Los Angeles Department of Water & Power
BUILDING A STRONGER L.A.

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September 10, 2026

The Honorable City Council
Office of the City Clerk
Room 395, City Hall
Mail Stop 160

Attention: Councilmember Adrin Nazarian
Chairperson, Energy and Environment Committee

Council File No. 25-0006-S26 – Response to City Council Motion Regarding Power Outages

Summary

This report provides an overview of the Los Angeles Department of Water and Power's (LADWP) Power System, a more in-depth analysis of the distribution system where most power outages occur, and the contingencies in place to mitigate outages on the distribution system.

Recommendation

That the City Council RECEIVE AND FILE this report.

Background

Motion CF 25-0006-S26 (Nazarian) requests that LADWP report on why certain areas of the City are more susceptible to power outages compared to others, what factors contributed to the disproportionate impact of outages around the City, and what contingencies the Department has to address these impacts.

KEY FINDINGS & ANALYSIS

Power System Overview:

LADWP's Power System consists of the following components:

- **Generation System** is responsible for the generation of electricity using various sources of energy, such as solar, wind, hydro, and thermal.

- **Transmission System** is responsible for the bulk movement of electricity from power plants to electrical substations. The Transmission System operates at very high voltages (500kV, 230kV, and 138kV).

- **Distribution System** is responsible for the final stage of electricity delivery to customers. Electricity is stepped down to lower voltages (34.5kV and 4.8kV) for consumption.

When customers experience power outages, they are almost always due to issues on the distribution system. These issues account for nearly 99% of all power outages and more than 90% of the total customer minutes of interruption.

Power Distribution System:

The power distribution system is the largest component of the Power System. LADWP's power distribution system is 65% overhead and 35% underground by length and serves 1.5 million customers. Key components include:

- **Overhead Distribution Lines** and **Underground Distribution Cables** that carry electricity from electrical substations to customers.

- **Distribution Transformers** that step down voltages to levels usable by customers.

- **Distribution Utility Poles and Crossarms** that carry overhead electrical infrastructure such as distribution lines, switches, and transformers.

- **Distribution Substructures** that contain underground electrical infrastructure such as distribution cables, switches, and transformers.

Different areas of the city will have a mix of overhead and underground power distribution infrastructure. <u>They each have their advantages and disadvantages and are susceptible to different types of outage causes and weather conditions:</u>

- **Overhead Distribution Systems** are easier for crews to locate issues and work on. While they generally experience more outages, they also have shorter outage restoration times. The most common types of issues affecting overhead distribution systems include

contact from vegetation and mylar balloons, vehicle collision, animals, high winds, and equipment failure.

- **Underground Distribution Systems** are shielded from many of the external factors that affect overhead distribution systems. However, they are much more difficult for crews to locate issues and work on. In general, they will have fewer outages but at the expense of longer restoration times. The most common types of issues affecting underground distribution systems include equipment failure and rain that floods distribution substructures.

Power Outage Susceptibility During Weather Events:

Power outage susceptibility of different areas of the City will largely be dictated by the type of distribution system in that area. Overhead and underground distribution systems are susceptible to different types of weather events:

- **Windstorms** affect the overhead distribution system, as high winds can cause loose debris and vegetation to fall and make contact with overhead distribution lines. Large branches can break, or trees can be uprooted entirely and fall onto overhead distribution lines. This increases outage restoration times as the fallen vegetation must be removed before electrical restoration work can begin.

- **Rainstorms** lead to outages with longer durations on the underground distribution system. Distribution substructures can become flooded and cause equipment to be submerged for long durations, which can ultimately lead to failure. Before crews can enter distribution substructures to perform restoration work, water in the substructures must be pumped out, further increasing restoration time. This is particularly difficult in multi-day rain events where the crews' access to substructures is limited.

- **Heat storms** affect both overhead and underground distribution systems. Smaller overhead distribution transformers and underground distribution equipment can become overloaded for prolonged durations and fail.

ONGOING AND FUTURE ACTIONS

Regardless of whether the distribution system in an area of the City is overhead or underground, it is impossible to prevent all outages. However, LADWP has

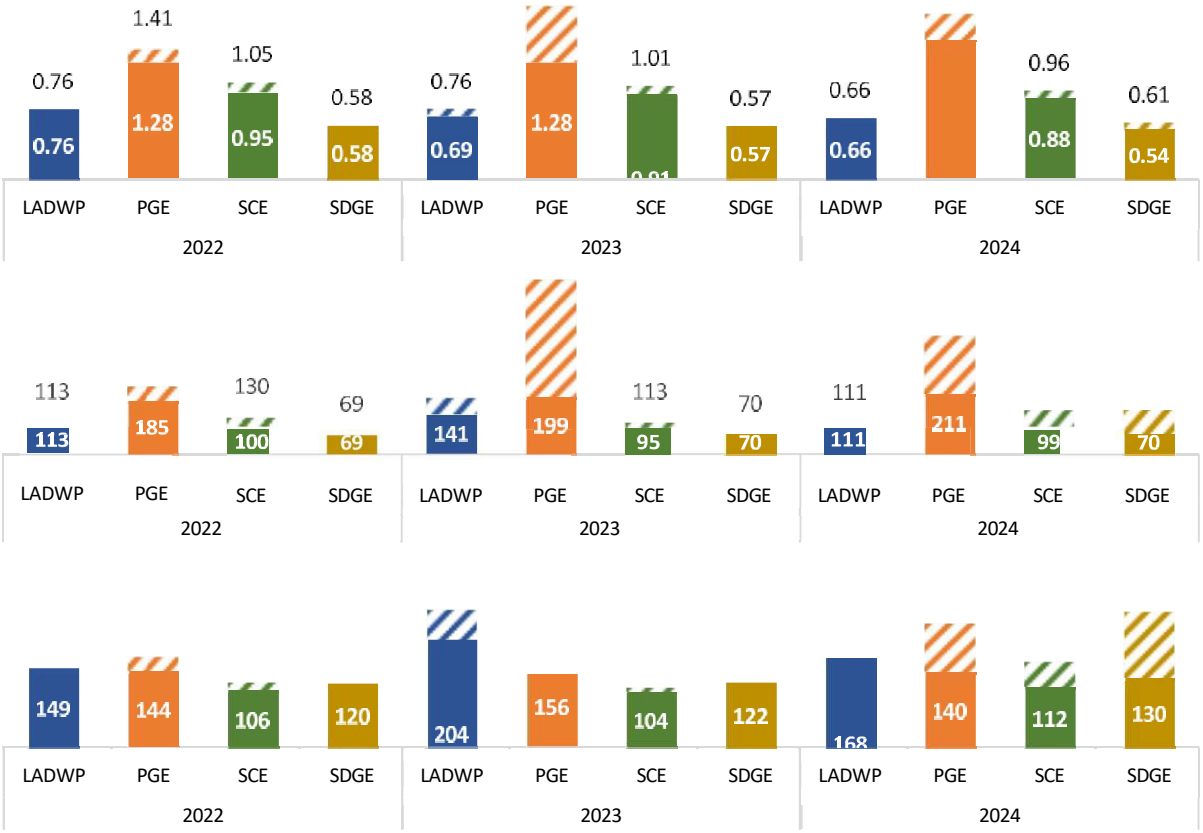
multiple programs and plans in place to mitigate the impacts and reduce the likelihood of widespread outages during extreme weather events:

- **Power System Reliability Program (PSRP)** is LADWP's infrastructure replacement program. Overhead and underground distribution equipment at risk of failure are identified and targeted for replacement.

  LADWP uses industry standard power distribution reliability indices to monitor and assure reliability: System Average Interruption Frequency Index (SAIFI) measures the average number of power interruptions per year for all customers, System Average Interruption Duration Index (SAIDI) measures the average total minutes of power interruption per year for all customers, and Customer Average Interruption Duration Index (CAIDI) measures the average outage restoration time in minutes.

  LADWP's reliability performance has consistently been comparable to that of California's investor-owned utilities (IOUs), which are more similar in size to LADWP than other publicly owned utilities in the state. The figures below compare the 2022 to 2024 reliability performance of Pacific Gas and Electric Company, Southern California Edison, San Diego Gas & Electric, and LADWP using the most recent publicly available IOU reliability data. For all indices, lower values indicate better reliability performance. The figures present reliability metrics both including and excluding Major Event Days (MEDs)—rare, high- impact events during which the power grid experiences an unusually high number or duration of outages due to extreme conditions. MEDs can significantly skew reliability metrics and are analyzed separately from normal operating conditions. LADWP did not experience any MEDs in 2022 and 2024. The 2023 MED occurred in February and was due to heavy rainfall and widespread flooding.

  Reliability indices, along with asset inspections and design life, are used to establish asset replacement targets. 1,611 distribution transformers, 10,642 crossarms, 18 substructures replacement/repairs, and 60 miles of underground distribution cable were replaced in FY 24-25.



2022 to 2024 Reliability Performance of LADWP vs. California IOUs

- **Storm Readiness (Heat, Rain, Wind Event):** LADWP has a robust Electric Trouble Section that provides 24/7 year-around coverage for its customers. Electric Trouble management tracks upcoming weather forecasts and will preemptively schedule crews for midnight shifts. When the workload increases due to the storm event, Electric Trouble calls upon our Distribution Construction and Vegetation Management crews to assist in restoration work. If needed, additional contract crews may be utilized to further reduce outage durations and expedite restoration.

  Summer Readiness: LADWP prepares for the summer months by focusing repair and maintenance efforts on abnormal, overloaded, and underperforming distribution circuits. Generation units undergo inspections and repairs from October through June to ensure they are fully available for peak summer demand. Vegetation management along power transmission and distribution rights-of-way are prioritized, scheduled, and completed in a timely manner. Aged and overloaded distribution transformers are targeted for

replacement. Power distribution circuits and facilities serving the City's cooling centers are patrolled, inspected, and maintained to ensure reliable operation during the summer months. Sub-transmission and distribution system underground circuit upgrades are prioritized and worked on to improve power reliability. LADWP Power Transmission and Distribution personnel, tasked with ensuring safe and reliable power delivery to all customers, are also regularly trained to work under challenging conditions including heat illness prevention, wildfire, and red flag warning response.

- **Wildfire Mitigation Plan:** LADWP's Wildfire Mitigation Plan includes preventative strategies and programs which, in addition to wildfire risk mitigation, have an added benefit of reducing the likelihood of an outage on hardened system components. System hardening is achieved through targeted programs that augment our already stringent design and construction standards, vegetation management, operating protocols, and inspection and maintenance programs.

PROJECTS

LADWP has partnered with the Los Angeles World Airport (LAWA) on the design and construction of a new Receiving Station X (RS-X) to meet load growth, reliability, power quality, and resiliency. This is a project that both agencies initiated to address power disturbances and interruptions in addition to load growth. The project has reached substantial completion with 90%+ circuits on the new RS-X circuits powering critical operational loads and already seeing positive reliability results. RS-X is the first high-voltage receiving station built in the City of LA in over 30 years.

LADWP has also partnered with the Port of Los Angeles (POLA) to support their Clean Air Action Plan and improve reliability, power quality, and meet load growth. POLA is expected to increase electrical demand by approximately 200 MW above the current 80 MW baseline. POLA, Marine Terminal Operators (MTOs), and LADWP worked together late-2024 through early-2026, on a study by the Electric Power Research Institute on: Collaborative Enhancement of Power Quality and Reliability for Electrified Cargo Handling at the Port of Los Angeles. The study provided recommendations on improving power quality and reliability. LADWP, POLA, and MTOs are currently working together on implementing recommendations. In addition, LADWP is working on designs to meet POLA's clean air initiative that includes electric infrastructure and designs for improving power quality and reliability to mitigate power disturbances and

interruptions.

These are some projects LADWP is working on to mitigate power disturbances and interruptions throughout the City. In addition, LADWP works with other customers and communities to improve reliability through the PSRP.

POWER ASSET MANAGEMENT OFFICE

LADWP established the Power Asset Management Office (PAMO) to improve long-term planning, prioritization, and decision-making for the Power System. PAMO is working to integrate asset condition, outage history, reliability performance, and operational risk data to help identify and prioritize infrastructure investments that improve reliability, resiliency, safety, and power quality for customers throughout the City. PAMO also supports coordination across engineering, operations, maintenance, and construction groups to better align infrastructure replacement, grid modernization, wildfire mitigation, and electrification efforts. As electrical demand, extreme weather events, and infrastructure needs continue to increase, PAMO helps ensure LADWP is making data-driven, risk- informed investments to support reliable electric service and long-term system resiliency.

CONCLUSION

While LADWP's Power System consists of the generation, transmission, and distribution systems, almost all power outages occur on the distribution system. Overhead and underground power distribution systems each have their strengths and weaknesses, and power outage susceptibility during weather events is largely dictated by the type of distribution system and the nature of the weather event. LADWP has partnered with LAWA, POLA, and other customers and communities to improve reliability. In addition, LADWP's new PAMO is working on improving reliability and power quality through risk informed decisions, reliability analysis, among other areas LADWP is committed to providing excellent customer service and continuing to improve power reliability for customers in all areas of the City via various programs and plans including the PSRP, Storm Readiness, Summer Readiness, and Wildfire Mitigation Plan.

FISCAL IMPACT

Receiving and filing this report has no fiscal impact.

Prepared by: Power System Management.

Reviewed by: Scott Hirsashima

Respectfully,

David Hanson (Sep 14, 2026 09:44:41 PDT)

David Hanson
Interim General Manager

Cc: Hon. Katy Yaroslavsky
Hon. Ysabel Jurado
Hon. Nithya Raman
Hon. Imelda Padilla