

Hosting Electric Vehicle Charging Stations

By Philip Barnes and Vincent Sikora, April 2021

Delaware is experiencing significant growth in electric vehicle (EV) sales and infrastructure.¹ At the same time, there is a tremendous opportunity to expand vehicle charging capacity to serve local and regional needs.² To meet current and future charging capacity demands, local governments and property owners who would like to host EV charging stations can pursue innovative partnerships and create a robust network of EV chargers in Delaware.

CHARGING BASICS

EV drivers in Delaware can utilize chargers manufactured by various technology providers: Tesla, ChargePoint, SemaConnect, Electrify America, and Volta. These companies partner with property owners—from City Hall to local retailers—who host charging stations and likewise become a destination for EV owners.

Site hosts select from three charging levels: Level I, Level II, and DC Fast Charging (DCFC). Each successive level provides the host and EV owners with an enhanced range of features and charging speeds, with Level II chargers being the most common for commercial and public sites.³

LEVEL I	LEVEL II	DCFC
Usually reserved for wall-mounted, residential charging	Most popular choice for commercial and public spaces	Usually limited to commercial fast charging and fleet operations
6 miles of range per hour of charging	60 miles of range per hour of charging	270 miles of range per hour of charging
\$300-\$1,500 per unit	\$400-\$6,000 per unit	\$10,000-\$40,000 per unit

MUNICIPALLY OWNED CHARGERS

Along with commercial and other public charging hosts, municipalities can partner with third-party installers to become EV charger site hosts themselves. The City of Newark, for example, purchased three chargers for municipal lots in the city and contracted with a private company for installation and ongoing maintenance.⁴ Adding chargers to municipal buildings, such as city or town halls, demonstrates that the municipality is ready to lead by example and it sends a signal to the community that EVs are welcome additions to the personal mobility environment.



If jurisdictions are interested in installing public charging stations at municipal buildings or other public property, local officials can contact the Delaware Department of Natural Resources and Environmental Control (DNREC) Division of Climate, Coastal and Energy for more information and guidance. DNREC also offers 90 percent rebates for government-owned charging stations and 75 percent for private stations. These rebates are capped at \$3,500 for single-port and \$7,000 for dual-port stations.⁵

BUSINESS MODELS

There are two main business models for EV charging that municipal or private sector hosts may select. The first model, or *the owner-operator model*, allows for the host to purchase, own, operate, and maintain the equipment procured from a charging station manufacturer. The host maintains control over the rates EV users pay to charge. By contrast, the *third-party operator model* sees the host enter into a lease agreement with an external operator. In this model, the host continues to receive lease payments regardless of the station's profitability.^{6,7}

MODEL SPECIFICS AND SUPPORT

The two business models offer distinct advantages for site hosts. A municipality may choose the owner-operator model if it has the resources to perform the necessary electric supply upgrades to the site, implement rate charges, or maintain charging capacity for fleet operations.⁸ The third-party operator model would instead allow for private operators to take on these costs.

Choosing a business model can help a host establish a retail rate design. Pricing can be membership based, user-specific, host-specific, per session, or time-based. The City of Newark is experimenting with a rate consisting of a regular parking fee plus the cost of electricity and demand charges.⁹

In either model, metering may be done via the existing electrical supply of the nearby structure, or separately via an on-site conduit installed at the time of construction to accommodate increased demands.¹⁰ Upgrades to transformers and wiring at the site may be required, so the electric utility may need to be involved to determine if these improvements are necessary.

¹ Alliance for Automotive Innovation, 2020

² US Department of Energy, 2016

³ Slowik & Lutsey, 2018

⁴ Martindale & Del Grande, 2020

⁵ Department of Natural Resources and Environmental Control, 2021a

⁶ Leung & Peace, 2020

⁷ Satterfield & Nigro, 2020



The average cost to install a two-port Level II station is \$2,793 per port, but capital costs can vary.¹¹ Cost drivers include station features and amperage, site evaluations and upgrades, labor, materials, permits, and trenching or boring. Hosts can mitigate these costs by strategically siting new chargers near existing supply wires and by planning for future installations in new construction.¹²

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⁸ Personal correspondence with City of Newark official

⁹ Personal correspondence with City of Newark official

¹⁰ Hong, Lee, & Kim, 2020

¹¹ Nicholas, 2019

¹² Electric Power Research Institute, 2013

For the full works cited, visit:

www.bidenschool.udel.edu/ipa/resources/publications