UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Facilities & Services
Physical Plant Service Building, MC-800
1501 S. Oak St.
Champaign, IL 61820-6905

EV Infrastructure Study of Peer Universities

Introduction

As universities commit to ambitious sustainability goals and carbon reduction strategies, the need for electric vehicle (EV) infrastructure has become increasingly important. With the growing adoption of electric vehicles among students, faculty, and staff, campuses are under pressure to provide accessible, reliable, and future-ready charging solutions. EV infrastructure supports clean transportation and is an essential component of broader climate action plans.

At the University of Illinois Urbana-Champaign (U. of I.), there is an active interest in expanding EV charging infrastructure across the campus. To inform the design, planning, and phased implementation of such infrastructure, a comparative study was undertaken to evaluate the current state of EV facilities at peer institutions. The objective was to understand how other universities are addressing the demand for EV chargers, managing costs, setting policies, and planning for future growth.

This report presents key findings from that study, identifying the best practices, challenges, and policy approaches that will guide U. of I. in making informed decisions about its EV infrastructure expansion.

Methodology

To conduct this analysis, a structured questionnaire was developed and distributed using Google Forms. The survey was designed to collect both quantitative data and qualitative information regarding the number and type of chargers, utilization trends, policy frameworks, decision-making processes. The survey was conducted with the 17 peer universities and received responses from the following:

- University of Washington – Seattle
- Ohio State University
- Northwestern University
- University of California Los Angeles (UCLA)
- Indiana University
- University of Maryland
- University of Wisconsin – Madison
- University of Southern California (USC)
- University of Minnesota

The questionnaire explored various aspects of EV infrastructure, including the current availability of Level 1, Level 2, and Level 3 charging stations, usage patterns, cost considerations for installation and operation, and existing or planned policies related to EV charging in new parking developments.

The survey was conducted from February 3rd, 2025, and remained open through February 28th, 2025, with an extension into early March to allow additional time for responses. A copy of the survey instrument is included in the Appendix. Responses were reviewed to identify trends and common strategies, and the findings were synthesized to offer recommendations relevant to U. of I.'s campus infrastructure planning.

Existing condition of EV infrastructure at U. of I.

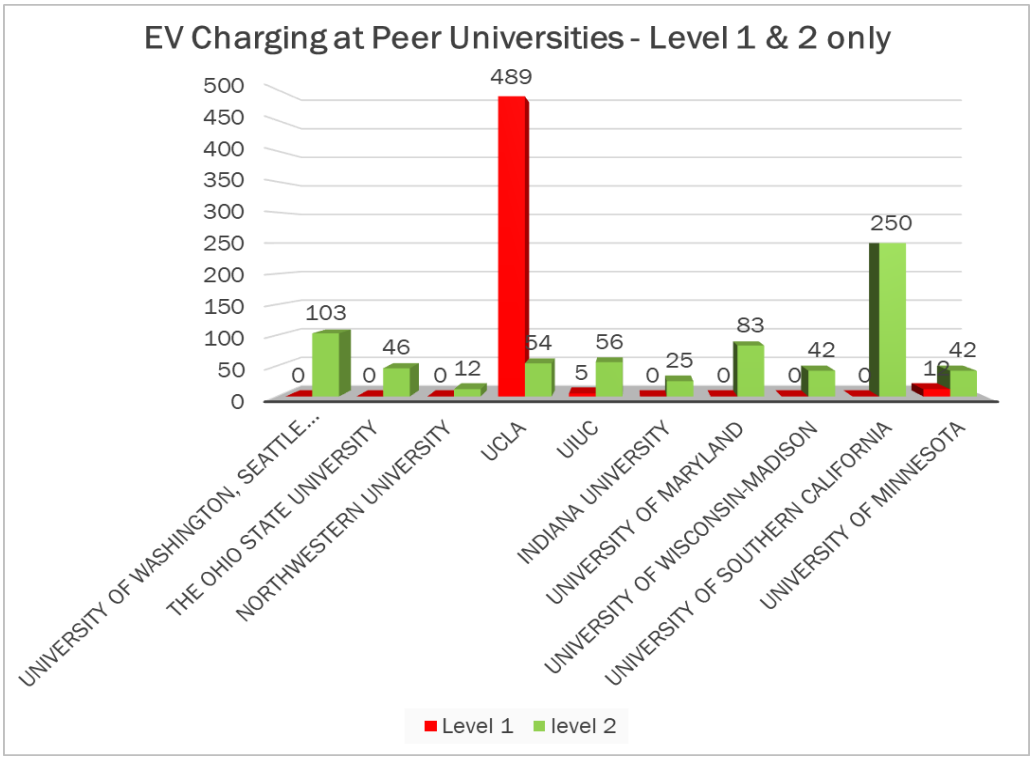
The University of Illinois Urbana-Champaign (U. of I.) has steadily expanded its electric vehicle (EV) charging infrastructure in support of campus sustainability goals outlined in the Illinois Climate Action Plan (iCAP). Currently, the campus operates 32 Level 2 chargers providing a total of 60 charging ports, along with 16 designated Level 1 charging locations[1] along with 6 Level 1 chargers at B-4 lot. These facilities are primarily intended for use by the campus community, including students, faculty, and staff.

EV usage at the U. of I. aims at a 45% reduction in transportation-related emissions by 2035. The cost of installing a Level 2 charger is approximately $11,800 excluding installation cost[2]. Funding for these installations has been drawn from university resources and campus sustainability budgets, aligning with broader institutional goals to reduce emissions and support clean mobility.

To ensure cost recovery and promote efficient charger use, U. of I. has implemented a fee structure for Level 2 charging. Users are charged $0.20 per kWh during active charging and $1.00 per hour once charging is complete, helping offset electricity costs and annual administrative expenses.

Survey Findings

a. Charging infrastructure



[1] iCAP report on DESMAN Study
[2] iCAP report on DESMAN Study

Figure 1: Type of charging infrastructure (Level 1 & Level 2)

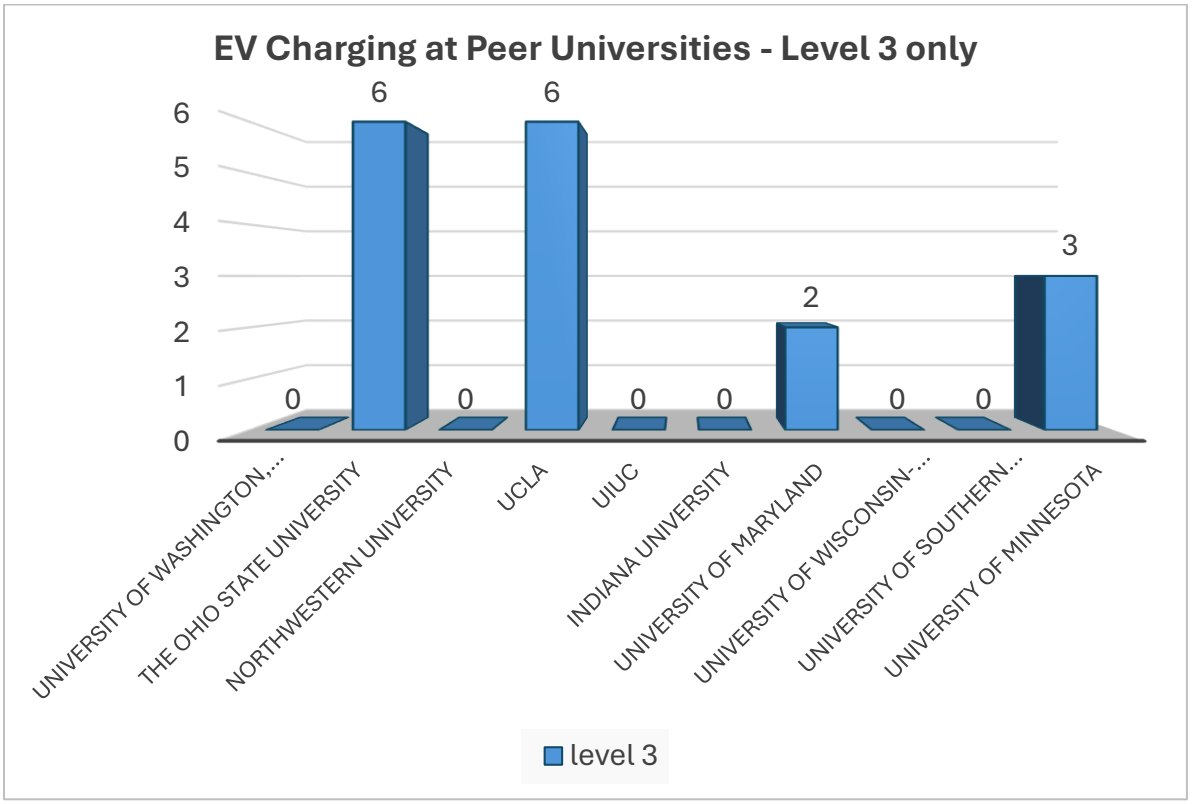


Figure 2: Level 3 chargers at Peer Universities

Figure 1 illustrates the distribution of Level 1, Level 2, and Figure 2 shows the Level 3 EV chargers across the surveyed campuses. Notably, UCLA stands out with the highest number of Level 1 chargers, totaling 489, alongside an integrated system of 54 Level 2 chargers and 3 Level 3 chargers. Across most universities, Level 2 chargers formed most installations, with the University of Southern California (USC) leading at 250 Level 2 chargers, followed closely by the University of Washington – Seattle.

Level 3 chargers were less commonly reported but were primarily installed to serve campus fleets. In most cases, these chargers were well-utilized, although many institutions did not track usage data formally. An exception was the University of Minnesota, where Level 3 chargers were made available for public use, representing a more open-access model compared to other campuses.

b. *Current usage*

To assess the demand for EV infrastructure across campuses, we analyzed the current number of EV users. While several universities did not maintain formal records of EV ownership, a few institutions provided detailed data. UCLA reported substantial adoption, with approximately 7,255 employee users and 2,222 student users. The University of Maryland estimated around 500 EV users, tracked through their Green Permit Pro initiative. The University of Wisconsin–

Madison also showed significant numbers, with over 3,450 users combining both students and employees (1,269 employees and 1,606 students). Additionally, the University of Southern California (USC) reported a total of 9,584 unique users who utilized the campus charging stations in 2024, indicating high demand and engagement with their EV infrastructure.

These numbers highlight the growing reliance on EV infrastructure within university communities and reinforce the need for data-driven planning to balance demand with adequate charging capacity. By understanding user trends, we can anticipate the future infrastructure needs and align them with sustainability goals.

c. Cost Overview

The cost of installing and operating EV chargers across campuses varied widely, largely depending on charger type, location-specific infrastructure needs, and institutional approaches to procurement and maintenance. As per the results below, the installation and operational costs are heavily influenced by site conditions and institutional planning strategies.

- **Level 1 Chargers**:
  - Cost data is limited as many universities installed them years ago.
  - Indiana University reported a cost of approximately $750 per unit, with installation costs varying by site.
- **Level 2 Chargers**:
  Varies anywhere between $2000 to as high as $100,000.
  - University of Washington: Estimated cost of $75,000 per port, covering design, installation, electrical upgrades, lighting, and first-year service contract.
  - Ohio State University: Costs ranged from $20,000 for parking garage installations to $100,000 for surface lots, depending on site conditions.
  - Northwestern University: Reported a relatively low cost of $10,000 per charger.
  - University of Maryland: Base hardware cost of around $6,600 for a dual plug charger, with additional installation and software fees varying by site.
  - University of Wisconsin–Madison: Combined hardware, warranty, and cloud service costs over $12,000, excluding installation.
  - University of Southern California: Typical purchase price of $6,000, with installation ranging from $5,000 to $15,000 based on infrastructure.
  - University of Minnesota: Recent installations cost between $2,000 and $15,000 per station.
- **Level 3 Chargers**:
  - University of Washington: Estimated cost of $190,000 per charger, including development and installation.
- **Operating Costs**:
  - Ohio State University: Average electricity cost of $0.50 per kWh.
  - University of Maryland: Paid a $0.80 network/software fee per session through Blink.
  - U. OF I. (Existing): Level 2 charging costs $0.20 per kWh during active charging, switching to $1.00 per hour after charging completes to recover energy and administrative costs.

d. *Policy Standards for New Parking Developments*

Most Universities responded that they currently do not have any specific policy standards. However, the University of Wisconsin–Madison mentioned that they are reviewing their policy due to conflicting local ordinances and state law. On the other hand, the University of Maryland shared that they had recently expanded their charging stations between 2022 and 2023 and would continue monitoring the situation to assess future needs and performance.

e. *Adding New EV Charging Stations*

Regarding the addition of new EV charging stations, the University of Illinois at Urbana-Champaign (U. of I.) practices the idea of adding new stations or upgrading existing structures when panel upgrades are possible. While many other universities have maxed out the capacity of their existing grids and are opting to build new infrastructure. At Rutgers University, for instance, they plan to add charging stations to existing parking areas where the network can easily be expanded. While they introduced solar-powered charging technology, they acknowledged its limitations, primarily due to insufficient sunlight in the area for optimal operation. Meanwhile, the University of Minnesota focused on adding fleet chargers and is also relying on a city installation program to expand its network.

f. *Factors Influencing Network Expansion*

Several factors influence how universities expand their EV charging networks. These factors include infrastructure limitations, such as the need for panel upgrades or the capacity of the existing electrical grid, as well as the integration of new technologies like solar-powered chargers. Universities are also evaluating their current needs and the demand for EV infrastructure before deciding on expansion.

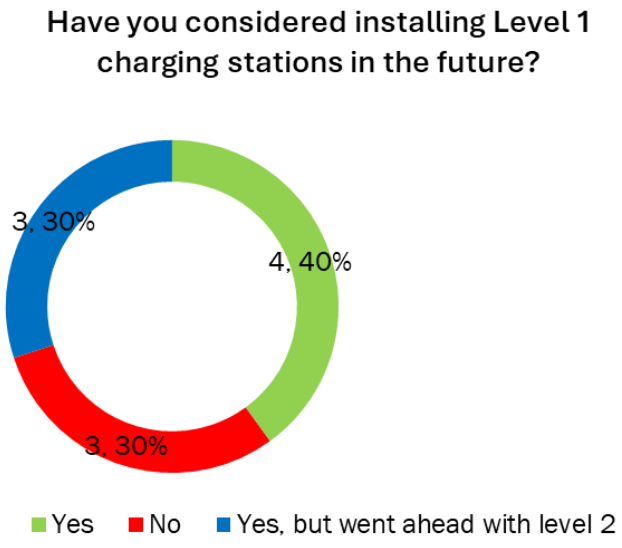


Figure 3- Percentage of universities considering Level 1 charging for the future

University	Response
UIUC	Yes
UCLA	Yes
Northwestern University	Yes
University of Washington, Seattle Campus	Yes
The Ohio State University	No
Indiana University	No
University of Southern California	No
University of Maryland	Yes, but went ahead with level 2
University of Wisconsin-Madison	Yes, but went ahead with level 2
University of Minnesota	Yes, but went ahead with level 2

Table 1 - Universities and responses for Future L1 charger installation

Level 1 Charging Stations viability in the future:

- **40%** of universities are considering installing Level 1 chargers in the future. Main reasons for this:
  - Provide an affordable, overnight charging option for short-distance fleet vehicles.
  - Offer an affordable payment option for short-distance commuters.
  - Example: UCLA uses Level 1 chargers across campus, with 80% of their customer-accessible chargers being Level 1 due to logistical feasibility.

- **30%** of universities do not consider Level 1 chargers a viable future option. Reasons for this:
  - Limited charging capacity for modern EV batteries.
  - Higher installation costs for infrastructure.
  - Growing demand for Level 2 chargers.

- Universities like UCLA and University of Maryland have prioritized Level 2 chargers due to:
  - Higher efficiency.
  - Need for smart, networked equipment for charging and occupancy management.

- Concerns with Level 1 chargers:
  - Trip hazards from cables.
  - Users need to provide their own cables.

g. Average Commute Distance for Faculty Members Using EVs

Most universities had not tracked this data. However, UCLA reported that the average commute distance for faculty, staff, and students using EVs is 15.6 miles one way, while the University of Maryland stated the average distance for EV users is 21.9 miles.

Policy recommendation

At U. of I., we are moving in the right direction with the conversion of our fleet to electric vehicles and the development of EV infrastructure. Key steps to enhance this progress include:

- Expand Level 1 and Level 2 chargers in new construction to meet growing EV charging demand, as recommended by survey case studies, especially given the average commute is only 7 miles.
- Developing a policy document for the installation and expansion of EV infrastructure, including guidelines for charger placement, prioritization of high-demand areas, and plans for ongoing maintenance and upgrades.
- Offering incentives to encourage EV adoption among students, faculty, and staff, such as discounted or prioritized access to charging stations and financial benefits for purchasing or leasing EVs.
- Continuing the strategy of upgrading electrical panels to support new charging stations, ensuring that future parking structures and renovations are designed with EV charging infrastructure in mind.
- Regularly tracking and analyzing EV charging station usage to adjust infrastructure and identify areas for further expansion to accommodate increasing demand.

Appendix

EV Infrastructure Questionnaire

1. How many Levels 1, Level 2, and Level 3 EV charging stations are currently available on your campus, and how well are Level 3 chargers utilized?
2. Can you share any information about the current number of EV users?
3. What are the approximate costs for the purchase, installation, and operation of each type of charger?
4. Does your campus have any policies in place for any new parking developments or renovation of parking garages? How do we add new EV charging stations?
5. Have you considered installing Level 1 charging stations in the future? Why Yes/ No?
6. What is the average commute distance for your faculty members who use EVs?