CALIFORNIA ENERGY COMMISSION

California Energy Commission

Clean Transportation Program

FINAL PROJECT REPORT

LAXREV: Los Angeles International Airport (LAX) Ridehail Electric Vehicle Charging Depot

Prepared for: California Energy Commission

Prepared by: Terawatt Infrastructure, Inc.

Terawatt
Lead the charge.

August 2025 | CEC-600-2026-002

California Energy Commission

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PREFACE

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007) created the Clean Transportation Program (CTP) to help achieve California's climate change policies and support projects that reduce greenhouse gas emissions from the transportation sector. Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013) reauthorizes the Clean Transportation Program through January 1, 2024, and AB 126 (Reyes, Chapter 319, Statutes of 2023) extended the program through July 1, 2035 and focused the program on zero-emission transportation.

The CTP has an annual budget of about $100 million and provides financial support for projects that:

- Develop and deploy zero-emission technology and fuels in the marketplace.
- Produce alternative and renewable low-carbon fuels in California.
- Deploy zero-emission fueling infrastructure, fueling stations, and equipment.

  Establish workforce training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

To be eligible for funding under the CTP, a project must be consistent with the CEC's annual Clean Transportation Program Investment Plan Update. The CEC issued GFO-21-601 for projects that will support the clean transportation program, charging access for reliable on-demand transportation services (CARTS). In response to GFO-21-601, the recipient submitted an application which was proposed for funding in the CEC's notice of proposed awards May 11, 2022 and the agreement was executed as ARV-21-065 on September 1, 2023.

Note: If needed, insert a blank page so the Abstract begins on the left side in two-page electronic view (same side as the cover page in electronic view or when printed).

ABSTRACT

In September 2023, The California Energy Commission awarded grant funding to Terawatt Infrastructure, Inc. ("Terawatt") to design, construct, and make operational an electric vehicle charging station located at 4600 W Century Boulevard, Inglewood, CA 90304. The goal of this project is to demonstrate the importance and feasibility of providing an electric vehicle charging station that would support ride hail and rideshare fleets located within Los Angeles County, focusing on Los Angeles International Airport ("LAX") and the surrounding area. The station consists of 29 direct current fast chargers, an amenities building, gated access, and security.

Commercial operation of the site, along with the official collection of electric vehicle charging data and charger performance, began on August 14, 2024. In addition to the collection data and performance assessment, this report includes lessons learned.

Keywords: California Energy Commission, Terawatt Infrastructure, Inc., electric vehicle, charging, LAX, infrastructure.

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Note: If needed, insert a blank page so the Table of Contents begins on the left side in two-page electronic view (same side as the cover page in electronic view or when printed).

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EXECUTIVE SUMMARY

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007) created the Clean Transportation Program (CTP), formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program. The statute authorizes the California Energy Commission (CEC) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help meet the state's climate change goals. The Alternative and Renewable Fuel and Vehicle Technology Program made available up to $6 million in grant funds for projects to support electric vehicle (EV) charging infrastructure for high mileage on-demand transportation services such as ridehailing, taxis, and meal and grocery delivery.

Terawatt Infrastructure, Inc. was awarded a grant to install, commission, collect data on, and assess the performance of 29 EV chargers located at 4600 W. Century Ave in Inglewood California with the goal of providing EV infrastructure to Los Angeles International Airport (LAX) and the surrounding ride hail fleets. Terawatt is the operator of the station.

Under the Grant Funding Opportunity GFO-21-601, Charging Access for Reliable On-Demand Transportation Services (CARTS), the CEC funded $2,000,000 or 32.6% of the total budgeted cost of the station which was $6,132,430.

The EV charging station has 29 dual-port direct current fast chargers (DCFCs) and an amenities building to support drivers during the charging period.

The shared-use gated charging station provides a secure, reliable, and available charging depot for ride hailing fleets that want the benefits of a private/semi-private site without committing the capital expenditure for site acquisition, development, maintenance, or support.

Terawatt's project team initiated site acquisition in November 2022. Permitting was obtained in August 2023. Project construction and on site delivery of equipment was completed in June 2024. Electrification of the site was completed in July 2024.

The required one-year operational reporting period started August 14, 2024, with the station remaining open after this period. Charging stalls are leased to ride hailing fleets with guaranteed uptime requirements. As of this report, the facility is in fully operational status with commitments to utilize the entire 29 chargers.

Terawatt will continue to operate and maintain the charging depot to support local ride hail fleets beyond the term of the funding agreement and through the end of the economic lifetime of the station and equipment.

CHAPTER 1:
Introduction

Project Overview and Objectives:

The LAX Ridehail Electric Vehicle Charging Station was designed, built and operated by Terawatt under an award from the CEC, under its grant funding opportunity GFO-21-601. The objective of this project was to create a reliably operated charging station to address the infrastructure challenges and demands of the Los Angeles-area ride hail fleets by shifting the burden of cost and resources from the fleets to Terawatt. Sourcing EVs for a fleet is only one of the many challenges of deploying and operating an electric fleet. Other challenges include: selecting a site that is suitably located that can support charging infrastructure, securing capital for infrastructure and facility upgrades, streamlining implementation with the local utility, mitigating stranded asset risks, and avoiding costly demand charges. Through this project, each of these hurdles is being addressed with a scalable solution.

Under the terms of GFO-21-601, the project placed into service an EV charging station containing 29 high quality dual-port DCFCs with power up to 120 kilowatts (kW) and 5-year equipment warranties. The availability of these DCFCs promotes zero-emission battery EVs in the LAX region. The station is strategically located in an area near the LAX airport in response to growing demand for EV infrastructure and to support the ridehail fleets with available electrification and infrastructure to meet the requirements set forth under the Clean Miles Standard.

By servicing the Los Angeles area, the project has the ability to reduce greenhouse gases and harmful criteria pollutants, particularly to surrounding disadvantaged communities. The development of this station made progress in accelerating the progress towards zero emissions and the reduction of California's use and dependence on petroleum transportation fuels.

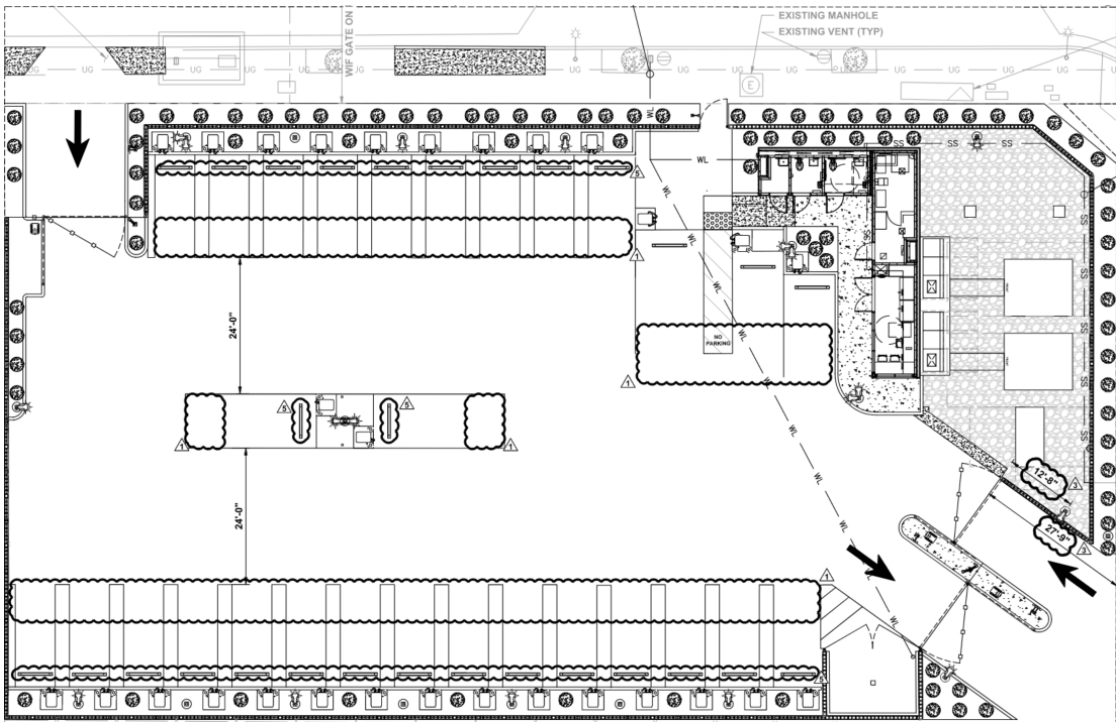
CHAPTER 2:
Station Design, Construction and Startup

Station Design

The site design for the LAX Ridehail Electric Vehicle Charging Station was developed in close collaboration with the City of Inglewood Planning and Building Departments. Entitlement for the project was secured through a Conditional Use Permit process, ensuring compliance with all local regulations and zoning requirements. The station's layout features multiple points of ingress and egress thereby optimizing traffic flow and ensuring efficient vehicle movement for ridehail fleets.

To support on-site personnel, a small amenities building was included in the design. Furthermore, the site was designed in coordination with the local utility provider to accommodate the necessary on-site utility equipment, such as transformers. This equipment is appropriately screened in accordance with local municipal codes to maintain aesthetic harmony with the surrounding area. Power is taken and distributed at 480 volt "secondary service" throughout the facility. Comprehensive lighting is provided across the entire site to ensure safety and visibility during all operational hours. The Electric Vehicle Supply Equipment (EVSE) units provide DCFC capabilities to all parking stalls on site. As illustrated in Figure 1, the station design creates an efficient means of charging fleets as quickly as possible, facilitating rapid turnaround times to get vehicles on-site, charged, and back on the road efficiently.

Figure 1: Station Design



Source: Terawatt Site Plan Revision 3

Construction

The construction of the LAX Ridehail Electric Vehicle Charging Station followed a typical sequence for installing EV charging infrastructure. Outside the scope of the project, the initial phase involved the demolition of a legacy internal combustion engine vehicle repair shop, along with the removal of all pre-existing surface lot asphalt. Following demolition, the lot was regraded to prepare for new construction, as seen in Figure 2

Subsequently, underground infrastructure, including conduit and various civil improvements, was installed below grade. Foundations were then poured for each of the EVSE units, providing a stable base for the charging equipment. Upon delivery, each charger was securely bolted to its respective foundation. The main switchgear was delivered, installed, and thoroughly inspected to ensure proper functionality and safety. Conductors were then pulled between the switchgear and the EVSE units, establishing the necessary electrical connections. All remaining site work was completed to make the site fully usable and operational. Finally, the local utility company completed their scope of work, including the crucial step of energizing the station.

Figure 2: Construction Grading and Conduit

Source: Terawatt

EV Charging Equipment:

The EV charging units installed at this project site were Terra 124 DCFCs. Figure 3 should the product guide for Terra 124 chargers, which can provide a full battery charge to two vehicles simultaneously at 60kW or one charger with 120kW. They were chosen to reduce the wait time of drivers. The chargers also interface with Terawatt's software to provide charger and port data, utilization, charging behavior and driver patterns. Figure 4 shows the completion of project construction.

Figure 3: Product Guide: Terra 94/124/184 UL

Terra 94/124/184 DC Fast Charger

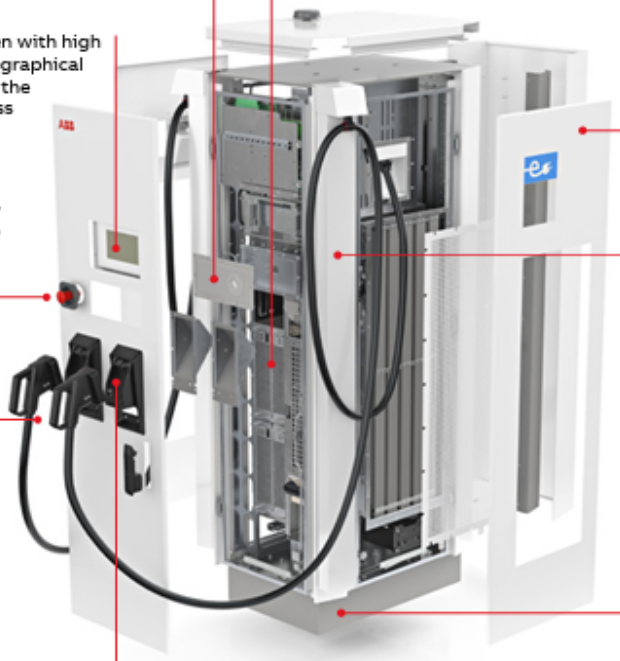
At a glance

CONNECTED by cellular modem for 24/7 remote services, receiving updates over-the-air to support every new EV on the road - plus easy remote OCPP integration.

COMPACT, UPGRADABLE power modules to support increasing demand from more EVs with bigger batteries - in a very easy to service package.

LCD touchscreen with high brightness and graphical visualization of the charging process

ROBUST all-weather powder-coated stainless steel enclosure



SAFETY: Emergency stop push button to immediately stop charging operation

CONVENIENCE and hassle-free reach for users – with retractable cable management option

GREATER revenue potential with simultaneous charging for 2 electric vehicles, including CCS and CHAdeMO combinations

EASY installation design with fast remote commissioning and start-up

AUTOMATIC authentication capability via CCS connector in the vehicle thanks to easy OCPP integration and Autocharge functionality

MAX CHARGING POWER	MAX CHARGING VOLTAGE	DIMENSIONS
Terra 94: 90 kW	CCS 920 VDC	Height 1900 mm / 74.8 in
Terra 124: 120 kW (and 2 x 60 kW)	CHAdeMO 500 VDC	Width 5655 mm / 222.6 in
Terra 184: 180 kW (and 2 x 90 kW)		Depth 880 mm / 34.6 in
		Weight 395 kg / 871 lbs

Source: Terra Product Guide

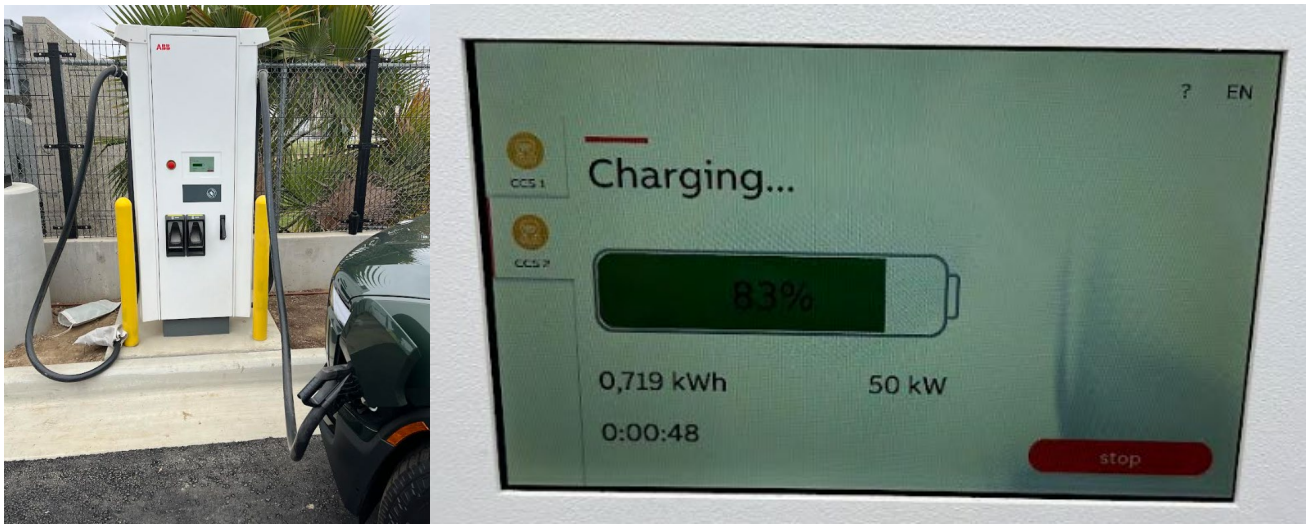
Figure 4: Construction Complete

Source: Terawatt

Startup

The startup phase of the LAX Ridehail Electric Vehicle Charging Station involved close coordination with the EVSE Original Equipment Manufacturer (OEM). The Terawatt project team worked diligently with the OEM to ensure that all proper startup procedures were meticulously followed, guaranteeing the safe and efficient activation of all charging infrastructure. Figure 5 show what users see after starting their charging session.

Figure 5: Startup – Charging!



Source: Terawatt

CHAPTER 3:
Project Results and Analysis

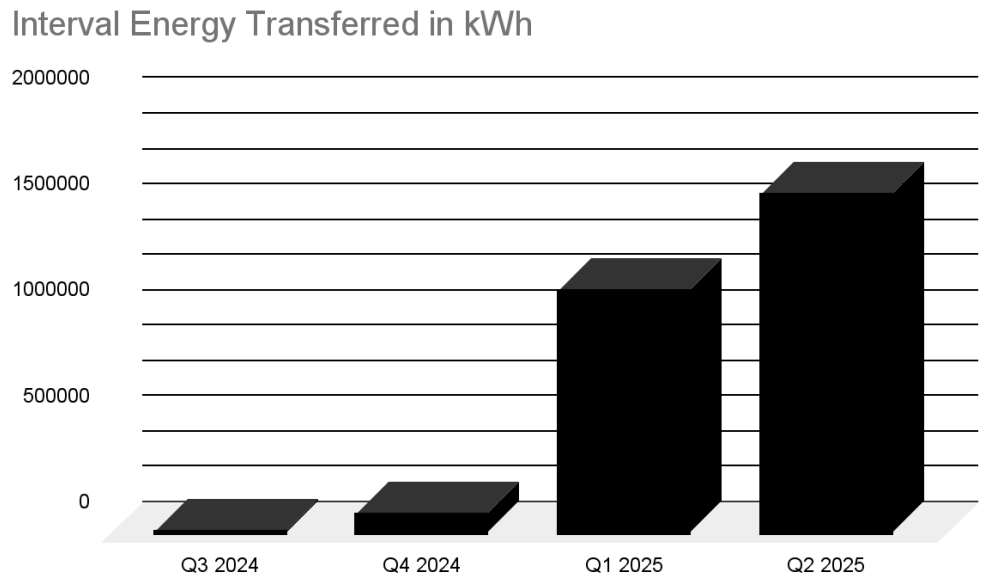
Data Collection

The one-year operational period for the collection of EV charging data (charge detail records) began on August 14, 2024 with the opening of the charging station to customers. At this time, only customers contracted to use the stalls are permitted onto the site for charging. The combination of contracted stalls and private use has created a sustainable model for providing safe and reliable charging.

Charging Events by Quarter

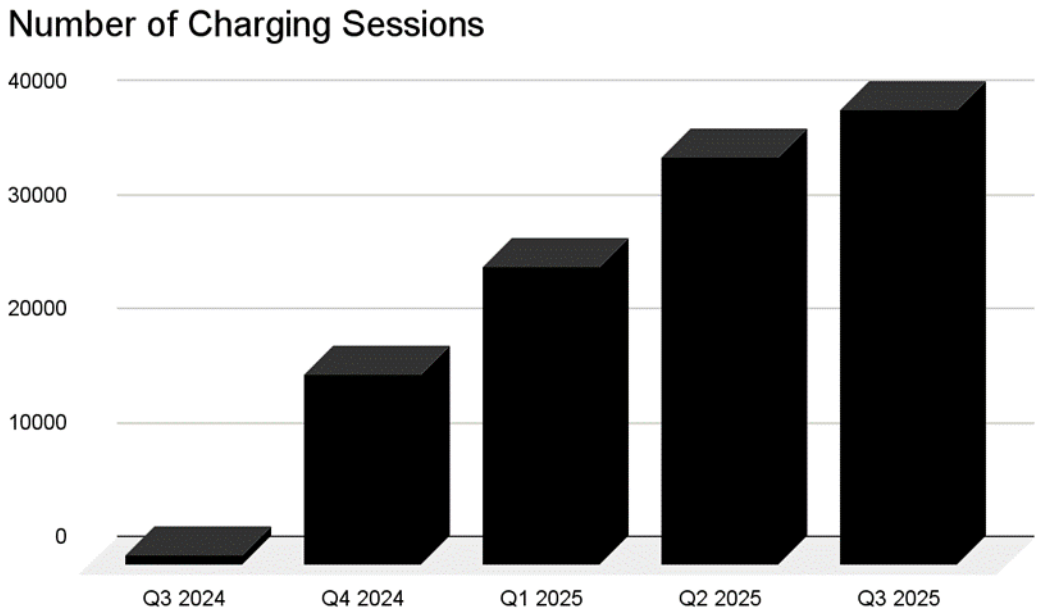
There was low utilization in the first two quarters after the chargers were energized due to some delayed utilization by contracted customers due to their internal training processes and learning capacity for the charger system. As customers began utilizing the station, usage has increased and is continuing to increase. Figure 6a shows a graph of the kilowatt hours (kWh) transferred to customers by quarter. Figure 6b shows the graph showing the number of charging sessions by quarter.

Figure 6a: Startup – Charging Events by Quarter



Source: Terawatt

Figure 6b: Startup – Charging Sessions by Quarter



Source: Terawatt

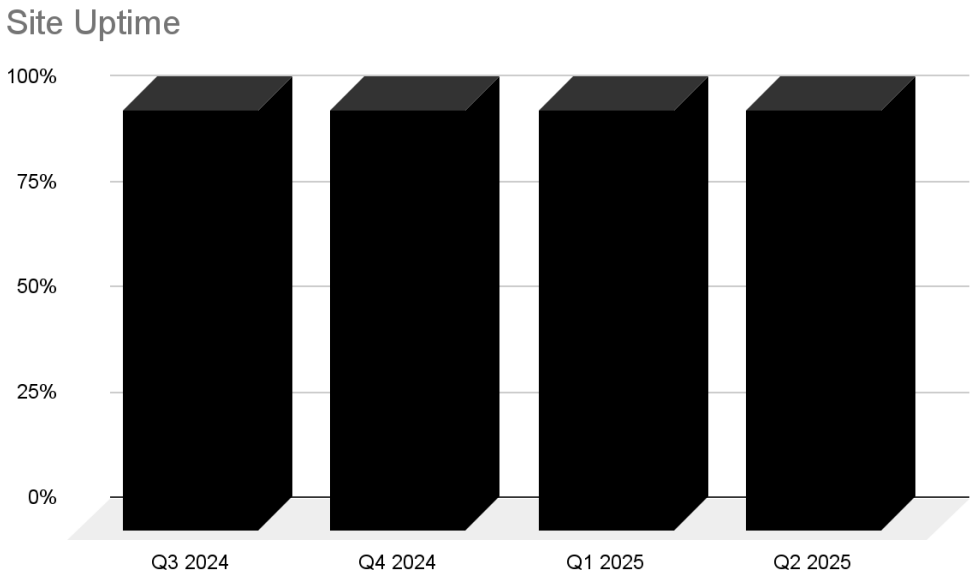
Site Reliability

The importance of maintaining high uptime for electric vehicles in California is critical to customer satisfaction, encouraging EV adoption and keeping in alignment with California's EV goals towards zero-emission. The ability to provide a high percentage of time that ports are operational, available for use, and providing the expected power output aligns with this project's goals of providing a reliably operated charging station. The charging port's ability to connect, communicate, and provide a consistent flow of electricity without interruption, allows customers to conveniently and reliably charge their vehicles. Port reliability is a primary contributor to the site level uptime.

As Figure 7 below shows, Terawatt achieved an average of 100% uptime at the site over the past year of operations.

Figure 7: Site Uptime

Site Uptime

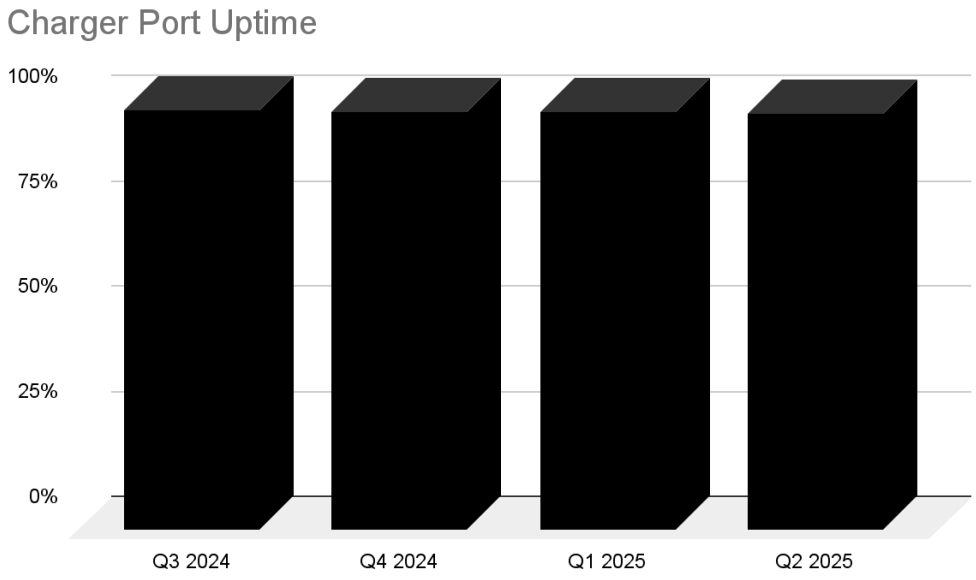


Source: Terawatt

Port Reliability

As the Figure 8 below shows, Terawatt achieved an average of greater than 99% port uptime over the past year of operations.

Figure 8: Port Reliability



Source: Terawatt

Environmental Impact

Since Terawatt opened this fast charging station, the station has had continued to increase in usage. By supporting the electrification of ridehail vehicles, which produce zero tailpipe emissions, the site delivered 4,520,000 kwh of energy which is the carbon dioxide equivalent of approximately 120,962 gallons of gasoline consumed or 105,598 gallons of diesel consumed. This is an abatement of roughly 1,075 metric tons of carbon dioxide equivalent.

Project Assessment

The objectives of this project were to provide an EVSE charging station in Inglewood, California to support the LAX-area ridehail fleets with the following results:

- Demonstrate a sustainable economic business model is achievable for EVSE charging depots serving the needs of ridehail fleets.
- Provide a reliable, available and safe refueling station.

- Demonstrate high uptime reliability to increase confidence in customer experience and encourage further investment.

At the time of this report, this project has fully achieved the project objectives and performance objectives as expected by the project team. Additionally it has provided safe, available charging with high port reliability and high uptime, to support ridehailing fleets and encourage additional EVSE investment and infrastructure. The project has met the objectives of this Grant Funding Opportunity.

Lessons Learned

Terawatt encountered some unforeseen difficulties during the construction period, including severe rain and extended construction weather delays that presented additional costs and time to mitigate. Permitting and utility interconnection also contributed to the overall project delay. This process could have benefited from California Assembly Bill (AB) 1236 which passed in 2015. CA AB 1236 and AB 970 apply to all charging stations and mandates that California cities and counties develop an expedited, streamlined permitting process for EV charging stations.

Glossary

CALIFORNIA ENERGY COMMISSION (CEC) - The state agency established by the Warren-Alquist State Energy Resources Conservation and Development Act in 1974 (Public Resources Code, Sections 25000 et seq.) responsible for energy policy. CEC's five major areas of responsibility are:

1. Forecasting future statewide energy needs
2. Licensing power plants sufficient to meet those needs
3. Promoting energy conservation and efficiency measures
4. Developing renewable and alternative energy resources, including providing assistance to develop clean transportation fuels
5. Planning for and directing state response to energy emergencies.

CHARGING ACCESS FOR RELIABLE ON-DEMAND TRANSPORTATION SERVICES (CARTS) - A CEC Program for Eligible projects that will provide electric vehicle charging infrastructure to support charging for on-demand transportation services and other services.

CONDITIONAL USE PERMIT- Allows a property owner to use their land in a way that's not typically permitted under current zoning regulations, but is deemed acceptable under specific conditions.

DIRECT CURRENT - A charge of electricity that flows in one direction and is the type of power that comes from a battery.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) - Infrastructure designed to supply power to EVs. EVSE can charge a wide variety of EVs, including BEVs and PHEVs.

LOS ANGELES INTERNATIONAL AIRPORT (LAX) - LAX, is the primary international airport serving Los Angeles and its surrounding metropolitan area, in the U.S. state of California.

ORIGINAL EQUIPMENT MANUFACTURER (OEM) - An OEM is a company that produces parts or components that are then used by another company to build its final product.

TERAWATT (TERAWATT) - Terawatt Infrastructure, Inc.

Appendix A: Reports on Charger and Charging Port Reliability and Maintenance from April – June 2025

Reporting Calendar Year	Reporting Quarter	Charger Manufacturer Serial Number	Network Provider Charger ID	Network Provider Charger Port ID	Charging Port Uptime Percentage	Total Number of Port Charge Attempts	Total Number of Failed Port Charge Attempts
2025	Q2	T124-IT1-3723-002	T124-IT1-3723-002	1	99.95581	996	116
2025	Q2	T124-IT1-3723-002	T124-IT1-3723-002	2	99.95739	83	14
2025	Q2	T124-IT1-3723-023	T124-IT1-3723-023	1	99.95517	985	144
2025	Q2	T124-IT1-3723-023	T124-IT1-3723-023	2	99.95622	138	33
2025	Q2	T124-IT1-3723-024	T124-IT1-3723-024	1	99.98264	935	116
2025	Q2	T124-IT1-3723-024	T124-IT1-3723-024	2	99.98106	128	26
2025	Q2	T124-IT1-3723-032	T124-IT1-3723-032	1	99.99369	977	218
2025	Q2	T124-IT1-3723-032	T124-IT1-3723-032	2	99.99527	228	55
2025	Q2	T124-IT1-3723-040	T124-IT1-3723-040	1	99.68513	905	131
2025	Q2	T124-IT1-3723-040	T124-IT1-3723-040	2	99.68592	55	19
2025	Q2	T124-IT1-3923-006	T124-IT1-3923-006	1	99.71512	980	101
2025	Q2	T124-IT1-3923-006	T124-IT1-3923-006	2	99.70702	87	19
2025	Q2	T124-IT1-3923-007	T124-IT1-3923-007	1	99.96423	859	596
2025	Q2	T124-IT1-3923-007	T124-IT1-3923-007	2	99.96607	760	121
2025	Q2	T124-IT1-3923-008	T124-IT1-3923-008	1	99.97448	965	121
2025	Q2	T124-IT1-3923-008	T124-IT1-3923-008	2	99.97475	90	12
2025	Q2	T124-IT1-3923-018	T124-IT1-3923-018	1	99.97684	1124	130
2025	Q2	T124-IT1-3923-018	T124-IT1-3923-018	2	99.97782	33	18

2025	Q2	T124-IT1-3923-022	T124-IT1-3923-022	1	87.87538	991	269
2025	Q2	T124-IT1-3923-022	T124-IT1-3923-022	2	87.87622	233	53
2025	Q2	T124-IT1-3923-023	T124-IT1-3923-023	1	99.97633	1036	109
2025	Q2	T124-IT1-3923-023	T124-IT1-3923-023	2	99.97633	170	35
2025	Q2	T124-IT1-3923-024	T124-IT1-3923-024	1	99.97206	999	127
2025	Q2	T124-IT1-3923-024	T124-IT1-3923-024	2	99.94582	183	45
2025	Q2	T124-IT1-3923-025	T124-IT1-3923-025	1	99.34454	107	71
2025	Q2	T124-IT1-3923-025	T124-IT1-3923-025	2	99.78128	978	127
2025	Q2	T124-IT1-3923-026	T124-IT1-3923-026	1	99.94515	984	82
2025	Q2	T124-IT1-3923-026	T124-IT1-3923-026	2	99.94647	83	25
2025	Q2	T124-IT1-3923-027	T124-IT1-3923-027	1	99.5555	953	111
2025	Q2	T124-IT1-3923-027	T124-IT1-3923-027	2	99.71357	91	24
2025	Q2	T124-IT1-3923-028	T124-IT1-3923-028	1	99.97869	1008	99
2025	Q2	T124-IT1-3923-028	T124-IT1-3923-028	2	99.97869	99	19
2025	Q2	T124-IT1-3923-030	T124-IT1-3923-030	1	100	930	108
2025	Q2	T124-IT1-3923-030	T124-IT1-3923-030	2	100	125	30
2025	Q2	T124-IT1-4023-002	T124-IT1-4023-002	1	99.97367	127	13
2025	Q2	T124-IT1-4023-002	T124-IT1-4023-002	2	99.97367	8	2
2025	Q2	T124-IT1-4023-003	T124-IT1-4023-003	1	99.95166	1013	141
2025	Q2	T124-IT1-4023-003	T124-IT1-4023-003	2	99.94949	138	37
2025	Q2	T124-IT1-4023-004	T124-IT1-4023-004	1	99.97496	1026	136
2025	Q2	T124-IT1-4023-004	T124-IT1-4023-004	2	99.97496	105	30
2025	Q2	T124-IT1-4023-005	T124-IT1-4023-005	1	99.96192	41	16
2025	Q2	T124-IT1-4023-005	T124-IT1-4023-005	2	99.96297	12	10
2025	Q2	T124-IT1-4023-008	T124-IT1-4023-008	1	75.7819	659	350

2025	Q2	T124-IT1-4023-008	T124-IT1-4023-008	2	92.61324	720	106
2025	Q2	T124-IT1-4023-009	T124-IT1-4023-009	1	99.94116	1072	134
2025	Q2	T124-IT1-4023-009	T124-IT1-4023-009	2	99.94167	133	41
2025	Q2	T124-IT1-4023-012	T124-IT1-4023-012	1	99.97555	1060	118
2025	Q2	T124-IT1-4023-012	T124-IT1-4023-012	2	99.97555	90	29
2025	Q2	T124-IT1-4023-013	T124-IT1-4023-013	1	99.94703	913	368
2025	Q2	T124-IT1-4023-013	T124-IT1-4023-013	2	99.95041	608	111
2025	Q2	T124-IT1-4423-006	T124-IT1-4423-006	1	99.97546	1017	126
2025	Q2	T124-IT1-4423-006	T124-IT1-4423-006	2	99.97651	110	26
2025	Q2	T124-IT1-4423-007	T124-IT1-4423-007	1	99.94537	944	100
2025	Q2	T124-IT1-4423-007	T124-IT1-4423-007	2	99.94503	104	25
2025	Q2	T124-IT1-4423-012	T124-IT1-4423-012	1	99.5268	965	105
2025	Q2	T124-IT1-4423-012	T124-IT1-4423-012	2	99.96063	113	24
2025	Q2	T124-IT1-4423-014	T124-IT1-4423-014	1	99.91124	971	135
2025	Q2	T124-IT1-4423-014	T124-IT1-4423-014	2	99.97711	169	30