

Electric Vehicle Fast Charging Stations

One of the challenges our country faces on the route to transportation sustainability is that electric vehicles (EVs) are outpacing available charging points, which stresses aging power grids. This lack of reliable charging is an impediment to gaining consumer confidence to replace ICE vehicles with EVs.

Congress' approval of the Inflation Reduction Act will add much needed charging infrastructure, but that will take time to implement. To overcome near-term challenges, we must combine made-in-America stationery battery energy storage systems with a robust network of fast charging stations. Energy storage regulates grid load and supports stations powered by renewable energy, storing solar and wind power for later use.

EV Adoption Will Only Accelerate

To meet government mandates and consumer demand, the automotive industry is making tremendous capital investments to accelerate EV availability and sales. Charge station infrastructure must proportionally grow to match EV demand:

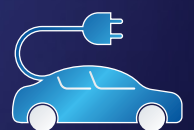
- ⊕ **Less than 1%** of the 290 million cars, SUVs and light-duty trucks on U.S. roads today are electric.
- ⊕ **By 2030 ... approximately 30%** of all U.S. new car sales will be EVs, projected by Auto Care Association.

U.S. Must Invest in Fast Charging Stations

Drive range anxiety and long charging times are top reasons drivers avoid EVs. Incentivizing sales requires substantial investment in the number of charging stations and access to fast charging stations that can reduce charge time from several hours to 30 minutes. According to the U.S. National Renewable Energy Laboratory:

- ⊕ About 110,000 public charging points exist; **only 20,000 are fast chargers.**
- ⊕ By 2030, the U.S. government has mandated **500,000 public charging points** with **100,000 fast chargers.**

“ ... nearly half of U.S. consumers say that battery or charging issues are their top concerns about buying EVs. ”



Batteries Enable Efficient, Reliable Fast Charging Stations

Battery energy storage systems provide the economic and convenience benefits that consumers and site owners need to fully adopt EVs:

+ **Lessen EV demand** on the power grid.

+ **Regulate power flow** throughout the day.

+ **Ensure power availability**, even during high demand and extreme temperatures.

+ **Reduce energy costs** to consumers.

+ **Enable more charging locations** and at a lower cost by using existing grid infrastructure.

Fast Charging Stations Reduce Charge Time

In general, there are three levels of charging. Level 1, the slowest, works well for plug-in hybrid electric vehicles (PHEVs). Level 2 is most commonly used for daily EV charging. Level 3 is considered direct current fast charging (DCFC), with the ability to charge an EV to 80% in about 20 – 60 minutes. This will enable EV adoption.

Charging Level	Power Delivery	Range Added Per Hour	Time to Charge 60 kWh EV
Level 1	1-1.4 kW	3-5 miles	30-40 hours
Level 2	3.9-19.2 kW	12-80 miles	2.5-4.5 hours
Level 3 "Fast Charging"	24-300 kW	75-1,200 miles	30-40 minutes

Time to charge EV with a 60-kWh battery is the time to raise the battery's charge level from 10% to 80%.

Lead Batteries Offer Key Advantages

Proven, highly sustainable lead batteries provide a solution for EV fast charging stations. Their 99% domestic recycling rate ensures a reliable supply chain exists to manufacture the batteries essential to green transportation.

The U.S. lead battery industry is uniquely poised to advance fast charging station growth. Unlike other battery technologies, lead batteries provide:

+ **Sustainability:** A 99% recycling rate; new batteries are typically made from 80% recycled material.

+ **Lower Cost and Total Cost of Ownership:**

New additives and materials have created faster charging times and lowered costs.

+ **Performance:** The cycle life of lead battery energy storage systems is expected to double from 2017 to 2030.

+ **Safety:** A strong safety record and ability to withstand temperature extremes.

+ **Domestic Availability via Circular Supply Chain:**

Currently, 90% of North America's lead battery demand is supplied by North American battery manufacturers.

BATTERY COUNCIL INTERNATIONAL Formed in 1924, BCI joins together battery manufacturers and recyclers, marketers and retailers, suppliers of raw materials and equipment, and battery distributors from across North America and around the world. BCI members are committed to responsible manufacturing and recycling processes, and serve as a unified voice for environmental, health and safety stewardship.

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