WATER & POWER ASSOCIATES, INC.

APRIL 2025

NEWSLETTER

US Electric Power Sector Issues to Watch in 2025

By Saif Mogri

Excerpted from Utility Dive:

https://www.utilitydive.com/news/electric-power-sector-issues-to-watch-prices-demand-reliability-renewables-nuclear-vpp-transmission/736492/?utm_source=Sailthru&utm_medium=email&utm_campaign=Issue:%202025-01-08%

The price U.S. consumers pay for electricity will continue to increase in 2025, driven by a range of factors including rising demand, transmission and distribution cost increases, and an anticipated rise in the price of natural gas.

Across all customer classes, U.S. electricity prices are expected to average 13.2 cents/kWh in 2025, up from 12.68 cents/kWh in 2023, according to data from the U.S. Energy Information Administration. Residential electricity prices across all regions will average 16.7 cents/kWh in 2025, up from 15 cents/kWh in 2022. These increases are driven in part by continued de-carbonization efforts nationwide.

U.S. LNG exports have tripled over the past five years and are expected to double again by 2030 and could increase even further under existing authorizations, Secretary of Energy Jennifer Granholm said in December. Natural gas prices were low in 2024 but as liquefied natural gas export increases, gas prices are expected to increase.

The North American Electric Reliability Corp. (NERC) rang in the New Year with a stark call to action for the electric power sector., After nearly two decades of stagnant electricity demand growth, the United States is seeing data centers and electrification drive consumption higher. Combined with generator retirements and a changing resource base, the NERC says this is a perilous moment for the power system.

NERC published an assessment in December concluding more than half of the U.S. electric grid could see energy shortfalls in the next five to 10 years, particularly under extreme weather conditions. Peak summer demand is forecast to rise by more than 122 GW in the next decade, adding 15.7% to current system peaks, NERC said, while fossil-fueled generation retirements of up to 115 GW are possible by 2034.

“NERC is especially concerned about natural gas supply given the significant amount of [gas] production in the mid-Atlantic and Northeast,” the reliability organization said in a Dec. 31 warning.

(Continued on page 2)

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With demand forecasts growing sharply for the first time in years, grid operators like the Midcontinent Independent System Operator (MISO) are working to ensure their markets send appropriate signals to spur new generation while also working to unclog their interconnection queues.

The PJM Interconnection, a regional transmission organization that originally consisted of the states of Pennsylvania, New Jersey and Maryland, may be facing the most challenges as it is trying to overhaul its capacity market amid warnings that it may soon face major supply shortfalls.

Grid operators are responding to supply/demand challenges. MISO, for example, in November proposed, for a second time, setting a megawatt cap on its annual interconnection queue to limit its study size, as well as exemptions to the cap.

Meanwhile, the California Independent System Operator (CAISO) and the Southwest Power Pool (SPP) are planning to expand wholesale markets in the West. CAISO aims to launch the Extended Day-Ahead Market in 2026 while SPP plans to start its Markets+ initiative in 2027, pending approval of the tariff by the Federal Energy Regulatory Commission (FERC).

In 2025, ongoing load growth in the U.S. will continue driving demand for renewable energy, while the sector simultaneously faces uncertainty due to President Trump's vow to prioritize fossil fuel-based generation.

Connecting renewable energy to the grid remains a challenge, with wind and solar constituting the vast majority of capacity in interconnection queues across the country. A lack of sufficient transmission to deliver renewable energy to where it's needed and the interconnection and siting of such projects is another key challenge. Congress has been considering bipartisan permitting reform legislation that aims to facilitate transmission buildout, but the prospects for such legislation remain uncertain.

President Trump is expected to implement tariffs in his second term, including on imported solar components, which could increase costs and contribute to supply chain constraints. However, as solar technology advances and domestic supply grows to meet demand, prices will continue to drop.

Momentum for nuclear energy increased rapidly in part because of projections of future load growth due to the electrification of buildings and transport, reshoring and de-carbonization of heavy industry, and above all, the expected proliferation of power-hungry AI and data centers. Developers of smaller-scale reactors, like Oklo and Last Energy, could begin to benefit in 2025 from an ADVANCE Act provision that establishes an 18-month licensing timeline for microreactors and may enable even faster approvals for subsequent microreactors, such as, Small Modular Reactors SMRs at existing nuclear or coal power facilities.

It seems that in 2025 we will be at a crossroads with increasing power demand due to electrification and data centers, the future of solar and wind resources, reduced demand for Electric Vehicles, renewed interest in coal fired and nuclear energy, especially Small Modular reactors.

President's Column

During the remainder of 2025, the Los Angeles Department of Water and Power (LADWP) will be engaged in vitally important planning processes which will form the basis for the investments that will be made to provide reliable, cost-effective water and electrical services to the residents of Los Angeles in the next two decades.

The Power System is currently engaged in developing the "LA100 Plan" to determine the resources and investments that should be made to meet the future needs of Angelinos. This plan will consider investments in resource development as well as the infrastructure needed to provide those resources to the customers. They will also be looking into the cost to implement the plan and how they can be financed in a way that will be affordable and distributed in an equitable manner. It appears to me that the change in the federal administration's outlook on providing finances to local entities will make this very challenging. Your Water and Power Associates, (WPA) will be taking an active role in this process and providing our technical expertise to the decision makers. I encourage you to get personally involved in the process and make your desires known for a reliable and cost-effective plan. A key request of the WPA will be for the plan to have measurable benchmarks developed so that the plan can be revised as progress necessitates while the implementation takes place.

The Water System will likewise go through an extensive State mandated planning process as the 2025 Urban Water Management Plan is developed to lay out a road map for providing reliable, cost-effective water supplies to the residents of Los Angeles. A key issue that the WPA will be pushing is the incorporation of facilities capable of meeting the needs of the north end of the San Fernando Valley in the event of another water shortage on the State Aqueduct, as happened in 2023. At that time, the Department came very close to not being able to meet the needs of the north end of the Valley, due to the inability of the Metropolitan Water District (MWD) to get supplies to that area.

One solution to that problem could be the proposed "Pure Water -LA" project which would take treated water from the Hyperion Water Reclamation Plant and transport it through a new large diameter pipeline to the Los Angeles Reservoir. There it could be distributed through the Valley. While this is a technically feasible project, it would be very expensive and cause much disruption to the citizens along the alignment of the project. Another solution could be to get MWD to complete their original plans to construct the Foothill Feeder to get Colorado River Water to the north end of the Valley. Again, the WPA intends to take an active role in this process.

Please enjoy this issue of our newsletter and our articles on issues affecting our future way of life in Los Angeles.

Jerry Gewe, President

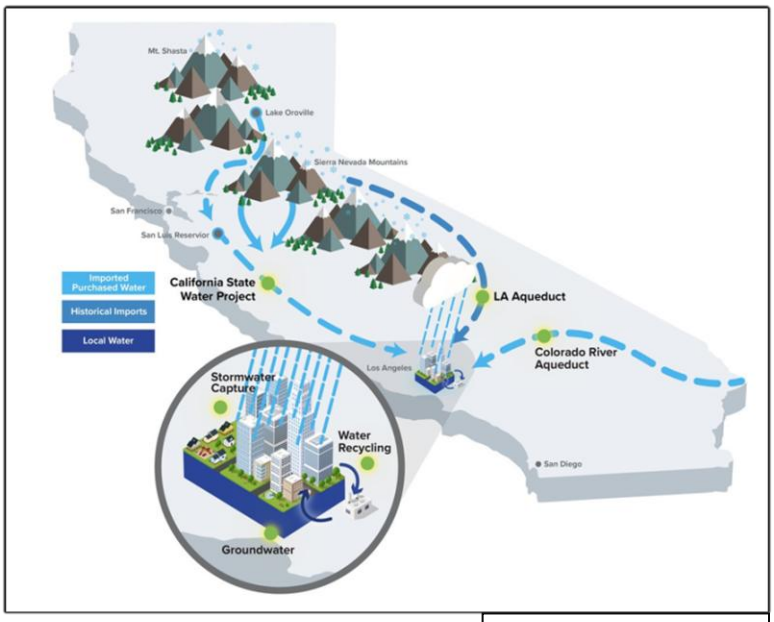
WATER SUPPLY 101
Where Does LA's Water Come From?

By Robert Yoshimura

The topic of where our water comes from should be familiar to most of our members, especially those who are or have been affiliated with the water industry in southern California. However, for those who have not, the following is a basic description of our (the City of Los Angeles') water sources today and the issues and challenges facing each one.

Our primary water supply sources consist of:

1. Local groundwater (9% of total supply in 2024/25),
2. The LA Aqueducts from the Owens Valley on the east side of the Sierra Nevada (65%),
3. Imported water purchased from the Metropolitan Water District of Southern California (MWD) (23%), and
4. Recycled Water (3%).



From ladwp.com

A brief analysis of each source is provided below and is based on the current (for 2024/25) demand forecast of 446,185 AF, which is the lowest city-wide demand since the 1970s. Demand reduction is the result of conservation programs which have reduced per capita demand from 187 gallons per capita per day (gpcd) in 1987 to only 103 gpcd today.

Local Groundwater. At one point in our early history, local groundwater from the San Fernando basin was the primary supply source for Los Angeles. As the city grew and imported water sources were added to our portfolio, the contribution of groundwater declined to about 15% of our total supply by 1970 and remained steady thereafter until contamination was discovered in the latter part of the 20th century. Subsequently, groundwater production was limited because selective pumping strategies were applied to avoid the contaminated water. Groundwater production declined to about 4,700 acre-feet per year (AF/yr) or 1% of our total supply in 2023/24. Thanks to remediation projects, in the current water year (2024/25) groundwater is forecasted to supply 40,000 AF or 9% of our supply.

There are three remediation projects involving wellhead treatment that are nearing completion this year that will ultimately enable the city to extract its full entitlement of 98,500 AF/yr. In the first two years of operation, DWP will be limited to operating only the remediation wells in order

to accelerate the removal of contaminated water from the San Fernando basin. By the end of 2028, the Groundwater Replenishment Project utilizing reclaimed water from the Tillman Water Reclamation Plant will add 21,000 AF/yr of groundwater recharge resulting in a total recharge of 42,500 AF/yr of reclaimed water. Total yield of the San Fernando basin could thus reach 141,000 AF/yr or more than 30% of our total water supply. Furthermore, additional proposed reclaimed water from the Pure Water LA Reclamation Project and expanded stormwater capture programs will add to the potential yield of groundwater.

Plans are currently being formulated to deal with a new form of groundwater contamination discovered just this past year. Trace amounts of a substance known as PFAS (per- and poly-fluoroalkyl substances) in concentrations of 8 to 14 parts per trillion (ppt) were detected in water pumped from the Tujunga well field. Proposed maximum contaminant levels being considered for PFAS are in the 4 ppt range. Thus, some additional treatment processes will ultimately be needed to deal with this issue.

Los Angeles Aqueducts (LAA). Originally completed in 1913, the LAA drew water from the Owens River and soon became the primary source of water for Los Angeles. An extension of the LAA intended to capture water from streams that feed Mono Lake was completed in 1940. A second aqueduct was added in 1970 that increased the capacity of the LAA system by 50% to enable additional water pumped from the groundwater basin to be imported to Los Angeles. The full capacity of the LAA was then 470,000 AF/yr, and in the late '70s, the LAA supplied nearly 80% of the city's demand for water.

Since then, the outcome of lawsuits filed by Inyo County, the Mono Lake Committee, and the Great Basin Air Pollution Control District have significantly reduced the amount of water imported to Los Angeles through the LAA. Today, nearly one-third of the available water is being diverted to a number of environmental mitigation projects intended to 1) recreate habitat and ecosystems affected by groundwater pumping, 2) restore the elevation of Mono Lake, and 3) control dust on the dry Owens Lake bed.

In the water year 2024/25, a total of 290,000 AF of water is forecasted to be delivered to Los Angeles.

MWD. MWD was established in 1928 by the California State legislature to construct and operate the Colorado River Aqueduct to supply additional imported water to southern California. The city of Los Angeles is one of thirteen original member agencies of MWD. That membership enables the purchase of supplemental water from MWD as needed. MWD later became a State Water Project (SWP) contractor in 1970 which allows them to purchase water imported from the Sacramento River Delta. MWD's total water allotment from its two sources is 4.4 million AF/yr from the Colorado River and 2 million AF/yr from the SWP.

The Colorado River supply has been under severe stress during the 25-year-long Western Mega-Drought that began in 2000 and continues to this day. Since then, average flows in the river have declined from 16.5 million AF/yr to less than 12 million AF/yr. However, because of its senior water right, MWD has continued to receive its full allotment from the river until now. Such deliveries, and overuse by other Colorado River Basin states have resulted in a severe decline in the elevation of Lake Mead, the source reservoir for the Colorado River Aqueduct. The

MWD, the federal Bureau of Reclamation, and the other basin states are required to negotiate a reallocation of the available water resources and establish new permanent guidelines for the operation of Lake Mead before the Interim Guidelines expire in 2026.

Since the completion of the SWP in 1970, MWD has received its full allotment of water from the state nearly every year until 2000, when the Western Mega-Drought began. Since then, drought-related shortages have reduced average deliveries to less than 50% of the contracted allotment. Changes in precipitation patterns and temperatures have created a need for additional storage facilities upstream of the Delta and for completion of the Delta Conveyance Project to safely deliver water produced by atmospheric river storms to southern California for storage and later use when needed.

In the water year 2024/25, a total of 103,000 AF of water is forecasted to be purchased from MWD.

Recycled Water. Current recycled water usage is limited to non-potable uses such as irrigation of greenbelts and groundwater recharge which total less than 12,000 AF/yr combined. However, as a result of the dire situations confronting the MWD water sources and the mandated diversions of LAA water for environmental mitigations, both LADWP and MWD have announced plans to construct major water recycling facilities that will avail them of nearly the entire effluent outflow from the city's Hyperion Water Reclamation Plant and the county's Joint Water Reclamation Plant. Ultimately, MWD's Pure Water Southern California project will yield 150,000 AF/yr and LADWP's Pure Water Los Angeles project will yield 235,000 AF/yr. Water from both projects will be applied to various uses including direct potable reuse, groundwater recharge, and industrial uses. The Los Angeles project alone will increase the city's currently available water supply by more than 50%.

Water Source Variability. In the previous ten years, the percentages of water from each of the above sources have varied significantly from one year to the next. The degree of variability is a function of differences in precipitation in each source's region and demonstrates the value and flexibility provided by having multiple sources from different geographical areas.

Fiscal Year	Los Angeles Aqueduct	Local Ground water	MWD	Recycled Water	Total
2013-14	12%	12%	74%	2%	100%
2014-15	11%	17%	70%	2%	100%
2015-16	12%	16%	70%	2%	100%
2016-17	45%	10%	43%	2%	100%
2017-18	59%	4%	35%	2%	100%
2018-19	64%	6%	28%	2%	100%
2019-20	60%	7%	31%	2%	100%
2020-21	25%	10%	63%	2%	100%
2021-22	14%	11%	73%	2%	100%
2022-23	42%	6%	50%	2%	100%

EIA Projects More Solar and Less Natural Gas Electricity Production

By William Glauz

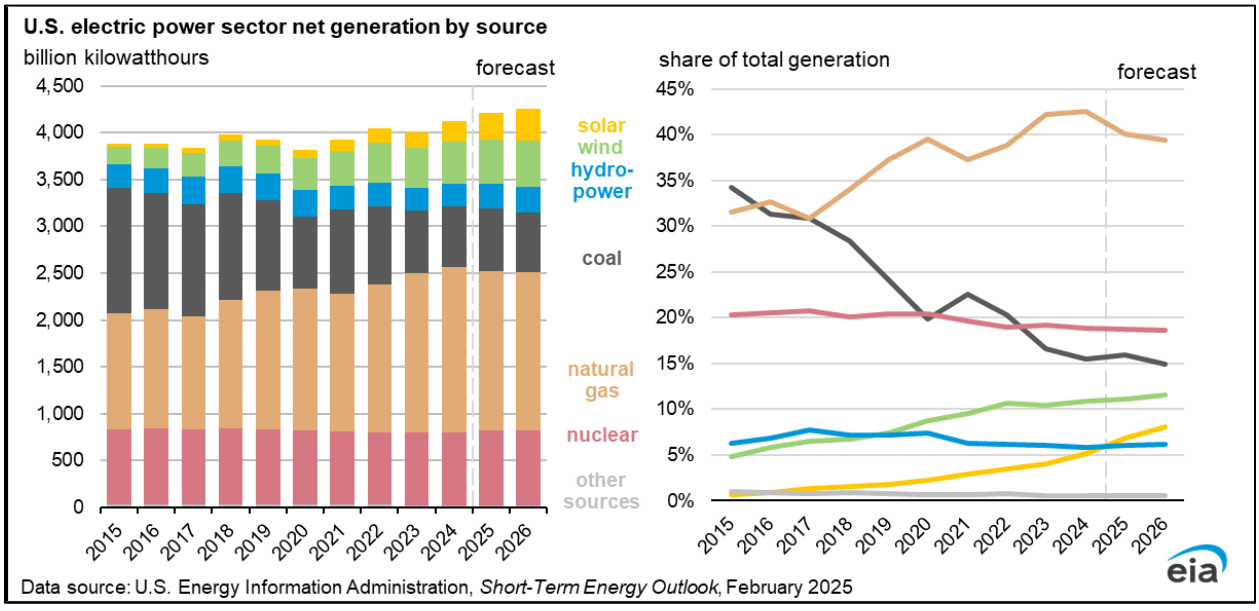
Excerpted from EIA: https://www.eia.gov/outlooks/steo/pdf/steo_full.pdf

In early February, The U.S. Energy Information Administration (EIA), a part of the Department of Energy, published its Short-Term Energy Outlook. Growing demand for electricity in the U.S. is driving more generation. In 2024, electricity generation grew by 3%. EIA anticipates U.S. power plants will generate about 4,240 billion kilowatt hours of electricity in 2025, up another 2% from 2024. They are also estimating an additional 1% growth in 2026. If electricity generation grows as expected, it will be the first three years of consecutive growth since 2005-07.

This increase in generation is led primarily by growth in solar energy sources. Solar energy generation is expected to grow from 5% of total generation in 2024 to 8% in 2026, because of an expected 45% increase in the amount of solar generating capacity between 2024 and 2026. The increases in solar generation are based on the number of planned solar generating projects nationwide. The forecasted share of generation from wind stays relatively flat in 2025 at 11% but grows to 12% in 2026.

The EIA also expects electricity produced by natural gas to fall from 43% of total generation in 2024 to 39% in 2026 as natural gas prices are expected to rise.

Coal fired electric generation is expected to stay relatively flat, at about 16% of total generation, with an increased demand for generation brought on early this year due to cold weather, but countered by an increase in coal plant retirements in 2025.



California EV Sales Have Stalled – What Happens to the State Mandate?

By William Glauz

Excerpted from Renewable Energy World, February 6, 2025

https://www.renewableenergyworld.com/electric-vehicle/californias-surge-in-ev-sales-has-stalled-so-what-happens-to-its-landmark-mandate/

In 2024, about 25% of all new cars registered in California were electric. This is about the same amount of new electric cars registered in 2023. The flat sales follow several years of rapid growth, and sales are still far below the state's 35% target.

Toru Hanai / Bloomberg / Getty

California's push to electrify its cars is facing a potentially serious problem: People aren't buying electric cars fast enough. This raises questions about whether the state will fail to meet its groundbreaking mandate banning sales of gas-powered vehicles. Under California's mandate, approved in 2022, 35% of new 2026 car models sold by automakers must be zero emissions. That leaves considerable ground to make up as some 2026 models begin rolling out later this year. The requirement ramps up to 68% for 2030 models, and in 2035, California's rule bans all sales of gasoline-powered cars. Although the rules limit what automakers can sell, Californians are not required to buy electric cars.

The state mandate, however, has some flexibility. First of all, it's a multi-year formula: Each manufacturer's sales of 2026 zero-emission vehicles must be 35% of its total sales averaged for model years 2022 through 2024.

Manufacturers also can buy credits from automakers that have exceeded the target — companies that only sell electric models, such as Tesla or Rivian. To enforce compliance with California's sales requirements, state officials could impose steep penalties of $20,000 per vehicle on manufacturers that fall short of quotas.

President Trump also recently signed an executive order repealing federal rules promoting electric vehicles. The outgoing Biden administration's U.S. Environmental Protection Agency granted California a waiver in December that allows the state to enforce its requirements phasing out new gas-powered cars. Many experts believe the Trump administration is likely to challenge the waiver through the courts.

Experts also anticipate that President Trump could eliminate the $7,500 federal tax credit for zero-emission vehicle purchases, which would increase the cost of buying some electric cars.

Newsom vowed last year to continue offering the incentive through state funding, although that promise came before Los Angeles faced devastating wildfires and the state released its fragile budget earlier this year.

Californians have purchased more than 2 million electric cars, leading the nation. The number has doubled in about two years.

But electric vehicle sales, which make up the majority of zero emission cars, grew by only 1.1% in 2024, with 378,910 sold compared to 374,668 in 2023. Plug-in hybrids, once considered a potential alternative to a purely electric model, remained relatively stable. And sales of hydrogen-powered cars all but collapsed last year, with sales plummeting to a meager 600 in 2024 from 3,119 in 2023.

The slower growth comes amid overall market sluggishness, with all auto sales in California dipping slightly last year to 1,752,030.

Tesla's market dominance has exacerbated the issue. Many left-leaning California consumers, who were once loyal to Tesla, appear to have distanced themselves because of CEO Elon Musk's controversial public persona and alliance with Trump.

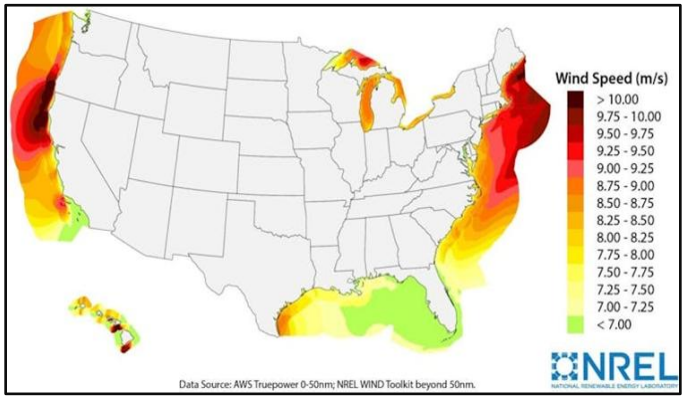
As Tesla sales have softened, dropping 11% in California last year, the decline has disproportionately affected overall EV registration data in California because of the company's significant market share.

Trump Takes the Wind Out of Wind Energy

By William Glauz

Excerpted from The Conversation:

https://theconversation.com/trumps-offshore-wind-energy-freeze-what-states-lose-if-the-executive-order-remains-in-place-249125



On January 20, 2025, President Trump's inauguration day, he signed many Executive Orders (EO), including one that temporarily halted offshore wind energy leasing in the Outer Continental Shelf (OCS). The EO temporarily ceases and calls for immediate review of federal wind leasing and permitting practices for all wind projects, halts all activities associated with the recently approved Lava Ridge Wind Project in Idaho including delaying any litigation associated with the project, and requires assessment of the environmental impact and cost to surrounding communities of defunct and idle windmills.

The offshore coastal areas of northern California and the northeast United States have some of the best wind energy resources in the world. For many years, the development of these resources for clean wind energy have been pursued. The Biden administration set a national offshore wind goal of 30 gigawatts of capacity in 2030 and 110 gigawatts by 2050. It envisioned an industry supporting 77,000 jobs and powering 10 million homes while cutting emissions. As recently as 2021, at least 28 gigawatts of offshore wind power projects were in the development or planning pipeline.

The EO withdraws from disposition for wind energy leasing all areas within the Outer Continental Shelf (OCS), which is generally defined as off shore, underwater areas between the typical 3 nautical mile jurisdiction of the states and 200 nautical miles. This essentially halts any new or renewed wind energy leasing for the purposes of generation of electricity or any other such use derived from the use of wind in the OCS. This withdrawal does not apply to leasing related to any other purposes such as, but not limited to, oil, gas, minerals, and environmental conservation.

The EO does not affect rights under existing leases in the withdrawn areas. The EO requires the Secretary of the Interior, in consultation with the Attorney General as needed, to conduct a comprehensive review of the ecological, economic, and environmental necessity of terminating or amending any existing wind energy leases, identifying any legal bases for such removal, and submit a report with recommendations to the President.

The EO directs the Secretary of the Interior and several other government agencies to halt issuance of new or renewed approvals, rights of way, permits, leases, or loans for onshore or offshore wind projects pending the completion of a comprehensive assessment and review of Federal wind leasing and permitting practices. This assessment will consider the environmental impact of onshore and offshore wind projects upon wildlife and also consider the economic costs associated with the intermittent generation of electricity and the effect of subsidies on the viability of the wind industry.

The Snake River Plain in southern Idaho represents the greatest wind resource potential in Idaho, according to Idaho's Office of Energy and Mineral Resources. Wind energy in Idaho is provided by nearly 550 turbines, including the ones on this wind farm in Power County. (Courtesy of the U.S. Department of Energy)

The EO also directs the Secretary of the Interior to place a temporary moratorium on all activities and rights of Magic Valley Energy, LLC, the developer of the recently approved Lava Ridge Wind Project, pending a review and new comprehensive analysis of the project and potential environmental impacts. Lava Ridge is a proposed wind energy plant to be developed in south central Idaho by Magic Valley Energy. It is proposed to consist of up to 400 wind turbines with a capacity of 1000MW, one of the largest wind generation plants in the United States. The Bureau of Land Management issued their Final Environmental Impact Statement in June 2024.

Ivanpah Solar Plant to Shut Down

By William Glauz

Excerpted from Engineering News Record:

https://www.enr.com/articles/60307-older-ivanpah-solar-plant-in-california-will-close-units-as-tech-shifts

You may have seen, as it is hard to miss, the largest concentrating solar power plant in the United States when driving north on Interstate 15 just before the Nevada border. That plant is the Ivanpah Solar Power Plant in San Bernardino County. The plant sits on 3,200 acres of federal land and consists of three 450-foot-tall towers with glowing white hot boiler tubes, surrounded by an array of heliostat mirrors that reflect sunlight onto the boilers atop the towers. The steam created by the boilers is then used in a more conventional steam turbine generator to make electricity. The plant produces 386 MW of power.

Photo by Dennis Schroeder/National Renewable Energy Laboratory

Power purchase agreements (PPAs) were signed by Pacific Gas and Electric and Southern California Edison in 2009. DWP was also offered a share of the plant, but the price tag drove them away. The $2.2 billion plant started construction in 2010 and went online in late 2013. But now the owner, NRG Energy, Inc, is planning to shut down the plant, as solar photovoltaic plants are more cost effective. In 2021, the California Public Utilities Commission ordered investor-owned utilities to evaluate their energy sources for potential cost savings. The Ivanpah PPAs were identified and negotiations were started to terminate the PPAs. NRG plans to begin closing down the units next year for decommissioning. There is talk of possibly repurposing the site for a solar photovoltaic plant.

William Mulholland Public Service Award

Duane L. Georgeson

Duane L. Georgeson – 2025 Recipient

Duane L. Georgeson made history as the youngest Division Head and Assistant General Manager (AGM) in the Los Angeles Department of Water and Power's (LADWP) Water System. A visionary leader, he established a collaborative team culture, prioritizing knowledge over hierarchy. He personally sought out experts for information while ensuring proper communication through the chain of command.

Among his many achievements, Duane oversaw the design and construction of the Los Angeles Aqueduct Filtration Plant, ensuring a reliable and high-quality water supply. He was committed to cost efficiency, spearheading the development of the Responsibility Cost Accounting System, which enabled the department to track performance and expenditures effectively.

Working alongside Tim Quinn, Duane played a key role in securing Metropolitan Water District (MWD) funding for local water resource initiatives. These efforts became a cornerstone for water conservation, groundwater development, and recycling programs across Southern California.

As a consultant, he coordinated negotiations among urban and agricultural water contractors and State Water Project management, leading to significant revisions in the State Water Contract under the Monterey Agreement. These changes provided greater flexibility in utilizing state water facilities, addressing challenges in water availability. Additionally, he collaborated with State Water Project staff to enhance power supply reliability, facilitating the purchase of a 40% stake in a power plant near Lodi, California—an investment that saved millions of dollars.

Beyond his professional career, Duane serves on the Executive Board of Water and Power Associates, offering invaluable insights into statewide and local water issues. His contributions to the W&PA Virtual Museum include historical research and documents on the Los Angeles Aqueduct, Owens Valley, and the St. Francis Dam disaster, as well as reports from the 1980s and 1990s addressing water demand, runoff, and the ecological challenges of Mono Lake. His dedication ensures that these critical resources remain accessible for use and study by future generations.

Click HERE to see previous recipients.

https://waterandpower.org/mulholland_svc_awd.html

Distinguished Service 'McCarthy' Award

Gerald A. (Jerry) Gewe

Jerry Gewe dedicated 31 years to the Water System of the Los Angeles Department of Water and Power (LADWP), serving in key positions across the Water Distribution Section, Aqueduct Division, Water Operating Division, Water Executive Office, and Water Resources Division.

During the drought of the 1990s, he acted as the Water System's spokesperson and led the development of the Conservation Water Rate Structure. As Assistant General Manager–Water, he was the only senior manager over 50, providing much-needed stability to the system and playing a pivotal role in developing its next generation of leadership.

Gewe also served as Los Angeles' representative on the Colorado River Board and took a leading role in protecting the City's interests within the Metropolitan Water District (MWD). He was instrumental in implementing the Memorandum of Understanding between LADWP and Neighborhood Councils.

Following his retirement, Gewe joined the Water & Power Associates, where he currently serves as President and has for the last several years. His contributions have been invaluable, particularly as Historical Preservation Chair, Program Chair, and Editorial Board Chair, where he has played a key role in organizing speakers, field trips, and the publication of the quarterly newsletter.

Gerald A. (Jerry) Gewe
2025 Recipient

Click HERE to see previous recipients.

https://waterandpower.org/mulholland_svc_awd.html#Jerry_Gewe

Transformer Supply and Demand Impacts Power System Stability

By Saif Mogri

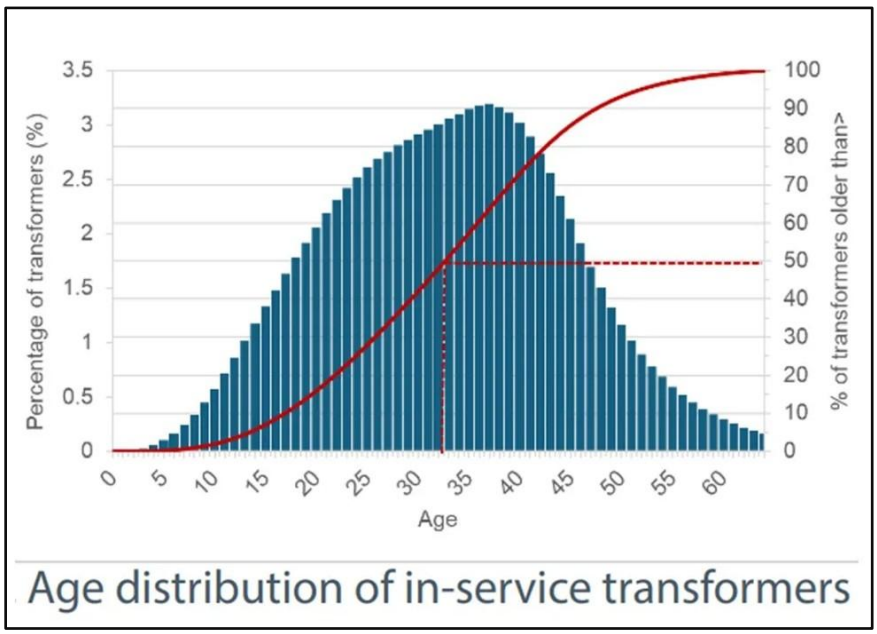
Source: https://www.utilitydive.com/news/electric-transformer-shortage-nrel-niac/

The U.S. is in the middle of an unprecedented imbalance between supply and demand for power transformers, which has left the energy sector anxious and uncertain about the stability of the future grid. The urgently needed modernization of the U.S. power system is being impeded by slow access to vital new electric transformers.

The growth of AI and Data Centers and economy-wide electrification is expected to grow demand almost 16% by 2030, increasing the need for both more and bigger transformers, according to a December National Renewable Energy Laboratory study. And that need is being accentuated where extreme weather events like the Los Angeles wildfires and East Coast hurricanes require rebuilding distribution systems.

"Delivery of a new transformer ordered today could take up to three years," said National Electrical Manufacturers Association (NEMA) Director of Government Relations Peter Ferrell. "Five years ago, that wait time was four to six weeks."

At wind and solar projects, small pad mounted transformers step up voltage to medium or larger sized transformers at production site substations, according to Doug Wolken **of** Hitachi Energy North America. Large transformers at natural gas, nuclear, and hydropower plants also step up voltage to the transmission system, he said.



Age distribution of in-service transformers

At distribution substations, large pad-mounted transformers step down voltage from the transmission system to medium or small pad mounted transformers, Wolken said. Small pole mounted or pad mounted distribution system transformers step the voltage down for homes and businesses, he said.

Individual manufacturer slowdowns vary. Lead times for pad-mounted

distribution transformers “are double or triple” what they were pre-pandemic, said Hitachi Energy’s Wolken. “Transmission scale unit lead times are now three years to six years, with specialized transformers taking the longest time,” he added.

Continuing load growth, aging system infrastructure and worsening extreme weather events are driving the need for transformers, manufacturers and analysts say.

Extreme weather events like hurricanes and wildfires impose further distribution system transformer losses. Replacement needs exceed utility inventories to meet everyday failures and new customer demands.

Following hurricanes Helene and Milton, Duke Energy needed to replace about 16,000 transformers. That is more transformers than other utilities require in a year, WoodMac’s Boucher said.

The rebuilding in Los Angeles has not really begun, according to city officials. As of February 2, Southern California Edison crew members, contractors, and mutual-assistance partners have installed nearly 400 transformers in the Eaton and Palisades wildfire areas, Jeffrey Monford, the utility’s spokesperson, reported.

The U.S. system had 60 million to 80 million distribution transformers in late 2024, and the 2050 need “could increase by up to 260% compared to 2021 levels,” NREL reported. About 55% of residential transformers are near the end of their lives, with many now more than 40 years old, the lab said. Continuing load growth, aging system infrastructure and worsening extreme weather events are driving the need for transformers, manufacturers and analysts say.

Mystery History Questions

Presented by Jack Feldman

(1890s) – View looking north along Figueroa Street, showing a prominent water ditch (zanja) running parallel to the property line. Today, the castle-like Stimson House at 2421 South Figueroa Street (seen in upper-left) still stands, along with visible remnants of the zanja.

The zanja system was the original water supply for Los Angeles, with its roots tracing back to the city's founding in 1781. The first zanja, known as the Zanja Madre (Mother Ditch), was an earthen channel that diverted water from the Los Angeles River to the nascent pueblo. Over time, this system expanded significantly, reaching its peak with 52 miles of zanjas irrigating nearly 7,000 acres within city limits by the 1880s.

The era of the zanjas came to an end in 1904 when William Mulholland, who had overseen both the zanja and piped water systems, officially closed the open-ditch network. This decision marked a significant shift in Los Angeles' water management, fully embracing the modern piped system.

(See Questions on Next Page)

What was a significant challenge faced by the zanja system as Los Angeles grew in the late 1800s?

A) The zanjas became clogged with sediment, leading to a severe water shortage.

B) Open trenches were prone to contamination from public dumping and pollution, raising health concerns.

C) The zanja system was unable to reach new developments, causing delays in construction projects.

D) The system was overwhelmed by rapid population growth, and local officials were unable to find a solution.

Why did William Mulholland decide to shut down the zanja system in 1904, and what impact did this decision have on Los Angeles' water infrastructure?

A) The zanjas were permanently damaged in an earthquake, forcing the city to rely solely on piped water.

B) The system became too expensive to maintain, and Mulholland wanted to shift all water into pressurized mains for efficiency.

C) The city banned open water sources due to a cholera outbreak, making the transition to pipes necessary for public health.

D) The Zanjas were abandoned after the Los Angeles Aqueduct was completed, making them obsolete.

Answers on page 23, OR

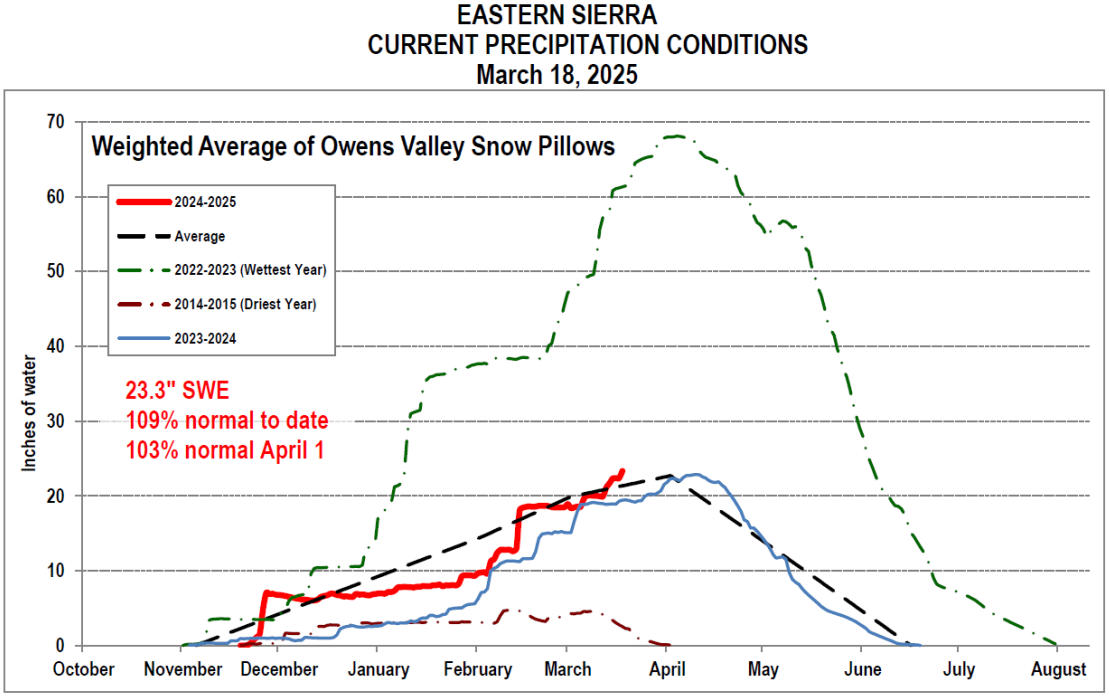
Click HERE, OR go to our website:

https://waterandpower.org/Museum2/Zanjas.html

Water Supply for 2025

By Jerry Gewe

Los Angeles and Southern California will have an adequate supply of water for 2025. The snowpack in the eastern Sierras is slightly above normal for this time of year. (See graph of the Weighted Average of Owens Valley Snow Pillows). The runoff from the eastern Sierra will make up a substantial portion of LADWP's supply from this lower cost water. While the eastern Sierra water supply will be near normal, water supplies available from northern California will be substantially above normal, due to this winter's atmospheric rivers. This will provide a surplus that can be stored in the Northern California Reservoirs for future years. Storage in the Colorado River System, which provides a significant portion of MWD's water supplies is currently at about 45% of capacity. While this is enough capacity to meet the current needs of Southern California, due to the large volume of storage in the Colorado River System, a long-term reallocation of the supplies from this system is required. The many states using water from the Colorado River are currently in serious negotiations over this, however, if they are unable to reach agreement it may end up in lengthy litigation.



Water and Power Associates Annual Meeting

By Jerry Gewe

On Saturday, February 8, 2025, The Water & Power Associates held their annual meeting in the Conference Center of the JFB.

During the meeting the minutes from last year were approved, and the treasurer's and membership reports for 2024 were received. We have a balance of $20,289 which is essentially the same as last year's balance. Our membership has increased from 121 to 154.

New Directors were elected. The following is a full list of our Directors:

2025 – 2027 Term
Phyllis Currie, Gerald "Jerry" Gewe, William Barlak, Paul Schultz, Don Sievertson, Jack Humphreville, Marty Adams, Winifried Yancy

2024 – 2026 Term
Bill Engels, Jack Feldman, Bill Glauz, Larry Kerrigan, James McDaniel, Scott Munson, Robert Yoshimura, Saif Mogri

2023 – 2025 Term
George Higgins, Julie Spacht, Rod Fishburn, Walter Zeisl, Susan Rowghani, Razmik Manoukian, Ken Silver, Jack Waizenegger

There was a discussion on the important issues that are likely to be addressed in the next year, the priorities of the WPA for the next year, and how to best educate policy makers regarding water and energy issues.

There was an excellent presentation by Justin Sarris, Assistant Director of Information Technology (IT), on Measures and programs that IT has developed to assist in rebuilding DWP's infrastructure in Pacific Palisades.

This was followed by a discussion regarding the performance of the LADWP water and electrical facilities during the fire and limitations of the systems to perform under the extreme conditions encountered in this area wide event.

GUEST SPEAKERS

Summaries by Robert Yoshimura

GUESTS OF THE MONTH
MARCH 2025

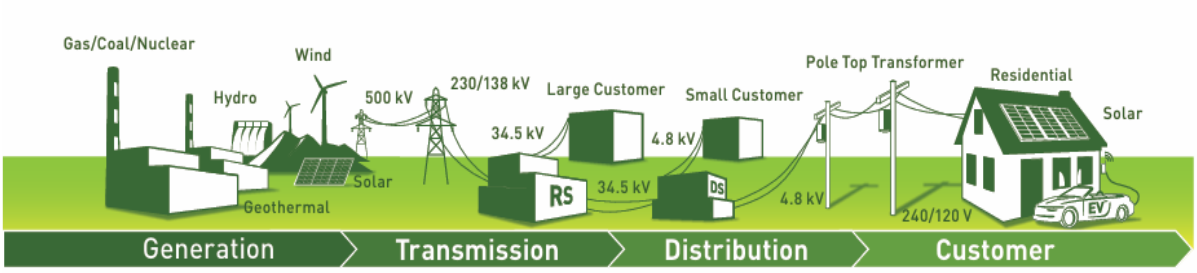
Haik Movsesian – Supervisor of Distribution Planning - LADWP

Update on Planned Power System Distribution System Upgrades

Haik Movsesian's presentation on LADWP's plans for distribution system upgrades needed to accommodate the anticipated growth in demand focused primarily on forecasting future demands and determining the impact of those demands on distribution system capacity. Such forecasting is a currently ongoing exercise intended to define future infrastructure needs and operating strategies for inclusion in the Strategic Long Term Resources Plan which in turn is intended to assure a reliable power distribution system in the future.

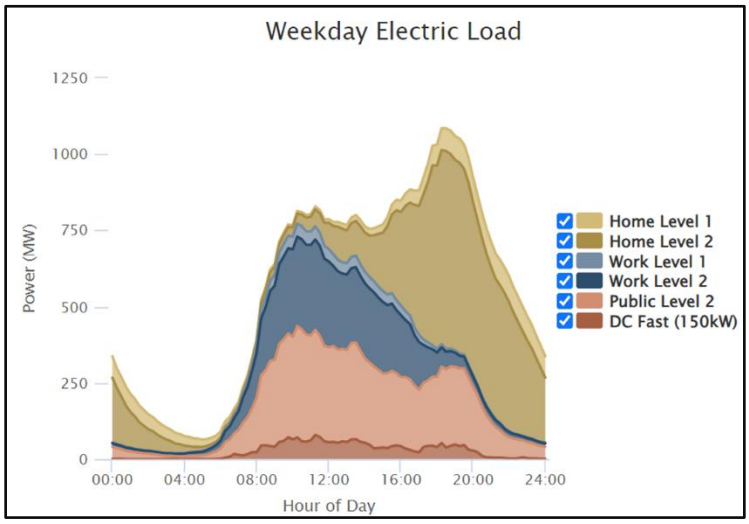
The power distribution system is the last part of the power system network of facilities needed to provide power to the customer. The process begins with generation from gas/coal/nuclear-fueled thermal power plants, hydroelectric generation, wind turbines, geothermal facilities, and solar power generation facilities. Such power is delivered at high voltages (approximately 138 to 500 kV or more) via the power transmission system to Receiving Stations (RCs). The RCs reduce voltage to 34.5 kV and deliver that power either directly to large customers (greater than 300 kW of demand) or to one of many Distribution Stations (DSs) located within Los Angeles. The DSs further reduce voltage to 4.8 kV and deliver that power to small industrial/commercial customers or to pole-top transformers for distribution to residential customers at 240/120 V.

The current distribution system consists of 20 RSs, 532 circuits carrying 34.5 kV power, 126 DSs, and 1617 circuits carrying 4.8 kV power. A significant challenge in forecasting future capacity is the need to analyze the impacts on each of these facilities 20 years into the future for several different demand scenarios. Additionally, distribution load forecasting is



complicated by the large number of factors (load modifiers) that affect load growth such as climate, building growth rate, new interconnections, and electrification of cars, trucks, and buildings. It is further complicated by the need to consider factors that reduce load such as roof-top solar, energy storage, and energy conservation strategies.

Building growth rate is determined from recent data which shows residential growth of between zero and one percent per year. Energy use growth is then calculated from that data and used to determine building growth effect on energy demand. Major electrification loads from large facilities such as LAX, the Port of LA, Hyperion Water Reclamation Plant, Data Centers, and Metro are estimated using data from the responsible agencies.



Light duty EV (cars) growth rates are estimated from Department of Motor Vehicles data and predicts that the number of electric cars in Los Angeles will increase from 200,000 today to 1.4 million in 2035. Data from the National Renewable Energy Laboratory is then used to determine the additional energy demand resulting from charging those cars (see adjacent figure for 2035). Subsequently, the location and number of public charging stations is estimated based on the locations of apartments where residents are less likely to charge their vehicles at home. Electric vehicles are the single most significant load modifier in these studies.

Heavy duty EVs (trucks) are not expected to grow as quickly as cars until after 2035 but will have an impact on load at that time. The existing movements of trucks are tracked to identify likely locations where they will be charged to determine the need for distribution station and feeder line upgrades. The location and growth of roof-top solar installations are also estimated to determine load reduction impacts throughout the city.

The impacts of all the load modifiers are used to determine the net load on the distribution system in each of the next 20 years. Four scenarios are used to determine load growth under varying assumptions. A “best guess” baseline scenario is supplemented by three likely outcomes including Low (fewer EVs than expected plus more solar than expected), High (More EVs than expected), and High Managed (load shifting applied to time and location of EV charging in High scenario). The High Managed scenario results in a significantly lower peak load than either the baseline or the High scenarios and presents an optimistic strategy for the future.

Recommendations from this study are as follows:

1. Equitably prioritize and address distribution system needs to maintain reliability while supporting future electrification demands.
2. Optimize residential EV charging through strategic rate design and tailored charging programs.
3. Modernize and automate the grid to accommodate higher penetration of Distributed Energy Resources.
4. Pair solar and storage to better align with the shifting distribution system peak.
5. Expand customer programs to address location-specific distribution system challenges.

Jonathan Leung, Director of Water Quality - LADWP

Post-Wildfire Restoration of Drinking Water Quality in the Palisades

Jonathan Leung began the presentation by handing out copies of the "Do Not Drink" notice that was originally issued on January 10, 2025, to customers in the Pacific Palisades neighborhood of Los Angeles during the devastating wildfire that engulfed the area. The notice further cautions customers to limit the use of hot water including hot showers and baths, to air dry laundry, and not to use the steam dry cycle when using an automatic dishwasher. These precautions aim to reduce the vaporization of volatile organic compounds (VOCs) in the water, which may pose an inhalation hazard.

The notice is required by public health regulations under AB 541, enacted in 2023, based on lessons from previous wildfires that impacted urban areas, including the Paradise and Santa Rosa fires in California. The regulations are enforced by the Division of Drinking Water (DDW) and triggered by wildfire events greater than 300 acres where a structure or structures connected to the public water system have been damaged. In such cases, the water utility is required to test the water for benzene, and if found, the utility is further required to adhere to a restoration protocol that involves multiple steps as follows:

1. Issue notice
2. Restore system pressure
3. Confirm water quality at treatment plant
4. Assess damage and plan
5. Clean out pipes
6. Stagnate sample and perform water quality testing
7. Obtain lab results
8. Submit results to regulator
9. Lift "Do Not Drink" notice

Benzene is a toxic volatile compound found in plastics that can be released when plastic pipe and other plastic fixtures are melted or otherwise damaged by fire. When such plastics exist in the plumbing of fire-damaged homes, a concurrent loss of system pressure can result in the siphoning of contaminated water from the homes back into the municipal water system. In addition to benzene, LADWP tested for a total of 72 regulated VOCs on each sample collected. A total of more than 470 samples were tested during the course of this event. Challenges associated with the sampling program were the requirement to stagnate the sample in-place for 3 days before collection and testing and the need to fabricate plumbing fixtures to enable water meters to be temporarily replaced by sample taps. The stagnation requirement was intended to determine if benzene was leaching from PVC pipe in the distribution system. However, LADWP does not use PVC pipe anywhere in its distribution system, thus the requirement is moot.

Once the pressure was restored to the distribution system, LADWP began a systematic program of main flushing and testing within the affected area starting at the highest elevations and working downward in the general direction of the flow of water. The water sampling protocol called for additional flushing and testing whenever benzene was detected in a given sample. This protocol resulted in a few instances of repeated flushing and expanded sample testing until all contamination was flushed out. By the end of February, initial water testing of

the entire area revealed several positive samples requiring additional work, and that no positives were found in a large area at the east end of the community. Consequently, a partial cancellation of the “Do Not Drink” order was issued on February 27, 2025. On March 7, 2025, the DDW deemed that water quality had been restored and approved the cancellation of the “Do Not Drink” notice for the rest of the Palisades.

To inform the public about this crisis, LADWP developed a comprehensive public notification and outreach plan. Elements of the plan include revised “Do Not Drink” and Cancellation notices; doorhangers for lifted areas; public information on the LADWP,com website; calls, emails, and texts to subscribed customers; Call Center staff briefings; and community meetings. The LADWP website incorporated a unique feature that enabled customers to input their addresses and track the status of this water quality restoration effort in their service zones.

The restoration of water quality in less than two months after such a severe wildfire was a significant accomplishment. Lessons learned from this event will be documented and some will be applied to scientific research to answer questions that popped up during this hectic time.

Mystery History Answers

What was a significant challenge faced by the zanja system as Los Angeles grew in the 1880s?

Answer: B – Open trenches were prone to contamination from public dumping and pollution, raising health concerns.

Why did William Mulholland decide to shut down the zanja system in 1904, and what impact did this decision have on Los Angeles’ water infrastructure?

Answer: B – The system became too expensive to maintain, and Mulholland wanted to shift all water into pressurized mains for efficiency.

More background on Los Angeles’ early zanja system HERE.

https://waterandpower.org/Museum2/Zanjas.html

SAVE THE DATE

2025 CALENDAR

GUEST OF THE MONTH

Meetings in Person Room 1471, JFB and Via Zoom, Check your WPA Emails for the Zoom Link

GREG REED **DIRECTOR, WATER ENGR & TECHNICAL SVCS, LADWP**	**APRIL 9, 2025** **The State of the Water System**
JASON RONDOU **CHIEF OF STAFF, POWER LADWP**	**MAY 14, 2025** **Power Supply Outlook for 2025**
TO BE DETERMINED	**JUNE 11, 2025** **Outreach Activities for WPA**
TO BE DETERMINED	**JULY 9, 2025** **LA 100 Plan Update**

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