



Briefing Book

2018-19

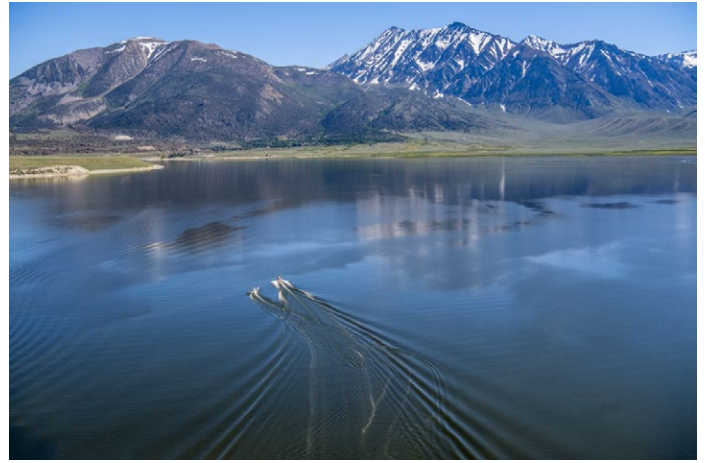
LA
DWP

Our Mission

*The Los Angeles
Department of Water
and Power provides our
customers and the
communities
we serve safe, reliable
and cost-effective
water and power
in a customer-focused
and environmentally
responsible manner.*

TABLE OF CONTENTS

3	Introduction	
3	LADWP Leadership	
4	Power System	
	Power Facts & Figures	5
	Power Infrastructure Reliability	6
	L.A. Clean Energy Future	7
	Greenhouse Gas Reduction	8
	Renewable Energy	9
	Expanding Energy Storage	10
	Local Solar	11
	Electric Transportation	12
	Energy Efficiency	14
15	Water System	
	Water Facts & Figures	16
	Water Infrastructure Reliability	17
	L.A.'s Water Future	18
	Stormwater Capture	19
	Recycled Water	20
	Groundwater Cleanup	21
	Water Conservation	23
	Owens Valley	24
	Water Quality	27
29	Putting Customers First	
30	Customer Savings and Sustainability	
33	LADWP In the Community	
35	LADWP In Our Schools	
35	Environmental Stewardship	
37	Professional Excellence	
38	Finance & Corporate Performance	



Introduction

In fiscal year 2017-18, the Los Angeles Department of Water and Power (LADWP) made progress toward creating a clean energy future for L.A. and a locally sustainable and resilient water supply. We also continued investing in replacing aging infrastructure while keeping rates low.

Our clean energy achievements include commissioning the 250 megawatt (MW) Beacon Solar Plant, which helped us surpass 30 percent renewable energy in 2017. We reduced greenhouse gas (GHG) emissions to nearly 47 percent of our 1990 levels—a full 14 years ahead of the state mandated deadline. On the water side, LADWP began constructing the North Hollywood Groundwater Treatment facility as part of reducing reliance on imported water. We also continued installing a network of earthquake resilient pipe to better safeguard our water supply.

Despite the challenges of our aging water and power infrastructure, our systems perform better than national averages for pipe leaks as well as the duration and frequency of power outages.

In keeping with our focus on “putting customers first,” we continue improving our customers’ experience. Call hold times averaged 55 seconds in fiscal year 2017-18. We launched new industry-leading energy efficiency and water conservation programs to assist our most at-risk customers with paying their bills while supporting conservation goals. This edition of the Briefing Book also includes highlights of our professional achievements, our community engagement and our corporate performance metrics since July 2017.

Board of Water and Power Commissioners

Mel Levine, President
Cynthia McClain-Hill, Vice President
Jill Banks Barad, Commissioner
Christina E. Noonan, Commissioner
Susana Reyes, Commissioner

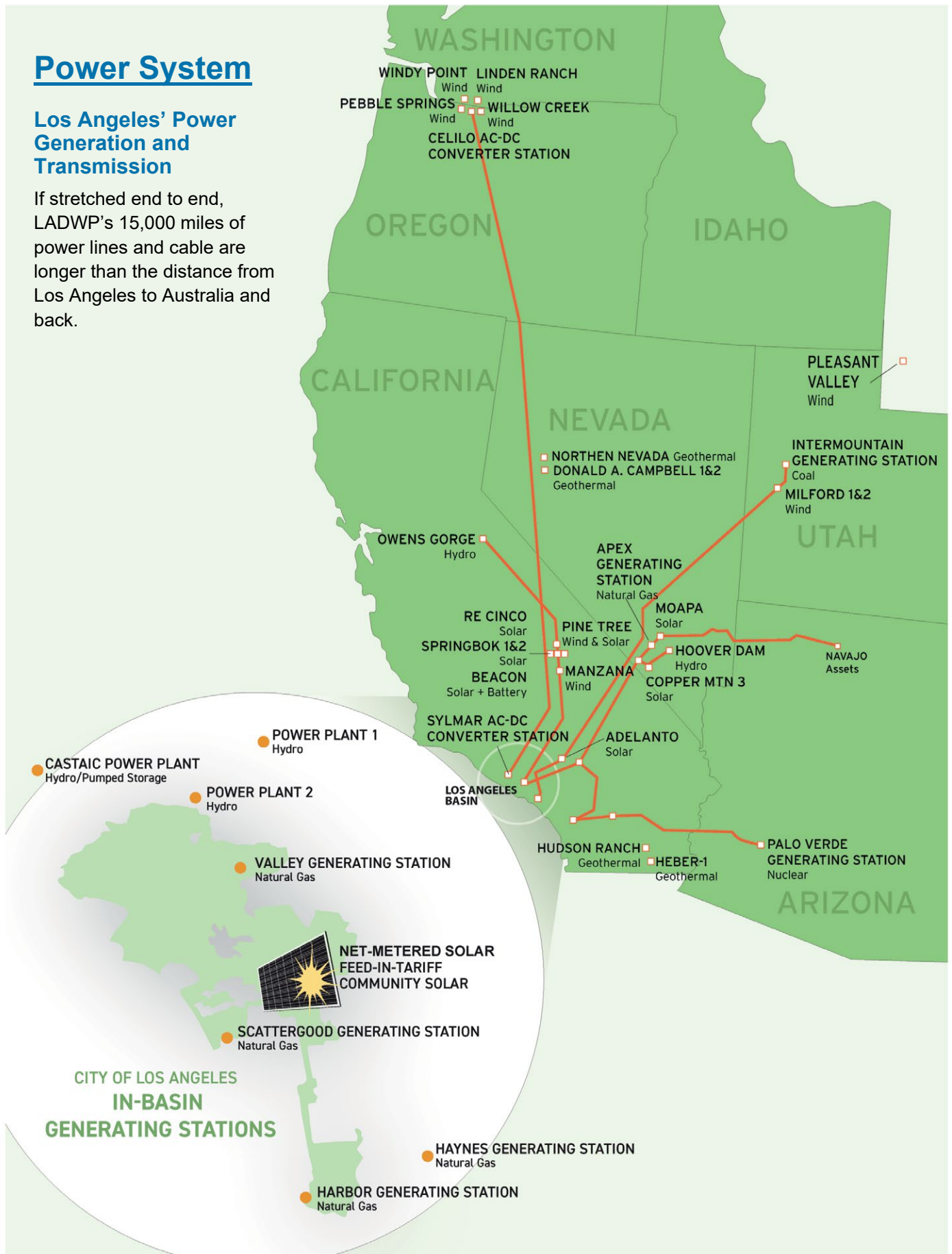
Our Team

Martin L. Adams, General Manager and Chief Engineer
Reiko A. Kerr, Senior Assistant General Manager - Power System Engineering, Planning and Technical Services
Andrew C. Kendall, Senior Assistant General Manager - Power System Construction, Maintenance, and Operations
Richard F. Harasick, Senior Assistant General Manager - Water System
Ann M. Santilli, Chief Financial Officer
Nancy Sutley, Chief Sustainability Officer
Joseph A. Brajevich, General Counsel

Power System

Los Angeles' Power Generation and Transmission

If stretched end to end, LADWP's 15,000 miles of power lines and cable are longer than the distance from Los Angeles to Australia and back.



Power System

LADWP is the nation’s largest municipal electric utility. In fiscal year (FY) 2017-18, we supplied more than 22,269 gigawatt-hours (GWH) to 1.5 million residential and business customers, including more than 5,000 in the Owens Valley. We maintain a vast power generation, transmission and distribution system that spans five Western states, and delivers electricity to about 4 million people in Los Angeles.

Approved Budget—FY 2018-19

Total: \$4.2 billion

- \$1.2 billion for operations and maintenance
- \$1.5 billion for capital projects
- \$1.5 billion for fuel and purchased power

Electric Capacity

Over 7,850 MW of generation capacity from a diverse mix of energy sources.

Power Resources (2017)*

Renewable energy	30%
• Wind	10%
• Solar	11%
• Geothermal	4%
• Eligible hydroelectric	4%
• Biomass & Biowaste	1%
Natural gas	31%
Nuclear	10%
Large hydro	4%
Coal	18%
Unspecified purchased power	7%

*Submitted to the California Energy Commission for calendar year 2017.

Power Use

Typical residential energy use per customer is about 500 kilowatt-hours (kWh) per month.

Business and industry consume about 70 percent of the electricity in Los Angeles, but residents constitute the largest number of customers.

Peak Energy Demand

The record instantaneous peak demand is 6,502 MW reached on August 31, 2017.

Power Infrastructure

The Power System is responsible for inspecting, maintaining or replacing, and operating the following:

Generation

- 4 in-basin thermal plants
- 1 out-of-basin thermal plant
- 14 small hydroelectric plants
- 1 large hydroelectric pumped storage plant
- 1 wind plant
- 2 solar photovoltaic plants

Energy Storage

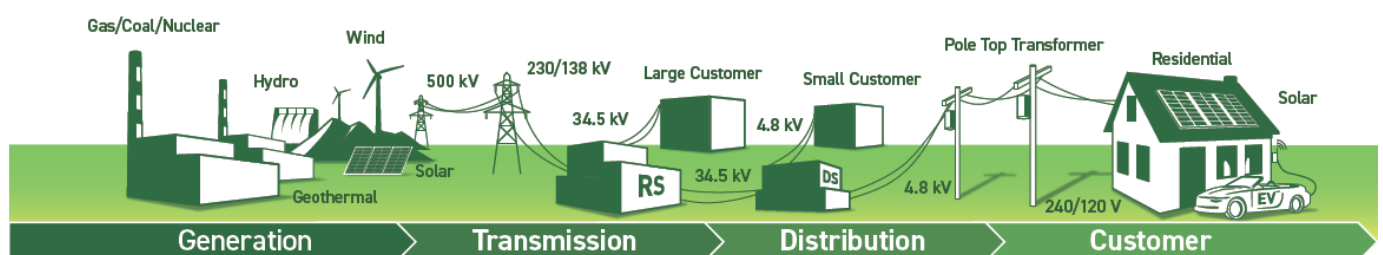
- 0.14 MW of City-owned battery energy storage
- 20 MW of utility-scale battery energy storage system
- 1,244 MW of pumped hydro storage

Transmission

- 3,636 miles of overhead transmission circuits (AC and DC) spanning five Western states
- 124 miles of underground transmission circuits
- 15,452 transmission towers

Distribution

- 6,763 miles of overhead distribution lines
- 3,732 miles of underground distribution cables
- 177 substations
- 308,373 distribution utility poles
- 3,166 pole-mounted capacity banks
- 128,693 distribution transformers



Power Infrastructure Reliability

Providing reliable and safe electricity is woven into the fabric of LADWP’s mission and strategic plan. Our Power System reliability continues to beat national averages. On average, customers experienced less than one outage and 150 minutes of power interruption during FY 2017-18, according to the system average interruption frequency and duration indexes, which are reported by most U.S. utilities.

LADWP has worked to maintain reliability by evaluating and prioritizing maintenance and replacement of aging and critical infrastructure through the Power System Reliability Program. With approval of increased investments through rate adjustments from 2016 to 2020, LADWP continues to ramp up the replacement of distribution infrastructure, such as poles, cross-arms, transformers, overhead circuits, and underground cables, as well as upgrading transmission, substation and generation equipment.

Power Grid Upgrades—At a Glance

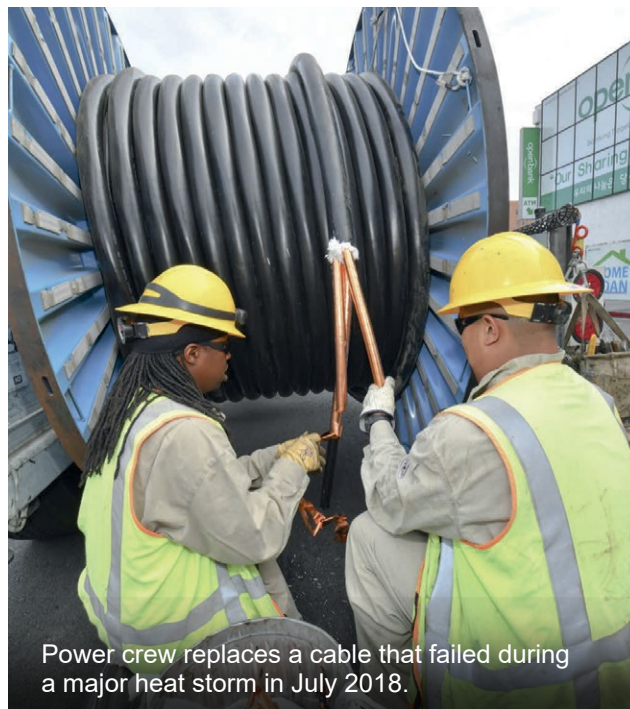
Infrastructure Replacements	FY 2017-18 Achievements	FY 2018-19 Targets
Poles	3,018	3,500
Crossarms	10,879	10,000
Transformers	950	800
Underground Cable (miles)	51	50
Vaults	17	18

Proactive Repairs

LADWP proactively inspects power equipment to identify needed repairs, ranging from a broken cross-arm to an abnormal circuit. In FY 2017-18, LADWP crews completed repairs on nearly 11,000 jobs. This marks a 20 percent increase from FY 2016-17, and beats a historic record set in the previous fiscal year for the most repairs completed in one year. We also exceeded all distribution equipment replacement targets for FY 2017-18.

Improving Customer Outage Notifications

As part of our mission to put customers first, LADWP is working to enhance our outage notification process and better communicate directly with customers during outages to provide more accurate and timely



Power crew replaces a cable that failed during a major heat storm in July 2018.

information. Based on lessons learned during a major heat storm that led to over 750 outage incidents in July 2018, LADWP has updated our web-based outage management system, enabled customers to report outages online and via the mobile website, and is developing a system for text alerts when power goes out or is restored. During the July 2018 event, LADWP engaged customers on Twitter, Facebook and Nextdoor. We plan to continue expanding our social media presence and other customer communications during power outages.

Longest Underground Transmission Line Improves Reliability for Westside

In July 2018, LADWP completed construction of the Scattergood-Olympic Cable A, a 230-kV, 11.4 mile underground transmission line—the longest in the Department’s power system. The new transmission line provides a backup to the original 1974 transmission line, which had been experiencing reliability issues due to deteriorated insulation. The addition of the second 230-kV cable will enhance electric service reliability in the Los Angeles’ densely populated Westside, improve the flexibility and reduce the need for emergency system repairs.

L.A.'s Clean Energy Future

LADWP is transitioning towards a 100 percent clean energy supply while maintaining a reliable and cost effective electric service for customers. In FY 2017-18, LADWP continued to aggressively decarbonize our power generation portfolio through clean energy initiatives: eliminating coal, expanding renewable energy, developing energy storage systems, investing in energy efficiency and local solar, and encouraging L.A. drivers to switch to electric vehicles. These strategies have dramatically reduced GHG emissions and are the building blocks for L.A.'s clean energy future.

Clean Grid L.A.

In February 2019, LADWP announced we will not proceed with the planned repowerings of the remaining units that use ocean water for cooling at our three coastal power plants—Scattergood, Haynes and Harbor Generating Stations. Instead, LADWP will determine a viable path forward, using clean energy alternatives, to create an even greener grid while remaining committed to ensuring reliable electric service for our customers. We will work through the 100 Percent Renewable Energy Study currently underway to develop a detailed Clean Grid L.A. plan by 2020.

The decision, announced by City and LADWP leaders in 2019, accelerates the transition to 100 percent renewable energy and puts L.A. on track to be carbon neutral by 2050. LADWP is required by state and federal regulations to phase out the use of ocean water cooling (a process called once through cooling, or OTC) at Scattergood by 2024, and at Harbor and Haynes by 2029. Among the first steps, LADWP will seek to align all OTC deadlines to 2029 to maintain reliability while moving to clean grid alternatives.

LADWP will work closely with the Mayor and City Council offices, along with the 100 Percent Renewable Energy Advisory Group, other stakeholders, customers, and community members to develop the plan. Among the potential clean energy alternatives are distributed generation technologies such as solar power, demand response and energy efficiency measures, energy storage, and micro-grids. The plan will also identify needed investments in upgrading transmission and distribution networks to move power reliably within and from outside the L.A. basin.



100% Renewable Energy Study

Progress continues on a ground-breaking 100 Percent Renewable Energy Study led by the National Renewable Energy Laboratory (NREL) and LADWP to determine the steps and investments needed to achieve a 100 percent clean energy future for Los Angeles. NREL, a leading renewable energy research arm of the U.S. Department of Energy, is conducting an objective economic and reliability analysis of options for L.A., along with alternative clean energy scenarios. Under the direction of the Mayor and City Council, the study is the first comprehensive analysis of its kind for a utility the size of LADWP.

Working with City leaders, representatives from the business sector, environmental advocacy groups, and the communities we serve, LADWP conducts quarterly meetings of the 100 Percent Renewable Energy Advisory Group, formed in June 2017 to help guide the study. The Advisory Group includes technical experts, representatives from research universities, commercial and industrial customers, local government officials, Neighborhood Councils, environmental advocates and community interest groups.

Preliminary study results are expected in the second quarter of 2020 with the final report anticipated at the end of 2020.

Learn More: ladwp.com/CleanEnergyFuture

Our Carbon Reduction Progress: Beating State Targets

LADWP exceeded the state’s 2030 target for GHG reductions in 2016—14 years ahead of the deadline. By the end of 2017, LADWP had reduced GHG emissions to 9.6 million metric tons (MMT)—approximately 47 percent below our 1990 emissions baseline of 17.9 MMT. LADWP’s long-term resource plan forecasts that our GHG emissions in 2037 will be approximately 79 percent below LADWP’s 1990 baseline, nearly achieving the state’s 2050 GHG emissions reduction target 20 years ahead of the mandate.

Climate Change Policy

Los Angeles and California remain leaders in climate change despite federal actions to dismantle climate change policies. The Los Angeles Sustainable City pLAN seeks to reduce GHG emissions by 45 percent below 1990 levels by 2025, 60 percent below 1990 levels by 2035, and 80 percent below 1990 levels by 2050. While the Sustainable City pLAN has more ambitious GHG emissions reduction goals than the state legislation, the end goal—80 percent below 1990 levels by 2050—is the same for both the Sustainable City pLAN and the state of California.

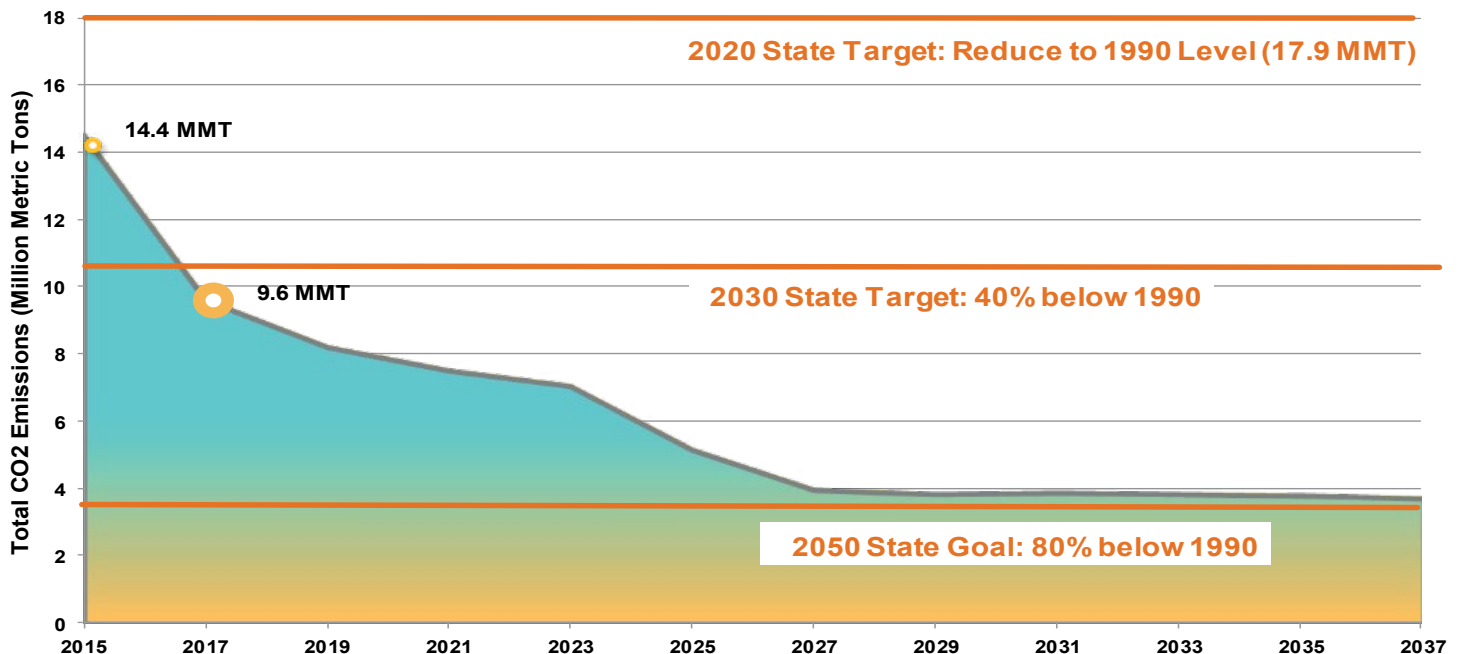
Transition from Coal Power

LADWP’s efforts to eliminate coal power and reduce GHG emissions from our power system took a major step forward in 2018 when the Board of Water and Power Commissioners adopted an accelerated GHG emissions reduction plan and advanced our environmental and equity goals. Most significantly, the Board’s action led the way to downsizing a proposed natural gas power plant that will replace the coal-fired Intermountain Power Project (IPP) in Delta, Utah by 2025 and paves the way for more renewable energy to flow from that region to Southern California.

Following LADWP’s lead, all IPP participants and the Intermountain Power Agency, which administers the plant, approved the scaled-down project in September 2018. The Board also recommended raising renewable energy targets another 5 percent, and pushed for new energy efficiency and community solar programs designed to benefit customers in disadvantaged communities.

As the IPP operator and largest agency partner, LADWP had led a multi-agency effort to convert the coal plant to a smaller, more efficient natural gas plant. The Board’s recent action authorized downsizing the Utah plant by another 30 percent—from 1,200 MW to 840 MW—to further reduce fossil fuel power and make room for more renewables using the project’s

LADWP GHG Emissions Levels Beat State Targets



transmission line to Southern California. The scaled-down 840 MW IPP repowering project will involve building two identical, efficient and flexible 420 MW combined cycle generating units, which are needed to maintain power flows onto the transmission system as well as balance out fluctuations in renewable energy.

Renewable Energy Rising

In calendar year 2017, LADWP achieved 30 percent renewable energy from wind, solar, geothermal, eligible hydroelectric power, and bio resources, and is on track to meet the next milestone of 33 percent by 2020. LADWP is studying potential paths for meeting or exceeding the state’s renewable energy targets under the California Clean Energy Act (SB 100), which accelerated Renewable Portfolio Standard (RPS) to 60 percent by 2030. The state legislation also requires that 100 percent of all retail sales of electricity come from zero-carbon resources by 2045. The independent 100 Percent Renewable Energy Study will include analysis of that scenario

Beacon Solar, 250 MW

With the final two solar sites completed in December 2017, LADWP’s Beacon Solar Plant is sending 250 MW of clean, renewable energy to Los Angeles. Located along Highway 14, north of Mojave, Calif., Beacon is a state-of-the-art solar power facility featuring 903,434 panels on single-axis trackers that follow the sun in the

early morning and late afternoon hours for maximum operational efficiency.

When operating at full capacity, Beacon produces enough renewable solar energy to serve 102,667 Los Angeles homes, and offsets approximately 313,311 metric tons of CO2 emissions annually from fossil fuel power plants. That amount of avoided GHG emissions is like removing 67,117 gas-fueled vehicles from the highway every year.

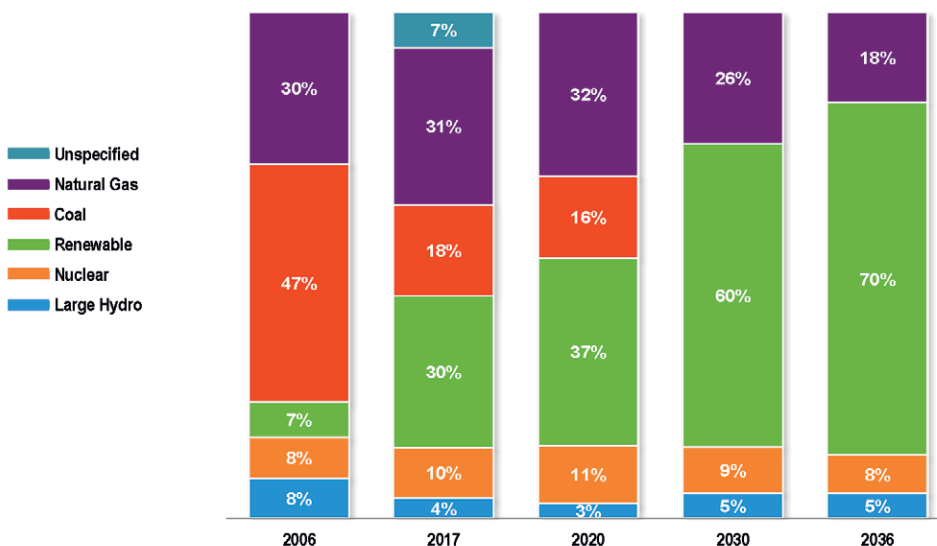
Springbok Solar, 350 MW

Since 2016, Los Angeles has been receiving 260 MW of clean sun power from the Springbok 1 and 2 projects, located next door to Beacon in the Mojave Desert. A third phase of the project—Springbok 3—will generate 90 MW when completed in June 2019.

Northern Nevada Geothermal, 84 MW

LADWP is receiving 84 MW of geothermal power from the Northern Nevada Geothermal Portfolio Project, consisting of 10 facilities that will provide 182 MW of clean, around-the-clock geothermal energy to Los Angeles by 2022. These facilities are expected to be highly efficient and reliable, operating at 95 percent or more of their capacity year round.

L.A.’s Future Power Supply Is Coal-Free



Hoover Dam Power Plant features 17 generating units, installed between 1936 and 1961. LADWP operated the plant for 50 years.



Energy Storage

Energy storage can provide a carbon-free, clean energy solution for integrating variable renewable energy, such as wind and solar power, reliably onto our power grid. Energy storage also helps avoid over-generation of solar, while ensuring that we meet federal electric grid reliability standards.

In addition to utility-scale energy storage, LADWP recognizes the important role of customer-owned energy storage systems. We are working diligently to finalize standards that will allow customers to safely install energy storage systems, including those paired with rooftop solar systems. This type of equipment is capable of both storing and creating electricity, helping customers better manage their electricity use.

Boulder Canyon Pumped Storage Project

LADWP is evaluating the feasibility of transforming one of the last century's major public works projects—Hoover Dam—into a giant energy storage system to manage future solar and wind energy in this century. Planning and outreach efforts are underway to consider building a large-scale, hydro-electric pumped energy storage project at the 2,000 MW hydropower plant near Boulder City, Nev.

While still in its infancy, the project is creating momentum as LADWP begins feasibility studies while

discussing the proposal with Hoover Dam stakeholders, including participants, operators and regulators. The project offers the potential for enormous benefits, not only for Los Angeles but for the Western U.S. The proposed facility would be capable of storing large amounts of renewable energy—ranging from 500 to 2,000 MW—in the form of water pumped uphill, and would operate similarly to our Castaic Pumped Storage Power Plant.

Beacon Energy Storage System

In October 2018, LADWP's first grid-scale battery storage project began commercial operation at the Beacon Solar Plant in the Mojave Desert. The 20 MW Beacon Battery Energy Storage System (BESS) ties into Beacon Solar and our other large solar arrays along Highway 14 north of Mojave, Calif., as well as our 135 MW Pine Tree Wind Farm in the nearby Tehachapi Mountains.

The Beacon BESS is designed to stabilize the natural fluctuations of solar and wind created when large amounts of these resources are placed on the grid. It helps control voltage levels on the transmission lines connecting the solar facilities to Los Angeles, increasing reliability and output from the solar arrays. A third purpose is that the BESS provides a small amount of peaking power to help meet demand as the sun sets and solar stops providing energy.



Beacon Solar Plant and Battery Facility

Castaic Pumped Storage Power Plant

The crown jewel of LADWP’s energy storage portfolio is our 1,265 MW Castaic Plant in northern Los Angeles. Built in the 1970s, the Castaic plant underwent a 10-plus year modernization that was completed in 2017 and increased its capacity by 21 MW. The plant has proven highly cost effective and has enabled LADWP to bring significantly more renewable energy onto our grid, offsetting the need for curtailing wind and solar and allowing us to store excess renewables for later use.

Fire Station No. 28 Battery and Solar System

A pilot project to combine battery energy storage and solar photovoltaic power was energized in February 2018 at Fire Station No. 28 in the Porter Ranch community of the northern San Fernando Valley. The battery and solar system will lower the electrical demand of the building and provide backup for critical energy needs at the station. Since the installation, the battery storage and solar system provided backup power during three outages, alleviating the need to use a diesel generator.

Local Solar Shines

Expanding solar power within our city helps meet our renewable energy targets, reduces the carbon footprint created by fossil fuel power plants, and provides economic benefits such as creating jobs and stimulating the green economy. Local solar projects also support the reliability of LADWP’s power grid because they provide “distributed generation,”

functioning like mini power plants that generate energy right where it is being used. LADWP’s cadre of local solar programs includes customer net-metered solar and the Solar Incentive Program, Feed-in Tariff, Community Solar, and utility-built solar, through which we install solar on rooftops of LADWP and City-owned buildings.

L.A. Ranked America’s No. 1 Solar City

In 2018, LADWP was recognized as the No. 1 Solar City in America, based on rankings by the Environment California Research & Policy Center. The report, *Shining Cities 2018: How Smart Local Policies Are Expanding Solar Power in America*, showed that Los Angeles marked a 44 percent increase in solar power as of the end of 2017 compared to the prior year. Los Angeles has ranked No. 1 in four out of the five years that the report has been produced. This progress brings L.A. closer to the goals outlined in the Sustainable City pLAn, including a clean and resilient energy supply through the expansion of local solar resources.

Community Solar

Recognizing that a large portion of our customers are unable to access solar power, LADWP offers a Community Solar Program to increase solar equity, meet our sustainability goals, and strengthen ties with the communities we serve.

LADWP introduced the first Community Solar Program—the pilot Solar Rooftop Program (SRP)—in February 2017 to expand access to solar savings for residential customers who otherwise may not be able to go solar because of the cost or credit worthiness. Under this program, LADWP pays customers a set amount to lease their roof space and install a solar system that feeds into the city’s power grid. We install and maintain the system at no cost to the homeowner. Participating customers receive an annual \$360 check for 20 years for the solar energy generated by their solar rooftop systems.

LADWP will launch a second Community Solar Program, called the Shared Solar Program, in 2019. The program is designed to improve solar equity for renters and to broaden the geographic diversity of solar projects in Los Angeles. The program stems from the findings of LADWP’s Equity Metrics Data Initiative, which identified geographic areas of the city with the least number of solar installations.

Under the pilot program, customers will be able to purchase blocks of solar power—up to 100 kWh per month—at a 10-year fixed rate, enabling customers to better manage their electric bill. LADWP has committed to providing up to 10 MW of solar power under the pilot program, which includes building new local solar on rooftops of LADWP and City-owned buildings, parking lots, and other structures. Part of the solar power for the program will also come from a large-scale 90 MW solar project due to be completed in 2019 in the Mojave Desert.

LADWP is also developing a pilot Virtual Net Energy Metering Program (VNEM) as part of community solar. VNEM enables a customer to receive a credit on their bill for their share of a solar project.

Solar Incentive Program

LADWP's Solar Incentive Program (SIP) closed to new applications on December 31, 2018. Upon closing, the program had incentivized 256 MW of local customer-owned solar, with more than 32 MW solar power in the queue for incentives. By incentivizing the installation of solar in Los Angeles, the program boosted the solar industry and helped to ultimately bring down prices and enable more customers to go solar.

LADWP ended the incentive program under the 2016 guidelines approved by the Board of Water and Power

Commissioners after extending the program by an additional two years.

SIP was created in 1999 to incentivize the installation of solar in Los Angeles, help establish the solar industry, and ultimately to make solar more affordable for our customers. Future investments in local solar will focus on expanding participation in Community Solar Programs, including the pilot Solar Rooftops Program and the pilot Shared Solar Program.

Learn more: ladwp.com/solar

Charge Up L.A.!

Through our electric transportation rebates and programs, we are creating EV communities across Los Angeles. LADWP encourages customers to plug in and save through EV rebate programs, expanding citywide charging infrastructure, and other strategies. The benefits of electrification include reducing the city's carbon emissions and other tailpipe emissions, improving air quality, and saving costs for drivers because charging up vehicles can be less expensive than gas. EVs and other forms of electric transportation can also help integrate renewable energy into the city's power grid and improve power reliability when owners charge up their vehicles at the appropriate time.

Solar Achievements

(As of December 31, 2018)

Over 38,091 customer-installed solar systems connected to the grid

Solar Incentive Program:

- \$328 million in solar incentives for from 33,246 systems since the program launch in 1999
- \$271 million in incentives for 256 MW under state legislated program SB1
- Total net-metered solar: 289 MW, generating 477,000 megawatt-hours (MWh) per year

Feed-in Tariff Program:

- 90 renewable projects totaling 62.8 MW in service
- The energy produced from these projects is enough to supply about 17,333 homes.



Community Solar Program

Solar Rooftops:

- 15 installations completed
- 46 kW of solar power being delivered
- 11 projects (30kW) in design and construction

Shared Solar: Anticipated launch in mid-2019



Electric Transportation Goals

To help drivers feel more confident about switching to EVs, we are working to expand charging infrastructure in the city and region. Our goal is to support or directly install 10,000 public EV chargers in Los Angeles by June 2022, including 4,000 chargers on LADWP or City-owned property. Our five-year goal is to support the adoption of 145,000 EVs by increasing EV purchases to 15 percent of all vehicle purchases by 2021.



Charging Up Communities

One important achievement this year was the completion of the new Crenshaw EV Charging Plaza, located in LADWP's Crenshaw Customer Service Center parking lot, in April 2018. The charging plaza features 22 new EV chargers, and is part of a larger plan to create EV charging hubs at additional customer service and community centers in Los Angeles.

Charging Up Businesses and City Facilities

LADWP has installed more than 600 Level 2 chargers at LADWP facilities and other City-owned properties,

including 14 DC fast chargers at publicly accessible locations. LADWP continued to assist other City facilities, such as libraries, the airport and police stations, with the installation of an additional 200 public chargers. Altogether, there are over 1,900 commercial chargers in Los Angeles, including those supported by LADWP rebates.

Charging Up State Parks

In September 2017, local state parks received a total of six new EV chargers through a team effort by LADWP, the California Energy Commission and the California Department of Parks and Recreation. The new chargers will help visitors and park employees alike enjoy the benefits of EVs, including reducing the city's carbon emissions, savings on fuel costs and helping integrate renewable energy into the power grid.

Power Pole Chargers

In a pilot program to expand EV infrastructure citywide, LADWP installed the city's first utility pole-mounted EV charger in Watts in December 2016. LADWP has since installed 21 more pole mounted chargers in the communities of West and North University Park, South L.A., the Arts District, Pico Union, the Fashion District, Studio City, Chinatown, Chatsworth, Sun Valley, North Hills, North Hollywood, Woodland Hills, Canoga Park, and Northridge.

Charger use is currently free to the public. Unlike EV chargers that connect to underground electric lines, pole EV chargers require no additional street work other than connecting the charging equipment to the existing pole wires.

Regional EV Efforts

LADWP is working with other agencies and California utilities on expediting transportation electrification through periodic planning and coordination meetings at the Los Angeles Cleantech Incubator. Other joint agency efforts include working with the Port of Los Angeles on electrification to meet future energy demand and supporting an electric fleet partnership with the Southern California Air Quality Management District.

LADWP's EV Fleet

LADWP operates one of the largest plug-in fleets in the city with 215 all-electric and plug-in hybrid sedans, along with six plug-in hybrid bucket trucks and digger derrick trucks. In 2018, LADWP expanded our EV fleet with more than 220 Chevy Volts and an additional 23 plug-in hybrid trucks. The Department is also taking delivery of 65 all-electric Chevrolet Bolts in the first half of 2019. This results in a total of 529 electric and hybrid vehicles in LADWP's fleet, which translates to about 1,710 metric tons (3.77 million pounds) of CO2 emissions avoided annually.

Investing in Energy Efficiency

Energy efficiency is a key strategy for transitioning our power supply to 100 percent clean energy, providing a cost-effective way to reduce GHG emissions and other pollutants. Energy efficiency helps LADWP meet customer demand, while enabling customers to better manage their power use and save on their electric bills. We offer a menu of rebates for energy efficient appliances and other measures that are tailored for all customer sectors.



These offerings will offset some of the cost of attic insulation and other home improvements. Our programs are also designed to support clean jobs and the Los Angeles economy.

Learn more: ladwp.com/save

Customers saved 476,361 MWh cumulatively for the fiscal year 2017-18. That amount of energy savings is comparable to offsetting electricity for 79,394 homes and reducing GHG emissions by 165,730 metric tons annually, which equates to removing about 35,654 gasoline-fueled cars from the road.

LADWP applies the following guiding principles for launching new and redesigned energy efficiency programs:

- Promoting energy efficiency programs for all customer sectors
- Targeting “hard-to-reach” customers, such as low-income residents and small businesses
- Achieving tangible economic benefits for low-income customers
- Leveraging programs to support jobs for the local workforce
- Working collaboratively with partner agencies on outreach and education, and to reach a broad and diverse customer base through a Southern California Gas Co. (SoCalGas) partnership
- Operating transparently and reporting results regularly

Energy Efficiency Goals

LADWP had set a target of 15 percent cumulative energy savings from 2010 through 2020, based on findings of the 2014 Energy Efficiency Potential Study. As of June 30, 2018, we were more than 80 percent toward meeting that target. After receiving an updated potential study in 2017, LADWP adopted a new goal to reduce energy use by another 15 percent from 2017 through 2027, representing 3,600 gigawatt-hours (GWh) in energy savings. At that pace, by 2030 we will have doubled our prior target for 2020.

Water System

Los Angeles' Water Sources



Water System

LADWP delivers a dependable supply of high quality water to customers in a safe, efficient and publicly responsible manner. We are the nation's second largest municipal water utility, serving a population of 4 million people within 472 square miles. We supply approximately 170 billion gallons of water annually, and an average of 466 million gallons per day (GPD).

LADWP has a strong history of water resources management. As Los Angeles has grown from a population of 142,000 in 1902 to 4 million residents today, LADWP continues to make efficient water use a Southern California way of life, providing reliable, resilient water supplies now and in the future.

The Water System is committed to implementing innovative water management and is a leader both nationally and globally by focusing on three key areas: the safety of drinking water, reliability of water infrastructure, and developing sustainable local water supplies.

Water Facts & Figures

The Water System is responsible for supplying, treating and distributing water to the City of Los Angeles.

Approved Water Budget—FY 2018-19

Total: \$1.54 billion

- \$511 million for operations and maintenance
- \$891 million for capital projects
- \$136 million for purchased water

Water Use

(FY 2017-18)

Average Daily Use Per Capita: 112 gallons

Residential Customers

324,000 acre-feet per year or 289 million GPD

Commercial/Industrial/Institutional Customers

148,000 acre-feet per year, or 132 million GPD

Annual Water Sales to Customers

(as of FY 2017-18)

- 154 billion gallons
- 731,000 active water service connections

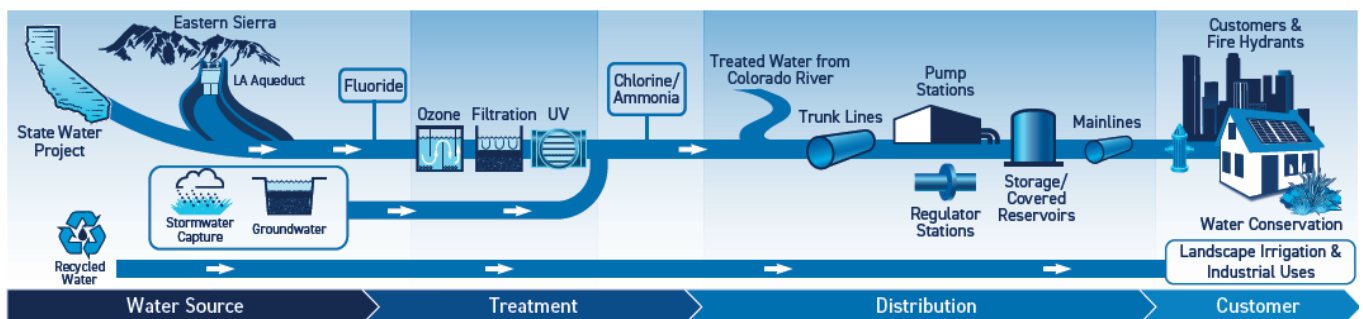
Water Supply Sources

(5-year average, FY 2014-2018)

L.A. Aqueduct (Eastern Sierra Nevada).....	27%
Purchased water (MWD).....	59%
• Bay Delta	50%
• Colorado River	9%
Groundwater	12%
Recycled water	2%

Water System Infrastructure

Tanks and Reservoirs	117
Pump Stations.....	84
Ammoniation Stations	9
Chlorination Stations	22
Regulator and Relief Stations.....	331
System Pressure Zones.....	111
Distribution Mains and Trunk Lines (miles)....	7,326
Fire Hydrants	60,905
Total Storage Capacity (acre-feet).....	311,000





Water Infrastructure Reliability

Upgrading Our Water Infrastructure

LADWP maintains a vast water distribution system with over 7,000 miles of pipe, which is critical to the reliable delivery of high quality water to Los Angeles residents. With a significant amount of pipe installed at the turn of the last century, LADWP faces the challenge of keeping pace with the replacement and upgrade of aging water mains and riveted-steel trunk lines.

More than 29 percent of the city's original cast iron pipes are over 80 years old, approaching the end of their typical lifespan of 100 years old. Moving forward, LADWP must take additional actions to accelerate the replacement and upgrade of the aging infrastructure.

To strengthen reliability of water service, we are investing \$2.85 billion in the next 10 years to upgrade and replace critical infrastructure identified through our

Asset Management Program. A significant amount of these expenses—about \$1.5 billion—will go toward replacing mainlines that have undergone a thorough assessment and have been prioritized as vulnerabilities within the water distribution system.

Infrastructure Replacements	2017-18 Achievements	2018-19 Goals
Distribution mainlines (pipes 20 inches or less in diameter)	216,543 feet	232,000 feet
Trunk lines (pipes 20 inches or greater in diameter)	6,091 feet	7,700 feet
Large valves	5	5
Pressure regulator stations	4	4
Pumps/motors	15	12
Small meters	28,198	31,500

Additional investments are necessary to replace and rehabilitate the Los Angeles Aqueduct, tanks and reservoirs, pump stations, pressure regulating stations, system valves, water meters, as well as ancillary infrastructure required to deliver water to its customers.

Despite the challenges of aging water infrastructure, LADWP maintains a high level of reliability. Our leak rate has averaged 19 leaks per 100 miles of pipeline over the past five years, below the national average of 25 leaks per 100 miles of pipeline.

Earthquake Resistant Pipe Projects

LADWP is a leader among water utilities nationwide in pioneering the installation of earthquake resistant water pipe, which provides greater system reliability and resiliency in case of an earthquake. The high-tech pipe's innovative, segmented design provides flexibility that allows up to one percent axial movement and up to eight degrees rotation to withstand the strains associated with earthquakes, landslides, and temperature changes.

LADWP has installed 2.5 miles of Earthquake Resistant Ductile Iron Pipe (ERDIP) through five pilot projects throughout Los Angeles, including the East Valley, West Valley, Central, Western, and Harbor areas. With the pilot program completed, LADWP is continuing to install an additional 14 miles or more of ERDIP pipe by 2020 as part of a seismic resilient pipe network throughout the city, targeting locations with critical earthquake hazards.

Among the projects underway is a four-mile segment of the Foothill Trunk Line, where the major water artery crosses the San Fernando Fault. The project will include two miles of ERDIP pipe that is a 54-inch diameter transmission trunk line and two miles of 12-inch diameter ERDIP distribution mainline.

Benedict Canyon Pipeline Project

The Benedict Canyon Water Pipeline Replacement Project, which changed out 5,200 feet of pipeline originally installed in the 1960s, was completed in September 2018. The project finished two months ahead of schedule despite its location on a major commuter artery connecting Beverly Hills to the San

Fernando Valley. By replacing the pipes over 65 years old, LADWP increased water supply reliability and improved existing fire protection in the area.

L.A. Aqueduct Relining Project

This past year, LADWP crews completed relining work on the Los Angeles Aqueduct three weeks ahead of schedule, ensuring the long-term viability of a reliable water source for our customers. The L.A. Aqueduct delivers water to the city from Los Angeles' key water supply in the Owens Valley and Mono Basin. As such, the aqueduct requires a carefully planned and executed maintenance effort to reline the cement walls of the engineering marvel without interrupting water flow to the city.

Securing L.A.'s Water Future

LADWP is focused on developing resilient, sustainable and cost-effective water resources as we confront extremes in weather conditions and the resulting change in water supply. A key strategy is to create a sustainable local water supply to diversify the city's water sources and reduce dependence on purchased imported water.

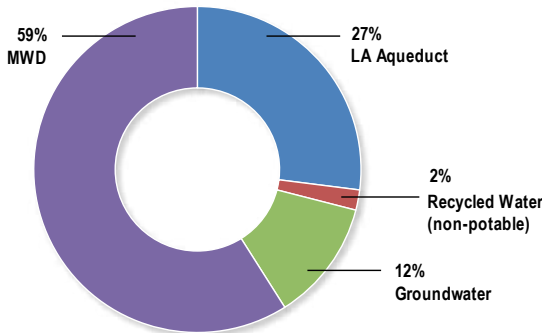
Like so many other parts of California, Los Angeles is heavily impacted by variations of our water supply as a result of hydrologic conditions. Although dry conditions recovered markedly in 2017, the multi-year extreme drought and increased environmental regulations had reduced Los Angeles Aqueduct supplies from the Owens Valley and Mono Basin by nearly one-third of historic levels over the past 10 years. As a result, LADWP has had to purchase more water from the Metropolitan Water District of Southern California (MWD) to meet our city's water needs despite increased conservation.

In February 2019, City officials and LADWP announced a new initiative to recycle 100 percent of the city's wastewater by 2035 to increase L.A.'s water independence. The initiative will help meet the 2019 Sustainable City pLAN goal to source 70 percent of water locally by 2035 from a combination of recycled water, groundwater, stormwater and new conservation.

Current and Future Water Resources

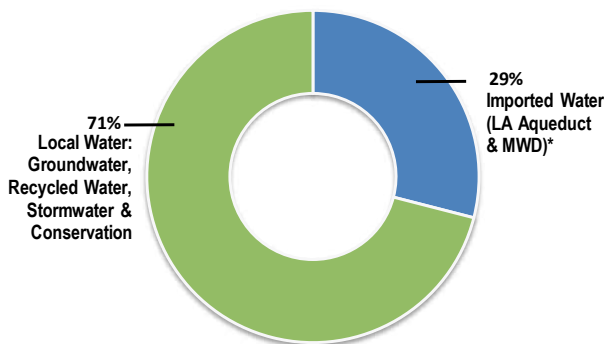
Present

Five-Year Average (FY 2013-14 through 2017-18)



Future

L.A.'s Green New Deal
Projected for FY 2034-35 Average



*Ratio of imported water from the L.A. Aqueduct vs. MWD will vary due to hydrological conditions.

Stormwater Capture

Stormwater runoff is an underutilized local water supply resource in Los Angeles. Capturing and managing stormwater is a natural way to help replenish local groundwater aquifers while reducing runoff and thereby improving water quality in our ocean, rivers and other water bodies. Historically, the average stormwater capture is about 21 billion gallons annually. As part of the Los Angeles Sustainable City pLAN, our goal is to more than double the capture capacity to about 49 billion gallons by 2035.

In partnership with the Los Angeles County Flood Control District (LACFCD), Los Angeles Department of Public Works - Bureau of Sanitation, and other governmental agencies and nonprofit organizations, LADWP has completed several stormwater capture projects with many other efforts underway.

Laurel Canyon Green Street

Through a partnership between LADWP and the Department of Public Works - Bureau of Sanitation, the Laurel Canyon Boulevard Green Street Project in Pacoima converted an existing parkway into a sustainable, stormwater capture system consisting of drywells and vegetated infiltration swales. Completed in 2017, the project has an average capacity of approximately 13 million gallons of water annually. Among other benefits, the project helped mitigate local flooding and enhanced a pedestrian sidewalk.

Tujunga Spreading Grounds

Construction continues to enhance the Tujunga Spreading Grounds by installing two additional intakes to receive flows from the Tujunga Wash and the Pacoima Diversion Channel, while deepening and enlarging the existing spreading basins, among other upgrades. LADWP is providing about \$40 million to LACFCD for implementation. Additionally, the project received a \$3.2 million grant through the Integrated Regional Water Management Plan (IRWMP) under Proposition 84 and a \$7 million grant through the Storm Water Grant Program (SWGP) under Proposition 1. The project is expected to double the stormwater capture capacity from the current 2.6 billion gallons to approximately 5.2 billion gallons, and is estimated to be completed in spring 2021.

Pacoima Spreading Grounds Improvement Project

LADWP provided \$15 million to LACFCD to enlarge the basins and improve the intake to increase the stormwater capture capacity and efficiency of the Pacoima Spreading Grounds. The improvements are expected to create an additional capacity of 1.7 billion gallons of captured stormwater. Construction is estimated to be completed by 2022.



Hansen Dam Spreading Grounds

Whitnall Power Line Easement Project

The proposed Whitnall Highway Power Transmission Line Right-of-Way, located along Whitnall Highway from Vineland Avenue to Cahuenga Boulevard, is expected to capture and manage 88 million gallons of stormwater runoff at several locations. The captured water will be pre-treated and spread through open basins for groundwater replenishment. The project is currently in the pre-design and planning phases, and construction is expected to be completed by 2022.

Silver Lake Stormwater Capture Project

The proposed Silver Lake Reservoir Stormwater Capture Project includes constructing new storm drains to divert approximately 52 million gallons of stormwater from the surrounding residential neighborhoods into the Silver Lake and Ivanhoe Reservoirs. This project is designed to use stormwater to maintain the Silver Lake and Ivanhoe Reservoir water levels. The project is expected to be completed in 2022.

Stormwater Capture at City Parks

LADWP is pursuing stormwater capture opportunities at various city parks in the San Fernando Valley to enhance our local water supply. These projects will divert runoff from the Tujunga Wash Central Branch storm drain and recharge the groundwater basin. These parks include: David M. Gonzales Recreation Center, Fernangeles Park, Strathern Park North,

Whitsett Fields Park North, Valley Plaza Park North, Valley Plaza Park South, Alexandria Park, North Hollywood Park and Valley Village Park. The Stormwater Capture Parks Program is expected to capture an estimated 945 million gallons of stormwater runoff. Construction is estimated to be completed by 2023.

Industrial Stormwater Rebate Program

The State Water Resources Control Board requires Industrial General Permit (IGP) holders to comply with stormwater quality discharge standards. The most widely used compliance method is to treat stormwater runoff then discharge it offsite. The Stormwater Rebate Program aims to incentivize IGP facility owners to capture stormwater runoff, and either reuse it at their facility or to replenish the groundwater basins. LADWP anticipates the program may help capture up to 1.3 billion gallons of stormwater for replenishing the San Fernando Groundwater Basin. The program is expected to be implemented in mid-2019.

Recycled Water

Recycled water was first used in Los Angeles in 1979 for park and landscape irrigation, and is a growing component of strategic initiative to expand the city's local water supply. For decades, LADWP has invested in recycled water for non-drinking water uses that meet federal and state standards (Title 22), including irrigation, environmental and industrial uses.

In FY 2017-18, LADWP delivered over 12 billion gallons of recycled water to offset drinking water. Of the total, about 9 billion gallons was used for environmental purposes at Lake Balboa, the Donald C. Tillman Japanese Garden, and the Wildlife Lake. In addition, LADWP provides about 12.4 billion gallons of treated wastewater to West Basin Municipal Water District, which serves it to municipalities in West Los Angeles County.

Our goal has been to deliver over 24 billion gallons of recycled water by 2040 under the current 2015 Urban Water Management Plan (UWMP). Last year, we served 3.2 billion gallons of recycled water to more than 60 customers (270 metered connections), including Griffith Park, seven city golf courses, Loyola Marymount University, Los Angeles World Airports, Playa Vista Development, Forest Lawn Memorial Park, CalTrans, and NBC Universal. LADWP's newest recycled water customers are Taylor Yard Senior Housing, Chandler Bike Path, Warner Brothers Studios, Woodbury University, Los Angeles County Department of Public Works, Los Angeles State Historic Park, Google's Spruce Goose Hanger, and Mason and Cleo apartments in Playa Vista.

Hyperion Recycled Water Expansion

The City initiative to recycle 100 percent of the city's wastewater includes a plan to expand the amount of recycled water produced by the Hyperion Water Reclamation Plant in El Segundo. Hyperion currently treats about 260 million gallons of wastewater per day. A portion of the wastewater receives additional treatment to recycled water quality at the Edward C. Little Water Recycling Plant operated by West Basin Municipal Water District. Some of this recycled water is delivered to LADWP's Westside customers for irrigation, industrial and other approved uses.

LADWP and the Department of Public Works - Bureau of Sanitation are analyzing the potential for recycling all remaining water from the Hyperion plant. The analysis will consider the cost and feasibility of recharging the groundwater basins south of the Santa Monica mountains with advanced treated recycled water from Hyperion, then pump the groundwater out to enhance our local water supply and offset purchased imported supplies. This is a regional effort involving the Water Replenishment District of Southern California as well as other municipalities that will benefit from improvements to expand recycled wastewater.



Valley Village Park is among several customers receiving recycled water through the North Hollywood Water Recycling Project.

Groundwater Replenishment

To help replenish our groundwater resource, LADWP will soon begin implementing indirect potable reuse, which means taking recycled water, purifying it, and conveying it into the groundwater basin for future use as drinking water. In collaboration with the Department Bureau of Sanitation, LADWP initiated the Groundwater Replenishment Project (GWR) that can take up to 9.8 billion gallons of highly purified recycled water from the Donald C. Tillman Water Reclamation Plant and use it to recharge the San Fernando Groundwater Basin. As water conservation has reduced flows to the reclamation plant, the GWR project is being implemented in phases. The initial phase will treat over 1 billion gallons of recycled water per year by 2021, and will include a demonstration of ozone treatment to show its efficacy for future phases. LADWP and the Bureau of Sanitation are working together to evaluate the next phases depending on the availability of adequate wastewater flows.

Groundwater Cleanup

Beneath the San Fernando Valley is a collection of aquifers made of gravel, silt and sand that store a large body of groundwater in the San Fernando Basin (SFB). Past industrial practices have contaminated and severely impaired the quality of the SFB groundwater, forcing closure of nearly 50 percent of LADWP's active groundwater production wells. From 2014 to 2018, the SFB provided an average of 12 percent of our total drinking water supply, and up to 23 percent during extended dry periods when imported water was less available. Resolving the contamination problems and restoring the beneficial use of the basin are essential

Cleaning Up the San Fernando Groundwater Basin



In January 2018, Mayor Eric Garcetti, Councilmembers Nury Martinez and Paul Krekorian, and LADWP officials broke ground on the North Hollywood West Wellfield Groundwater Treatment Project.

The \$92 million project will clean up and restore the use of groundwater as a safe, high-quality source of drinking water in the San Fernando Valley. The site is the first of four planned remediation projects in the San Fernando Valley.

to protecting public health and the environment, and to recovering LADWP's historical groundwater supply and valuable local water resource.

From 2009 to 2015, LADWP undertook an extensive remedial investigation and produced a Groundwater System Improvement Study to inform the SFB Remediation Program. The study characterized the groundwater basin contamination, and led to the installation of 26 new monitoring wells. These new wells, along with a network of 70 existing wells, provide data to evaluate groundwater quality in the northern portion of the SFB, which includes the city's most productive wellfields.

LADWP's current groundwater remediation efforts are focused on the North Hollywood West, North Hollywood Central, and Tujunga Wellfield areas. LADWP may focus on other SFB areas in the future. Our goal is to best address contamination in the SFB, and document the investigations and analysis through remediation investigation and feasibility studies and related documents. The Board of Water and Power Commissioners approved the proposed remedial actions for North Hollywood Central Remediation project on December 11, 2018 and Tujunga Remediation project on January 22, 2019, following public review, comment periods, and analysis.

Grants and Funding

Voter approved Proposition 1, the "Water Quality, Supply, and Infrastructure Improvement Act of 2014" provides funding for projects that improve water quality, including drinking water protection, and help meet the long-term water needs of California. LADWP estimates the total SFB Remediation Program cost to be approximately \$600 million. LADWP received a Proposition 1 grant approval for \$44.5 million dollars to remediate the 1,4-dioxane at the North Hollywood West Wellfield.

Proposition 1 planning grants have been approved for approximately \$4 million related to the North Hollywood Central and Tujunga Remediation projects. LADWP has been asked to submit implementation grants for North Hollywood Central and Tujunga Remediation, which if approved, would provide about \$260 million in grant funding. LADWP is separately engaged in planning for a response action in the vicinity of the Pollock Well Field. LADWP will continue to proactively seek local, state, and federal funding to offset potential impacts to ratepayers.

Water Conservation

In addition to the state's long-term strategy, our water reduction goals are guided by the Los Angeles Sustainable City pLAN. Under the 2015 pLAN, L.A. must reduce water use by 22.5 percent by 2025, and 25 percent by 2035. LADWP has been working with the Mayor's Office, other City departments, and customers to reduce water use across all sectors. We also continue to encourage conservation through rebates and incentives for water-saving measures and devices, such as landscape transformation and high-efficiency clothes washers. Furthermore, LADWP's Water Loss Task Force has been deploying strategies to reduce water losses in our distribution system.

LADWP is proud of the progress our customers have made in conservation. Due to dramatic declines in per capita water use, total water consumption in Los Angeles in 2017 was lower than it was in 1970, despite a population increase of more than one million people.

Water Conservation: A Way of Life in L.A.

Historically, Angelenos have a strong water conservation ethic. The City of Los Angeles has long recognized water conservation as the core of multiple strategies to improve overall water supply reliability. As LADWP continued to offer water rebates and programs, coupled with educational and marketing campaigns, our customers have made water conservation a way of life. L.A.'s per capita water use as of FY 2017-18 is 112 gallons, one of the lowest of any major U.S. city.

L.A. has seen a slight increase in water usage this fiscal year due in part to the hot and dry winter the previous year. The rebound in usage is also typical following the end of a drought period; however, the current uptick in water use is still the lowest rebound in L.A.'s history, proving the continual success and effectiveness of our customers' water conservation efforts. Overall water usage has dropped by 16 percent since the last major drought, which began in 2013.

Water Conservation Potential Study

To help meet our water reduction goals and plan for a sustainable water future, LADWP updated the Water Conservation Potential Study in 2017. The study, which received the Excellence in Environmental Engineering - Superior Achievement Award from the American Academy of Environmental Engineers and Scientists, evaluated the current water use efficiency among customers and identified measures that have the most potential for new water savings. The study results will help LADWP develop a long-term water conservation plan that will cost-effectively achieve our ambitious 2035 water use goals. The study recommended potential water conservation strategies for all customer sectors, as well as municipal facilities and passive measures, which are driven by plumbing codes and landscape ordinances. For single-family homes, programs that reduce water used for landscape irrigation offer the biggest potential water savings, followed by switching to more water efficient clothes washers.

Learn more: ladwp.com/waterconservation

Outreach and Rebate Programs

In partnership with the Mayor's office, LADWP continued the "Save the Drop" campaign promoting reduced water use throughout the city. The campaign focuses on behavioral changes and rebate programs to help meet L.A.'s water reduction goals. Advertisements featuring "The Drop" were strategically placed in a variety of platforms, including transit shelters, newspapers, movie theaters, social media, and large venue screens.

LADWP continues to offer rebates to customers to help reduce both outdoor and indoor water use as well as free water conservation devices such as faucet aerators and water efficient showerheads. These items are available for pick up at any LADWP Customer Service Center.

Hands-on Workshops

For several years, LADWP has been investing in Community Partnership Grants with local nonprofit organizations to provide hands-on workshops to customers on how to remove turf, grade soil for capturing rainwater, and create California Friendly® landscapes. In fiscal year 2017-18, 10 hands-on workshops were hosted by LADWP Community Partnership grantee SELVA International.



Landscape Training Workshop

LADWP intends to continue offering workshop opportunities throughout our service area. The workshops complement the information provided through our California Friendly® Landscape Training classes.

Green Gardeners Workshop

As customers have transformed their landscapes from water-thirsty lawns to California Friendly® landscaping and native plants, there is an increased need for professional landscapers who are qualified and skilled in maintaining sustainable landscapes. Through a Community Partnership grant with TreePeople and the Green Gardeners Group, LADWP has piloted a Green Gardeners Workshop that provides landscapers with the educational resources needed to ensure new sustainable landscapes thrive. Conducted in English and Spanish, the workshop teaches participants about building healthy soil, efficient water systems and plant maintenance.

Water Loss Task Force

With rising water costs due to climate change and other factors, reducing water loss has moved to the forefront of LADWP's efforts to increase water efficiency. A Water Loss Task Force with more than 100 LADWP staff members from eight divisions, formed in 2014, brings together diverse technical

expertise to develop strategies to reduce water losses and improve efficiencies in the water distribution system. The Water Loss Task Force conducted a sample bench testing program, which confirmed that our water meters perform well overall, achieving a 99 percent accuracy level. The Water Loss Task Force initiated the use of a mobile leak reporting system to track real-time leak information across the water system.

Owens Valley

Since the construction of the First Los Angeles Aqueduct in 1913, the majority of L.A.'s water supply has historically come from the Owens Valley. In 1970, the Second Los Angeles Aqueduct was completed, increasing the amount of water that can be delivered to Los Angeles from the Eastern Sierra region by 60 percent.

The Water System operates and maintains a number of water supply facilities in the Owens Valley, including the First and Second L.A. Aqueducts, several reservoirs, and hundreds of miles of canals, ditches and pipe. Through our operations, LADWP has followed a consistent policy of making Owens Valley lands available for recreation, ranching, horse and mule packing, and use by businesses, schools, and public agencies. In keeping with our commitment to environmental stewardship in all regions where we operate, own and maintain land, we have invested in ecosystem restoration in the Eastern Sierra—one of the largest of its kind in the country, including:

- Approximately \$1.65 billion spent on dust mitigation at Owens Lake, including the establishment of a bird and waterfowl area recognized as a Western Hemisphere Shorebird Reserve Network site of international importance.
- Nearly \$260 million spent on environmental mitigation projects, including many that are dedicated to public recreation, such as Diaz Lake and the Lower Owens River.
- Restoring Mono Basin creeks, following 30 years of intensive rehabilitation and scientific examination.
- Completing the largest river revitalization project of its kind in the nation by rewatering the 62-mile Lower Owens River.



Managing and Maximizing Record Snowpack Runoff

Like many other water sources in California, the Eastern Sierra snowpack that provides water for Los Angeles is heavily impacted by extreme weather changes. After the state experienced a multi-year drought, a series of storms in 2017 provided much-needed precipitation and a snowpack level measuring at 203 percent of normal.

However, this also brought the threat of extreme runoff and significant flooding to the communities near the Los Angeles Aqueduct in the Owens Valley. As such, Mayor Eric Garcetti issued an emergency declaration and allowed LADWP to take immediate steps to protect infrastructure and aid managing flood waters while protecting public health and safety.

The record snowpack brought more than 296 billion gallons of water into the Owens River Basin. To make the most of this extreme runoff to benefit the Owens Valley, LADWP staff recharged 78 million gallons of water into the aquifer by spreading as much as possible throughout Long Valley and Owens Valley. As a result, the average groundwater levels in the Owens Valley rose by approximately three feet compared to 2016. During the emergency efforts, LADWP spent approximately \$27 million to achieve the following:

- In coordination with Caltrans and Inyo County, LADWP helped minimize flooding in the Owens Valley. Crews repaired culverts, waterways and other facilities to prevent further damage from increased water flows.
- LADWP safeguarded Los Angeles' dust mitigation investment in Owens Lake by limiting flooding on the lake.
- Coordinated action prevented the spilling of Long Valley Reservoir and dam, and protected local habitats and LADWP hydropower infrastructure in the Owens Gorge.
- Effective management of the runoff also led to the export of enough water for nearly 70 percent of Los Angeles' annual water needs, reducing L.A.'s purchases of expensive imported water.

Community Investments

LADWP also recognizes the important role that people living and working in the Owens Valley play in ecosystem management. For many years, LADWP has invested in the economic development, education and community relations of the region. On average, we support annually over 70 organizations in both Inyo and Mono County that host events, community

programs, educational activities, and workforce development opportunities.

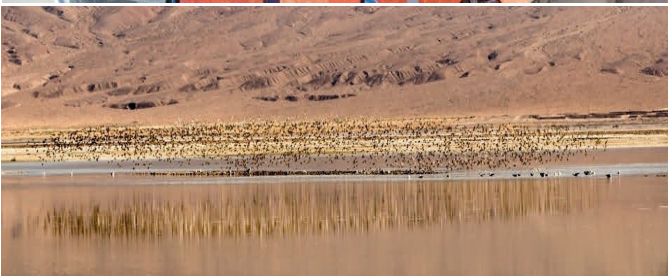
In 2019, LADWP added two more schools to our Adopt-A-School Program in the Owens Valley. Five Owens Valley schools now participate in the program, which centers on LADWP employee involvement working with schools as volunteers.

Owens Lake Trails

Partnering with a diverse group of local and regional stakeholders and other interested parties, LADWP created three public access trails and viewing areas as part of the Owens Lake Dust Mitigation Program. The trails—Boulder Creek Trailhead, Plaza Trailhead and Dirty Socks Trailhead—allow viewing access to over 120 bird species and other wildlife.

Mule Days

Every Memorial Day weekend since 1969, Mule Days takes place in Bishop, Calif. where LADWP's Northern District offices are located. In 2018, the six-day event drew more than 30,000 spectators who enjoyed live entertainment, booths and displays, more than 700 mules and their trainers, and competitive Western events.



Managing Record 2017 Snowpack Runoff

135 miles of canal cleared

**70 measuring/division
structures**

100 miles of road repaired

130,000 yards of spoils

207,805 AF of water spread

150 LADWP personnel

People from all over the world, including many LADWP employees and their families, visited the Eastern Sierra to enjoy a unique Owens Valley experience. LADWP was a sponsor of the event to demonstrate our presence in the Owens Valley and support for the community.

Owens Valley Bird Festival

Shallow flooding, native vegetation, gravel and tillage on Owens Lake have transformed the lake bed into a haven for migratory birds and other wildlife. The Owens Lake Bird Festival began in 2014, conceived and organized by Owens Valley resident and conservationist Mike Prather. Friends of the Inyo in partnership with LADWP celebrate the return of the birds to Owens Lake each year, and highlight the environmental success story of the Owens Lake Dust Mitigation Program.

In April 2018, 140 bird enthusiasts descended on the town of Lone Pine to attend the 4th Annual Owens Lake Bird Festival. Owens Lake was recently designated a Western Hemisphere Shorebird Reserve Network site of International Importance. Announced at the festival, the designation is the result of years of hard work and coalition building between LADWP and our partners in the Owens Valley.

Ensuring Safe, High Quality Water

Ensuring the city's drinking water meets the highest federal and state standards is paramount to LADWP's water operations.

In fiscal year 2017-18, we collected over 35,400 water samples throughout the city and conducted more than 118,800 water quality tests for compliance with safe drinking water standards. LADWP has also invested more than \$1.3 billion in 26 major infrastructure projects to safeguard the city's drinking water and meet all state and federal drinking water regulations. These include the Long Term 2 Enhanced Surface Water Treatment Rule (LT2), which protects drinking water in open-air reservoirs from microbiological contamination. LADWP is also engaged in water quality projects to meet the Stage 2 Disinfectants/Disinfection By-Products Rule (DBP2).

Learn more: ladwp.com/waterquality

Reservoir Compliance

The LT2 regulation affected six LADWP open-air reservoirs, which we have worked to bring into compliance over the past 20 years. As of fiscal year 2017-18, Upper Stone Canyon, Silver Lake, Elysian, Santa Ynez, and Ivanhoe reservoirs have all been brought into compliance, and plans for Los Angeles Reservoir are approved and underway.

Los Angeles Reservoir Project

Los Angeles Reservoir will be brought into compliance with the LT2 and DBP2 regulations through a combination of shade balls and construction of the new Los Angeles Reservoir Ultraviolet Disinfection Plant, the nation's second largest such plant. The "shading" of the reservoir was completed in 2015 with nearly 96 million shade balls deployed to control the formation of disinfection byproducts and algae. The new UV treatment facility will disinfect water leaving the Los Angeles Reservoir and entering the drinking water supply to satisfy the LT2 water quality regulation. Construction began in June 2017 and will be completed by the December 2020 compliance date set by the State Water Resources Control Board, Division of Drinking Water.

Elysian and Upper Stone Reservoirs

LADWP completed a floating cover on Elysian Reservoir and returned it to service in March 2018. Upper Stone Canyon Reservoir was removed from service in July 2017 with the new floating cover expected to be completed in summer 2019. Based on environmental impact reports, installing floating covers at these reservoirs was determined to be the most environmentally superior and cost-effective solution for each reservoir.



Upper Stone Canyon Reservoir

Ivanhoe and Silver Lake Reservoirs

The Headworks Reservoir Complex, including Headworks East and West, will completely replace the storage capacities of Ivanhoe and Silver Lake with two seismically resilient buried reservoirs. Headworks East was completed in November 2014. Construction of Headworks West continues and is expected to be completed by February 2021.

To bring Silver Lake and Ivanhoe into compliance, LADWP constructed a pipeline to bypass the reservoirs. Silver Lake Reservoir was removed from service in 2013 and subsequently drained to construct the bypass project, completed in 2017. Ivanhoe Reservoir was isolated from the distribution system in 2017. Since then, LADWP has developed walkways around Silver Lake Reservoir and the adjacent Ivanhoe Reservoir, both much loved by their communities, for the public to enjoy.

99th Street Wells Filtration and Chloramination Station

LADWP is constructing new filtration and disinfection stations to provide treatment and chloramine disinfection of groundwater from the 99th Street Wells. When completed in February 2020, the 99th Street Wells Chloramination Station and Filtration Plant will significantly enhance treatment for this vital groundwater resource, improving the removal of naturally occurring iron and manganese, and adding chloramine disinfection to ensure drinking water safety.

Grants and Loans

To help fund large-scale projects, LADWP has been awarded \$1.16 billion in grants and loans from the Safe Drinking Water State Revolving Fund, including \$45 million through the American Recovery and Reinvestment Act, and \$14 million in grants from the Safe Drinking Water State Revolving Fund. In addition, LADWP has been awarded a total of \$64.6 million in grants from Proposition 1 for water recycling, groundwater remediation, and stormwater capture projects.

These awards help to reduce the potential rate impacts to customers from these projects while improving water quality and developing sustainable local water supply for the City of Los Angeles.



Media tour Headworks West



Pathway around Ivanhoe Reservoir



Elysian Reservoir Cover

Putting Customers First

Customer Journey Transformation

At LADWP, we are working every day to put Customers First. That means our customers' needs drive our programs and processes—not the other way around.

Studies have shown a nearly perfect correlation between high customer satisfaction and low effort experiences. We are working to create effortless customer experiences through broad collaboration among the many different LADWP divisions and groups that interact with customers in some way.



Working in cross-functional teams, we engage in a deep 360-degree analysis of customer journeys to determine the pain points and come up with easier paths for our customers. We have successfully applied journey management principles to a variety of transactions and programs, such as online requests for new water or power service and helping customers with billing issues. We have also created a “Customer Ambassador Spotlight Award” recognizing employees who go above and beyond on behalf of our customers.

Excellent customer service is a science that requires a methodology applied across LADWP. We utilize customer analytics, customer focus groups, transactional surveys, industry best practices, and employee training to support our culture of customer journey transformation.

Customer Service Satisfaction Awards

For the second year in a row, LADWP was awarded the Business Customer Champion among peer utilities by Market Strategies International. The recognition was based on the 2017 Utility Trusted Brand &

Customer Service — By the Numbers

(FY 2017-18)


 **2.1 Million**
customer calls handled

 **26,857**
emails

 **156,227**
online signups

 **98.3%**
on-time bills

 **1.8 Million**
in person visits

 **2.9%**
estimated bills

Average Call Wait Time

 **55**
seconds

Customer Engagement™: Business by Cogent Reports™. Each Customer Champion scored among the best in Market Strategies' three management categories: brand trust, product experience, and service satisfaction as well as scoring the best in Market Strategies' Engaged Customer Relationship Index.

Our customers' experience during telephone or in-person interactions continues to improve, according to the most recent Customer Service Division Transaction Study. Completed each quarter, the studies are based on follow-up interviews with customers who have engaged with us either by telephone at the Customer Contact Center or in-person at a Customer Service Center.

In the July 2018 survey, customers rated their overall experience at 84 percent, compared to 74 percent in January 2018. The survey found that 77 percent of customers are very satisfied with LADWP, and one-third of customers say their opinion of LADWP has changed for the better after their most recent interaction with LADWP Customer Service. In addition, 83 percent of customers were very satisfied with the end result of their most recent contact with LADWP Customer Service.

National Accounts Team

To address the special needs of a growing customer sector, we established the National Accounts team to support large, commercial customers that operate within LADWP's service territory. Account advisors serve as the customer's primary point of contact, providing individualized service and addressing any water or power related issues. Advisors also promote energy efficiency, water conservation and sustainability by encouraging customers to participate in LADWP's many available programs and services. As of fiscal year 2017-18, the National Accounts team serviced 68 national customers, consisting of over 5,000 individual LADWP accounts that yield water and electric revenues of more than \$189 million annually.

Discount and Assistance Programs

To improve access to and awareness of programs that can help customers pay their bills, LADWP has launched the Low Income Customer Access (LICA) Program. LICA uses findings from our Equity Metrics



Data Initiative to guide outreach, enhance partnerships, and implement pilot programs for low-income and multi-family customers. Using a multi-pronged, integrated approach, the program aims to increase access to payment assistance programs as well as energy and water saving programs.

For the past year, LICA has enhanced the integration of equity into all programs. LICA also helped improve the process for accessing discount and assistance programs via LADWP and its partners.

In partnership with Customer Service Centers, LICA began piloting one-on-one consultations with low income customers at three Customer Service Centers (CSC). The first pilot outreach was initiated at Van Nuys Service Center in August 2018. More than 75 customers attended to learn more about discount and assistance programs, including the federal Low Income Home Energy Assistance Program (LIHEAP), offered by nonprofit agency partners. Similar one-on-one customer consultations are planned in 2019.

Learn more: ladwp.com/financialassistance

Customer Savings and Sustainability

2018 Sustainability Awards

LADWP recognizes commercial, industrial, and governmental customers for their leadership in environmental sustainability. At the 3rd Annual Sustainability Awards on May 3, 2018 at the La Kretz Innovation Center, 21 awards were given in five categories: Energy Management, Water Management, Transportation Electrification, Renewables, and Demand Response.

The program honors commercial, industrial and governmental customers who are leading the way with the most impactful sustainability measures that result in significant reduction of GHG emissions. Customer efforts in these areas contribute to achieving the Sustainable City pLAN goals.

Rebate and Incentive Programs

LADWP continues to offer a variety of rebate and incentive programs to help customers save water and energy, as well as to save on their bottom line. In fiscal year 2017-18, we worked to enhance programs that benefit renters, low-income customers and those living in disadvantaged communities. In addition to water conservation and energy efficiency programs, we offer rebates for EV chargers and used EVs to encourage Angelenos to drive electric. Switching from gas-fueled vehicles to hybrid and plug-in EVs is one way that customers can help reduce GHG emissions in Los Angeles and the region.

Water Savings Programs

Through our water rebate and incentive programs and free water-saving devices, residential and commercial customers saved nearly 585 million gallons of water during fiscal year 2017-18—enough water for 5,386 homes annually.

Turf Replacement Rebate

In an effort to encourage customers to invest in sustainable landscaping and low water use devices, LADWP increased our turf removal rebate to \$2.00 per square foot for both residential and commercial customers. From 2009 through July 2018, LADWP customers replaced nearly 49 million square feet of turf with California Friendly® and native landscaping. This has resulted in approximately 1.96 billion gallons of water saved annually.



High-Efficiency Clothes Washer Rebate

In July 2018, we announced an increase to our high-efficiency clothes washer rebate from \$300 to \$400. High-efficiency clothes washers use 55 percent less water than standard washers, reducing household water use by about 11,000 gallons a year. During this last year, residential customers received rebates for approximately 4,600 high-efficiency clothes washers that will save up to 49 million gallons per year—enough water to serve approximately 450 homes.

Other rebates to encourage customers to reduce their outdoor and indoor water use include: rain barrels rebated at \$50 per unit; premium high-efficiency toilets rebated at \$100 per unit; and weather-based irrigation controllers rebated at \$200 per unit.

Learn more: ladwp.com/save

Leak Detection

LADWP's Water Conservation Response Unit (WCRU) continues to address water waste citywide through enhanced outreach and education. Historically, the WCRU staff responded to water waste complaints and focused on enforcing the city's water conservation ordinance. They were dedicated to working with customers to irrigate on the correct day, fix leaky pipes and avoid excessive watering that leads to runoff onto the street. In 2018, the WCRU re-focused their leak detection efforts on high water users. Staff proactively identifies customers who unexpectedly fall in the highest tier (4th tier) of water use, and reaches out to them to help fix the water loss and water waste issues within the first billing period of their spike in consumption.

Learn more: ladwp.com/waterwaste

Energy Savings Programs

Attic Insulation Rebates

In August 2018, LADWP announced a five-year, \$100 million attic insulation rebate program to help Angelenos better control temperatures in their homes, reduce energy use, and save money. The rebate subsidizes 80 percent of the cost of materials and other expenses that are required to install the insulation. Home insulation, especially in an attic, allows for cool air from an air conditioner to spread more evenly and for longer periods of time. In cold weather, insulation has the opposite effect by working to trap heat indoors.

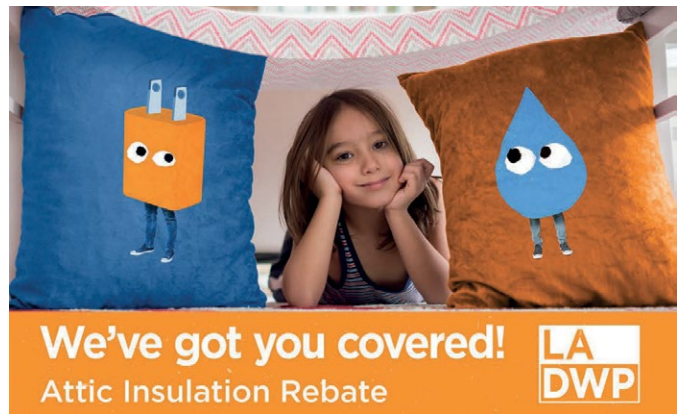
By participating in the program, Angelenos who previously had no insulation can save between \$200 and \$375 per year on their electric bills, or 15 to 30 percent of their average annual cooling and heating expenses. The program is the latest addition to a roster of rebates offered through LADWP's Consumer Rebate Program. From August 24, 2018 through March 4, 2019, the program provided rebates on 535 applications, offsetting the cost of 787,527 square feet of attic insulation. The amount of insulation rebated is estimated to save close to 170,000 kWh per year, which is equivalent to avoiding CO2 emissions from 13 cars annually.

AC Optimization

LADWP relaunched the AC Optimization Program to reach more residential and commercial customers with expedited service to help them save on their cooling costs. The program, which is free for qualifying LADWP customers, provides services by certified, professional heating, ventilation, and air conditioning (HVAC) technicians from approved, licensed contractors to analyze cooling systems and provide basic maintenance and efficiency services.

In fiscal year 2017-18, LADWP provided free AC tune-up services to 11,605 customers, creating an estimated annual energy savings of nearly 9,100 MWh, which is equivalent to avoiding CO2 emissions from 678 cars annually.

Learn more: ladwp.com/save



Lighting Up Homes

LADWP hit the pavement from March through June 2018 to conduct a second door-to-door delivery of free LED bulbs to every residential household, distributing two 12-watt bulbs each to 1.4 million customers. LEDs consume up to 60 percent less energy than CFLs, while producing the same amount of light and lasting up to seven times longer. By replacing two 75-watt incandescent bulbs with the LED bulbs they receive, each LADWP customer can expect to save a combined 138 kWh annually for the life of the bulbs, estimated to last nearly 23 years. The amount of GHG emissions avoided by installing two LEDs is equivalent to 5,790 miles driven by an average passenger vehicle. Customers who make the switch can also save up to \$476 in electric costs over the lifetime of the LEDs.

Big Savings for Business, Industry and Institutional Customers

LADWP works closely with large business, industrial and institutional customers to increase their sustainability and conservation efforts, benefitting both the customers' bottom line and our environment. In 2018, we partnered with these customers to identify and implement major conservation and efficiency measures. For fiscal year 2017-18, we provided rebates and technical services to help offset over 214,470 MWh. That amount of energy is equivalent to taking 35,745 homes off the grid and 17,556 gas-fueled cars off the road annually. Below are some commercial customers that benefited from significant rebates for saving energy and water through our programs.

- Goodwill Industries installed an extensive lighting retrofit at their headquarters. Over 2,015 lighting fixtures have been upgraded to LEDs at their headquarters and storefront through participation in the Commercial Lighting Incentive Program

(CLIP). CLIP provides incentives on the installation of newly purchased and installed energy-saving lighting and controls.

- Hanjin International (owner of the Wilshire Grand) participated in the Savings by Design program, a program administered by California utilities. Savings by Design encourages high-performance, non-residential building design and construction, and other solutions that help buildings be more sustainable.
- Cedars-Sinai received significant incentives through our Technical Assistance Program (TAP) for installing a recycling system to reuse the groundwater that was running under certain areas of their facility instead of discharging it to the sewer. The system now provides 50 to 80 percent of the water used by Cedars-Sinai's cooling towers. LADWP's TAP offers rebates for the installation of water saving projects and equipment to commercial, industrial, and institutional customers as well as multi-family residential customers in Los Angeles.

Helping Customers Drive Electric

In June 2018, LADWP's Board approved an extension and enhancement to the existing charger rebate program "Charge Up L.A.!" of up to \$38 million in rebates. The new three-year program, which became effective July 1, 2018, provides charger rebates (including DC fast-chargers) for residential and commercial customers as well as charger rebates for electric medium/heavy-duty vehicles.

Supporting residential charging is important because the vast majority of residential customers charge up their EVs at home. LADWP's charger rebate program provides up to \$500 toward the cost of a residential Level 2 charger. Residential customers can also take advantage of an EV rate discount of 2.5 cents per kWh during off-peak charging if they set up a separate electric service for their vehicle. Customers who do this are eligible for an additional \$250 rebate for the chargers.

EV chargers installed at commercial customer facilities, which include private businesses, multifamily dwellings and government agencies, are eligible for a rebate of up to \$5,000 per installed charger.

In April 2018, LADWP launched a pilot program to provide rebates of \$450 to customers who purchase a



used all-electric or plug-in hybrid EV. With this new program, LADWP aims to help more customers access the benefits of electric transportation and support the pre-owned EV market.

Learn more: ladwp.com/ev

LADWP in the Community

Community outreach and awareness are vital to our mission of putting customers first. Through a variety of channels, we work to effectively engage our communities to raise awareness, instill trust and increase participation in our programs and activities.

Connecting with Our Communities

To stay connected with our communities, we host or participate in numerous meetings with Neighborhood Councils, homeowners' groups, elected officials and other agencies every month throughout the city. Our presence at these meetings serves to gain input and educate the community about plans, programs, and construction projects or other issues that potentially impact their neighborhoods.

LADWP also participates in hundreds of community events each year with informational booths, displays and exhibits. These have included major events such as the L.A. Auto Show, CicLAvia, Earth Day L.A. at Grand Park, and Nature Fest and Summer Nights in the Garden at the Natural History Museum. LADWP also offers educational exhibits and displays at the L.A. Aqueduct Filtration Plant, the La Kretz Innovation Campus and soon at El Pueblo de Los Angeles. Events are staffed by our Speakers Bureau, which consists of about 50 employees, representing various job functions and responsibilities throughout the Department.



As LADWP increases investments in upgrading water and power infrastructure, our outreach related to construction projects has grown significantly, paving the way for our crews to work smoothly with businesses and residents in areas where construction work is occurring.

During fiscal year 2017-18, LADWP participated in more than 400 community events and meetings, and provided customer outreach on 40 different water and power construction projects.

In 2017 and 2018, we conducted customer outreach for more than 40 construction projects. Construction-related outreach includes: organizing and publicizing community meetings, developing informational materials, posting information online, issuing public notices, publishing advertisements, and coordinating briefings with officials, local community groups and individual customers.

Neighborhood Council Outreach

Since April 2005, LADWP and certified City of Los Angeles Neighborhood Councils (NC) have participated in an MOU to enhance effective two-way communications, transparency, and promote information sharing, mutual notice, and education. The

MOU was renewed in 2017 for five years without any changes. LADWP has committed to working with the NCs to provide information on Department projects and significant actions, such as the budget, rates, and major policy changes.

LADWP also meets regularly with NCs to educate members about water and power programs, projects and services. As part of this effort, LADWP has dedicated NC liaisons who regularly attend meetings of the NC Regional Alliances, and facilitate briefings with executive management on key issues. In early 2019, we launched a new digital community newsletter targeted for Neighborhood Councils and other community groups.

Learn more: ladwp.com/community

We're on Nextdoor

To increase our presence in communities, LADWP joined Nextdoor and uses the forum to connect with customers and neighbors to provide important information about local events, programs, construction projects and services. From January through December 2018, LADWP posted nearly 470 updates to various communities across Los Angeles on Nextdoor. Nextdoor has 472,340 members and 1,280 neighborhoods within the city.

LADWP in Our Schools

For more than four decades, LADWP and our employees have partnered with the Los Angeles Unified School District, nonprofit education-related organizations, local schools and teachers on programs and activities to enhance education and students' learning. Our educational outreach efforts serve two key purposes. First, we help students and their families understand topics related to their utility, such as water conservation, energy efficiency, renewable energy and electric safety. Secondly, our educational partnerships help students gain necessary skills and abilities to support the economic success of the city and region.

During the 2017-18 fiscal year, we reached 125,000 students through many new and long-standing programs, including:

LADWP Science Bowl Regional Competition

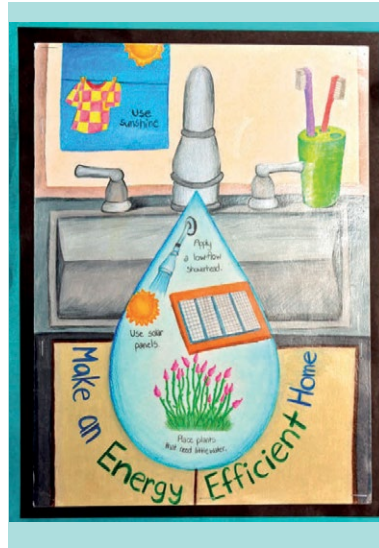
Celebrating its 25th anniversary, the 2018 Science Bowl saw North Hollywood High School win its 19th first place regional championship and place second at the U.S. Department of Energy Office of Science National Science Bowl in Washington, DC. This was the fifth time that the team placed second at the national event.

Adopt-A-School

Bishop Elementary School and the Owens Valley Unified School District in Independence (one school combining small elementary, middle and high schools) are the latest additions to our Adopt-A-School Program, which now includes 22 schools. Through this program, LADWP employees volunteer at schools in activities ranging from reading programs to judging science fairs to speaking in classrooms during career days or other events.

Los Angeles Times in Education Program

The latest Times in Education Program, "Water, Energy, the Environment and You," reached more than 60,000 students in grades 4-12. The program assists teachers using online access to the newspaper as a living textbook with three guidebooks that cover most LADWP related environmental topics as well as careers in water and electric utilities.



As part of the Times in Education Program, students enter an art poster contest focused on the benefits of water conservation and energy efficiency. Left, the 2018 Grand Prize winning poster by an 8th grader from Porter Ranch.

"A Drop in the Bucket"

We partner with the Wildwoods Foundation to provide in-class instruction focused on water to about 7,500 elementary students. In 2017-18, these activities involved building a replica of the Los Angeles Aqueduct. This project helped students understand how the L.A. Aqueduct carries water 230 miles through mountainous terrain from the Owens Valley to Los Angeles using gravity alone.

Walking the Talk: Environmental Stewardship at LADWP

LADWP demonstrates our commitment to environmental stewardship through promoting water and energy efficient customer programs and educating customers on how to conserve these precious resources. At the same time, we have a special responsibility to "walk the talk" by supporting water and energy conservation measures and technologies, and other green building practices, throughout our facilities, operations, and policies. We strive to reduce our own carbon footprint and water use, and encourage employees to do the same.

We also help catalyze for job creation and economic development activities in Los Angeles that support environmental sustainability and clean technologies through the La Kretz Innovation Campus.



La Kretz—a Cleantech Hub for L.A.

The La Kretz Innovation Campus Los Angeles, located in the dynamic Arts District of Downtown Los Angeles, is home to LADWP’s Sustainable Living and Customer Engagement Labs, and the L.A. Cleantech Incubator (LACI). LACI is a place where entrepreneurs, engineers, scientists and policymakers can collaborate, promote, and support the development of clean technologies and L.A.’s green economy. Since opening in 2016, the campus has featured the latest smart technologies and appliances, and demonstration projects such as a microgrid and energy storage system, bioswales, and a gray water system. In the fall of 2018, LADWP and LACI held an open house to showcase many new exhibits in the Sustainable Living and Customer Engagement Labs. The exhibits are designed to educate visitors about water and power related topics, ranging from how to improve efficiency in the home to LADWP’s renewable energy and sustainable water initiatives.

Learn more: laci.org

Water-Wise Landscaping at Our Facilities

Since 2011, LADWP has been giving our facilities landscape make-overs by removing turf and replacing it with water-wise California Friendly® landscaping. Through the program, we are saving water, reducing landscape operation and maintenance costs, and setting an example for customers.

During FY 2017-18, LADWP converted 15 facilities to water-saving landscape, meeting our fiscal year goal. The drought tolerant installations will collectively save about 6.56 million gallons per year, enough water for nearly 60 L.A. homes annually. Since the program began, LADWP has converted landscaping at

109 facilities, representing a total estimated water savings of 47.8 million gallons per year—enough water to serve approximately 440 homes annually.

Building Energy and Water Efficiency

In addition to promoting conservation to our customers, LADWP has undertaken measures to reduce energy and water consumption within our own facilities. LADWP conducts sustainability benchmarking for Department facilities that are over 15,000 square feet using the U.S. Environmental Protection Agency’s (EPA’s) ENERGY STAR Portfolio Manager®, in compliance with the City of Los Angeles’ Existing Buildings Energy and Water Efficiency Program ordinance. In FY 2017-18, 60 LADWP buildings reduced electricity use by 3 percent and water use by 5 percent compared to FY 2016-17 levels. Facilities included district yards, office buildings and payment centers.

Along with 40 of our commercial and industrial customers, LADWP’s downtown headquarters, the John Ferraro Building, participates in our Demand Response Energy Conservation program. To help reduce peak energy demand during periods of intense heat, elevator cars are taken temporarily out of service and the AC temperature is adjusted. Together with other participants, we helped achieve an energy savings of 101,200 kWh on September 1, 2017.

LADWP’s Green Team

The Green Team is a group of volunteer LADWP employees who are committed to keeping sustainability at the forefront of policy development and operations in the Department. With over 120 members, the team has made a significant impact on sustainability practices at LADWP in the areas of green building (LADWP achieved LEED Gold for our John Ferraro Building headquarters in 2016), as well as environmentally preferable purchasing and initiatives that reduce paper waste.

Achieving Professional Excellence

LADWP staff demonstrate professional excellence every day through projects, initiatives and dedicated service to our customers, as well as through significant contributions to the utility industry. Employees participate in numerous water and power professional organizations to share knowledge about policies, technology and practices, as well as highlight our achievements and trailblazing efforts.

In the last year, LADWP was recognized locally, nationally, and globally for innovation and environmental stewardship through numerous industry, awards, honors, presentation opportunities, and other achievements.

American Society of Civil Engineers Awards:

LADWP was honored in August 2017 with two awards from the American Society of Civil Engineers, Metropolitan Los Angeles Branch, for the work on the City Trunk Line South SEM Tunnel Project. LADWP received the Outstanding Water Project and Outstanding Construction Project honors; both awards recognized the Tunnel Project, which employed an innovative method of tunneling not usually done in the water industry.

2017 L.A. Digital Government Awards: Teams and individuals from LADWP were among the big winners at the 2017 L.A. Digital Government Awards. Two IT staff members took individual prizes for the Outstanding IT Service & Support Awards. In addition, the Equity Metrics Team and the Customer Service PCI Compliance Team were both honored in the Outstanding IT Projects category.

NECA Project Excellence Awards: The National Electrical Contractors Association (NECA) named the Microgrid Project at LADWP's La Kretz Innovation Campus among its 2017 Project Excellence Award winners. This was the inaugural year for the NECA awards with 17 winners selected.

AMWA 2017 Sustainable Water Utility Management Award: LADWP was recognized by the Association of Metropolitan Water Agencies (AMWA) for excellence in management in the category of Sustainable Water Utility Management. Efforts highlighted by the award include LADWP reaching the goal of 20 percent water savings, deploying shade



The Sustainability Garden at LADWP's John Ferraro Building helped earn the AWWA 2017 Sustainable Water Utility Management Award.

balls to cover the surface of the Los Angeles Reservoir, achieving LEED Gold status at our downtown headquarters, and breaking ground on the Tujunga Spreading Grounds Enhancement Project to improve stormwater capture capacity.

USGBC-L.A. Chapter Sustainable Innovation

Awards: LADWP's Los Angeles Aqueduct Filtration Plant was recognized in December 2017 by the U.S. Green Business Council – L.A. Chapter at the 7th Annual Sustainable Innovation Awards, winning the award for Excellence in Water Conservation. The plant was honored due to the facility's commitment to a sustainably-built environment and emphasis on water savings.

CMUA 2018 Resource Efficiency and Community

Service Award: LADWP was honored by the California Municipal Utilities Association (CMUA) for an innovative program that has helped thousands of low-income Los Angeles residents reduce their energy and water use and save on their utility bills. The CMUA's 2018 Resource Efficiency and Community Service Award was granted to LADWP for the

Enhanced Energy Savings Assistance Program (ESAP), which provides free energy and water efficiency upgrades for income-qualifying residents and multi-family residential buildings. LADWP offers this program in conjunction with SoCalGas.

Ranked Among Forbes' America's Best Employers of 2018: LADWP was recognized as one of the top large employers in America by *Forbes Magazine* – ranked No. 8 in the Government Services category, which honored 25 companies. The Department also placed No. 229 overall. The annual ranking was based on data from 30,000 U.S. employees, and 500 companies across 25 industries.

AAEES Excellence in Engineering and Science

Awards: Three important LADWP Water System projects received awards in Excellence in Environmental Engineering and Science™ in 2018 by the American Academy of Environmental Engineers and Scientists (AAEES). LADWP received four separate awards for best practices in the environmental management field, including the Superior Achievement Award – the top national honor across all categories for the 2017 Water Conservation Potential Study.

LADWP's executive management as well as staff also participated in myriad conferences and public engagements to speak about our achievements in various topics including renewables, water supply, infrastructure, equity, energy storage, electrification of the transportation sector, customer service, sustainability and information technology. These include presentations to or hosted by APPA, the Rotary Club, SCPPA, the L.A. Business Council, the Regional Investors' Conference, AWWA, ASCE, the Sierra Club, the L.A. Chamber, Congress of Neighborhoods and WEI.

Finance & Corporate Performance

As a public municipal water and power utility, LADWP exists by and for our customers, who are also our owners. We develop all of our strategic plan goals and objectives so that they are achievable, measurable, and cost effective, and are designed to maintain cost competitive rates for our customers. LADWP is

committed to meeting our operational needs and financial goals through:

- Maintaining diverse power and water sources
- Meeting or exceeding all regulatory commitments
- Continuing to invest in water and power system reliability
- Maintaining competitive retail rates and financial stability
- Improving customer service

For the fiscal years 2017-2018 and 2018-19, the budgets approved by the Board of Water and Power Commission are consistent with our strategic plan, reflecting continued cost controls and prioritization of resources that address our customer-driven priorities.

Successful Bond Sales

Maintaining strong credit ratings is a key component of keeping water and power rates competitive. Good credit enables the utility to access low-interest borrowing and achieve cost-effective capital projects, which saves money. In the third year of a five-year rate adjustment, approved by the Board and City Council in 2016, LADWP continues to maintain high ratings from Wall Street. Since 2011 LADWP has refunded \$4.8 billion of debt and yielded \$770.4 million in present value savings.

To maintain our financial health and protect our ratepayers, LADWP also adheres to Board approved financial planning metrics covering debt service coverage, operating cash, and capitalization ratios.

Corporate Performance: Ensuring Transparency and Accountability

LADWP established the Corporate Performance Office within the Financial Services Organization to improve our accountability, transparency, and ultimately operating, financial, and customer service performance. The Corporate Performance Office conducts data driven analysis and reports on Department-wide key performance indicators (KPIs), benchmarking, and other special studies.

Meeting Operational and Spending Targets

In accordance with the Water and Electric Rate Ordinances that went into effect in April 2016, and in conjunction with the Office of Public Accountability/Ratepayer Advocate (RPA), LADWP developed an initial 49 rates metrics aimed at fostering transparency and accountability across LADWP’s major programs, initiatives, and budgets. The performance results for rates metrics are reported to the RPA on a quarterly basis and to the Board of Water and Power Commissioners on a semi-annual basis beginning in January 2017.

During fiscal year 2017-18 LADWP reported on 57 rate metrics of which more than two-thirds met or exceeded their targets. We met our required renewable energy goals and stayed within spending levels for wind, solar, and geothermal. We exceeded our Power System Reliability Program (PSRP) replacement targets for critical power equipment such as poles, transformers and circuits, and also stayed within spending levels.

In the Water System, we met the spending targets for replacing water infrastructure, and exceeded our target for replacing mainlines. We also met operations and maintenance spending targets for major programs and exceeded new distribution field staff targets.

Creating Equity for Customers and Communities

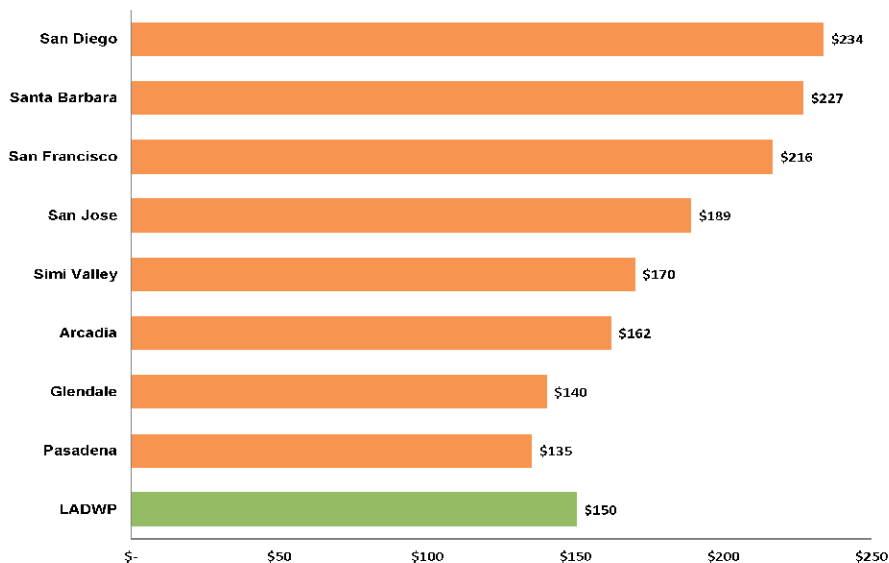
LADWP has worked to improve the equity of our programs and services across all customers and residents of Los Angeles through the Equity Metrics Data Initiative (EMDI). Since January 2017, we have used equity metrics to assess how well programs, services, resources, and investments are distributed and utilized. The metrics cover key areas such as water and power infrastructure investment, customer incentive programs, procurement, and employment. The metrics are reported to the Board of Water and Power Commissioners semi-annually.

Equity metrics have already been useful in helping to develop or enhance existing customer-focused programs and services as well as create new initiatives designed to increase participation by customer segments that are difficult to reach. For example, our energy efficiency and conservation teams will budget an additional \$100 million over the next five years for programs initially targeting renters in multi-family housing.

Recognizing that a large portion of our customers are unable to access solar power, we developed Community Solar to increase solar equity and meet our sustainability goals. In addition, we increased our recruitment budget and staffing to improve diversity and gender equity in hiring new LADWP employees.

Learn more: ladwp.com/equitymetrics

Our Water and Power Rates Are Competitive



Average Residential Combined Monthly Water Bills, as of July 2018



ladwp.com