



Transatlantic Workshop on Electric Vehicles and Grid Connectivity

Session C: Smart Charging & Vehicle-Grid Connectivity

Main messages

Harmonization of charging equipment – charge couplers, chargers, meters, communications and controls – is good for several reasons. It lowers equipment costs and consumer electricity bills. It facilitates system integration. It makes systems simpler and more reliable.

Smart charging – to coordinate the additional loads on power grids created by EV charging – is much more cost-effective than beefing up distribution transformers for keeping power grids stable. Consumers need to be able to charge their vehicles where and when needed – they need to be able to tell the utility how soon they need enough charge to drive the distance they want to drive. Utilities (distribution and transmission companies) need the flexibility to time the charging, within the constraint of consumer demands, to take the maximum advantage of intermittent wind and solar power, and more broadly to use the cheapest power source available.

Good news is that the European Union and United States have agreed on the necessary communications protocols. This means that vehicle charging control modules and software can be of common design and work together. That is essential for a variety of services such as charge spot allocation and authentication of billing, as well as communication of consumer charging requirements and utility actions for grid optimization. Moreover, there is potential to harmonize DC charging connectors for rapid charging (by reducing the number of different connectors and harmonizing controls).

However not all regulations enable generators and network operators to manage EV loads so that they can optimize green electricity use on the grid. But service providers may be able to perform this and other functions. Not only supply-demand prioritization, but also mobility management for those who roam beyond their home neighborhoods (everyone), charging infrastructure, battery financing and warranty, and so forth.

A question going forward is what more can we do together to exchange research and best practice on incentives enabling EVs to optimize green electricity use but also to standardize equipment and promote agreed standards to important “third countries” like China and Japan.