



## The Seamless World of Plug and Play Charge

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- The diverse range of authentication processes for EV charging leads to an unharmonized EV ecosystem and is expected to slow down growth in the EV industry.
- Manufacturers in the EV market are moving to incorporate the Plug and Charge technology, which they did not offer initially, in order to make them plug and charge compliant.
- Plug and charge technology helps the EV owner achieve a seamless EV charging experience that is focused on streamlining certain procedures, such as authentication and payments.

The world is moving towards the widespread deployment of public charging infrastructure to support the EV industry. The diverse range of authentication processes for EV charging leads to an unharmonized EV ecosystem and is expected to slow down the growth in the EV industry. But there are technological solutions available that radically improve the customer's charging experience and renders it seamless; one such solution is the Plug and Charge technology.

## Understanding the Plug and Charge Technology

Plug and Charge is the latest technology that allows drivers of electric vehicles to identify themselves safely and

smoothly at the charging station, leading to an improved charging experience. Presently, the first step in charging an electrical vehicle is the identification of the EV driver, which can be done through a mobile application or with an RFID card. This is then followed by the plugging of the charger inside the EV.

EV owners usually have to register themselves with a wide range of Charge Point Operators (CPOs) and Mobility Service Providers (MSPs) when they plan on travelling long distances; therefore, they need to have several RFID cards or applications at the ready. These RFID cards or applications have their own PIN code that is required for the authentication process at different charging points, which can cause confusion regarding when to use which type of RFID card or mobile application. Additionally, RFID cards tend to, at times, not work at charging points which may frustrate the EV user. Furthermore, the payment procedure at charging stations is another hassle, where some chargers accept credit cards while others accept various other forms of payments. These reasons render the whole charging experience inconvenient for EV users.

The Plug and Charge technology only requires users to plug the charging cable into the EV in order to charge their electric vehicle. As the cable is plugged in the EV, the vehicle is automatically identified by the charger and is authorized to withdraw energy to recharge the battery from the charging point. With the Plug and Charge technology in place, there is no need to enter credit card information, open a mobile application, scan a QR code, or take out easy-to-lose RFID cards.

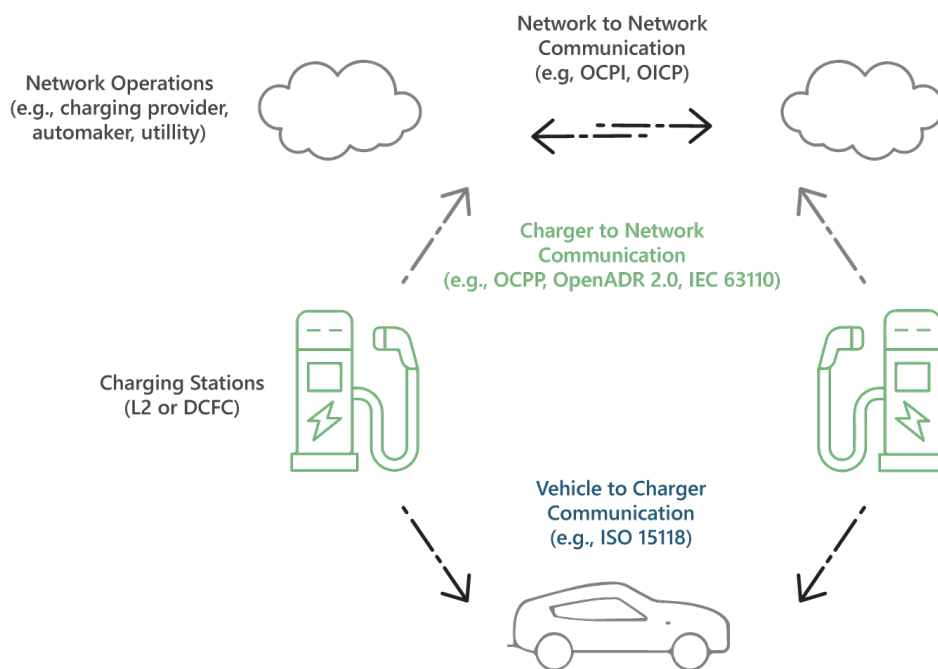


Figure 1: Different protocols used in EV charging.  
Source: MJBradley Interoperability Brief

## Implementation of Plug and Charge

For nearly a decade, Tesla has been offering this Plug and Charge technology; other EVs such as Mustang Mach-E, the Lucid Air, and the Porsche also boast this feature. Manufacturers in the EV market are moving to incorporate the Plug and Charge technology, which they initially did not offer, in order to make them plug and charge compliant. For example, EO Charging, a charging solutions provider based in the UK, filed a patent for ISO-15118 compliant EV chargers and software. This allowed EO to carry out smart AC charging of the legacy fleet of electric vehicles that were initially not equipped with the latest technology.

In the same vein, Hubject is offering Open Plug and Charge Protocol (OPCP), which allows free access to Plug and Charge. OPCP is the very first independent protocol which has standardized the Plug and Charge ecosystem.

## Looking Ahead

According to Power Technology Research, the Plug and Charge technology has the capability to transform the charging experience of electric vehicle owners. It presents a significant opportunity to make use of the existing EV charging technology and is expected to increase the penetration of electric vehicles in the market. Plug and Charge technology helps EV owners achieve a seamless EV charging experience, focused on streamlining procedures such as authentication and payments.

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