March 5, 2018

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

Attention: Councilmember Nury Martinez
Chair – Energy, Climate Change, and Environmental Justice Committee

Honorable Members:

Subject: Council File Nos. 17-0971 and 17-0971-S1 (Bonin-Koretz-Blumenfield)
Power Reliability at Los Angeles International Airport

This correspondence is in response to both the August 25, 2017 (Council File No. 17-0971) and August 29, 2017 (Council File No. 17-0971-S1) Energy, Climate Change, and Environmental Justice (ECCEJ) Committee motions requesting the Los Angeles Department of Water and Power (LADWP) to (1) report on the current and future power demands of the Los Angeles International Airport (LAX), (2) report on the power reliability issues and outages at LAX, and (3) report on the ways in which LADWP proposes to reduce the likelihood of future power outages.

Note: Under separate transmittal, the Los Angeles World Airports (LAWA) will provide a joint response to the January 17, 2018, motion by the Trade, Travel and Tourism Committee, Council File No. 17-0971-S2 (Bonin-Wesson) requesting LADWP and LAWA to provide an action plan with implementation timelines for infrastructure upgrades to ensure that LAX has adequate power capacity to prevent intermittent power failures and has power redundancy to ensure incidents like those experienced in Hartsfield-Jackson Atlanta International Airport do not occur at LAX.

Response

LAX is a high-profile premier customer of LADWP and as such, power reliability at LAX is a major priority and concern to LADWP.

Improving power reliability at LAX will require a concerted effort and coordination by both LADWP and LAWA. LADWP's responsibility will focus on the distribution, operation, contingency schemes, and quality of electrical power delivered to both on and off-campus facilities, while LAWA's responsibility will primarily be on the integrity of all behind-the-meter facility equipment, switchgear, and control systems that are designed to ride through typical anomalies that may occur within the LAX power system. It is understood that some power quality issues are inherent to the power system and cannot be avoided. However, LADWP is committed to minimize the number of power reliability incidents at LAX by dedicating significant resources and implementing preventative actions. To that end, LADWP has embarked on several plans of action to address reliability-related concerns.

Report on Current and Future Power Demands at LAX

LADWP has sufficient capacity to meet the existing LAX loads (currently around 60-MegaVolt-Amperes [MVA] peak). LADWP also has the capacity to meet the planned LAX increase load of 120-MVA by 2024 for ongoing airport projects.

Report on Power Reliability Issues and Outages at LAX

LADWP reviewed LAWA's recorded facility system disturbances from November 2012 through June 2016 and correlated such data to LADWP's system outages. It should be noted that LAWA's disturbances do not necessarily equate to power outages as recorded by LADWP. LAWA disturbances may also include voltage dips and momentary interruptions which does not meet the utility-industry definition of outage. Out of the 83 disturbances recorded by LAWA, LADWP has found the following:

- 47 – LADWP facilities -- approximately 12 per year
- 28 – incidents within LAWA's facilities
- 8 – undetermined causes and not reported to LADWP

The 47 outages that adversely impacted LAWA's operations were analyzed and the results are as follows:

- 9 – trees or balloons touching energized lines
- 8 – birds or rodents creating short circuits
- 2 – lighting and flooding respectively
- 28 – other system-related causes

Existing LADWP power reliability and quality metrics and history, though not ideal, do not portend a catastrophic power outage for LAX. LAX does on occasion suffer from either a partial power outage or a momentary power anomaly which does require resetting of critical LAX equipment (such as elevators, walkways, escalators, baggage handling equipment, security equipment, and computers).

Though these partial power outages and momentary power anomalies disrupt LAX operations, they have to date never completely shut down LAX. Many of the power anomalies can be addressed by hardening LAX's facilities electrical systems by utilizing Uninterruptable Power Supplies (UPS) on critical control systems, and implementing a maintenance program that will ensure its proper operation.

LADWP's Power System reliability has consistently placed in the top quartile of the electric utility industry. Reliability is measured in terms of the following metrics.

- System Average Interruption Duration Index (SAIDI) - the average duration of service interruptions per customer during the year. In general, SAIDI is a reflection on the efficiencies of restoring electric service following an interruption. Time to respond, time to repair and speed of notification are part of the different components of SAIDI.
- System Average Interruption Frequency Index (SAIFI) - the average number of service interruptions over five minutes per customer during the year. In general, SAIFI is a reflection on the effectiveness of preventive maintenance on the system to prevent interruptions from occurring in the first place.

Below is a table comparing the overall performance of LADWP to other large California utilities on the various factors. The lower the number, the better the utility is performing. LADWP's target for SAIFI is 0.68 and for SAIDI, it is 85.0.

	SAIFI*				SAIDI*			
YEAR	LADWP	PG&E	SCE	SDG&E	LADWP	PG&E	SCE	SDG&E
2012	0.55	0.96	0.88	0.51	70.81	120.10	105.58	63.32
2013	0.45	0.87	0.86	0.45	64.21	100.10	94.33	54.75
2014	0.65	0.93	0.94	0.61	77.69	119.70	111.08	74.73
2015	0.74	0.80	0.88	0.53	92.10	99.40	111.87	57.90
2016	0.68	0.90	1.05	0.65	82.77	95.40	129.32	83.93

*These numbers exclude major events per industry standards.

Below are tables specific to LAX for the same factors. These factors look good for the SAIDI and SAIFI numbers.

LAX Circuits SAIDI

CIRCUITS	2012	2013	2014	2015	2016	2017
4.8-KV	91.99	10.57	89.77	363.68	24.01	7.11
34.5-KV	22.31	21.88	7.78	0.00	9.16	0.00

LAX Circuits SAIFI

CIRCUITS	2012	2013	2014	2015	2016	2017
4.8-KV	1.26	0.07	0.56	1.22	0.10	0.71
34.5-KV	1.01	0.13	0.07	0.00	0.09	0.00

LADWP Proposes to Reduce the Likelihood of Further Related Power Outages

Open Lines of Communication

LADWP has assigned a dedicated account advisor to act as the primary point-of-contact for all LAWA-related inquiries. In addition, representatives from LADWP meet with several groups from LAWA on a bi-weekly basis. These meetings are held to discuss power reliability, coordination of major projects in design or construction, and maintenance of on-campus power facilities. Further, LADWP's and LAWA's management meet once a month to resolve project management issues and to review and share future plans and developments.

In light of its critical operations and importance to the City of Los Angeles and the Southern California region, LAWA is one of the very few LADWP customers that has direct communication with LADWP's bulk power Energy Control Center (ECC) in case of any planned and unplanned outages. LAWA is also enrolled in LADWP's Outage Notification Program available exclusively to premier key customers. Furthermore, LADWP has created a line of communication document for LAWA. The document is housed at the Airport Response Coordination Center (ARCC) and it governs and directs the flow of communication between LAWA, LADWP's ECC, and LAWA's ARCC.

Planning and Reliability Improvement

LADWP's distribution planning, engineering, construction, and maintenance forces have taken major steps towards addressing reliability issues at LAX including improved system planning, fault or short-circuit investigations, dedicated maintenance support, and transformer and cable replacements. Problem areas are addressed immediately.

New Receiving Station

LADWP and LAWA's management are in the process of negotiating a new Memorandum of Understanding (MOU) for power reliability which includes a new Receiving Station and establishing a policy requiring all new electrical construction on LAX's campus be designed as an underground system to improve reliability. The estimated expenditures for this new station and undergrounding all circuits is approximately $120 million. This MOU is scheduled to be executed in March 2018.

Independent Expert Verification

LADWP is currently collaborating with LAWA and the Electric Power Research Institute (EPRI), as an independent power quality organization, to evaluate mission critical equipment at LAX and provide reliability enhancement recommendations to both LAWA

and LADWP. EPRI is also tasked with providing an Area Vulnerability Study to ensure the effectiveness of the newly proposed Receiving Station for LAX.

In addition, an independent power reliability expert from Electric Power and Energy Consulting (EPEC) has been contracted to review LADWP's plan for improving power reliability at LAX and to provide further recommendations. EPEC is preparing a report comparing outages at LAX to other major national airports such as Hartsfield-Jackson Atlanta International Airport, Oakland International Airport, San Francisco International Airport, and John F. Kennedy International Airport. LADWP will review the findings and recommendations from EPEC and make system modifications/improvements where appropriate.

Conclusion

As part of its commitment to improve the quality of service and reduction of outages at LAX, LADWP will continue to focus on enhancing current practices, implementing new action plans, achieving better reliability metrics/goals, applying preventive maintenance methodologies and techniques, conducting independent verification of its actions and practices, and communicating and coordinating efforts with LAWA's staff and management.

If you have any questions or if additional information is required, please contact me at (213) 367-1338, or you may have a member of your staff contact Ms. Winifred J. Yancy, Director of Legislative and Intergovernmental Affairs, at (213) 367-0025.

Sincerely,

David H. Wright
General Manager

ECH:ps
c: Councilmember Paul Koretz, Vice Chair, ECCEJ Committee
Councilmember Paul Krekorian, Member, ECCEJ Committee
Councilmember Gilbert A. Cedillo, Member, ECCEJ Committee
Councilmember Mitch O'Farrell, Member, ECCEJ Committee
Councilmember Herb J. Wesson, Jr., President, Tenth District
Councilmember Mike Bonin, Eleventh District
Ms. Zina Cheng, Legislative Assistant, ECCEJ Committee
Dr. Frederick H. Pickel, Office of Public Accountability
Board of Water and Power Commissioners
Ms. Winifred J. Yancy

ENERGY, CLIMATE CHANGE AND ENVIRONMENTAL JUSTICE

MOTION

Los Angeles International Airport (LAX) is the 2nd largest airport in the nation with annual passengers over 80 million this year. Its mission is to provide the highest level of service to its guests, tenants and customers including the traveling public.

LAX's premiere location in Southern California, just off the coast, contributes to it experiencing summer seasons of high heat and humidity and winters that can produce windy and cold temperatures. In 2015, the airport completed construction of its Central Utility Plant (CUP), a state-of-the art facility that produces energy-efficient cooling, heating and electrical power for LAX that provides a comfortable climate-controlled environment inside the terminals. The CUP generates its own electricity for operations in the various structures located in the Central Terminal Area (CTA), and results in an estimated $2 million in rebates from the L.A. Department of Water and Power (DWP).

Despite this, LAX relies on and is a customer of the DWP and often times, DWP customers, including LAX, experience power outages. Even brief outages can be disruptive and dangerous, posing risks to traffic and disrupting work and business. The danger is significantly increased when these outages occur at locations such as LAX, which can result in traffic delays inside the CTA, a glitch in security checkpoint electronic systems, delays of the baggage conveyer belt systems and even delay some flights, all contributing to a slowdown in airport operations and disruptions to airport guests. It is imperative that the City do all that it can to preserve power reliability at LAX.

I THEREFORE MOVE that the City Council request the General Manager of the Department of Water and Power (DWP) and the Office of Public Accountability (OPA) report to Council on the power reliability issues and outages at the airport and the ways in which the Department proposes to reduce the likelihood of further -related power outages.

Presented by: _____
PAUL KORETZ
Councilmember, 5th District

Presented by: _____
MIKE BONIN
Councilmember, 11th District

Seconded by: _____

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ENERGY, CLIMATE CHANGE AND ENVIRONMENTAL JUSTICE

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LAX's premiere location in Southern California, just off the coast, contributes to it experiencing summer seasons of high heat and humidity and winters that can produce windy and cold temperatures. In 2015, the airport completed construction of its Central Utility Plant (CUP), a state-of-the art facility that produces energy-efficient cooling, heating and electrical power for LAX that provides a comfortable climate-controlled environment inside the terminals. The CUP generates its own electricity for operations in the various structures located in the Central Terminal Area (CTA), and results in an estimated $2 million in rebates from the L.A. Department of Water and Power (DWP).

Despite this, LAX relies on and is a customer of the DWP, but often times, DWP customers, including LAX, experience power outages. Between 2013 and 2016, LAX experienced 85 power outages. Outages, even brief, can be disruptive and dangerous, posing risks to traffic and disrupting work and business. The danger is significantly increased when these outages occur at locations such as LAX, which can result in traffic delays inside the CTA, affect security checkpoint electronic systems, delays of the baggage conveyer belt systems and even delay some flights, all significantly impacting airport operations and disrupting airport guests. To work on increasing power quality in an effort to reduce surges it is also imperative that the City and the DWP do all that it can to assist LAX on these issues by increasing power quality and reliability; in partnership with LAWA.

I THEREFORE MOVE that the City Council request the General Manager of the Department of Water and Power (DWP) and the Office of Public Accountability (OPA) report to Council within 30 days on the current and future power demands of LAX; the current and future power reliability issues and objectives at LAX; and the ways in which DWP is prioritizing and working with the airport to develop reliable power and mitigate current and future power outages.

PRESENTED BY: _____
Paul Koretz
Councilmember, 5th District

PRESENTED BY: _____
Mike Bonin
Councilmember, 11th District

SECONDED BY: _____

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