April 17, 2025

CALL AND NOTICE OF A REGULAR MEETING OF THE
LEGAL, GOVERNMENT AND ENVIRONMENTAL AFFAIRS COMMITTEE
OF THE
BURBANK-GLENDALE-PASADENA AIRPORT AUTHORITY

NOTICE is hereby given that a regular meeting of the Legal, Government and Environmental Affairs Committee will be held Monday, April 21, 2025, at 8:30 a.m., in the Burbank Room of Hollywood Burbank Airport, 2627 N. Hollywood Way, Burbank, California 91505.

In addition to attending the meeting in person, members of the public may observe the meeting telephonically and may offer comment in real time through the following number:

Dial In: (701) 802-5334
Access Code: 2451017#

Terri Williams, Board Secretary
Burbank-Glendale-Pasadena Airport Authority

REGULAR MEETING

OF THE

LEGAL, GOVERNMENT AND ENVIRONMENTAL AFFAIRS COMMITTEE

Burbank Room

Monday, April 21, 2025

8:30 a.m.

The public comment period is the opportunity for members of the public to address the Committee on agenda items and on airport-related non-agenda matters that are within the Committee's subject matter jurisdiction. At the discretion of the presiding officer, public comment on an agenda item may be presented when that item is reached.

Members of the public are requested to observe the following decorum when attending or participating in meetings of the Committee:

- ***Turn off cellular telephones and pagers.***
- ***Refrain from disorderly or boisterous conduct, including loud, threatening, profane, or abusive language, clapping, whistling, stamping, or other acts that disrupt or otherwise render unfeasible the orderly conduct of the meeting.***
- ***If you desire to address the Committee during the public comment period, fill out a speaker request card and present it to the Board Secretary.***
- ***Confine remarks to agenda items or to airport-related non-agenda matters that are within the Committee's subject matter jurisdiction.***
- ***Limit comments to three minutes or to such other period of time as may be specified by the presiding officer.***

The following activities are prohibited:

- ***Allocation of speaker time to another person.***
- ***Video presentations requiring use of Authority equipment.***

Any disclosable public records related to an open session item on a regular meeting agenda and distributed by the Authority to the Committee less than 72 hours prior to that meeting are available for public inspection at Hollywood Burbank Airport (2627 N. Hollywood Way, Burbank) in the administrative office during normal business hours.

In accordance with the Americans with Disabilities Act of 1990, if you require a disability-related modification or accommodation to attend or participate in this meeting, including auxiliary aids or services, please call the Board Secretary at (818) 840-8840 at least 48 hours prior to the meeting.

A G E N D A

Monday, April 21, 2025

1. Roll Call
2. Approval of Agenda
3. Public Comment
4. Approval of Minutes
   a. April 7, 2025 ***[See page 1]***
5. Items for Discussion
   a. Review of Power Supply Alternatives ***[See page 3]***

   Staff seeks a Legal, Government and Environmental Affairs Committee recommendation to the Commission to receive and file the enclosed report, prepared to explore power supply alternatives for the Airport campus to meet current and future electrification demands.
6. Items for Information
   a. Committee Pending Items ***[See page 21]***
7. Adjournment

MINUTES OF THE REGULAR MEETING OF THE LEGAL, GOVERNMENT AND ENVIRONMENTAL AFFAIRS COMMITTEE BURBANK-GLENDALE-PASADENA AIRPORT AUTHORITY

MONDAY, APRIL 7, 2025

A regular meeting of the Legal, Government and Environmental Affairs Committee was called to order on this date in the Burbank Room, 2627 N. Hollywood Way, Burbank, California, at 8:43 a.m., by Commissioner Najarian.

1. ROLL CALL

Present:	Commissioners Najarian and Gordo (arrived at 8:43 a.m.)
Absent:	Commissioner Gabel-Luddy
Also Present:	Staff: Kathy David, Senior Deputy Executive Director, Derrick Cheng, Assistant Manager, Business and Properties Authority Counsel: Terence Boga, Esq., Richards, Watson & Gershon

2. Approval of Agenda

Motion	Commissioner Gordo moved approval of the agenda; seconded by Commissioner Najarian.
Motion Approved	The motion was unanimously approved (2–0, 1 absent).

3. Public Comment — There were no public comments.

4. Approval of Minutes

a. March 17, 2025	A draft copy of the Committee meeting minutes of March 17, 2025, was included in the agenda packet for review and approval.
Motion	Commissioner Gordo moved approval of the minutes; seconded by Commissioner Najarian.
Motion Approved	The minutes were unanimously approved (2–0, 1 absent).

5. Items for Approval

a. Approval of Charging Station License Agreement – City of Burbank	Staff sought a Legal, Government and Environmental Affairs Committee ("Committee") recommendation to the Commission to approve the proposed Charging Station License Agreement ("Agreement") with the City of Burbank ("City") to replace an expired Right of Entry for Installation and Maintenance of Plug-in Electric Vehicle Charging Stations. The Agreement will give the City access to the Airport for maintenance of one vehicle DC

	Fast Charge Station until the Authority closes the Short-Term Parking Structure for demolition, which is anticipated to be in October 2026. Subject to the Committee's consideration, as the Burbank City Council has approved the proposed Agreement, this item was also placed on the Consent Calendar for the Commission's consideration at its meeting immediately following the Committee's meeting
Motion	Commissioner Gordo moved approval; seconded by Commissioner Najarian.
Motion Approved	The motion was approved (2–0, 1 absent).

6. Items for Information

a. Committee Pending Items	Staff informed the Committee of future pending items that will come to the Committee for review.

7. Adjournment — There being no further business to discuss, the meeting was adjourned at 8:49 a.m.

STAFF REPORT PRESENTED TO THE
BURBANK-GLENDALE-PASADENA AIRPORT AUTHORITY
LEGAL, GOVERNMENT AND ENVIRONMENTAL AFFAIRS COMMITTEE
APRIL 21, 2025

REVIEW OF POWER SUPPLY ALTERNATIVES

Presented by Aaron Galinis
Senior Airport Planner

SUMMARY

Staff seeks a Legal, Government and Environmental Affairs Committee ("Committee") recommendation to the Commission to receive and file the enclosed report, prepared to explore power supply alternatives for the Airport campus to meet current and future electrification demands.

BACKGROUND

At the request of the Commission, Staff engaged the services of Martin Adams, former General Manager and Chief Engineer of the Los Angeles Department of Water and Power ("LADWP"), for the purposes of providing a review of electric power supply options for the Airport.

Mr. Adams has nearly 40 years of experience with LADWP, including leadership as the Senior Assistant General Manager of Water, General Manager and Chief Engineer, and appointment by former President Biden to the National Infrastructure Advisory Council.

The report places a focus upon the significant increases to the Airport's electrical demand that will occur due to electrification of terminal modernization, enhanced amenities, increased electrified airport equipment, and a significant rise in the deployment and use of electric vehicle charging stations for self-parking and rental car customers against an evolving backdrop of rules, regulations, and efforts from peer organizations.

STUDY FINDINGS

The scenarios explored in the report include the use of Burbank Water & Power ("BWP") community substation, self-generation, installation of a fuel cell microgrid, and increased on-site solar generation. The evaluation concludes that the most robust path forward is through collaboration with BWP to construct a new substation and related facilities to meet future energy demands.

STAFF RECOMMENDATION

Staff seeks a Committee recommendation to the Commission to receive and file the report submitted to Airport Staff by Mr. Adams.

Attachments:
Exhibit A: Power Supply Alternatives Report
Exhibit B: Committee Presentation Slides

HOLLYWOOD BURBANK AIRPORT
REPLACEMENT PASSENGER TERMINAL PROJECT
REVIEW OF POWER SUPPLY ALTERNATIVES

MARTIN L. ADAMS – APRIL 2025

Summary and Opinion

This report is a review of electric power supply options for the Hollywood Burbank Airport (Airport), focused on the Replacement Passenger Terminal project (RPT). The enlarged and modernized RPT will be a model of efficiency and is expected to receive a high-level LEED certification (Leadership in Energy and Environmental Design). Electrification of the new terminal building, associated airport support services and ancillary structures, along with significantly increased requirements for customer-facing electric vehicle (EV) charging infrastructure, have resulted in a five-fold load growth in electricity demand for the Airport.

The single most critical power-related issue facing any commercial United States (US) airport is reliability. A power outage at any commercial airport is detrimental to continuity of operations and can have broad societal and economic implications. Power outages of any nature, cause, or duration have caused well-publicized and far-reaching impacts such as flight disruptions, cascading passenger delays across the country, lost revenue to air carriers, and major inconvenience to the air traveling public.

Meeting this need for resilience and reliability is a complex exercise, especially when factoring in required changes to energy generation that reflect the transition to a sustainable, zero emission future. Fortunately, in California, regulations are now in place that set specific goals and timelines for utilities to achieve sustainable power generation while maintaining reliability.

In preparing this review, several alternative power supply options were investigated to inform the recommended course of action by the Burbank-Glendale-Pasadena Airport Commission (Commission). These include the recommended option of increasing utility-provided power supply, and two options that were looked at in context of the RPT and should also be considered for future demand growth: constructing a solar/photovoltaic system with battery storage; and creating a Fuel-Cell Microgrid.

It is important to note that at this time, and with current technology and infrastructure, there is no scenario under which an adequate amount of zero carbon energy can be produced onsite that would meet the projected power demand for the RPT.

It is the conclusion from this evaluation and the discussions, research, and experience that informed it, that the only path forward to ensure adequate and reliable power supply for the RPT project is to collaborate with Burbank Water and Power (BWP) to construct a new substation and related facilities to meet the increase in energy demands.

According to the draft agreement presented to the Airport by BWP, the Airport will be required to invest about $62 million toward new and expanded BWP facilities to obtain the level of electric power identified in the current load forecast. These costs, while significant, appear reasonable. Moreover, it does not appear that there is any alternative power supply that would result in a lower ultimate cost, whether that cost is financed directly by the Airport or by a third-party vendor who would recover its investment, plus profit, through the rates it charges.

Beyond just the current utility-customer relationship, BWP provides significant advantages in terms of reliability, resilience, and sustainability. These advantages are discussed further in the review of power supply options.

The following is background and further discussion of potential options reviewed for powering the RPT, acknowledging the benefits and challenges of each which led to the recommended path forward. The review also considered electric energy needs in areas of the Airport not served by the RPT project power sources and concluded that both increased solar energy and fuel cell technology may be viable alternatives for other future needs at the Airport.

Background

The RPT project will result in significant increases to the Airport's electrical demand due to electrification of terminal modernization, enhanced amenities, increased electrified airport equipment, and a significant rise in the deployment and use of EV charging stations for self-parking and rental car customers.

The anticipated power demand for the RPT evolved over the course of the project development. Initial power estimates called for an increase from the current demand of about 3.5 Megawatts (MW) to 6.7 MW. A subsequent AECOM study identified a higher demand of 11 MW. Projected power needs grew in response to plans for increased electrification, more granular information on equipment power specifications, and regulatory-driven requirements for additional EV charging capacity.

For instance, the RPT was originally designed with 5 percent (%) of its 2191 parking spaces being EV charging capable and 50 parking spaces (about 2.2%) having EV chargers installed. However, California Green Building Standards Code (CALGreen) increased the requirement to 20% capable with 5% installed, which was followed shortly by a change to the City of Burbank Municipal Code to requirements of 45% EV capable, and 33% installed.

With these new electrical demands, the Airport commissioned Syska Hennessy to prepare a revised electrical load analysis to investigate what the demand would be for

the complete electrification of the RPT in addition to anticipated EV charging infrastructure. The study concluded that the Airport would need a total of about 19MW of capacity to power the RPT and related improvements.

Changing Rules and Project Development

The following timelines demonstrate the interplay between key milestones in the progress of the RPT and the evolving regulatory landscape of clean energy goals and EV mandates facing the Airport during the course of project development:

- 2015: Senate Bill (SB) 350 set goals for renewable energy, energy efficiency, and clean transportation
- November 2016: Measure B approved by Burbank residents
- November 2017: Federal Aviation Administration (FAA) conditionally approves revised Airport Layout Plan
- 2018: SB100 mandates 100% clean electricity by 2045 statewide
- May 2018: FAA begins Environmental Impact Study (EIS), expected to take 24 months
- January 2019: FAA holds EIS Scoping Meetings for public input
- March 2019: Public Charrette Process for terminal design begins
- 2019: Airport enters agreement with the South Coast Air Quality Management District calling for EV charging to be installed on 5% of total parking infrastructure by 2031
- 2020: Assembly Bill (AB) 841 attempts to streamline EV charging infrastructure permitting
- 2020: Executive Order N-79-20 accelerates zero-emission vehicles and infrastructure
- 2021: Executive Order N-20-21 mandates carbon neutrality by Q1 of 2045
- 2023: CALGreen requires 20% EV charging capable, 5% EV installed
- 2023: Project design phase starts

- 2024: City of Burbank changes municipal code to require 45% EV charging capable and 33% EV chargers installed
- Q1 2024: RPT construction begins with Ground-Breaking Ceremony
- Q4 2026: Replacement Terminal to open
- Q4 2027: Existing terminal to have been demolished

Electrical Upgrades at Other Airports

Power reliability is an issue of ongoing concern and attention both within and beyond the airport industry, being the subject of a 2023 US Government Accountability Office report as well as a global topic in the July 2024 International Airport Review. Power reliability is considered not only in terms of power outages, but also in the context of power quality. Power quality typically refers to voltage variants, which unless properly protected against in the design of electronic equipment, can and have caused sensitive airport equipment to go offline, ranging from computer systems to baggage handling equipment.

Against that backdrop, airports across the nation strive to meet sustainability goals, accommodate increasing power demands, and improve power reliability. Several key projects offer insights into the potential pathways for meeting these energy needs. By examining initiatives undertaken by other commercial airports, the Commission can identify best-practices and emerging technologies that could inform future developments.

In 2012, San Francisco International Airport (SFO) began its Zero Net Energy Plan, and in 2020 produced its Zero Emissions Vehicle Readiness Roadmap. SFO is now planning a series of renovations to electrify its campus and reduce the amount of carbon dioxide and other pollutants emitted on-site. A major component of this work will be sizing and construction of power substations to distribute electricity throughout the Airport, with infrastructure to be sized adequately for the maximum loads foreseeable

throughout an expected 40- to 50-year design life. One of the largest anticipated loads will come as the result of vehicle electrification (both public and employee parking), air-side operations including electrified ground service equipment, and potentially, electric aircraft. SFO is anticipating a future power demand of 132-155 MW.

SFO is looking to incorporate fuel cell technology and cites the following benefits from distributed energy resources: energy reliability, lower overall energy costs, increased renewable energy generation, reduced transmission energy loss, and more airport campus resiliency.

John F. Kennedy (JFK) Airport in New York undertook a major terminal project in 2022 incorporating a 12 MW microgrid. This project and the potential opportunities for future power supply it represents are discussed in detail in the Options section below.

In 2020, the Los Angeles Department of Water and Power (LADWP) began construction of a new Receiving Station, RS-X, at Los Angeles International Airport (LAX). This project is nearly identical in purpose to that proposed through the new Community Station with BWP. The dedicated LAX receiving station project and associated transmission upgrades will cost LAX about $140 million and are necessary to provide much-needed power reliability as well as meet the current and increased future power demands from the new Automated People Mover, airport electrification, and other improvements. There is no viable alternative to utility-provided power to meet the increased LAX power demands and much-needed improvements to power reliability and quality.

As the Airport evaluates future projects outside of the RPT, there is an opportunity to consider various power solutions that can support its sustainability goals, operational efficiency, and resilience. Further development of the Airport property, particularly large areas such as the southeastern portion near the current passenger terminal and onsite parking facilities, may require power upgrades if additional improvements are planned.

Such development may exceed the capacity provided through the RPT power infrastructure or may simply not be able to access that power due to distance or logistical issues. Alternate power supply options such as those presented here may offer effective strategies to meet future energy demands.

OPTIONS FOR ELECTRIC POWER

Burbank Water & Power Community Station – Recommended

The most straight-forward path and the one having the most certainty is to partner with BWP on its proposed new Community Station on Cohasset Street just north of the new passenger terminal and parking structure. This proposed facility is necessary to meet the projected power demands of the RPT, which exceed the capacity of previous upgrades to the Ontario substation. BWP is only able to meet the projected RPT demand with substantial new upgrades to its electrical infrastructure. It is standard industry practice for utility customers to pay for any new infrastructure necessary to meet increased demands created by their projects. Cost is the greatest impact of this option on the Airport, as BWP will be handling the work needed to complete this power source.

The new community station will remain under the operational control and responsibility of BWP and will be financed through a cost-sharing agreement with BWP. The Airport's original investment in the Ontario station will be credited toward the new community station and BWP will recover use of the capacity from the Ontario substation that the Airport had originally contracted for. While the Ontario station is not capable of meeting the Airport's projected future power needs, BWP will leverage its existing capacity to provide interim power to the RPT while the community station awaits long lead-time electrical equipment. BWP will also maintain the Airport's access to electrical feeders from the Ontario station after the new community station is in service, ensuring an even higher level of reliability and outage-proofing.

Regrettably, since the Ontario substation was built, the actual cost of construction of both a station and transmission line extension have gone up considerably: the cost of a recent BPW standard-design 40 MW station increased from $30M to $41M over a few years. This kind of cost escalation is unfortunately typical throughout the electric industry.

To provide the total future forecasted load for the Airport, the cost components identified in the draft agreement from BWP, as of mid-2024, include:

- New community substation costs estimated at $41 million
- A credit of $1.7 million for the amount paid for the 6.67 MVA (mega-volt-amperes) of dedicated capacity in the Ontario Substation (which voids the 2018 agreement and is surrendered back to BWP)
- A 30.9% credit of the actual total costs to construct the new community substation, up to a maximum of $12.7 million
- Sub-transmission costs estimated at $22.5 million
- Distribution Facilities Costs estimated at $13.4 million
- Estimated Load Fee to Airport = $62.5 million

Arguments Supporting the BWP Community Station

Partnering with BWP for its new power supply is the only option that can meet the RPT project needs and timing. It is also the one option that can be most assured up front to be successful and completed without direct heavy involvement from Airport staff. BWP is arguably one of the most reliable power utilities in the nation and has amongst the lowest power rates in California.

Partnering with BWP on a new community substation has other distinct advantages as well: reliable power from a trusted provider, specified power availability for a one-time fixed price, existing expertise and readily available emergency response, no additional

staffing required by the Airport, expectation of reasonable power rates, and a power resource that meets California clean energy standards (BWP is on track to meet state 2045 sustainability requirements and its current electric power resource mix averages 44% renewable and 55% carbon-free).

BWP's local grid reliability and strong record on power interruptions comes as a result of continued investments in infrastructure maintenance and upgrades. BWP also enjoys power supply reliability through its own local generation and its participation in LADWP's balancing authority, which provides tremendous insurance against an actual power shortage through real-time resource sharing and coordination with neighboring municipal utilities and the broader western energy grid. An example of this resilience is the severe heatwave of August 2020 that overtaxed California's energy infrastructure and resulted in widespread rolling blackouts throughout the state. During this episode, BWP customers experienced no interruption in power service.

In addition, BWP has embarked on a comprehensive program to reduce its carbon footprint, diversifying its energy mix with the goal of surpassing the state's 60% renewable energy target by 2030 as mandated by SB 100. The utility's investments in large-scale solar and wind projects, community-scale grid optimization, and customer incentive programs ensure that the energy provided to all BWP customers is as carbon free and environmentally sustainable as possible.

If utilizing carbon-free energy at the Airport is a significant driving factor, a "green energy rate" may be able to be negotiated with BWP, under which it can target the purchase of renewable energy directly from the utility. These rates are generally at a premium because the Airport would be receiving a dedicated portion of the utility's overall renewable portfolio.

The downsides of partnering on a new community station are the large capital cost, and to a lesser extent, the loss of potential for the Airport's own clean energy credits and

independent demonstration of its commitment to environmental leadership. However, this is against the backdrop of rate affordability, power reliability, and BWP's sustainability initiatives. Finally, while the upfront costs are high, nothing indicates that they are unreasonable or out of sync with the local power industry. The capital investment is also comparable to that required for the Airport's other power alternatives.

Airport as a Self-Generator Utilizing Solar Energy

With vast land holdings and a large building stock, there is a natural question of whether the Airport can achieve "energy independence" by being a self-generator through increased deployment of solar panels coupled with battery storage. The energy density of solar panels is such that they require a relatively large footprint. The RPT's new parking structure will be capable of accepting roof-top solar panels. However, even with its large usable area, the structure can only accommodate enough solar panels to produce about 0.75 MW, or the equivalent of 4% of the capacity of the BWP proposed Community Station.

The current highest performing solar panels convert about 24% of the sunlight they receive into electricity. As this translates to surface area, a general rule of thumb for an optimal system is that it takes roughly 5 acres of solar panels to generate 1 MW of electricity. This is complicated by the fact that solar panel alignment at the Airport may be sub-optimal due to restrictions designed to protect pilots against solar panel glare or sight obstructions that may impair their vision. Sub-optimal panel alignment on rooftop or ground-mounted solar would reduce the panel efficiency as well as the number of hours they could be expected to generate energy during the day. Similarly, building design and geometry may limit the practical application of solar panels - the new passenger terminal is able to incorporate just 0.375 KW of proposed solar.

Under ideal conditions, a total of about 95 acres of solar panels would be required to meet the Airport's projected 19 MW of energy needs, at a roughly estimated cost of

$55-60 million. The cost of rooftop solar for regional airport terminals and parking structures varies depending on factors such as system size, geographic location, and site-specific limitations. Large, simple rooftop solar installations cost $2.50 to $3.50 per watt, with higher unit costs for smaller or more complicated systems.

The Airport owns a number of structures that are under its direct control or under lease to Airport tenants. However, the roofs of many of these structures are either arched or incapable of holding a solar array due to age or construction type. If hangars or other structures are rebuilt in the future, they could be designed to optimize solar generation as well as incorporate other energy efficiency enhancements.

By comparison, ground-mounted solar arrays are much more cost-effective, even approaching the $1 per watt range. However, much of the apparent “wide open space” typical to airports is land designated for runways, taxiways, safety and buffer zones, aircraft parking, and other airport business or regulatory requirements. This often means the actual open land that can be used for a ground-mounted solar installation is considerably less than what one would assume.

Any solar generation serving a critical load must be “firmed up”, or backed up, to provide system reliability. Battery storage can be utilized to buffer the real-time gap between energy generation and energy demands. Battery storage can also be an important tool for times when solar generation has not picked up in the early morning, is diminishing in the late afternoon, and during inclement or cloudy weather. A general guideline for daily power fluctuations is to have battery capacity equal to four hours of the peak capacity of the solar panels. For instance, a solar array providing a peak of 1 MW would need 4 megawatt-hours (MWh) of battery storage to ensure a reliable power supply during times when solar generation isn't enough. Businesses with extended or around-the-clock operating hours such as the Airport may require substantially more energy storage.

The cost of battery storage varies based on the technology used, duration of storage, and scale of the project and other design factors. Costs for a large, utility-scale lithium-ion battery storage system are around $200,000 to $400,000 per MWh, translating to a cost of $800,000 to $1.6 million for a 4 MWh backup per megawatt of solar production. While longer duration energy backup can theoretically be provided via a battery farm, from a practical standpoint, long duration backup generally relies on service from the electric grid or another source of non-renewable energy. In the event that solar energy is firmed up by power from the utility grid, agreements will have to be reached with BWP to ensure that there is adequate power availability in reserve, what kind of fixed or stand-by charges might be associated with such service (particularly if power is only purchased periodically), and what additional infrastructure investments might be required with BWP in order to guarantee that the most critical power needs of the Airport can be met at all times.

To put this in perspective, a somewhat extreme (and not recommended) example, would be a scenario in which the Airport negotiates to continue use of the Ontario substation and attempt to meet the net additional power needs through solar and battery backup. This would require a 60+ acre solar farm with a minimum 4-hour battery backup and would cost on the order of $50 million. Not included are the cost of long-duration energy storage or the cost of firmed-up power supply through BWP or another energy source, along with the standby cost of having that power capacity available while not being a regular energy purchaser.

Fuel Cell Microgrid: An Alternate Approach to Self-Generation

The Airport could consider a self-sufficient micro-grid, which may be a viable option for future Airport energy needs outside of the area served by the proposed BWP Community Station. This option would rely on commercially available fuel-cell technology. While producing far less greenhouse gases than a natural gas fired power plant, fuel cells still produce pollutants. This may be remedied if a clean hydrogen

supply becomes available in the San Fernando valley area, however, at this time fuel cells are largely not considered a “green” solution in California due to their reliance on natural gas as the only readily available fuel source.

A fuel cell microgrid was recently put into service at New York’s JFK Airport Terminal One Project. This 12-MW microgrid integrates 6.63 MW of rooftop solar panels, 3.84 MW of fuel cells, and 1.5 MW of battery energy storage. The system is designed to supply half of the terminal’s daily operational energy needs, reducing its demand on the utility electric system.

A feature of this microgrid is its capability to operate independently from the main power grid. This ensures that, in the event of a power outage, the terminal can maintain some degree of continuous, uninterrupted operations. Additionally, the microgrid captures heat from the fuel cells to generate both chilled and hot water for the terminal, optimizing energy efficiency.

The JFK Airport’s microgrid project is managed by a third-party under an Energy as a Service (EaaS) contract (similar to a PPA or Power Purchase Agreement). This arrangement guarantees predictable operating costs and performance without requiring upfront capital expenditures, because they are born by the third-party vendor. The project supports JFK Airport's commitment to achieving net-zero emissions by 2050.

Implementing a microgrid requires interconnection agreements with the local utility, regulatory compliance with the California Public Utilities Commission (CPUC), and system integration with existing energy management systems. Large-scale microgrid and fuel cell technology is still in its infancy at this time and would require substantial time, effort, and expertise to develop and implement a project.

In consulting with a leading supplier of fuel cell microgrids based in California, it was confirmed that microgrids can operate independently from the main electrical grid, which

is a selling point for facilities requiring uninterrupted power. This independence, however, remains contingent on the continuous availability of the fuel sources used to generate power, such as natural gas, biogas, and hydrogen.

From an environmental perspective, natural gas used in a fuel cell to produce electricity results in lower emissions compared to traditional power sources, thereby supporting a reduction in overall carbon emissions. For example, Bloom Energy fuel cells are certified by the California Air Resources Board and compliant with the South Coast Air Quality Management District.

The modular design and power density of fuel cell microgrids allow them to be tailored to specific power needs. However, fuel cells are typically geared toward producing base-load power and are not designed to ramp up and down to meet fluctuating or marginal demand. This would require that battery energy storage and other components to provide dispatchable power must play a role in the overall makeup of a microgrid.

From an economic standpoint, a fuel cell microgrid can be implemented through a PPA, which can enable organizations to manage energy costs more predictably. However, this does not necessarily guarantee lower overall costs compared to traditional power providers, especially when considering the variable price of natural gas.

Other Solar and Revenue Generation Options

The Airport has other options to contribute to the local clean-energy future. None of the options below change the percentage of renewable energy in the Airport's power supply nor do they offset the need to invest in adequate power infrastructure to receive electricity from BWP. However, they may offer a source of annual revenue with which to offset costs and bond obligations. The designation as a self-generator for a project producing 1 MW or greater still applies regardless of whether the generated power is used on-site or sold back to the utility.

BWP's Feed-in Tariff (FiT) Program provides a robust framework for integrating renewable energy projects into the local grid. Under this program, BWP commits to purchasing energy generated for up to 20 years through a PPA, which ensures financial stability and predictable revenue for participants. Under the FiT program, solar energy can be generated by the Airport and sold back to BWP at the contracted rate, rather than directly consumed on Airport property. This solar energy does not reduce the Airport's normal power purchases from BWP, but it could offset some of the costs the Airport spends on electricity. FiT projects are often done in partnership with a solar developer who bears the financial burden of the solar installation and shares in the proceeds from the sale of power with the owner of the property or facility on which the installation is placed.

Unfortunately, the glut of solar energy during peak daytime hours coupled with shifts in peaking of electricity demands has caused utilities to re-evaluate the time-value of solar energy. From a practical standpoint, solar energy is exceedingly cheap to virtually valueless during the middle of the day when energy generation is at its peak. Energy in the early morning and most particularly in the later afternoon and evening is substantially more valuable due to the drop-off in solar production and increase in peak power usage as people return home from work.

To address this, utilities are moving away from buying solar energy at the "average energy rate", which only served to pay more for energy at a time when it was least needed and was at its cheapest value on the power grid. BWP will be changing its FiT program such that any project applying for the program after July 1, 2025, will be reimbursed at a rate reflecting the much lower time-value of energy during the daytime hours. Historically, solar photovoltaic projects have received up to 14.5 cents per kilowatt-hour (kWh) under the BWP FiT program, while that price will now drop to a few cents. This will logically make most new FiT projects economically unattractive.

Another approach is to partner with BWP by allowing the utility to place a solar installation on available Airport property. BWP may have a desire for additional utility-owned solar within its service territory, particularly if CPUC rules allow it to be counted in an advantageous renewable energy category. Such solar power might serve to reduce congestion on the electric grid and offset certain needs for fossil fuel generation. The Airport could potentially benefit through a tenant-style land or facility lease, or through negotiating an energy price incentive with BWP. This would also give the Airport a role greening the community it is located in.

** NOTES ON BECOMING A SELF-GENERATOR **

In California, any entity producing more than 1.0 MW of power must be registered with the CPUC and be classified as a power provider under Public Utilities Code Section 394.5. Power providers must comply with several ongoing reporting and regulatory obligations, including submission of interconnection reports concerning integration with the existing grid; annual reports on operations, financials, and transactions; and potentially annual Renewables Portfolio Standard compliance reports.

The Owner Reporting Form California Energy Commission-1304 (ORM CEC-1304) reporting framework “Power Plant Generation and Fuel Quarterly Reports with Annual Environmental Information” was originally designed to capture a standardized set of data from power plants that in many cases are fueled by combustible sources. However, as California’s energy mix evolves, renewable assets such as solar photovoltaic systems and battery storage projects that meet the 1 MW threshold are increasingly subject to reporting requirements as a power plant under the state’s guidelines.

The intent behind ORM CEC-1304 is to capture the overall impacts of facilities that have a significant combined generating capacity, and the regulatory framework is designed to prevent circumvention of reporting requirements by deliberately splitting a project into smaller parts. The CPUC might determine that multiple generating units collocated or

interconnected, especially when under common ownership, should be aggregated for reporting. If adjacent projects are interconnected at a common point or function as a single coordinated facility, the combined capacity may be viewed as one power plant. In these cases, the aggregated capacity could exceed the threshold and trigger reporting requirements even if each individual unit is below 1 MW capacity. Thus, if the Airport were to have multiple smaller projects that totaled more than 1 MW of capacity, it is possible that these would be aggregated for the purpose of reporting obligations.

By contrast, if the Airport were to pursue additional power generation projects that are truly independent of each other and do not operate together, such as on an entirely separately metered system, then each might be treated separately and not trigger the reporting requirements. However, this is subject to interpretation by the overseeing agency and depends on the specifics of the interconnection agreements and application of the regulations.

If or when the Airport did exceed the 1 MW energy production threshold, BWP believes that the Airport would be considered a generator and would be responsible for its own reporting to the State. This is not an insurmountable task, but to comply with the annual reporting requirements and record keeping, it is estimated that as many as 3-4 full-time equivalent employees would be needed for project management, regulatory affairs, environmental compliance, financial analysis, technical engineering, legal support, and administrative support.

BURBANK-GLENDALE-PASADENA AIRPORT AUTHORITY
LEGAL, GOVERNMENT AND ENVIRONMENTAL AFFAIRS COMMITTEE
APRIL 21, 2025
COMMITTEE PENDING ITEMS

Future

1. Approval of Minor Amendment to the EIR; DA Condition of Approval No. 42	TBD
2. LEEDS to Density Presentation (tentative) (City of Burbank - Golden State Plan)	TBD
3. Award of Contract - Computer Aided Dispatch System	TBD

Hollywood Burbank Airport

Review of Power Supply Alternatives

Presented to

Burbank-Glendale-Pasadena Airport Authority
Legal, Government and Environmental Affairs Committee
April 21, 2025

Presented by
Martin L. Adams

About the study…

Reviewed Airport conditions, RPT Project plans, various approaches to energy supply, Airport goals, future power supply strategies

Options for future power supply:

- ❑ Procure additional power from Burbank Water & Power
- ❑ Construct solar/photovoltaic system with battery storage
- ❑ Create a Fuel-Cell Microgrid

Findings for the RPT

- Power reliability for passenger aviation is an ongoing concern
- RPT terminal modernization, electrification, and increased EV infrastructure drove power estimates from the current 3.5 MW to 6.7 MW, then up to 11 MW, and to an eventual projected 19 MW
- The only viable path for adequate and reliable power for the RPT is to collaborate with BWP to construct a new power substation
- The cost for proposed BWP facilities appears reasonable, and no power supply alternatives appear to offer a lower ultimate cost
- There is no scenario under which enough zero-carbon energy can be produced onsite to meet the projected RPT power demand

Why BWP is the Recommended Option for RPT

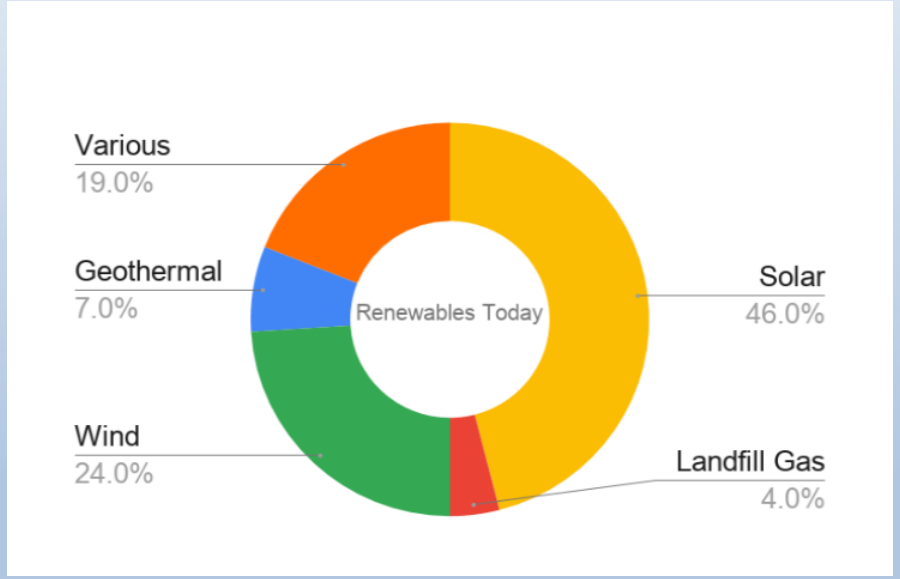
- High certainty of successful and timely completion
- BWP's strong reliability and low power rates
- BWP commitment to reducing carbon footprint and meets California clean energy standards
- Local grid reliability and participation in LADWP's balancing authority
- Existing expertise and emergency response
- Meets RPT project needs and timeline

BWP Power Portfolio

BWP currently
44% Renewable Energy 55% Carbon Free

Fossil resources are Natural Gas and Coal

BWP is committed to 60% renewables by 2030 and 100% zero-carbon energy by 2045



Future Power Needs Beyond the RPT

- Future development on Airport property may require additional power upgrades
  - Current southeast corner passenger-use areas
  - Other redeveloped leased land or buildings
  - Areas already served by separate power meters
- RPT power infrastructure may not be sufficient to meet additional demands or accessible for these areas
- Alternative power supply options (solar, fuel cells, batteries) may be viable for these future needs

Observing Other Airport Projects

San Francisco International (SFO) - Zero Net Energy and ZEV Readiness plans Roadmap drive renovations to electrify campus, including fuel cell technology for reliability, savings, renewables, resilience.

Los Angeles International (LAX) - Constructing new $140M Receiving Station similar to proposed BWP Community Station to improve power reliability and meet increased demand. No viable alternative to utility power.

John F. Kennedy (JFK) – the $9B Terminal One Project includes a 12MW microgrid comprised of 7 MW rooftop solar, 3.8 MW fuel cells, 1.5 MW battery storage. The microgrid will capture heat for chilled and hot water, is sized to supply the majority of the terminal's energy needs, and can operate independenty of the main power grid.

Becoming a Self-Generator

In California, any entity producing more than 1.0 MW of power is classified as a power provider under the Public Utilities Code

The regulatory reporting framework prevents circumvention by splitting a project into smaller parts: the aggregated capacity could exceed the threshold and trigger reporting requirements even if each individual unit is below 1 MW capacity.

Power providers have regular reporting and regulatory obligations

Compliance with reporting requirements and record keeping would require an estimated 3-4 additional full-time equivalent staff

Alternative: Airport as a Solar Generator

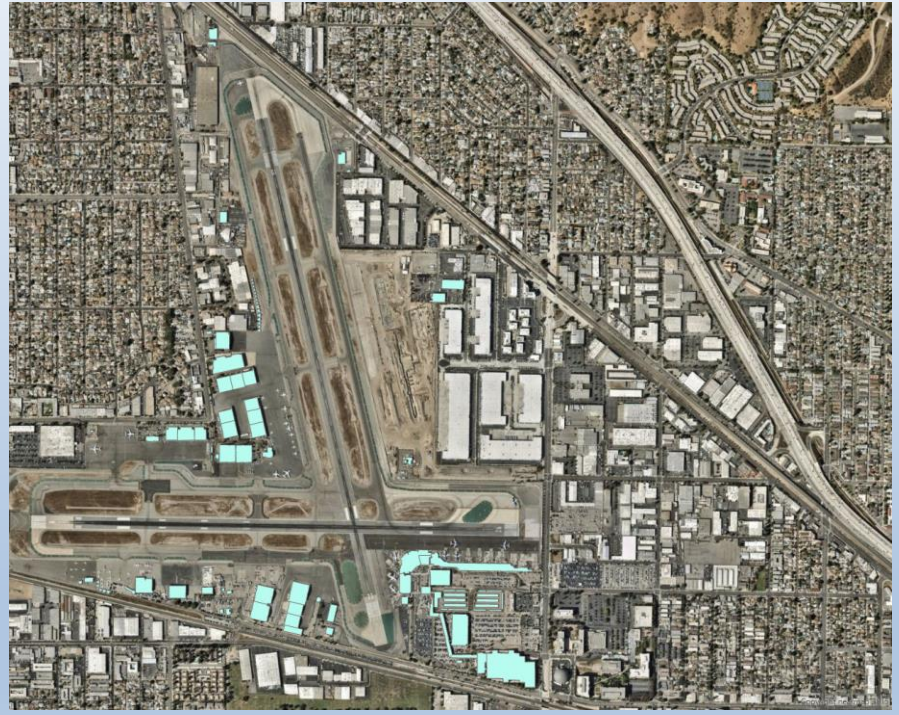
Can solar energy play a role in future Airport power supply?
YES, within reason…

Understanding the issues with solar:

- **Solar is land-intensive: Optimal solar systems need about 5 acres of land per 1 MW energy generated**
- **Airport restrictions (glare, obstructions) may lead to sub-optimal panel alignment and efficiency**
- **Airport would become a Self Generator triggering CPUC compliance requirements and adding to costs**

Existing Airport-Controlled Land Uses

Airport Lease Zones



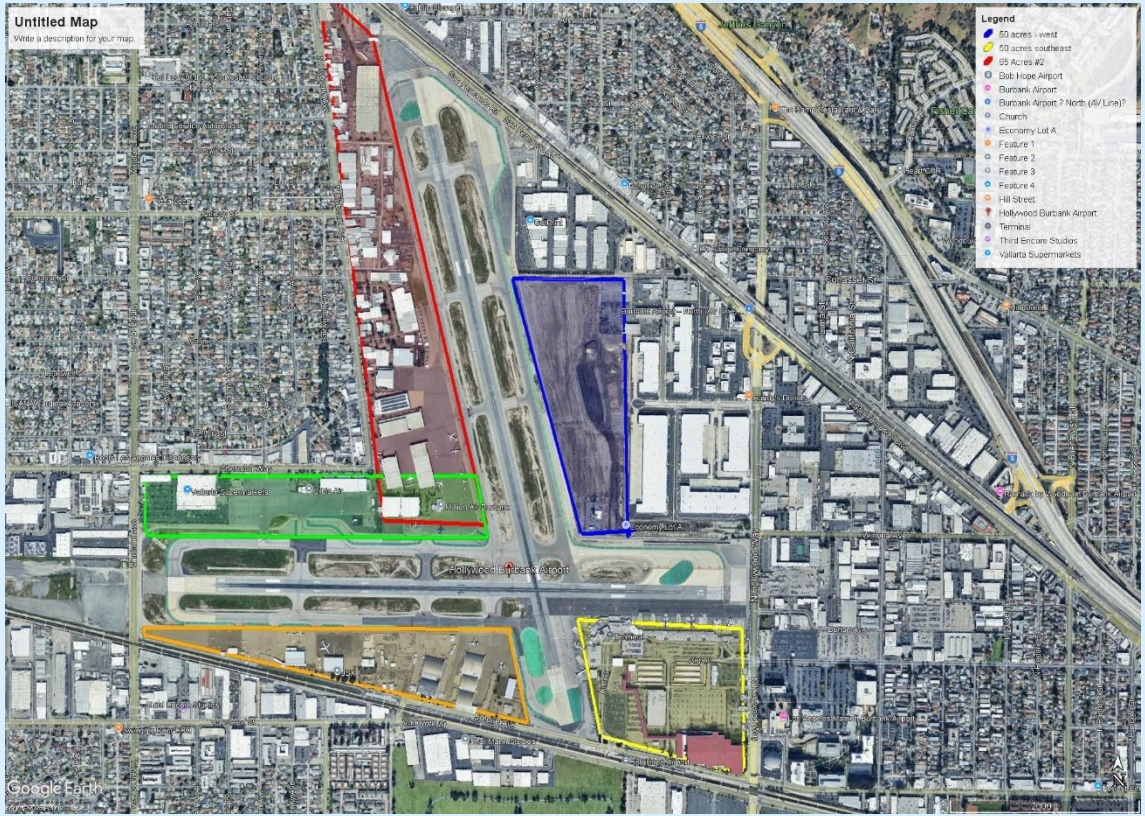
Airport Buildings

Solar Generation for “Energy Independence”

Can the Airport achieve "energy independence" through solar and battery storage?

- **Estimated ~95 acres of solar panels needed for 19 MW demand (optimally-sited)**
- **Estimated cost of solar installation ~$55-60 million**
- **Many existing Airport roofs are unsuitable for solar**
- **Very limited amount of potentially usable land for ground-mounted solar**

What Does 95 Acres Look Like?



Solar Generation– The Rest of the Story

- Solar generation must be “firmed up"
- Battery storage buffers the gap between generation and demand. Typical to install 4 hours of battery capacity per 1 MW of solar capacity
- Large-scale lithium-ion battery storage runs $200k-400k/MWh
- Long-duration backup relies on grid or non-renewable sources
- Agreements with BWP needed for grid-tied solar backup (availability, standby charges, infrastructure)

Other Solar Opportunities

- ✓ Potential to generate annual revenue to offset costs
- ✓ Still need for BWP power infrastructure
- ✓ May incur designation as a self-generator

  - ❑ BWP Feed-in Tariff (FiT) Program

  - ❑ Partnership with BWP for Utility-Owned Solar on Airport Property

Alternative: Fuel Cell Microgrid

- Potential for a self-sufficient microgrid for future needs
- Relies on commercially available fuel-cell technology
- Produces fewer greenhouse gases than natural gas plants but still generates pollutants until hydrogen is available
- Likely has low up-front costs

Fuel Cell Microgrid Implementation Challenges

- Requires interconnection agreements with the local utility and regulatory compliance with CPUC
- Requires integration with existing energy management systems
- Large-scale microgrid and fuel cell technology are still relatively new and require time, effort, and expertise to implement
- Relies on continuous fuel source availability
- Fuel cells primarily provide base-load power; battery storage is still needed for fluctuating demand

In Conclusion…

For the RPT project, the only viable path to ensure reliable and timely power is to collaborate with Burbank Water and Power on the construction of a new Community Station.

Opportunities exist to incorporate alternative power supplies to meet future needs at the Hollywood Burbank Airport

A strategic combination of solar, fuel cells, and batteries may be able to provide green or near-green energy to certain areas