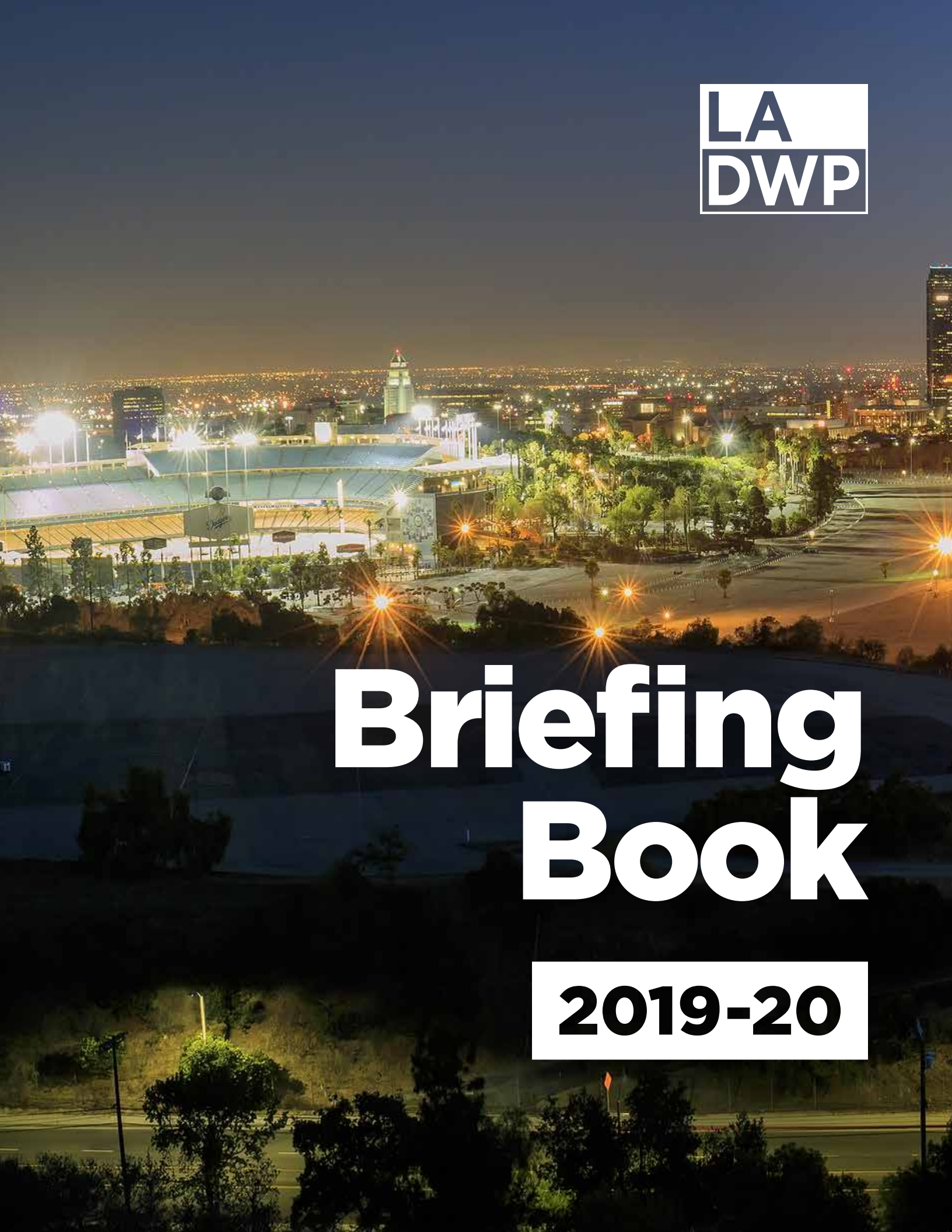


LA DWP

Briefing Book

2019-20

Overview

The Los Angeles Department of Water and Power (LADWP) is the nation's largest municipal utility, with more than 8,000 megawatts (MW) of electric capacity and serving an average of 436 million gallons of water per day to the more than 4 million residents of Los Angeles, its businesses and visitors. For more than 100 years, LADWP has provided the city with reliable water and power service in a cost-effective and environmentally responsible manner. With a workforce of more than 10,000 employees, LADWP is guided by the five-member Board of Water and Power Commissioners, appointed by the Mayor and confirmed by the City Council.

Mission Statement

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.

Contents

The LADWP Briefing Book is published by the Communications and Public Affairs Division of LADWP.

Introduction

In this edition of our annual Briefing Book, covering fiscal year 2018-19 and the first half of fiscal year 2019-20, we have highlighted LADWP's efforts to create a clean energy future and a resilient local water supply, enhance Water and Power System reliability, and provide equitable programs that benefit all of our customers and the communities we serve.

Our Power System is developing a Clean Grid LA Plan and engaged in the LA100 Study, which together will provide the path to 100 percent renewable energy by 2045 and zero carbon by 2050. In partnership with multiple agencies, our Water System is moving forward with plans to recycle 100 percent of the wastewater from the Hyperion Water Reclamation Plant, considered essential for achieving the goal of 70 percent local water sources by 2035.

Along with developing sustainable and resilient water and energy resources, this Briefing Book describes our continued efforts to upgrade critical water and power infrastructure, meet regulatory mandates, keep our rates competitive, and put customers first in all interactions.

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

Linda P. Le
Chief Administrative Officer

Ann M. Santilli
Chief Financial Officer

Nancy Sutley
Senior Assistant General Manager of
External and Regulatory Affairs and
Chief Sustainability Officer

Joseph A. Brajevich
General Counsel

Board of Water and Power Commissioners

Cynthia McClain-Hill
President, 2020-present
Vice President, 2018-2020

Mel Levine
President, 2013-2020
Commissioner, Jul-Sep 2020

Jill Banks Barad
Commissioner, 2013-present

Susana Reyes
Vice President, 2020-present
Commissioner, 2019-2020

Nicole Neeman Brady
Commissioner, 2019-present

Green New Deal Selected Targets

Water Supply

By 2035 we will:

- Recycle 100% of the city's wastewater
- Source 70% of our water from local sources
- Capture 150,000 acre-feet per year (AFY), or 49 billion gallons of stormwater
- Reduce water use by 25%

Power Supply

- Supply 55% renewable energy by 2025; 80% by 2036; and 100% by 2045
- Increase local solar to 900-1,500 MW by 2025; 1,500 MW– 1,800 MW by 2035; and 1,950 MW by 2050
- Reduce greenhouse gas (GHG) emissions by 45% below 1990 levels by 2025; 60% below 1990 levels by 2035; and 80% below 1990 levels by 2050

Zero Emissions Vehicles

- 25% by 2025; 80% by 2035; and 100% by 2050

Buildings

- All new buildings will be net zero by 2030; and 100% of building stock will be net zero by 2050

Sustainability

L.A.'s Green New Deal

In spring 2019, Mayor Eric Garcetti released L.A.'s Green New Deal, an update of the Sustainable City pLAn that sets robust new commitments for the city's sustainable future. Built on the vision and goals of the Mayor's 2015 and 2017 Sustainable City pLAns, the Green New Deal expands and elaborates in detail L.A.'s vision for a sustainable future and tackles the climate emergency with accelerated targets and new aggressive goals.

Key principles of the Green New Deal include:

- A commitment to the Paris Climate Agreement with a strategy for achieving a zero carbon grid, zero carbon transportation, zero carbon buildings, zero waste, and zero wasted water;
- Responsibility to deliver environmental justice and equity through an inclusive economy;
- Ensure that every Angeleno has the ability to join the green economy; and
- Resolve to demonstrate the art of the possible and lead the way to drive changes.

LADWP is involved in over half of the Green New Deal initiatives, which prioritize many of the Department's sustainability initiatives through 2050. These include accelerating goals for renewable energy, including local solar power; expanding local water supplies and decreasing purchased water; reducing carbon emissions from power generation as well as vehicles and buildings; supporting the electrification of the transportation sector and the city's building supply; and increasing water conservation and energy efficiency. In support of all of these efforts, LADWP is committed to achieving equity among our programs, projects and services, using our Equity Metrics Data Initiative to track outcomes and ensure we are accountable to our customers.

Our Carbon Reduction Progress

LADWP GHG Emissions Levels Beat State Targets

In 2016, LADWP achieved California's Senate Bill 32's target to reduce GHG emissions 40 percent below the 1990 level by 2030 —14 years ahead of the deadline. By the end of 2018, LADWP had reduced our GHG emissions to 9.1 million metric tons (MMT)—approximately 49 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 entire state's long-range GHG emissions reduction target of 80 percent below the 1990 level by 2050.

Climate Change Policy

Los Angeles and California remain leaders in climate change and clean energy policy. In 2018, California Senate Bill 100 was signed into law, establishing new goals for electricity providers to achieve 60 percent renewable energy by 2030 and 100 percent zero carbon electricity by 2045. The legislation included a statewide goal to achieve carbon neutrality by 2045, in addition to the state's GHG emission reduction targets.

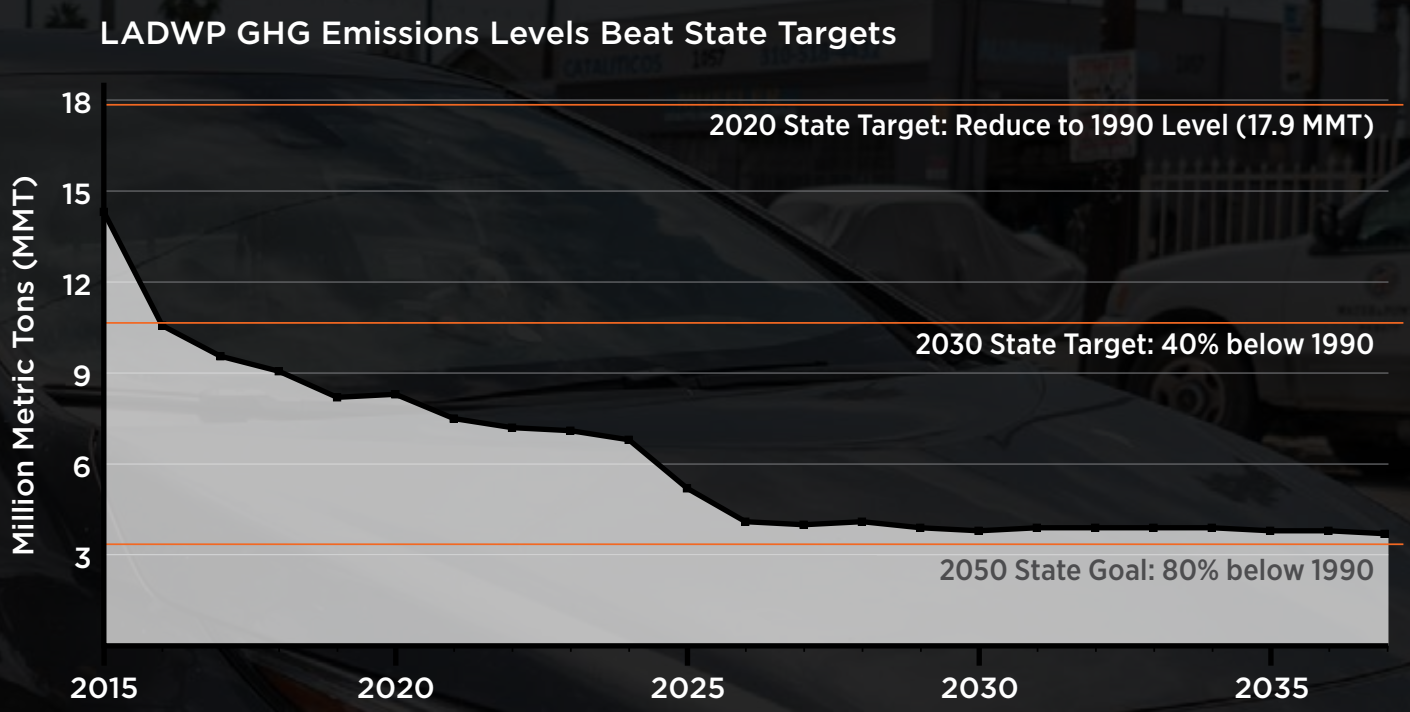
Along with meeting state legislative goals, LADWP is setting a path to achieving the Green New Deal goals, which call for reducing GHG emissions by 45 percent below 1990 levels by 2025, 60 percent below 1990 levels by 2035, and 80 percent below 1990 levels by 2050.

Transportation Electrification

Apart from requiring a clean energy supply for L.A., the Green New Deal calls for deep reductions in GHG emissions from the transportation sector, and the state of California is striving towards electrification to reduce emissions within the goods movement and transportation sectors. Conversion of buses, trucks, and passenger vehicles from fossil fuels to electric powered, in conjunction with a clean electricity supply, will significantly reduce GHG emissions in the city and across the state. LADWP is helping to achieve electrification within the transportation and goods movement sectors by installing electric vehicle charging infrastructure, encouraging Angelenos to drive electric through outreach and incentives, and supporting electrification efforts at the Port of Los Angeles and Los Angeles International Airport.

Building Electrification

To achieve a carbon neutral city by 2050, the Green New Deal includes policies to reduce carbon emissions from L.A.'s buildings. While L.A.'s building stock is one of the most energy efficient in the country, meeting



L.A.'s Green New Deal GHG emission reduction goals will require significant electrification of homes and other buildings.

LADWP participated in commissioning a study that assessed the energy savings, GHG savings, impacts to the electric grid and overall economics of residential building electrification for customers across many regions of California. The study found LADWP electrification can reduce emissions in homes by up to 90 percent in 2050 compared to mixed-fuel homes, and that home electrification will also provide cost savings for most homeowners and developers.

LADWP is currently working with a number of stakeholders to determine the best path forward for building electrification. Reducing the carbon footprint will improve L.A. buildings while creating local job opportunities and promoting technology innovation.

Low Carbon Fuel Standard Program

The Low Carbon Fuel Standard (LCFS) Program, administered by the California Air Resources Board (CARB) aims to reduce the carbon intensity of transportation fuel by 20 percent by 2030. Since 2016, LADWP has received over $67 million in LCFS generated funds to invest in transportation electrification. LADWP receives LCFS credits based on electric meter information indicating how much actual and projected residential EV charging occurs in our service territory. LCFS credits have helped support rebate programs for EV charging equipment and used EVs, charging infrastructure, and public education, as well as defrayed the cost of discount electric rates for off-peak EV charging. LCFS funding helps LADWP meet L.A.'s Green New Deal goals related to expanding EV adoption and reducing carbon emissions from the transportation sector.

Community Emissions Reductions

To improve equity for communities that experience disproportionate levels of pollution, LADWP will launch a new Community Emission Reduction Grant Program in 2020 funded largely through LCFS credits. The program will offer $10 million in grant funding over five years to regulatory agencies and nonprofits to develop projects that reduce emissions in communities surrounding the Valley Generating Station in Sun Valley and Harbor Generating Station in Wilmington. These communities are in the top 10 percent of polluted areas in California per the 2018 CalEnviroScreen map. Grant-funded projects may include battery storage, electric vehicle charging stations, and other facilities or technologies that can help mitigate nitrogen oxide (NOx) emissions in the vicinity of the Valley and Harbor power plants.

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. In fiscal year 2018-19, we supplied approximately 159 billion gallons of water annually, and an average of 436 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 over 4 million residents today, LADWP continues to make efficient water use a way of life, providing reliable, resilient water supplies now and in the future.

Our 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 System

Los Angeles' Water Sources

Water Facts

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

Approved Water Budget (FY 2019-20)

Total: $1.59 billion

$584 million for operations and maintenance
$831 million for capital projects
$176 million for purchased water

Water Use (FY 2018-19)

Average Daily Use Per Capita: 105 gallons

Residential Customers (FY 2018-19)

308,000 acre-feet per year or 275 million GPD

Commercial/Industrial/Institutional Customers (FY 2018-19)

141,000 acre-feet per year or 126 million GPD

Annual Water Sales to Customers (FY 2018-19)

146 billion gallons
733,900 active water service connections

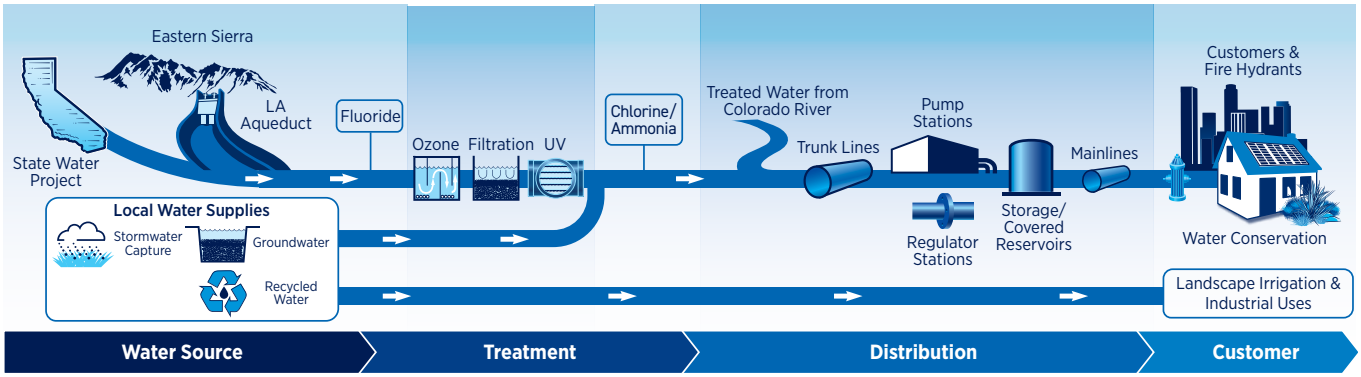
Water Supply Sources (5-year average, FY 2015-2019)

L.A. Aqueduct (Eastern Sierra Nevada)	**38%**
Purchased Water (MWD)	**49%**
Bay Delta	41%
Colorado River	8%
Groundwater	**11%**
Recycled Water	**2%**

Water System Infrastructure

Tanks and Reservoirs	**115**
Pump Stations	**84**
Ammoniation Stations	**9**
Chlorination Stations	**22**
Regulator and Relief Stations	**329**
System Pressure Zones	**111**
Distribution Mains and Trunk Lines (miles)	**7,336**
Fire Hydrants	**60,988**
Total Storage Capacity (acre-feet)	**323,820**

(in-basin and along the L.A. Aqueduct)



Water Reliability and Resiliency

Upgrading Water Infrastructure

LADWP maintains a vast water system with about 7,340 miles of mainlines and trunk lines, which are critical to reliably delivering high quality water to Los Angeles residents and businesses. With a significant amount of pipe installed at the turn of the last century, we are working to accelerate the replacement and upgrade of aging water mains and riveted-steel trunk lines.

About one-quarter of LADWP's mainlines are over 80 years old, nearing the end of their useful life. Supported with funding from the approved five-year rate action in 2016, LADWP has steadily increased the replacement of aging distribution pipes with a five-year goal of replacing 315,000 feet of mainline per year. The replacement work focuses on pipes that are prioritized as vulnerabilities within the water distribution system after a thorough assessment. Our long-term goal is to achieve a replacement cycle that aligns with the expected useful life of the pipes, ranging from 100 to 120 years. Over the next five years, we will invest over $6 billion to upgrade and replace critical water infrastructure through our water system capital improvement plan.

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.

Infrastructure Replacements	2018-19 Achievements	2019-20 Goals
Distribution mainlines (pipes 20 inches or less in diameter)	171,441 feet	232,000 feet
Trunk lines (pipes 20 inches or greater in diameter)	8,072 feet	6,000 feet
Large valves	7	5
Pressure regulator stations	5	8
Pumps/motors	17	12
Small meters	27,603	33,500

LADWP maintains a high level of water service reliability. Our leak rate has averaged 20 leaks per 100 miles of pipeline over the past five years, below the national average of 25 leaks per 100 miles of pipes.

Foothill Trunk Line-Unit 3 Project Fast Facts

2016	December 2025	13,000	3,430	9 of 19
Groundbreaking	Anticipated completion	feet of open trenching	feet of tunneling	work areas are completed (as of February 2020)

Earthquake Resistant Pipe Network

LADWP is a leader among water utilities nationwide in pioneering the installation of earthquake resistant pipe (ERP), which provides greater system reliability and resiliency during L.A.'s frequent temblors. From 2015 to 2016, LADWP installed the first 2.5 miles of ERP through five pilot projects located in the East Valley, West Valley, Central, Western, and Harbor areas of Los Angeles. As of December 2019, an additional 14 miles of ERP were installed, targeting locations in critical earthquake hazard zones. LADWP plans to continue installing ERP throughout the city and building our seismic resilient pipe network, one of the goals in the city's Resilient Los Angeles plan.

Foothill Trunk Line-Unit 3

Among the current ERP projects is the replacement of Foothill Trunk Line - Unit 3, a major water artery that crosses the Sylmar Fault in the North San Fernando Valley. The original 1930s-era pipe, which ranges in diameter from 24 to 36 inches, will be replaced with nearly three miles of 54-inch diameter ERP trunk line. The increased size will improve water quality and flow capacity as well as water system flexibility and reliability. To minimize impacts to the community, a new 12-inch diameter ERP distribution water mainline will be installed alongside the trunk line. The mainline will separate the water serving the local community from the trunk line. The construction includes 13,000 feet of open trenching and 3,430 feet of tunneling in six work areas to minimize impact to community and allow through traffic.

Learn more: LADWP.com/foothill

Century Trunk Line-Unit 1

The Century Trunk Line – Unit 1 Project is replacing approximately 7,600 feet of existing 36-inch welded steel pipe originally installed in 1937 on Century Boulevard in the vicinity of the Los Angeles International Airport. Operating past its useful service life, the old pipe is being replaced with 10,200 feet of 24- and 48-inch diameter ERP, to help increase resiliency during seismic events. Construction on Unit 1 began in January 2020 and will be complete by May 2022.

Learn more: LADWP.com/CenturyTrunkLine

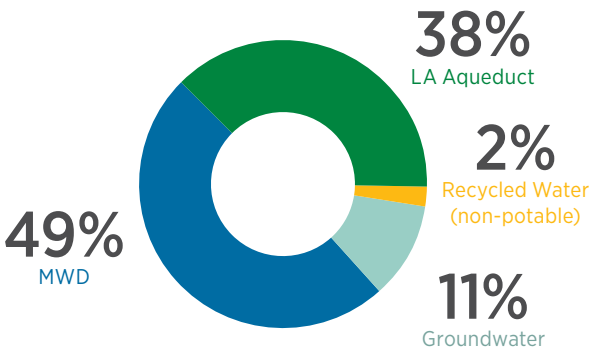
River Supply Conduit 7 (RSC7)

RSC7, which began in December 2018, continues to move forward toward an anticipated completion in April 2022. The project replaces the existing RSC7, which was installed in the 1940s. In February 2020, LADWP hosted an open house for the public, the media and officials from the cities of Los Angeles and Burbank to see first-hand a giant tunnel boring machine that will operate 63 feet below ground surface and create a tunnel underneath the City of Burbank. When completed, RSC7 will have installed 13,325 linear feet of 78-inch diameter welded steel pipeline.

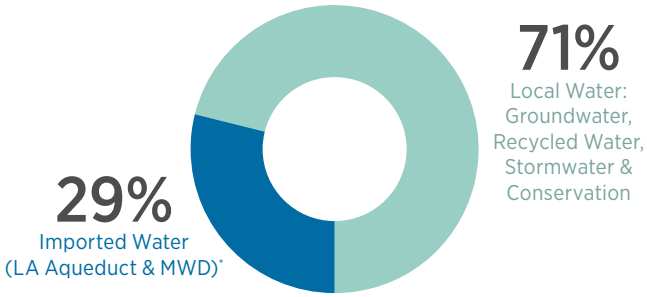
Learn more: LADWP.com/rsc7

Expanding L.A.'s Local Water Supply

Present
Five-Year Average (2014-15 through 2018-19)



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



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

WATER STRONG

Water Strong

LADWP is committed to providing a water supply that is resilient, sustainable, reliable, high-quality and cost-effective as we confront extremes in weather conditions and address other challenges in managing our city's water supply. A key strategy to maintaining our water strength as a city is to continue diversifying and expanding the city's local water resources and to further reduce dependence on purchased imported water.

Los Angeles' water supply from outside the L.A. basin has been impacted by a changing climate creating significant swings in hydrological conditions. Although our water supply bounced back in 2017 after years of dry conditions, the impact of more frequent multi-year extreme droughts, combined with increased environmental restoration obligations, reduced our traditional Los Angeles Aqueduct supplies from the Owens Valley and Mono Basin by 50 percent of historic levels over the past 30 years. As a result, LADWP has had to purchase more imported water from the Metropolitan Water District of Southern California (MWD) to meet our city's water demands, despite achieving increased conservation. This outcome highlights the need to develop a more reliable independent water supply.

Operation NEXT

Water Supply Program

In February 2019, Mayor Garcetti and officials of LADWP and the City of Los Angeles announced a bold initiative to purify and recycle 100 percent of the city's wastewater by 2035, with a focus on recycling all treated wastewater from the Hyperion Water Reclamation Plant in El Segundo. This initiative, called Operation NEXT, will use purified, advanced treated recycled water from Hyperion to replenish local groundwater basins. The program will also increase water supplies to the Los Angeles Aqueduct Filtration Plant through raw water augmentation—a process of blending advanced treated water.

December 2019

Operation NEXT can potentially provide up to a third of the city's water supply and help meet LADWP's goal to source 70 percent of water locally by 2035.

Operation NEXT is a partnership among LADWP, the City of Los Angeles Department of Public Works - Bureau of Sanitation (LASAN), and the Water Replenishment District of Southern California (WRD). Currently in the planning stages, the program components include:

- Upgrading Hyperion to full advanced treatment, capable of producing with up to 170 million gallons per day (MGD) of purified recycled water.
- Developing a distribution network to convey the advanced treated water to replenish nearly one million acre-feet of available groundwater storage within the local West Coast, Central and San Fernando Groundwater Basins.
- Building systems for extraction and treatment of groundwater from the basins for distribution into the drinking water system.
- Continuing to work with regulators to provide input and support the development of direct potable reuse regulations allowing raw water augmentation. These new regulations would allow for leveraging LADWP's existing recycled water program to further advance local water supply development.

LADWP will begin the environmental review process in 2020 and continue to work with our partners to develop a robust stakeholder and community outreach plan.

Stormwater Capture

Expanding our capacity for capturing stormwater runoff is a key strategy for ensuring the city remains "Water Strong." Capturing and managing stormwater is a reliable and sustainable way to replenish local groundwater aquifers while reducing runoff, which also improves the quality of water that drains into our rivers, ocean and other water bodies. Historically, the average stormwater capture is about 21 billion gallons annually.

As part of L.A.'s Green New Deal, our stormwater capture goal is about 49 billion gallons per year by 2035.

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

Van Nuys Great Street Project

The Van Nuys Boulevard Great Street Project was completed in 2019 to capture and infiltrate stormwater and urban runoff from a 100-acre watershed to replenish the groundwater basin. The project is estimated to capture an average of 31 million gallons per year. Work involved installing sustainable stormwater infrastructure, such as bioswale-drywell systems and a porous concrete gutter-drywell system at various locations around the neighborhood. In addition, more than 60 new trees were planted to provide neighborhood greenery. This project is a joint partnership between LADWP, State of California Coastal Conservancy, and LASAN.

Tujunga Spreading Grounds Enhancement Project

A major project underway, the Tujunga Spreading Grounds Enhancement Project reconfigures and deepens 20 existing stormwater capture spreading basins of varying sizes into nine deeper basins, doubling the capture capacity of stormwater that percolates into the natural aquifer below to recharge the groundwater supply. Funded through Proposition 84 and Proposition 1 grants, the project will increase the spreading grounds' capture capacity from the original 2.6 billion gallons to about 5.2 billion gallons, enough water to supply more than 48,000 homes in Los Angeles.

In 2019, work neared completion on two new intakes to divert more runoff from the Tujunga Wash and the Pacoima Diversion Channel. The last phase of construction, scheduled to begin in early 2020, will add enhancements such as walking paths and educational signage. The enhancements will help improve the environment and provide social equity by beautifying the community with native vegetation and open space. The overall project is estimated to be completed in the spring of 2021.

Rendering of Tujunga Spreading Grounds Enhancement Project

The Tujunga Spreading Grounds project received several awards in 2019 from the Western Council of Construction Consumers and the American Academy of Environmental Engineers and Scientists.

Stormwater Capture at City Parks

LADWP is pursuing stormwater capture opportunities at nine city parks in the San Fernando Valley to enhance our local water supply. These projects will capture and infiltrate surface flow, and also runoff from the Tujunga Wash Central Branch storm drain to 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 parks stormwater capture projects are anticipated to yield about 949 million gallons of stormwater runoff per year. Construction for the first phase is estimated to be completed by 2023.

Silver Lake Stormwater Capture Project

The proposed Silver Lake Reservoir Stormwater Capture Project includes constructing new storm drains to divert approximately 22 million gallons of stormwater runoff per year from the surrounding residential neighborhoods into the Silver Lake and Ivanhoe Reservoirs. This project is designed to use stormwater to maintain the water levels in Silver Lake and Ivanhoe Reservoirs, and offsets the need to use drinking water to maintain the reservoir level. The project is currently in the design phase and construction is expected to be completed in 2022.

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. The project is currently in the environmental review process. Construction is estimated to start in 2021 and be completed by 2023.

Groundwater Cleanup

Cleaning the San Fernando Groundwater Basin (SFB) is critical to producing 70 percent of L.A.'s water locally by 2035, a goal of the City's Green New Deal. The SFB contains a collection of aquifers made of gravel, silt and sand that store a large body of groundwater. 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 SFB are essential 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 well fields.

LADWP's current groundwater remediation efforts are focused on the North Hollywood West, North Hollywood Central, and Tujunga Well Field areas. Our goal is to best address contamination in the basin, and document the investigations and analysis through remediation investigation, 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.

Groundwater Cleanup Agreements

To restore the SFB as a beneficial and long-term resource for drinking water, and mitigate the cost for our customers, LADWP and the U.S. Environmental Protection Agency (USEPA) have engaged in a coordinated effort to hold more than 20 responsible parties in the area accountable for their historic production of hazardous materials and the resulting SFB groundwater contamination.

In early 2020, a historic settlement agreement was achieved between LADWP and Honeywell International Inc. to clean up groundwater contaminated by Honeywell's predecessors in the 1940s. Under the agreement, Honeywell will provide about 2.8 billion gallons of clean drinking water to LADWP. The agreement includes a provision for an additional 2.1 billion gallons over time should groundwater in the area require additional remediation to achieve drinking water standards.

The Honeywell settlement comes on the heels of a similar agreement between LADWP and Lockheed Martin Corporation reached in late 2018 that will provide 1.5 billion gallons of drinking water to LADWP annually.

Grants and Funding

LADWP continues to proactively seek local, state, and federal funding to offset potential impacts to ratepayers. LADWP has been awarded several grants funded through Proposition 1, the "Water Quality, Supply, and Infrastructure Improvement Act," approved in 2014. The measure provides funding for projects that improve water quality, including drinking water protection, and help meet the long-term water needs of California.

LADWP has been awarded $6 million in Proposition 1 planning grants for the North Hollywood Central, Tujunga, and Pollock Well Field remediation projects. LADWP has also been awarded a $44.5 million Proposition 1 grant for the North Hollywood West Remediation Project, and expects to receive $260.3 million for the North Hollywood Central and Tujunga Remediation Projects.

NoHo West Wellhead Treatment Project

The North Hollywood West Wellhead Treatment project is an important part of LADWP's Interim Remedial Action for the North Hollywood West Operable Unit. The project involves constructing an Advanced Oxidation Process (AOP) treatment facility for the remediation of 1,4-dioxane (historically used as a solvent in industrial and laboratory applications, among other things) encountered in groundwater in the North Hollywood West Well Field. The project is expected to operate year-round and will be capable of treating 3.86 billion gallons of water per year. The project broke ground in January 2018 and is expected to be operational by fall of 2021.

Water Conservation

Faced with extreme variability in precipitation from year to year, our city has long recognized water conservation as the core of multiple strategies to ensure a sustainable water supply.

LADWP's water conservation goals are driven by the Green New Deal, which calls for residents to reduce water use by 22.5 percent by 2025, and 25 percent by 2035. LADWP works with the Mayor's Office, other City departments, other utilities and customers to reduce water use across all sectors. LADWP is also actively engaging with the State Department of Water Resources and State Water Resources Control Board on developing water efficiency standards and objectives that are consistent across the state.

LADWP encourages conservation through generous rebates and incentives for water-saving measures and devices, such as turf replacement and high-efficiency clothes washers. By expanding our outdoor water efficiency education and services, we provide customers with tools and information on how to reduce water waste and increase water use efficiency. In addition, LADWP's Water Loss Task Force continues to develop and implement strategies to further reduce already low water losses that occur in our distribution system.

Water Conservation: A Way of Life

Our city's residents and businesses have made water conservation a way of life. Thanks to our customers' strong water saving ethic, combined with a cool, wet winter, L.A.'s per capita water use was 105 gallons as of the end of FY 2018-19, one of the lowest of any major U.S. city. Water use overall has dropped by 21 percent compared to the last major drought that ran from 2012 and through 2016. Despite more abundant water supply, LADWP customers have maintained their waterwise habits and continue to conserve, exceeding the 20 percent reduction target since 2017.

Due to dramatic declines in per capita water use, total water consumption in Los Angeles in FY 2018-19 was lower than it was in 1970, despite a population increase of more than one million people.

Water Conservation Potential Study

In response to the findings of the 2017 Water Conservation Potential Study, LADWP has developed a long-term water conservation plan designed to cost-effectively achieve our ambitious 2035 water use goals. The study, which received the Excellence in Environmental Engineering - Superior Achievement Award from the American Academy of Environmental Engineers and Scientists, recommended that enhancing rebate programs and passive measures would help boost water savings among various customer sectors. For example, programs that reduce water for landscape irrigation offer the biggest potential water savings, followed by switching to more water efficient clothes washers.

Learn more: LADWP.com/waterconservation

Boosting Water Saving Rebates

Based on recommendations from the Water Conservation Potential Study, LADWP increased the Turf Replacement Rebate to $3 per square foot and expanded the eligible area to 5,000 square feet in November 2019. Customers can now receive up to $15,000 in rebates when they transform their thirsty lawns to California Friendly and native landscaping. LADWP also increased our residential high-efficiency clothes washer rebate amount to $400 in July 2018. Applications for clothes washer rebates have skyrocketed by nearly 40 percent during FY 2018-2019 when compared to the previous year.

Learn more: ladwp.com/save

Hands-On Workshops

To further assist customers with their landscape transformations, LADWP launched a series of Hands-On Workshops to help customers manage their outdoor water use by creating water efficient and beautiful landscapes while taking advantage of LADWP's turf replacement rebate. In addition to the workshops, our website features many useful educational resources, such as fact sheets, watering guides, California Friendly® planting templates and landscape transformation videos.

Learn more: LADWP.com/landscaping

Owens Valley

For over a century, LADWP has had a significant presence in the Owens Valley. Construction of the First Los Angeles Aqueduct in 1913 and the second in 1970, have provided the majority of L.A.'s water supply historically from the Eastern Sierra. Today, LADWP maintains stewardship of nearly 315,000 acres of land throughout Inyo and Mono counties and abides by a long-held policy of making the land publicly available. Through our land ownership, LADWP also contributes significant property tax revenues for the counties – over $27 million annually – that provide funding for local public education, parks and recreation, police and fire services, and other needs in the Eastern Sierra. LADWP's management of this land also requires stewardship of the plants and wildlife that reside upon it.

Aqueduct Operations

LADWP maintains and operates a number of key facilities involved in delivering water and power safely and reliably to the City of Los Angeles, as well as about 6,000 electric customers in the Owens Valley, and directly employs nearly 350 people in the Eastern Sierra area. In addition to our water and power operations, construction and maintenance forces, LADWP administers leases and other land-use activities ranging from ranching and grazing to campgrounds and golf courses, and from local businesses to homes.

Stewardship

LADWP is committed to maintaining, protecting, and enhancing the natural resources of Owens Valley and Long Valley. Each year, about 50 percent of the water that once flowed through the Los Angeles Aqueduct stays in the Eastern Sierra to meet environmental commitments and operational needs. LADWP continues to fulfill more than 100 environmental tasks related to protecting and sustaining the environment, including:

- Approximately $2.4 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 Buckley Ponds and Diaz Lake.
- Restoring Mono Basin creeks, following 30 years of intensive rehabilitation and scientific examination.
- Completing the largest river restoration project of its kind in the nation by rewatering 62 miles of the Lower Owens River and enhancing approximately

Owens Lake Trails and Bird Festival

Years of LADWP dust mitigation projects such as shallow flooding, native vegetation, gravel and tillage on Owens Lake have transformed the lake bed into a haven for migratory birds and other wildlife. Each April, bird enthusiasts descend on the town of Lone Pine to attend the annual Owens Lake Bird Festival. While there, visitors have viewing access to over 120 bird species and other wildlife as they meander along the Owens Lake Trails. Three public access trails—Boulder Creek Trailhead, Plaza Trailhead and Dirty Socks Trailhead— were created by LADWP with a diverse group of local and regional stakeholders and other interested parties as part of the Owens Lake Dust Mitigation Program.

2,000 acres of wetland and aquatic habitat for waterfowl use. Since the release of water back in 2007, the Lower Owens River has evolved into a thriving ecosystem and a recreational area for hiking, kayaking, and other activities.

- In the fall of 2019 LADWP successfully planted close to 10,000 shrubs and other types of vegetation in Laws, a small town north of Bishop, to provide groundcover and dust control. Through the Laws-Poleta Re-Vegetation Project, LADWP has planted over 160,000 native shrubs covering 255 acres of land.

To date, LADWP has completed 52 mitigation projects resulting in re-greening and/or re-vegetation of approximately 3,300 acres of land in the Owens Valley. These projects have fostered creation and maintenance of wetland ecosystems, invasive vegetation eradication and additional environmental benefits to the area.

Community Investments

LADWP supports over 75 organizations annually in Inyo and Mono counties that host events, community programs, educational activities and workforce development opportunities.

Community Partnership Grant

For the second year, the High Sierra Energy Foundation received funding to support energy efficiency and conservation through LADWP's Community Partnership Outreach Grants Program. Last year, the foundation partnered with the City of Bishop to install a weather station at Bishop City Park. The data from the station provides information such as temperature, winds, and humidity to help keep buildings cool or warm. The information helps communities take advantage of passive methods for managing their electricity use.

Adopt-A-School

Bishop Elementary School, the Owens Valley Unified School District in Independence (one school combining small elementary, middle and high schools) and Home Street Middle School in Bishop are the latest additions to our Adopt-A-School Program, which now involves 24 schools, including six in the Owens Valley. 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.

Supporting Owens Valley Schools

From watershed hikes to career building lessons, LADWP employees have partnered with local school districts to enhance student learning in (and outside) the classroom.

"Our school has greatly benefited from the support LADWP has given through the program. We established a robotics club, went on a field trip to the Control Gorge Power Plant and more. LADWP employees have taken time from busy schedules to educate our youth in a variety of ways. Through the Adopt-A-School program, we can offer even more STEM activities to the students."

- Bishop Elementary Principal Gretchen Skrotzki

Ensuring Safe, High Quality Water

LADWP is committed to providing our customers and the communities we serve with clean, safe and cost-effective drinking water that meets federal and state standards. The water that comes out of our customers' taps has been put through rigorous treatment, testing and monitoring. In 2019, we collected over 38,000 water samples and conducted more than 124,000 water quality tests throughout the drinking water system for compliance with safe drinking water standards.

We have invested more than $1.3 billion in 26 major infrastructure projects to safeguard the city's drinking water and meet strict regulations. These regulations include the Long Term 2 Enhanced Surface Water Treatment Rule (LT2), which protects drinking water in reservoirs from microbiological contamination, and the Stage 2 Disinfectants/Disinfection By-Products Rule (DBP2).

Learn more: ladwp.com/waterquality

Expanding Hydration Stations

LADWP is supporting a major citywide initiative to increase access to clean, healthy water as well as decrease reliance on single-use plastic water bottles. In collaboration with multiple City departments and agencies, LADWP will install or refurbish 200 drinking water fountains, or hydration stations, by 2022 at municipally-owned buildings, parks and other public places. The initiative was announced during the 2019 annual Tap Water Day celebration and fulfills a goal of L.A.'s Green New Deal.

Stations have already been placed at Balboa Park, L.A. City Hall East, and at LADWP's John Ferraro Building. In addition, LADWP is working to install or refurbish hydration stations at our customer service centers and employee facilities. All hydration stations will feature reusable water bottle filling stations and some outdoor stations will include spigots to fill water bowls for pets. In anticipation of the 2028 Olympics in Los Angeles, LADWP will install hydration stations in strategic locations expected to draw large numbers of spectators and participants.

Headworks Reservoir Complex

Reservoir Compliance

Over the last 20 years, LADWP has actively improved the water quality for our customers and met stringent LT2 and DBP2 regulations. We have met the regulations by removing from service large uncovered reservoirs such as Encino, Lower Stone, Silver Lake and Hollywood; replacing them with tanks, bypass trunk lines and other infrastructure; and installing covers on other reservoirs such as Santa Ynez, Elysian and Upper Stone.

Los Angeles Reservoir Project

The 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, which will be 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 after leaving the Los Angeles Reservoir but before entering the drinking water distribution system. This additional step will satisfy the LT2 water quality regulation. Construction began in June 2017 and will be completed by June 2021.

Headworks Reservoir Complex

The Headworks Reservoir Complex, a 43-acre complex just north of Griffith Park, will replace the storage capacities of Ivanhoe and Silver Lake reservoirs with two seismically resilient buried reservoirs. Headworks East has been fully operational since 2014. Construction work is progressing on Headworks West, which is expected to be operational by early 2021. The $353 million Headworks Reservoir Complex will be the largest underground water storage facility in the western U.S.

Upper Stone Reservoir

In the fall of 2019, LADWP completed the installation of a 700,000 square-foot floating cover on Upper Stone Canyon Reservoir, which serves approximately 450,000 customers in Los Angeles' Westside communities. The cover is the largest in LADWP's water system—approximately the size of two football fields—and brings the reservoir into compliance with drinking water regulations.

Grants and Loans

To help fund large-scale projects, LADWP has been awarded $1.16 billion from the Safe Drinking Water State Revolving Fund (DWSRF), including $45 million in grants from the American Recovery and Reinvestment Act of 2009, and another $14 million in DWSRF grants.

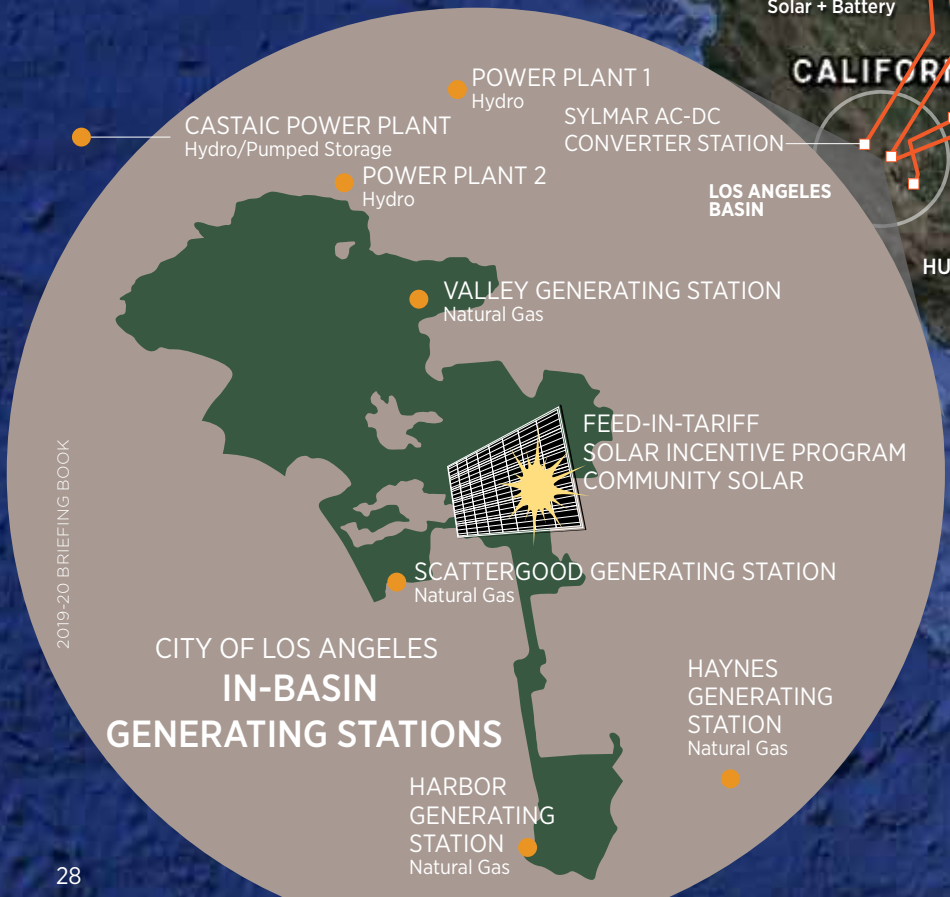
Power System

LADWP is the nation's largest municipal electric utility. In fiscal year 2018-19, we supplied more than 22,550 gigawatt-hours (GWH) to more than 1.54 million residential and business customers, as well as about 6,000 in the Owens Valley. We maintain a vast power generation, transmission and distribution system that spans five Western states, and delivers electricity to more than 4 million people in Los Angeles.


Altec

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.



WASHINGTON
WINDY POINT Wind
LINDEN RANCH Wind
PEBBLE SPRINGS Wind
WILLOW CREEK Wind
CELILO AC-DC CONVERTER STATION
OREGON
IDAHO
PLEASANT VALLEY Wind
NORTHEN NEVADA Geothermal
DONALD A. CAMPBELL 1&2 Geothermal
INTERMOUNTAIN POWER PROJECT Coal
MILFORD 1&2 Wind
NEVADA
OWENS GORGE Hydro
APEX GENERATING STATION Natural Gas
UTAH
RE CINCO Solar
SPRINGBOK 1&2 Solar
BEACON Solar + Battery
PINE TREE Wind & Solar
MANZANA Wind
MOAPA Solar
HOOVER DAM Hydro
COPPER MTN 3 Solar
NAVAJO Assets
CALIFORNIA
ADELANTO Solar
HUDSON RANCH Geothermal
HEBER-1 Geothermal
PALO VERDE GENERATING STATION Nuclear
ARIZONA
BAJA CALIFORNIA

Power Facts

Electric Capacity

Net dependable generation capacity of 8,009 MW from a diverse mix of energy sources.

Approved Budget—FY 2019-20

Total: $4.7 billion

$1.4 billion for operations and maintenance
$1.7 billion for capital projects
$1.6 billion for fuel and purchased power

Power Resources*

	2018	2019
Renewable Energy	**32%**	**34%**
Wind	10%	10%
Geothermal	7%	9%
Solar	13%	12%
Eligible hydroelectric	2%	3%
Biomass & Biowaste	0%	0%
Natural gas	**30%**	**27%**
Nuclear	**10%**	**14%**
Large hydro	**3%**	**4%**
Coal	**18%**	**21%**
Unspecified purchased power	**6%**	**0%**

*Submitted to the California Energy Commission for calendar years 2018 and 2019. Percentages may not add up due to rounding. 2019 numbers are unaudited.

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
1 out-of-state wind plant
2 solar photovoltaic plants

Energy Storage

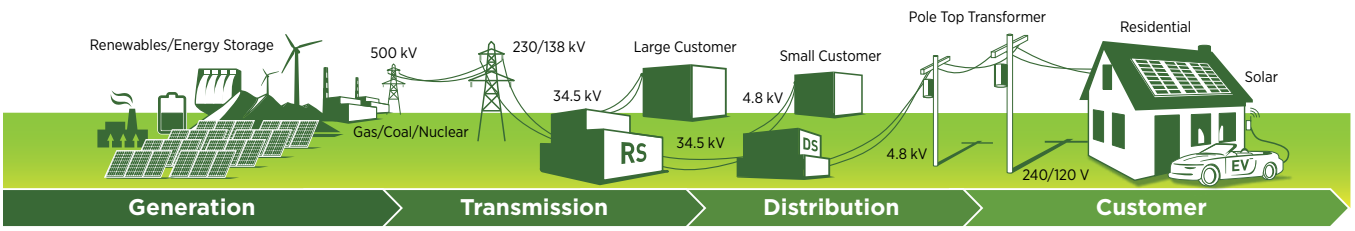
1.6 MW of City-owned energy storage
21.5 MW of utility-scale battery energy storage
1,244 MW of pumped hydro storage

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

7,148 miles of overhead distribution lines
3,709 miles of underground distribution cables
308,170 distribution utility poles
3,214 pole-mounted capacitor banks
124,510 distribution transformers
177 distribution substations



Power Reliability & Resiliency

Power Grid Upgrades—At a Glance

Infrastructure Replacements	FY 2018-19 Achievements	FY 2019-20 Targets
Poles	3,757	4,000
Crossarms	10,203	10,000
Transformers	1,238	850
Underground Cable (miles)	51	50
Vaults	16	20

Providing reliable and safe electricity is woven into the fabric of LADWP's mission and strategic plan. LADWP's power reliability continues to beat national norms. On average, customers experienced less than one outage and 175 minutes of power interruption during FY 2018-19, according to the system average interruption frequency and duration indexes, which are reported by most U.S. utilities.

Outage Notifications

As part of our mission to put customers first, LADWP launched an automated outage alert service in July 2019 to keep customers informed of the status of power outages in their neighborhoods. Customers can enroll online to receive texts, emails or both when there is a power outage affecting their neighborhood. When enrolling online, customers can choose to receive alerts for up to three communities within LADWP's service area. The notifications are sent after a significant outage occurs in a selected area and when power is restored. Since the service was launched in summer 2019 through January 2020, over 20,800 customers had enrolled to receive outage notifications, and the system has proven effective during several significant outage events.

LADWP also continues to keep customers informed via social media, including Facebook, Twitter and Nextdoor, during major outages.

Sign up: LADWP.com/OutageAlert

Infrastructure Upgrades

LADWP has invested significantly in the replacement and upgrade of aging and undersized electrical equipment through the Power System Reliability Program (PRSP), supported by annual rate adjustments from 2016 through 2020, with over $1 billion being invested in FY 2019-20. Through the PSRP, LADWP proactively inspects power equipment to identify needed repairs. In FY 2018-19, LADWP crews completed repairs on nearly 10,500 infrastructure-related jobs. We also exceeded distribution equipment replacement targets for poles, crossarms, transformers, and underground cables in the same year.

Power Grid Resiliency

Wildfire Mitigation Plan

Wildfires have posed a significant threat to public safety, resulting in major changes in the State of California's fire prevention approach and a requirement for electric utilities to prepare and implement a year-round wildfire mitigation plan. In December 2019, LADWP finalized our Wildfire Mitigation Plan, consistent with state legislation (SB 901), describing the Department's actions to mitigate the threat of wildfires caused by electrical lines and equipment. Our plan provides a comprehensive approach to minimizing the probability that LADWP's transmission and distribution system might spark or contribute to the cause of wildfires, and builds on measures that have been implemented since 2008. The plan also aims to improve the resiliency of the electric grid.

Learn more: LADWP.com/wildfireplan

Grid Resiliency During Wildfires

Unlike the state's major investor-owned utilities (IOUs), LADWP has determined not to preemptively shut off power lines in advance of an imminent threat, because only a fraction of our service territory lies in high fire threat zones, and proactively shutting off power can also provide health and safety risks. Rather, LADWP will consider a preemptive shut off based on individual facts and circumstances when warranted.

In October 2019, two significant wildfires in Los Angeles tested LADWP's grid resiliency. The Saddleridge Fire in Sylmar threatened three critical transmission lines that bring power into the L.A. basin. The lines either relayed out or were shut off to protect the system as well as to prevent further spread of the fire. However, shutting off those lines curtailed a significant amount of power that was being imported into the city and raised awareness of the need for in-basin generation to maintain resiliency and reliability.

L.A.'s Clean Energy Future

LADWP is transitioning towards a 100 percent clean energy supply while maintaining reliable and cost effective electric service for customers. In FY 2018-19, LADWP continued to aggressively decarbonize our power generation portfolio through clean energy initiatives: eliminating coal, expanding renewable energy, developing energy storage systems, investing in distributed energy resources such as 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.

More than one-third of L.A.'s power supply now comes from clean, renewable sources like solar, wind and geothermal energy as we advance toward powering the city with 100 percent renewables by 2045.

Our path to a clean energy future is illustrated above. The two prongs of the arrow represent two strategic efforts now underway that will come together to inform our next Strategic Long-Term Resource Plan (SLTRP). The LA100 Study will offer a 25-year analysis of various scenarios for achieving 100 percent renewable energy, while the Clean Grid L.A. plan focuses on near-term projects needed to maintain a reliable and resilient power grid in the next 10 years to mitigate the potential loss of in-basin natural gas generating units that use ocean water for cooling purposes. LADWP will begin work on the 2021 SLTRP once the final results of the LA100 study are completed early next year.

Rendering of Eland Solar and Storage Center, courtesy of 8minute Solar Energy, LLC. ►

Eland Solar + Storage Center – Fast Facts

- Nation's largest combined solar + battery system
- Capacity for 400 MW + up to 1,200 MWh energy storage
- Record low solar cost @ 2 cents per kWh
- 3.3 cents per kWh for solar + storage
- 3.9 cents per kWh for expanded storage option
- Covers 2,650 acres in Kern County
- In-service by December 31, 2023

Our Path to Clean Energy

Clean Grid L.A.

LADWP is developing the Clean Grid L.A. Plan to identify clean energy projects and other alternatives for reducing the need for in-basin power generation from our coastal natural gas power plants. In February 2019, we cancelled plans to repower the remaining generating units that still use ocean water for cooling. LADWP is required by state and federal regulations to phase out the use of ocean water cooling (known as once-through cooling or OTC) at Scattergood Generating Station by 2024, and at Harbor and Haynes Generating Stations by 2029. Under the Green New Deal, cancelling original plans to repower those units is a key strategy for reducing carbon emissions within the basin.

The most immediate and critical step is to upgrade and expand our in-basin transmission lines to continue providing reliable power to the communities now served by the Harbor, Haynes and Scattergood OTC units.

The Clean Grid L.A. Plan also considers issues associated with retiring the OTC units in terms of resource adequacy—which checks whether there is sufficient power to meet our city's future peak energy demand—and grid resiliency in the face of major earthquakes, wildfires, heat storms and other disruptive events. In addition to expanding and upgrading in-basin transmission, the plan analyzes distributed energy resources (DERs), energy efficiency, renewable energy, battery energy storage, demand response, and other clean energy programs and strategies both in front of (utility side) and behind the meter (customer side).

LA100 (100% Renewable Energy Study)

LADWP is continuing to work closely with the National Renewable Energy Laboratory (NREL) on the LA100 Study, an independent research analysis of the investments and feasibility of achieving a 100 percent renewable energy portfolio for Los Angeles. Since July 2017, LADWP has hosted quarterly meetings of the LA100 Advisory Group, a steering committee representing neighborhood councils, environmental groups, community-interest groups, research universities, commercial and industrial organizations, labor and local government.

The Advisory Group has been guiding the study by providing feedback on various aspects of NREL's research. In the 10th Advisory Group meeting held in December 2019, NREL presented initial insights from the study. Their initial findings indicate that LADWP will need to add substantial renewable energy resources from within and outside of the L.A. basin to reach our renewable energy targets. Additionally, NREL noted that biofuels, geothermal energy, and energy storage technologies could prove highly valuable as we evolve to 100 percent clean energy while maintaining a safe, reliable and resilient power grid.

NREL is expected to deliver preliminary study results in the fourth quarter of 2020 with the final report due in the first quarter of 2021. To help convey its findings to a wider audience, NREL is leveraging its world-class visualization expertise to develop interactive media that will help to explain the various pathways to achieve LADWP's renewable energy goals.

Learn more: LADWP.com/CleanEnergyFuture

Distribution Resource Plan

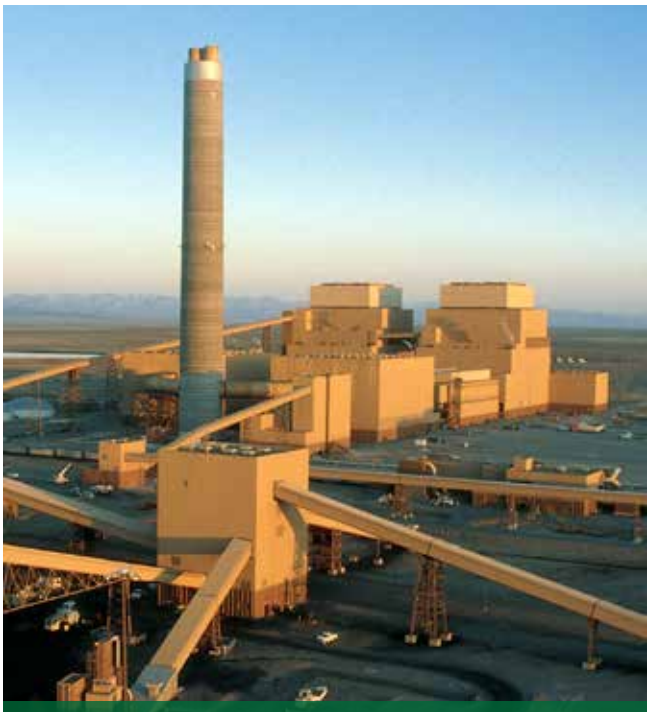
One way to offset the need for upgraded transmission lines, and a key strategy addressed by the Clean Grid L.A. Plan, is to expand distributed energy resources (DERs) on the distribution system. DERs are small-scale energy generation, energy storage, or energy management technologies, such as rooftop solar systems, energy efficiency and demand response programs, electric vehicle chargers, and micro-grids that cluster distributed generation and resources together. LADWP is developing a Distribution Resource Plan to provide a short-term and long-term roadmap for DER technologies in Los Angeles.

As LADWP's Power System resources evolve with higher levels of clean energy resources to reduce emissions, DERs play a key role in this transformation. They provide customers with more choices for participating in clean energy programs, such as local solar, demand response, and electric vehicles, while helping maintain reliability and cost competitive rates. With the advent of expanding DERs, LADWP will also implement mitigation measures to address the increased risk to cyber security.

Greening Intermountain Power Project

As LADWP and our partners move forward with plans for a 840 MW combined cycle natural gas/hydrogen facility to replace the coal-fired Intermountain Power Project (IPP) in Utah, IPP's future is green. Proposals are being evaluated to build the new plant with the capability to burn green hydrogen on the first day of commercial operation, expected in mid-2025. Owned by the Intermountain Power Agency (IPA), the new turbines will use a blend of fuel with capacity for 30 percent green hydrogen in 2025, and up to 100 percent by 2045. LADWP anticipates awarding the construction contract next year, with groundbreaking in 2022.

The advent of green hydrogen at IPP is an important step forward in LADWP's efforts to achieve 100 percent renewable energy by 2045. Among the key benefits, the project would convert renewable energy resources into a reliable, carbon-free energy supply that is also dispatchable, meaning it can generate a steady flow of reliable and dependable power. This steady flow of power is necessary to support a key transmission system (the Southern Transmission System, or STS) coming from IPP to the Los Angeles basin.



Intermountain Power Project

Utah's Renewable Energy Hub

The project will also benefit from IPP's location, which is central to a high concentration of renewable energy resources, including solar, wind and geothermal. Renewable energy will be used to produce hydrogen through an electrolysis process and the resulting green hydrogen will provide fuel for the new generating units. The hydrogen will be stored in caverns, created in a massive underground geologic salt formation at the IPP site, allowing LADWP to shift springtime excess renewable generation to fuel the peak summertime energy needs for LADWP customers.

Green Meadows Grid Resiliency Project

LADWP's first community-scale grid resiliency project is expected to break ground in South Los Angeles in 2020. The grid resiliency project will be developed with the Los Angeles Department of Recreation and Parks (RAP) at its Green Meadows Recreation Center, which serves as a cooling and disaster relief center. A Clean Grid L.A. initiative, the project will bring together rooftop solar, energy storage and electric vehicle charging stations to create a clean energy micro-grid and promote environmental equity in the South L.A. community.

The first phase is set to be commissioned in December 2020 with final completion in June 2022. This project is part of an MOU between LADWP and RAP to develop grid resilient facilities throughout L.A., particularly in disadvantaged communities. In the event of weather events, earthquakes or other disasters, these facilities will serve as "energy islands" separate from the grid, providing relief to community members.

Demand Response

LADWP has been implementing a Demand Response (DR) Program for our large commercial customers since 2015. DR programs benefit both LADWP and our customers. Customers earn incentives while reducing their electric bill, and at the same time, help LADWP continue providing reliable power during peak demand periods. LADWP also benefits by reducing transmission and distribution costs related to expanding capacity of the grid and fixing problems that occur due to overloaded circuits, transformers and other equipment. LADWP's current commercial DR portfolio is 38 MW with 50 active participants. In 2019, LADWP paid over $1 million in incentives to commercial customers who participated in the DR program.

Power Savers

As part of the Clean Grid L.A. Plan and to achieve the Green New Deal goals, LADWP will introduce a new demand response (DR) program for residential and small business customers in the summer of 2020. LADWP Power Savers will encourage participation by providing an incentive upon enrollment and for each year of participation.

Aiming to reduce the energy use of customers during peak periods in the summer, Power Savers will use a third-party, Energy Hub, under contract with the Southern California Public Power Association (SCPPA), to operate a cloud-based DR management system linked to customers' smart thermostats. Through this system, the temperature settings of these smart thermostats will be remotely adjusted when there is a need to reduce peak energy demand on short notice, a situation that has occurred more frequently during recent hot summers.

Renewable Energy Rising

In calendar year 2019, LADWP achieved 34 percent renewable energy from wind, solar, geothermal, and eligible hydroelectric power. We exceeded the state-mandated target for electric utilities in California of 33 percent in 2020, and are on track to meet L.A.'s Green New Deal goals of 55 percent renewable energy by 2025, 80 percent by 2036, and 100 percent by 2045.

Eland Solar + Storage Center, 400 MW Solar + 800 MWh

LADWP achieved a historic agreement for the nation's largest combined solar power and battery energy storage system (BESS), capable of dispatching power to meet peak demand, even after the sun sets. Located off Highway 14, north of Mojave, California, the Eland Solar and Storage Center will consist of two large-scale solar facilities totaling 400 MW of single-axis solar photovoltaic system, integrated with 200 MW (800 MWh) BESS energy. LADWP also has the option of expanding the BESS capacity to 300 MW for 1,200 MWh of stored power. Glendale Water and Power (GWP) is participating with LADWP in Eland 1 and will receive 12.5 percent the total solar and battery storage system.

When operating at full capacity, Eland 1 and Eland 2 will produce enough solar energy to serve 283,330 homes and offset approximately 727,000 metric tons of CO_2 emissions annually from fossil fuel power plants. That amount of avoided GHG emissions is like removing 148,700 gas-fueled vehicles from the highway for a year.

On November 6, 2019, the City Council approved the two power purchase agreements with 8minute Solar Energy, LLC to develop the project and begin commercial operation no later than December 31, 2023.

Beacon Solar, 250 MW + 20 MW/10MWh Battery

Since the Beacon Solar and Beacon BESS began commercial operation in the fall of 2018, the cutting-edge facility has won numerous awards for integrating renewables and battery energy storage in a way that has moved the technology forward. The innovative project was honored in 2019 by the Global Solar and Energy Storage Conference, the American Society of Civil Engineers (ASCE), and the Western Council of Construction Consumers.

Springbok Solar, 350 MW

In November 2019, LADWP and public and private partners celebrated the completion and commercial operation of the 350 MW Springbok Solar Cluster in Kern County, California. 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—which generates 90 MW went into commercial operation on July 19, 2019. The Springbok cluster of solar panels supplies more than enough energy for 152,000 Los Angeles households.

Energy Storage

Expanding energy storage—the capture and re-dispatch of energy using various technologies—is integral to creating a clean energy future for Los Angeles. LADWP is developing large-scale battery and alternative energy storage projects that will provide a carbon-free, clean energy solution to integrating intermittent renewable energy onto the power grid.

In addition to utility-scale energy storage, LADWP recognizes the important role of customer-owned battery systems. We have introduced standards that allow customers to safely install batteries, including those paired with rooftop solar systems. As of December 2019, LADWP has interconnected over 6 MWs of customer-owned energy storage systems, including batteries and thermal energy storage. This type of equipment is capable of both storing and creating electricity to help customers manage their electricity use.

Boulder Canyon Pumped Storage Project

LADWP continues to evaluate the feasibility of transforming Hoover Dam, one of the last century's major public works projects, into a giant energy storage system. Partnering with consulting firms, LADWP is conducting engineering and economic studies to determine the feasibility of designing, constructing, and operating a large-scale, hydro-electric pumped energy storage project at the 2,000 MW hydropower plant near Boulder City, Nevada. The Boulder project would provide a solution to managing and integrating future solar and wind energy and help avoid the challenge of over-generation of solar.

In parallel with the feasibility studies, LADWP is discussing the proposal with Hoover Dam and Colorado River stakeholders, including participants, communities, operators and regulators. Studies will assess the potential benefits for Los Angeles and 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 from Lake Mohave up to Lake Mead, and would operate similarly to LADWP's Castaic Pumped Storage Power Plant in Northern Los Angeles.

JFB Battery Energy Storage Pilot Project

In November 2019, LADWP began commercial operation of a new pilot energy storage project adjacent to our John Ferraro Building (JFB) headquarters parking structure. The JFB Battery Energy Storage System consists of two types of battery technologies—one lithium-ion and one flow battery system. Each battery is capable of generating 100 kW for four hours. LADWP, in conjunction with Electric Power Research Institute (EPRI), will evaluate the two different energy storage technologies to help inform future decisions regarding large-scale energy storage within the LADWP service territory. The outcome will help determine best uses to meet our Clean Grid L.A. goals.

Maximizing L.A. Sunshine

Local solar is an important component of LADWP's Clean Grid L.A. Plan that will help LADWP meet our sustainability targets, including the L.A. Green New Deal goal to grow local solar up to 900 to 1,500 MW by 2025. Local solar programs provide residents and businesses with opportunities to generate their own clean, renewable power. They also support the city's green economy and provide equity for all customers to enjoy the benefits of a healthy, clean environment.

Small-scale solar projects support the reliability of LADWP's power grid by providing "distributed generation," functioning like mini-power plants that generate energy right where it is being used. LADWP's cadré of local solar programs includes customer net energy metered solar, Feed-in Tariff (FiT), community solar, and utility-built solar, through which LADWP installs solar on rooftops of LADWP and City-owned buildings. As of December 2019, approximately 410 MW of local solar was supporting L.A.'s clean grid.

Expanded Feed-in Tariff

LADWP's FiT program, the largest offered by any municipal utility in the nation, creates revenue for LADWP's commercial customers while also contributing to the green economy by supporting sustainable businesses and local jobs. The program enables customers or other third parties to enter into an agreement with LADWP to develop solar, or other renewable energy resources, within the utility's service areas, and sell the energy to LADWP for distribution on the city's power grid.

Responding to increased demand and to benefit more customers, LADWP launched an expanded FiT program that provides an additional 300 MW of renewable energy projects on top of the current 150 MW program, which is now fully subscribed and has a wait list. This expansion is in line with LADWP's long-term local solar goals and the Green New Deal goals. The expanded FiT program launched in January 2020.

Learn more: LADWP.com/FIT

Community Solar

Since launching the Community Solar Program (CSP) in 2015, LADWP has been developing innovative business models to better serve customers and help create the grid of the future, meet renewable energy mandates, increase solar equity, and bring communities together to transform the City of Los Angeles. The CSP is an umbrella program consisting of multiple residential-based programs, such as the existing Solar Rooftops and Shared Solar Programs. The CSP supports LADWP's Equity Metrics Data Initiative (EMDI), which identified disadvantaged and underserved areas of the city with the least number of solar installations.

Shared Solar

The latest Community Solar Program was designed specifically for residential customers living in multifamily dwellings. The Shared Solar Program (SSP), which launched in May 2019, allows apartment or condo dwellers to participate in the economic benefits of solar while supporting a cleaner and healthier environment. Through Shared Solar, participants are charged a fixed cost for a portion of their electric bill, guarding against rising utility costs for up to 10 years by subscribing to blocks of energy priced in relation to SSP solar projects. Program participants can subscribe to 50 kWh or the maximum of 100 kWh of energy on a monthly basis. The blocks of clean electricity come from new solar power plants constructed in or near the L.A. basin.

Learn more: LADWP.com/CSP

Net Energy Metering

Residents and businesses in Los Angeles continue demonstrating their enthusiasm for going solar. The Net Energy Metering Program enables customers to install their own solar system and connect to the city's electric grid. Customers benefit by receiving a credit on their bill for the amount of power that their solar system provides to the grid. Through the program, LADWP provides customers with a solar net energy meter and works with them on connecting the meter to the power grid.

Although the solar incentive program is no longer available, customers can still take advantage of the Federal Tax Credits until the end of 2021.

Learn more: LADWP.com/NEM

Local Solar – By the Numbers
(As of December 31, 2019)

Over 44,488 customer-installed solar systems connected to the grid.

Net Energy Metering/Solar Incentive Program:

- $332.5 million in solar incentives for 34,515 systems since the program launch in 1999*
- $275 million in incentives for 258 MW under state legislated program SB1*
- Total net-metered solar: 335.2 MW from 44,390 systems, generating 661,000 MWh per year

*Includes incentives processed after program closed on December 31, 2018.

Feed-in Tariff Program:

- 99 renewable projects in service, totaling 68.2 MW*
- The energy produced from these projects is enough to supply nearly 21,000 homes

*Includes 4 MW installed in the Owens Valley and 2.95 MW comprised of renewable landfill gas

Solar Rooftops Program:

- 27 installations completed
- 83 kW of solar power being delivered
- 10 projects (55.2kW) are expected to be installed early 2020

Shared Solar Program:

- 409 customers enrolled
- 36,150 kWh per month supplied

Utility Built Solar

- 47 installations completed totaling 26 MW*

*Includes 44 in-basin projects totaling 6.6 MW

Learn more: LADWP.com/solar


VOLT
Charge Up LA

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 local 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.

Electric Transportation Goals

The L.A. Green New Deal sets aggressive goals for electrification of transportation as a means of reducing local greenhouse gas emissions. The goals are to install 10,000 public, workplace and fleet EV chargers in Los Angeles by 2022, including 4,000 chargers on LADWP or City-owned property; 25,000 by 2025; and 28,000 by 2028. The Green New Deal also has an overarching goal of 100 percent zero-emissions vehicles on the road by 2050.

All City-owned fleets, including LADWP's, must include 100 percent zero-emissions vehicles by 2021 when technically feasible. LADWP is also supporting the electrification of all of Metropolitan Transportation Authority (Metro) and Los Angeles Department of Transportation (LADOT) buses.

Charging Up Communities

The Crenshaw EV Charging Plaza, located in our Crenshaw Customer Service Center parking lot, provides Los Angeles residents with access to 16 Level 2 charging stations. LADWP has expanded the plaza with four DC fast chargers and longer weekend hours, providing increased access to EV chargers. Benefits include improving local air quality, increasing electric vehicle miles travelled, and increasing access to EV charging for drivers who do not have home chargers.

The Crenshaw EV Charging Plaza is part of a larger plan to create EV charging hubs at additional customer service and community centers in Los Angeles. One such project, at the Van Nuys Customer Service Center, is set to break ground in 2020.

Charging Up Businesses and City Facilities

As of the end of 2019, LADWP had installed or supported the installation of more than 3,600 commercial EV chargers in Los Angeles, including at least 1,600 charging stations on LADWP- and City-owned property.

LADWP continues to support other City facilities owned by the Port of Los Angeles, Department of General Services, LADOT, and Bureau of Street Lighting with the installation of additional public chargers. LADWP has also installed 44 more pole-mounted chargers in various communities across the city since the first one was installed in South Los Angeles in 2016.

In August 2019, rebates for chargers for medium- and heavy-duty EVs became available to customers. This program supports the electrification of school buses, transit buses, and medium- and heavy-duty trucks on L.A. roads. The reduction in local air pollution and GHG emissions from medium- and heavy-duty EVs on public roads benefits all Los Angeles residents.

Regional Partnerships

LADWP is a founding member of the Los Angeles Cleantech Incubator (LACI) Center for Transportation Initiatives, which brings together state and utility leaders on electrification and other climate related goals. 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 has established a consistent approach to support transit agency fleet electrification goals. We are working with both Metro and LADOT to assess the electrical capacity at locations of future large fleet charging stations, and developing plans to accommodate increased electricity demand. Other regional collaborations include the West Coast Clean Transit Corridor Initiative and the Electric Utility Innovative EV Charging Project.

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 others measures that are tailored for all customer sectors. Our programs are also designed to support clean jobs and the Los Angeles economy.

Learn more: LADWP.com/save

Guiding Principles

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 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, 2019, we were more than 93 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.

Customers saved 476,867 MWh cumulatively for the FY 2018-19. That amount of energy savings is comparable to offsetting electricity for 79,478 homes and reducing GHG emissions by 165,906 metric tons annually, which equates to removing about 35,692 gasoline-fueled cars from the road.

By the Numbers FY 2018-19

2 million	25,850	188,258	1.7 million	1 minute 11 seconds
Calls handled	Emails	Online signups	In-person visits	Average call wait time

Putting Customers First

At LADWP, our customers are our partners. We work together to create a customer- and community-focused, environmentally beneficial world-class utility of the future. We continually seek ways to make it easier for our customers to work with us, such as enhancing online services and communicating more frequently and directly through social media channels. Our aim is to provide information, assistance and services to our customers so their interactions with us are as effortless and efficient as possible.

For example, customers are now able to receive a text or email alert from LADWP notifying them about a power outage in their community. They can also report an outage through an interactive feature on our website. Another new web-based service is enabling customers to apply for certain rebate programs online without needing to download, mail or fax paper documents.

In the past year, we have greatly expanded marketing on social media channels to increase awareness about rebate and incentive programs that help customers better manage their bills while becoming more water and energy efficient. We also strive to ensure customers are aware of discount and assistance programs, and we maintain a dedicated customer relations staff to help them understand their bills. LADWP is dedicated to providing respectful, responsive and dependable customer service. Our guiding principles include:

Become a more customer-focused organization: We continually evaluate customer processes and revamp them as needed to improve operational excellence.

Provide more convenience for our customers: Our goal is to make it easier to do business with LADWP in all transactions and interactions.

Increase accountability and transparency to customers: We do this by tracking customer processes, setting goals, and reporting on how we do.

Customer Insights Panel

To better understand our customers and improve their experiences with LADWP, we created a Customer Insights Panel among a representative group of residential customers. The panel consists of approximately 2,000 customers, segmented to align with our residential customer demographics and services they receive (water or electric only, or both water and electric service). Using an online platform, the panel allows for quick research, testing, and insight on a variety of topics, such as electric vehicle adoption/interest, outage notification preferences, and more. Customers are invited to participate on a regular basis in order to maintain engagement, and participation is usually incentivized. The panel was in full swing in 2019, and refreshed to ensure continued quality research in 2020.

Increasing Scam Awareness

Scams are a growing problem for utilities across the nation. LADWP belongs to a national organization, Utilities United Against Scams (UUAS), through which utilities work together on nationwide campaigns to increase awareness of and protect our customers from scams. We encourage customers to contact us if someone calls or comes to the door, demanding a payment. Customer Service representatives will check to see if there is an issue with the customers' account, help the customer understand the potential scams, and report incidents to LADWP security. We educate our customers about scams through informational campaigns in English and Spanish, including on social media, television news interviews, bill messaging and other methods.

Learn more: LADWP.com/ScamAlert

Upgrading Customer Service Centers

Seeking to make the customer experience more enjoyable, LADWP began upgrading our community-based customer service centers. In 2019, Crenshaw and Lincoln Heights were the first centers to receive a significant improvement. Among the new features is a bilingual queuing system that allows customers to indicate the reason for their visit, take a number, then relax and wait to be assisted in newly installed waiting areas. The upgrades stem from a customer survey that concluded the automated queuing system would improve our customers' overall experience while visiting the customer service centers. This coming year, we will be enhancing additional centers with solar photovoltaic installations and EV charging stations to create more livable communities in an equitable manner as well as support our Clean Grid L.A. program.

LADWP Chosen Top Trusted Brand

For the third year, LADWP was recognized in 2019 as a top Trusted Business Partner Utility. The recognition was based on the 2018 Escalent "Cogent Syndicated Utility Trusted Brand & Customer Engagement™: Business" report. The annual energy survey identifies the top 20 U.S. utilities designated as the most trusted brands; LADWP was ranked the top utility in the Western region by business customers.

Customer Outreach

In 2019, LADWP partnered with the Department of Aging, Los Angeles Unified School District, Southern California Gas Company, PACE Foundation, and other community-based organizations in sponsoring outreach events in the Crenshaw, Boyle Heights and Watts/Green Meadow communities. These events provided customers with an opportunity to learn more about programs and offerings that can assist them with managing their utility bills. Customers were also able to ask questions and receive answers to their billing inquiries on-site. Energy and water-saving devices were provided to attendees, helping to enable them to conserve water and electricity in their homes.

Learn more: ladwp.com/financialassistance

LADWP's Energy Efficiency programs are designed to help our customers reduce their energy and water use through a variety of incentives and technical assistance. Through the Custom Performance Program, Vallarta Supermarkets Inc. upgraded the food refrigeration cases at their flagship market, saving a total of 78,084 kWh, enough power to supply 13 homes for a year or enough to avoid 27 metric tons of CO_2 emissions annually.

Customer Savings and Sustainability

2019 Sustainability Awards

LADWP recognizes commercial, industrial, and governmental customers for their leadership in environmental sustainability. At the 4th Annual Sustainability Awards in April 2019, 21 awards were given in five categories: Energy Management, Water Management, Transportation Electrification, Renewables, and Demand Response. The program honors our largest customers who are leading the way with the most impactful sustainability measures that result in significant reduction of GHG emissions and water use.

Customer efforts in these areas contribute to achieving the LA's Green New Deal goals. Together, the 2019 winners conserve an estimated 57 million gallons of water and reduce CO_2 emissions by 23,000 metric tons annually. The combined water savings by the honorees is enough to supply 524 single family homes in Los Angeles on an annual basis. The combined carbon emissions avoided is equivalent to taking nearly 4,950 cars off the road.

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 FY 2018-19, we continued 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 electric and plug-in hybrid EVs is one way that customers can help reduce GHG emissions in Los Angeles and the region.

To help our customers save energy and lower their bills, LADWP completed our third consecutive door-to-door LED bulb distribution in summer 2019.

Energy Saving Programs

Through our energy efficiency rebate and incentive programs, residential and commercial customers saved 466,278 MWh of energy during FY 2018-19. That amount of energy savings is comparable to removing more than 77,700 homes from the grid, and avoiding 162,200 metric tons of greenhouse gas emissions from traditional fossil fuel power plants, which equates to removing about 34,900 cars from the road for a year.

Self-Assessment Tool

LADWP customers can do their own energy self-assessment through the Energy Advisory Tool on LADWP's website. This easy-to-use online tool allows residential customers to estimate their energy usage and the impact it has on their LADWP electric bill. Weather and rate information is included "behind-the-scenes" in the calculation based on the zip code entered by the customer. When the assessment is complete, customers are offered relevant recommendations for LADWP rebate programs, based on the information entered. This tool was given a soft launch in late 2019, and will be proactively marketed in 2020.

Learn more: LADWP.com/energyadvisor

HVAC Optimization

LADWP has expanded our 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 FY 2018-19, LADWP provided free AC Optimization services to over 23,000 customers, resulting in an estimated annual energy savings of nearly 16,415,143 kWh. That amount of energy savings is equivalent to removing about 2,740 homes from the grid and avoiding 5,711 metric tons carbon emissions, equivalent to removing over 1,200 cars from the road annually.

Lighting Up Homes

In summer 2019, LADWP completed the third consecutive year of our door-to-door distribution of free LED bulbs to all 1.4 million residential electric customers. Each customer received a resusable bag with two LED lights. Customers were also provided information explaining that the LEDs offer a potential savings of 138 kWh annually for the life of the bulb (estimated to be up to 23 years) compared to two 75-watt incandescent bulbs. If all customers install the bulbs, they could potentially save to 4,410 GWh over the lifetime of the bulb.

Savings for Large Businesses

LADWP works closely with commercial, industrial and institutional (CII) customers to increase their sustainability and conservation efforts, benefitting both the customers' bottom line and our environment. We partner with these customers to identify and implement major conservation and efficiency measures. For FY 2018-19, we provided rebates and services to help offset an estimated 242,688 MWh. That amount of energy is equivalent to taking 40,448 homes off the grid, and avoiding 84,400 metric tons of CO_2 emissions, which equates to removing 18,164 gas-fueled cars off the road annually.

Commercial Direct Install

Since 2012, businesses and other non-residential customers have received free energy and water efficiency upgrades through the Commercial Direct Install program, helping reduce the city's carbon footprint. The program is available to small and mid-size non-residential customers. Upgrades include installing energy efficient, LED lighting, LED exit signs, low-flow water devices, and pre-rinse spray valves. In FY 2018-19, the program is expected to save Los Angeles businesses an estimated 100,306 MWh in electricity, avoiding approximately 34,897 metric tons of CO_2 emissions per year. Annually, that amount is equivalent to removing about 7,500 gas-fueled cars from road and offsets energy for approximately 16,718 homes.

Frozen food storage industry giant Linear Logistics expects to save over 3.6 million kWh per year through energy efficiency lighting and refrigeration equipment installed at their L.A. facility, thanks to LADWP's Savings by Design program.

LADWP Instant Rebates

LADWP introduced the Point-of-Sale Food Service Rebate Program, known as "LADWP Instant Rebates!" in August 2019. The program provides incentives for new energy efficient cooking and cooking process equipment. LADWP partnered with 27 food service equipment stores to encourage energy efficiency, increasing demand and inventory for such equipment.

Custom Performance Program

LADWP relaunched our Custom Performance Program (CPP) in January 2019 with enhanced features to make it easier and faster for customers to apply for and receive incentives. The program now offers two tracks. CPP's Custom Express fast-tracks smaller, less energy intensive projects with deemed energy savings projections, while Custom Calculated conducts in-depth energy savings analysis to maximize project savings potential. In FY 2018-19, the program paid over $9.3 million in incentives for efficiency measures expected to save more than 45,326 MWh annually—a 37 percent increase over the prior year.

Water Saving Programs

LADWP helps residential and commercial customers reduce their water use and save on their bills through rebates for water-saving devices, including high efficiency toilets, rain barrels, smart irrigation controllers, turf replacement and clothes washers. Large business, industrial and multifamily residential customers also see significant water savings through customized technical assistance as well as numerous rebates programs tailored for larger facilities. In addition, LADWP provides free faucet aerators and showerheads at our customer service centers.

Altogether, our customer water-saving rebates and programs are expected to save 486,979 million gallons of drinking water per year, enough to offset the needs of approximately 5,975 Los Angeles homes annually.

Learn more: LADWP.com/save

Through our water rebate and incentive programs and free water-saving devices, residential and commercial customers saved over 486 million gallons of water during FY 2018-19—enough water for 5,976 homes annually.

Expanding Turf Removal Program

Based on recommendations from the Water Conservation Potential Study, we increased our Turf Replacement Rebate to $3 per square foot and expanded the eligible area to 5,000 square feet in November 2019. Customers can now receive up to $15,000 in rebates when they transform their thirsty lawns to California Friendly® and native landscaping.

Clothes Washer Rebates

Applications for clothes washer rebates skyrocketed by nearly 40 percent during FY 2018-19 when compared to the previous year. In July 2018, the rebate was boosted to $400 for each high-efficiency clothes washer purchased. In FY 2018-19, LADWP provided 5,325 clothes washer rebates to residential customers, estimated to save nearly 57,000 million gallons per year. That amount of water savings could offset the water demand for about 700 households.

Learn more: ladwp.com/save

Leak Detection

LADWP's Water Conservation Response Unit (WCRU) assists customers in identifying leaks in their homes or businesses through enhanced outreach and education. Since 2018, the WCRU has focused on identifying leaks affecting customers who unexpectedly fall in the highest tier (4th tier) of water use. Our WCRU team reaches out to those customers to help resolve the water loss and water waste issues within the first billing period of their spike in consumption. In FY 2018-19, we inspected over 2,400 possible leaks, handled nearly 4,000 water waste complaints, and issued 3,180 informational letters proactively to the highest water users.

Home Water Use Report

About 70,000 LADWP customers receive bi-monthly water use reports through our Home Water Use Report pilot program. The program provides individualized reports that help customers review their home's water efficiency in comparison to other similar households. The program results provide easy access to individual water consumption data and offers tailored water efficiency suggestions for the customer.

LADWP's La Kretz Innovation Campus is home to a microgrid demonstration project and other emerging clean technologies.

Walking the Talk

JFB Achieves LEED Zero

In September 2019, LADWP's downtown headquarters, the John Ferraro Building (JFB), achieved LEED Zero Energy, making it the first building in California to receive this certification. LEED Zero, a program developed by the U.S. Green Building Council (USGBC), complements the building's LEED Gold certification received in 2016. Having already received the LEED Existing Building Operations and Maintenance and LEED Gold certification as a prerequisite, LADWP's JFB achieved LEED Zero Energy certification by purchasing renewable energy credits to offset the building's energy use in the 2018.

The JFB also earned the first-ever USGBC Pacific Region Leadership Award for Decarbonization at the 2019 Greenbuilder Conference in San Francisco. LADWP received this award for continuing to make extensive energy efficient upgrades.

Electrifying Our Fleet

LADWP operates one of the largest plug-in fleets in the city with a total of 392 all-electric and plug-in hybrid sedans and 39 plug-in hybrid bucket, cable puller, digger derrick, and stake bed trucks. In 2019, LADWP expanded our EV fleet with the purchase of 65 Chevy Bolts and three plug-in hybrid trucks. As a result, LADWP has nearly 500 electric and hybrid vehicles in our fleet; the environmental benefit translates to about 4.29 million pounds of CO_2 emissions avoided annually.

La Kretz Innovation Campus

LADWP's La Kretz Innovation Campus, located in the dynamic Arts District of Downtown Los Angeles, is home to LADWP's Sustainable Living and Customer Engagement Labs, Efficiency Solutions Labs, and the L.A. Cleantech Incubator (LACI). The labs are designed to educate visitors about water and power-related topics. The labs are actively used for testing and researching new and emerging water and energy sustainable technologies to support LADWP's environmentally responsible initiatives. La Kretz is also rated a LEED v3 Platinum and WELL v1 Gold Core building.

Learn more and book a tour: www.lkic.la

Drought Tolerant Landscaping

Since 2011, LADWP has been giving our facilities landscape makeovers 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 2018-19, LADWP converted 16 facilities to water-wise landscaping, exceeding our fiscal year project goal of 15 facilities. The drought tolerant installations will potentially save approximately 4.2 million gallons per year, enough water for about 38 homes annually.

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

LADWP and staff 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, Taste of Soul, Sherman Oaks Street Fair, Earth Day L.A. at Grand Park, and Nature Fest and Summer Nights in the Garden at the Natural History Museum. Events are staffed by our Speakers Bureau, which consists of about 50 employees from throughout LADWP. We also offer educational exhibits and displays at the L.A. Aqueduct Filtration Plant, the La Kretz Innovation Campus and soon at El Pueblo de Los Angeles.

Construction Outreach

As LADWP increases investments in upgrading water and power infrastructure, community outreach related to construction projects has grown significantly. Our efforts pave the way for our crews to work smoothly with businesses and residents in areas where construction work is occurring. 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 a Memorandum of Understanding (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 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

LADWP continues to maintain a presence on Nextdoor as a way to connect with customers and neighbors. We post news or information about local events, programs, construction projects and services. Nextdoor has 596,603 members residing in 1,292 neighborhoods within the city, reaching 23 percent of L.A.'s households.

School Partnerships

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. We also partner with Owens Valley schools to support communities along the Los Angeles Aqueduct where LADWP has a significant presence.

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. Programs include long-standing traditions such as the much-loved LADWP Science Bowl, which brings together the brightest math, science and technology students from Los Angeles schools to compete in the Regional Science Bowl Championship. Other long-standing programs include Adopt-A-School and the Times in Education Program.

During the FY 2018-19, we reached 125,000 students and more than 2,000 teachers through many new and long-standing programs.

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 year 2019-20, the budgets approved by the Board of Water and Power Commissioners 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 fifth 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 $5.3 billion of debt and yielded $866.1 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 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 a set of rates metrics aimed at fostering transparency and accountability across our major programs, initiatives, and budgets. The performance results for rates metrics have been reported to the RPA on a quarterly basis and to the Board on a semi-annual basis since January 2017.

During FY 2018-19 LADWP reported on 57 rate metrics of which more than two-thirds met or exceeded their targets. In the Power System, we met our required renewable energy goals and stayed within spending levels for wind, solar, and geothermal. We exceeded our power reliability replacement targets for critical power equipment such as poles, transformers and cables, and also stayed within spending goals. In the Water System, we met the spending targets for replacing water infrastructure as well as the Sustainable City pLAn goal of 20 percent reduction in GPCD.

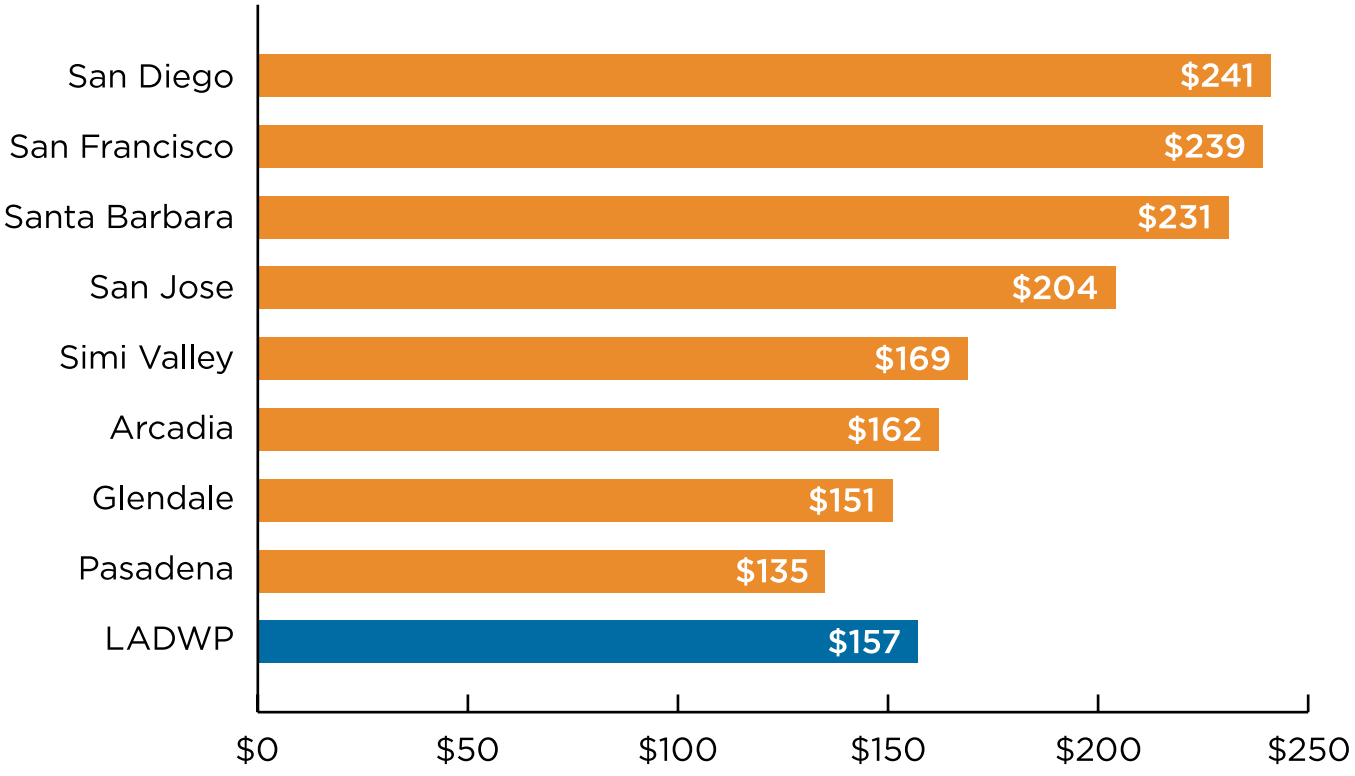
Ensuring Equity

LADWP has worked to improve the equity of our programs and services for 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 help to analyze our existing programs and make necessary refinements to improve equity. For example, analysis of our solar programs revealed that a large portion of our customers were unable to access solar power. This finding led to developing Community Solar programs to increase solar equity and meet our sustainability goals. In order to address equity within our workforce, 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 and Power Bills, as of January 2020

*Based on average residential power use of 500 kWh and water use of 10 HCF per month

Financial Data

This provides an overview of the financial activities of the LADWP for fiscal years 2014-15 through 2018-19.

For the complete financial statements:
LADWP.com/financialinfo

WATER SERVICES FACTS IN BRIEF

	FY 2019	FY 2018	FY 2017	FY 2016	FY 2015
Use of Water					
Average Los Angeles Population Served	4,040,079	4,054,400	4,021,488	3,985,114	3,959,840
Average daily use per capita (gallons)*	105	112	102	104	113
Water Sales for Fiscal Year (Millions of Billing Units of 100 cu. Ft)	195.4	205.3	196.0	199.2	216.2
Water Supply (Millions of Billing Units of 100 cu. Ft.)					
Local supply	14.0	9.5	22.3	34.4	39.4
DWP Aqueduct	136.1	134.0	92.6	22.3	25.1
MWD	60.0	79.6	95.7	150.6	167.9
Recycled Water	3.3	4.3	3.5	4.3	4.5
Gross Supply	213.4	227.4	214.1	211.6	236.9
Diversion from (to) local storage	-0.7	-0.1	-3.4	1.0	-10.0
Net supply to distribution systems	212.7	227.3	210.7	212.6	226.9
Bond Ratings					
Moody's/S&P/Fitch	Aa2/AA+/AA	Aa2/AA+/AA	Aa2/AA+/AA	Aa2/AA+/AA	Aa2/AA/AA

ENERGY SERVICES FACTS IN BRIEF

	FY 2019	FY 2018	FY 2017	FY 2016	FY 2015
Number of Customers					
Residential	1,396,643	1,385,470	1,378,172	1,370,137	1,363,366
Commercial and Industrial	125,673	123,680	122,841	122,734	122,609
All Other	6,484	6,391	6,651	7,002	7,230
Total customers of all classes	1,528,800	1,515,541	1,507,664	1,499,873	1,493,205
Power Use					
Sales to Ultimate Customers - kilowatt (kW) hours	21,961,382,983	22,383,310,345	22,490,122,681	23,278,785,593	23,018,220,376
Sales to Other Utilities - kW Hours	626,058,000	532,293,000	1,425,847,000	1,880,402,376	2,330,069,000
Average annual kW hours per residential customer	5,252	5,248	5,285	5,450	5,380
Net dependable capacity, megawatts	7,937	7,850	7,787	8,038	7,976
Bond Ratings					
Moody's/S&P/Fitch	Aa2/AA/AA	Aa2/AA/AA	Aa2/AA-/AA-	Aa2/AA-/AA-	Aa3/AA-/AA-

WATER AND POWER (CONSOLIDATED) FINANCIAL FACTS IN BRIEF

($ Billions)	FY 2019	FY 2018	FY 2017	FY 2016	FY 2015
Financial Data					
Total Assets	28.3	26.9	26.7	25.6	24.4
Total Net Position	8.8	8.4	8.9	8.6	8.2
Total Annual Operating Revenue	5.3	5.0	4.8	4.6	4.4
Total Annual Budget	5.7	6.1	6.3	6.4	6.0
Retiree Benefits Data Based on Market Value of Assets					
Unfunded Pension Liability	0.8	0.9	1.3	2.2	1.1
Funded Pension %	94.0%	93.1%	89.4%	82.2%	89.8%
Unfunded Retiree Medical Liability	0.5	0.4	0.4	0.6	0.3
Funded Retiree Medical %	82.8%	84.5%	81.4%	72.5%	85.8%

*Beginning in Fiscal Year 2015, the Department replaced Average Metered Consumption Per Person Per Day with Average Consumption Per Person.

WATER SERVICES SELECTED FINANCIAL DATA AND STATISTICS

($ Millions)	FY 2019	FY 2018	FY 2017	FY 2016	FY 2015
Operating Revenue					
Residential	$515.2	$509.6	$450.4	$458.0	$431.9
Multi Dwelling	396.0	352.1	338.6	339.8	331.2
Commercial and Industrial	262.3	254.7	264.7	277.8	269.0
Other	80.0	73.7	64.9	56.2	50.4
Total Operating Revenue	$1,253.5	$1,190.2	$1,118.6	$1,131.7	$1,082.6
Operating Income	309.1	339.0	261.1	251.8	212.7
As % of operating revenues	24.7%	28.5%	23.3%	22.2%	19.6%
Change in Net Position*	$167.2	$200.3	$140.5	$154.2	$108.0
Balance Sheet					
Net utility plant	$8,436.8	$8,033.0	$7,554.0	$7,013.0	$6,513.8
Capital additions, net	455.8	479.0	541.0	499.3	563.6
Capitalization					
Net Position	3,185.4	$3,018.3	3,136.2	2,995.7	2,841.5
Long-term debt	6,139.4	5,786.4	5,569.2	5,249.6	4,568.5
Interest on debt	214.5	205.3	194.5	181.3	173.6
Key Financial Planning Metrics					
Debt Service Ratio	1.71	1.82	1.74	1.95	1.88
Number of Days Cash on Hand	253	183	165	154	173
Debt to Capitalization %	66%	65%	64%	63%	61%
Operations					
Gallons sold (billions)	146.2	153.6	146.5	149.0	161.7
Customers - average number (thousands)	687	683	680	678	676
Average Revenue per hundred cu. ft. Sold (in dollars)					
Residential	$7.07	$6.48	$6.21	$6.30	$5.23
Multiple Dwelling	6.45	5.62	5.54	5.46	5.06
Commercial and Industrial	5.94	5.53	5.89	5.88	5.38
Water Supply (millions of billing units of 100 cu. ft.)					
Local supply	14.0	9.5	22.3	34.4	39.4
DWP Aqueduct	136.1	134.0	92.6	22.3	25.1
Metropolitan Water District	60.0	79.6	95.7	150.6	167.9
Recycled Water	3.3	4.3	3.5	4.3	4.5
Gross Supply	213.4	227.4	214.1	211.6	236.9
Diversion from (to) local storage	-0.7	-0.1	-3.4	1.0	-10.0
Net supply to distribution systems	212.7	227.3	210.7	212.6	226.9

*The Change in Net Position amount under Fiscal Year 2018 excludes the cumulative effect of change in accounting for post retirement benefits other than pensions under GASB 75.

ENERGY SERVICES SELECTED FINANCIAL DATA AND STATISTICS

($ Millions)	FY 2019	FY 2018	FY 2017	FY 2016	FY 2015
Operating Revenue					
Residential	$1,376.3	$1,265.7	$1,179.5	$1,126.7	$1,034.1
Commercial and industrial	2,560.1	2,429.3	2,331.6	2,308.2	2,201.1
Sales for resale	111.5	91.4	88.1	72.9	93.9
Other	22.9	17.8	98.7	9.2	7.8
Total Operating Revenue	$4,070.9	$3,804.2	$3,697.9	$3,517.0	$3,337.0
Operating Income	512.3	725.3	611.7	524.6	395.7
As % of operating revenues	12.6%	19.1%	16.5%	14.9%	11.9%
Change in Net Position*	$226.9	$278.2	$176.9	$175.3	$36.6
Balance Sheet					
Net utility plant**	$12,173.8	$11,377.5	$10,772.6	$10,322.5	$9,925.9
Capital additions, net	715.1	634.7	479.2	429.0	747.0
Capitalization					
Net Position	5,611.9	5,384.9	5,767.9	5,591.1	5,415.8
Long-term debt	10,370.1	9,772.3	9,519.3	9,154.5	8,798.4
Interest on debt	355.4	348.3	326.0	299.7	298.8
Transfers to City of Los Angeles	232.6	241.8	264.4	267.0	265.6
Key Financial Planning Metrics					
Debt Service Ratio	2.40	2.59	2.37	2.68	2.31
Number of Days Cash on Hand	204	176	206	267	241
Debt to Capitalization %	65%	63.6%	61.4%	61.3%	61.0%
Full Obligation Ratio	1.90	1.88	1.63	1.83	1.51
Operations					
Kilowatt hours sold (billions)	22.6	23.0	24.0	25.3	25.4
Customers - average number (thousands)	1,529	1,516	1,508	1,500	1,493
Average Revenue per kWh Sold (in cents)					
Residential	18.8	17.4	16.2	15.1	14.1
Commercial and Industrial	17.5	16.0	15.2	14.5	14.0
Energy production (billions in kWh)					
Total generation	16.9	14.0	14.6	14.4	15.0
Purchases	9.0	12.3	12.2	13.1	12.9
Total production	25.9	26.3	26.8	27.5	27.9
Net system dependable capability (thousand megawatts)					
Power System-owned facilities	4.8	4.8	4.8	4.7	4.7
Jointly owned and firm purchases	3.1	3.1	3.0	3.4	3.3
Total	7.9	7.9	7.8	8.1	8.0

*The Change in Net Position amount under Fiscal Year 2018 excludes the cumulative effect of change in accounting for post retirement benefits other than pensions under GASB 75.

**A reclassification has been made to the 2018 Net Utility Plant amount to conform to the 2019 financial statement presentation.

Briefing Book 2019-20

ladwp.com

@LADWP @LADWP @LADWP1 LADWP1 LADWP

LA DWP