Electric mobility: bidirectional charging would reduce costs while promoting the energy transition

Press Release

A study from Agora Verkehrswende examines bidirectional charging / Bidirectional charging would generate financial benefits for EV drivers and electricity customers / Policy reform is necessary for widespread adoption

4 November 2025. Feeding electricity from electric vehicle batteries into the grid can be financially beneficial for EV drivers while also supporting the electricity sector. This is underscored by a new study from Agora Verkehrswende that estimates potential revenues from bidirectional charging in 2030. The Berlin-based think tank recommends policy reform to make bidirectional charging as attractive as possible, as this would reduce the total cost of ownership of electric vehicles (EVs) while utilizing their storage capacity to advance the energy transition.

Christian Hochfeld, the Director of Agora Verkehrswende, breaks down the benefits of bidirectional charging: "Electric vehicles can offer power systems crucial flexibility. Feeding electricity from car batteries into the grid can compensate for fluctuations in the availability of wind and solar energy and increase grid stability. This boosts the share of renewable energy in the electricity mix and lowers electricity prices. What's more, the financial incentives of bidirectional charging can accelerate the ramp-up of electric mobility. In the best-case scenario, the proceeds from bidirectional charging can completely cover the electricity costs of EV use – zero emissions at no cost!"

According to the study, which was commissioned by Agora Verkehrswende and conducted by the Reiner Lemoine Institute, the electricity stored in vehicle batteries could generate revenues of several hundred euros per vehicle per year. Specifically, charging a vehicle when electricity prices are low and feeding electricity into the grid when prices are high was projected to yield annual revenues of up to €500. Car batteries charged with home photovoltaic systems and used for household storage could produce ever higher gains.

Nevertheless, the projected revenues are heavily dependent on electricity prices and market conditions. Above all, the federal government needs to make bidirectional charging feed-in more financially attractive – as this application also supports the electricity sector. One option is to rely on flexible connection agreements (FCAs). These allow grid operators to ensure that battery charging and discharging occurs in a manner beneficial to the grid. In exchange, grid operators reduce grid usage fees on temporarily stored electricity, thus significantly lowering individual electricity costs. The Agora Verkehrswende study concludes that the government should also undertake awareness and trust-building campaigns for EV users.

A growing number of vehicles and home EV chargers now possess the technical features required for bidirectional charging. The largest technical hurdle remains the slow expansion of smart meters.

"Regulatory reforms are necessary to fully tap the potential offered by bidirectional charging," Agora Verkehrswende Senior Associate in Energy Sector Integration Fanny Tausendteufel explains. "It is important to create an efficient regulatory framework that creates viable business models for V2G feed-in. Those who increase

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power system flexibility through their EV batteries should benefit financially."

For their analysis, the study's authors compiled and evaluated existing scientific data and conducted expert interviews. The paper identifies measures to enable the widespread use of bidirectional charging and projects 2030 revenues for three different scenarios: privately owned EVs without access to photovoltaic systems, privately owned EVs with access to photovoltaic systems, and commercial electric trucks with access to photovoltaic systems.

The German-language study (*Bidirektionales Laden: Wie es sich finanziell auszahlen kann, die Antriebsbatterien von Elektrofahrzeugen als Speicher für das Stromnetz einzusetzen*) can be downloaded for free here: https://www.agora-verkehrswende.de/veroeffentlichungen/bidirektionales-laden

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