



ADAPTER ENABLES EV SMART CHARGING WITH BETTER TECHNOLOGY

THE CHALLENGE

As electric vehicles (EVs) become more common, the need for better charging technology has become apparent. Currently an estimated two million stand-alone EV chargers are in use. Because these older-style chargers lack the ability to communicate, they aren't considered "smart." Smart chargers allow consumers and utilities to monitor and control the amount of charge and its timing, for example.

Newer "smart" chargers also allow users—which include operators, consumers, and utilities—to share data. A consumer could choose to schedule charging at a time when electric rates are lower, making EVs less costly to use. A utility may be able to analyze data and control for load balance by scheduling usage to avoid peak times.

Older-style chargers can be costly and time consuming to replace.

THE INNOVATION

Funded by a grant from the U.S. Department of Energy's (DOE) Technology Commercialization Fund—which is administered by DOE's Office of Technology Transitions and with support from the Office of Energy Efficiency and Renewable Energy through the Vehicle Technologies Office—researchers at Argonne National Laboratory developed a handheld, universal adapter that can be installed to "plug and play" by consumers. It retrofits older stand-alone chargers to be smart.

Engineers in Argonne's Smart Grid-Electric Vehicle Interoperability Center supported creation of the software and hardware for the adapter. By working with industry partner EVmatch, Argonne patented the adapter and a companion mobile application.

The application can be used to optimize cost breaks for consumers by charging at off-peak hours. The data it generates can be used for analytics and reports.

THE IMPACT

- The adaptor was licensed in 2023 to EVmatch (Redwood City, Calif.), a women-led startup that operates a nationwide peer-to-peer EV charging network, enabling individuals, business owners, and commercial properties to rent out private charging stations, earn money and support their communities.
- With charging stations in 47 states, EVmatch works with electric utilities and state governments to increase EV charging access across hard-to-reach customer segments, including renters and apartment-dwellers.
- EVmatch began delivery of the EVmatch Adapter in 2023.

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