

Subject: DES: EV Charger Usage

Related Department(s): DES

FY 2025 Proposed Capital Budget

CIP Work Session

The following information is provided in response to a request made by Mr. Karantonis; at the work session on *06/11/2024*, regarding the following question:

Please provide analysis on public EV charger usage in addition to the 30% overall usage rate.

Several metrics related to the County’s electric vehicle supply equipment (EVSE) are tracked for both public use and fleet use within the County’s EVSE online software platform. This data is leveraged to track the use of EVSE, including how the public is utilizing the County’s installed infrastructure. The utilization rate is calculated using two methods:

- **Charging Utilization-** proportion of time that an EVSE charging station is actively being used to charge vehicles each 24-hour day. For example, if a charger has a 25% utilization rate, a vehicle is drawing electricity for 6 hours in that day.
- **Charging Utilization Core Hours-** proportion of time that an EVSE charging station is actively being used to charge vehicles during the facility core business hours from 7 am to 8 pm daily.

Both metrics are valuable, with the **charging utilization** important to benchmark against national averages while **charging utilization core hours** important to show the usage during facility hours.

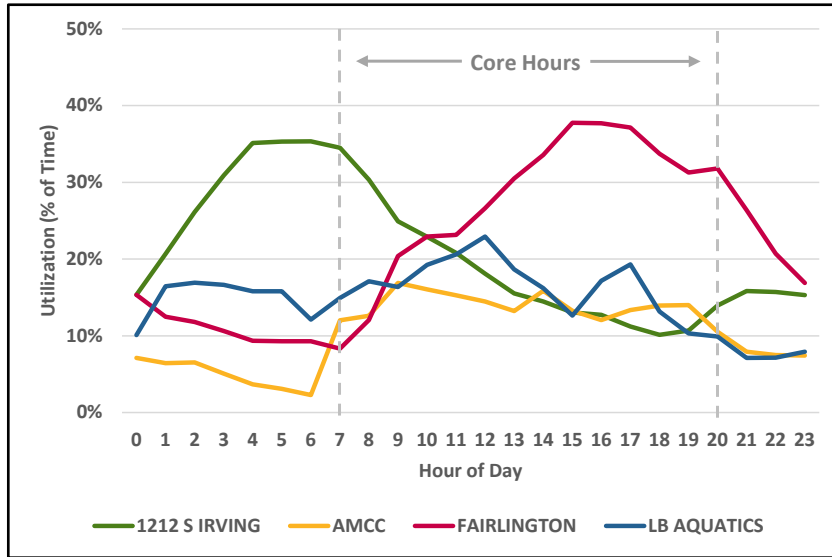
While EVSE **charging utilization** rates vary by data source, a National Renewable Energy Laboratory (NREL) study¹ that included municipal EVSE locations and another study by an EVSE solutions vendor² show a 7% to about 15% utilization rate for level 2 chargers. The utilization rate of the County’s EVSE is at the high end of the publicly available utilization rate benchmarking data, as seen in Graph 2, with the total exceeding both benchmarks at 16%.

Charging utilization core hours vary from about 10% to nearly 40% at the Fairlington Community Center, as seen on the lines within the dashed vertical lines on Graph 1 representing the core facility hours. Benchmarking data for the charging utilization core hours metrics was not available for comparison to the County’s performance.

¹ [Evaluating Electric Vehicle Public Charging Utilization in the United States using the EV WATTS Dataset: Preprint \(nrel.gov\)](#)

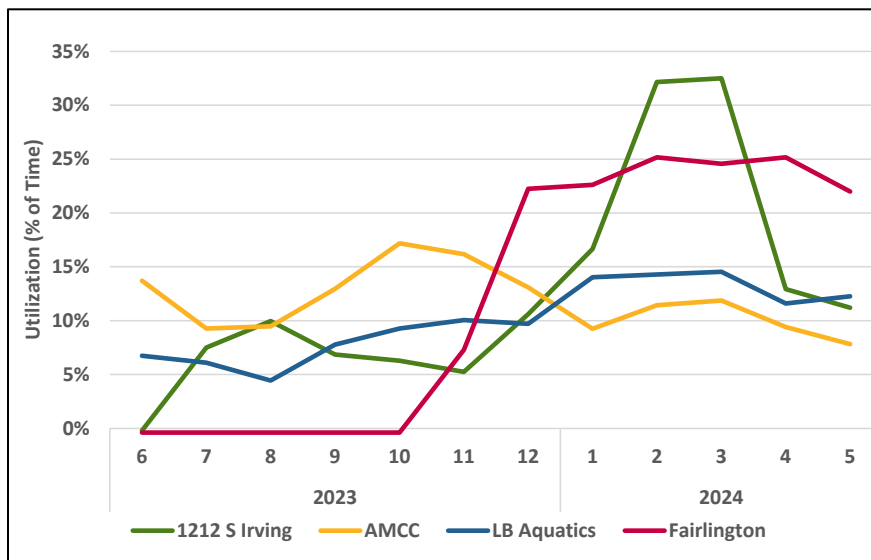
² [Stable Insights: EV Charging Utilization Trends](#)

Graph 1: Public EVSE Charging Utilization Core Hours



The graph below displays the locations with publicly accessible charging and monthly charging utilization rates for all 24 hours of the day, beginning in June of 2023.

Graph 2: Public EVSE Charging Utilization Rate by Month



Below is a table with the publicly accessible EVSE key metrics, that includes the data from the previous graphs. Also following the table are the definitions of the additional EVSE metrics.

Public EVSE Utilization Rates by Site (6 month rolling average)						
Location	# of EVSE ports	Monthly kWh	Charging Utilization Core Hours (7am- 8 pm)	Charging Utilization (24 hours)	Uptime	Idle Time
Fairlington Community Center (Fairlington)	4	3,700	30%	24%	100%	5%
Long Bridge Aquatics Center (LB Aquatics)	8	3,600	16%	13%	99%	6%
Irving Street Group Home (1212 S Irving)	1	900	17%	20%	100%	12%
Arlington Mill Community Center (AMCC)	2	800	15%	11%	100%	5%
All County-Owned Public Charging	15	9,000	20%	16%	>99%	6%

- **Monthly kWh-** 6 month rolling average of electricity, measured in kilowatt hours, dispensed from public EVSE stations.
- **Uptime-** percentage of time the public EVSE are properly functioning.
- **Idle Time-** proportion of time that an EV is plugged in at the station but not charging (e.g., charging session not yet started or remaining parked after charging is complete). This time is not included in the either utilization metric.

Looking Ahead

The utilization data is one of the many inputs that will be used to inform the siting of future public EVSE at County facilities, including the Carbon Neutral Transportation Master Plan (CNTMP) siting criteria. The utilization rates at Fairlington support the assumption that EVSE siting near multifamily garden style apartments may have higher usage. Data from the EVSE utilization rates will be continuously analyzed to inform further planning efforts to ensure the County is prioritizing sites that have the highest utilization potential while meeting other siting criteria goals such as equity. With previously approved funding, we anticipate installing an additional 36 EVSE ports over the next 12-18 months, with many coming on-line within the next month as detailed below. In addition, while the proposed FY 2025 operating budget included funding for an additional 32 EVSE ports at the Barcroft Community Center, Barcroft Garage, and the Walter Reed Community Center; this funding was reallocated at budget adoption for other climate investments.

EVSE Installation Status:

- Aurora Hills (4): permit approved, pending material delivery with installation planned for August 2024
- Central Library (12): the equipment has been installed, but waiting on final electrical connection; scheduled to be completed by end of July 2024
- Courthouse Lot (6): equipment installed, the units should be activated the week of July 7th
- Madison CC (6): equipment installed, the units should be activated the week of July 7th
- LRCC (8): design underway, installation planned for Spring 2025

As for the Dominion coordination issues, all of the above locations are being completed through the use of spare capacity from the facility's existing feed. Due to the excessive timeline, cost, and coordination efforts with Dominion, we decided to go that route instead of requesting new or upgrade service to complete the installations.