

Common goals for a future-orientated European recharging infrastructure

Enabling every European driver of electric vehicles to use electric charging infrastructures across the EU has been a central aim of the Directive 2014/94/EU on the deployment of alternative fuels infrastructure (AFID). To achieve this goal and to facilitate the charging process for the customer, interoperability of the charging infrastructure is a fundamental need.

Since its entry into force in 2014, the market for electric vehicles and associated charging infrastructure has evolved rapidly. Yet, challenges with regard to the availability and ensuring Europe-wide interoperability of charging infrastructures abound. Consequently, a revision of the directive is needed, which the European Commission announced for 2021 as part of the European Green Deal¹.

The European Commission has already launched its evaluation of the directive in the Sustainable Transport Forum (STF)² and announced a public consultation in the beginning of 2020. These initiatives are welcomed and will help achieve an ambitious revision of the directive.

1. Customer-friendly charging and interoperability

- Customer-friendly charging means the charging operation is simple and comfortable, i.e. any customer should be able to **recharge at any public recharging point in Europe** knowing it will work. It also has to be ensured that customers have the **freedom to select the electromobility service provider (EMSP)** of their choice regardless of any preceding limitations.
- A revised AFID will need to support measures for **securing the quality of charging. Vital e-mobility aspects** that need to be addressed include: customer-friendly charging, integration into the electricity grids, elementary quality and service levels³ as well as security of data transmission.
- **E-roaming solutions and B2B contracts demonstrated** how to successfully enable **interoperability** of infrastructures and **increase customer-friendliness**. Especially for large markets with many market actors, platform-based e-roaming has proven to be the most cost-effective way of enabling interoperability. To further increase interoperability, a stronger focus should be laid on the interconnection of European roaming solutions in a non-discriminatory way. Therefore, the reviewed AFID should contain a legal definition of roaming services.
- The **choice of protocols** to enable the communication between EMSP and CPO (charge point operator) **must be left to the market parties**, however, harmonized standards should be aspired to. This is also fundamental for offering additional value-added services in an efficient and simple way in the future. Fair⁴ access for all EMSPs to all CPOs within a competitive framework is another important element of customer-friendly charging as well as ad hoc charging, both of which have to be addressed in more detail in a revision of the AFID as well.
- Apart from the enhanced customer-friendliness via its *Plug&Charge* function, the **implementation of the ISO 15118 standard** as an internationally valid standard for vehicles and infrastructure in a timely manner **addresses vital e-mobility aspects** as it enables the integration

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN>

² https://ec.europa.eu/transport/themes/clean-transport-urban-transport/clean-power-transport/sustainable-transport-forum-stf_en

³ Joint quality and service levels means the provision of standardized contracts and products in order to ensure uniform quality standards.

⁴ Granting fair access does not entail that CPOs need to provide access free of charge or tolerate unwillingness to pay on behalf of the EMSP.

of electric vehicles into the electricity grid, secure data transmission as well as additional value-added services in the future. ISO 15118 as an elementary part of CCS is expected to become the predominant standard for vehicle to recharging point communication on the global scale. Europe cannot afford to lag behind in this development.

- Considering the **strong involvement of European industry players** from the energy and automotive sectors ISO 15118 shall be supported. Consequently, also Plug&Charge should be based on ISO 15118. A **global CCS- and ISO 15118-based Public Key Infrastructure (PKI) has to be defined** and a certificate policy (CP) has to be agreed upon.
- In general, **the future regulatory framework shall support the market development by securing the following fundamental preconditions:**
 1. A **level playing field** for all market players needs to be ensured;
 2. The **free choice of EMSPs** for the customers when buying a car or before starting the charging process needs to be guaranteed;
 3. Simple, immediate and costless charging **certificate / EMSP change** must be enabled for the customers;
 4. The **free choice** for the customer **of an aggregator** for offering bi-directional charging must be enabled.
 5. Regulatory measures targeting the infrastructure need to be complemented by **adequate measures for the electric vehicles** as well.
- Customer-friendly ad hoc charging also concerns **pricing**. There is a need for uniform provisions,⁵ for clear and transparent pricing towards consumers across Europe (e.g. billing per kWh). Additional pricing mechanisms (e.g. blocking fees) for some use-cases are reasonable.

2. Scaling up and financing charging infrastructure

- In order to enable electric mobility that is truly European and ensures borderless travel throughout the Common Market, **targets for high-power charging of different magnitudes need to be set by every Member State** correlating with the number of available high-power charging capable cars as well as to the number of non-public charging points.
- Future European policy on charging infrastructure needs to ensure that **locations** for normal and high-power charging stations will become **available in a public and transparent manner**. Therefore, setting uniform and reliable conditions across the Union is of outmost importance to be able to face competition across regions.
- In the short- and mid-term, **public funding** of charging infrastructure for every use-case (private, workplace, public, highway) **will remain a vital necessity, in particular when the market is still in agile development with lots of uncertainty as regards the availability of electric vehicles**. Funding for such infrastructures delivers the best results if it is made contingent on technical criteria. Best practices can be found across Europe, e.g. with regards to technical criteria requiring digital connectivity, e-roaming and the use of open protocols and standards.

⁵ In light of the current lack of metering equipment for high power DC charging, some leeway should be granted to market actors.

- Business models that are long-term sustainable are the ultimate goal. In the mid-term, focussing on the **economic operation** of public recharging infrastructure will further increase consumer-friendliness and the comfort of charging. Utilization rates are the main levers for economic operation.
- Consequently, the **market uptake of vehicles** and **corresponding infrastructure** need to be rolled out **in parallel**. However, any number of charging infrastructure units will not only need to correspond to the number of vehicles but also to their individual traits. Intelligent target-setting will need to take account of the actual charging capacities of vehicles to be introduced to the market in the upcoming years.
- Similarly, high-power charging infrastructure should support vehicles with up to **800-volt architecture** and its rollout shall be downward compatible for all new chargers with respect to car architecture development. In this case, it has to be ensured that corresponding standards are made mandatory for the vehicles as well.
- Notwithstanding the final mechanism of target-setting in the European Union, **metrics** need to **better distinguish between types of charging**, in particular the definition of fast and high-power charging (< 50 kW, ≥ 50 kW, ≥150 kW and ≥ 250 kW) needs to be clarified.
- As soon as they are available, upcoming standards for **recharging technologies in the freight sector**, such as High Power Charging for Commercial Vehicle Charging (HPCCV) need to be set by a future regulatory framework similarly to the provisions on the Combined Charging System (CCS) at the moment. Standardization efforts need to be supported by the Commission, which should make use of its power to issue mandates to CEN/CENELEC as soon as a standard has been established. Furthermore, the legal framework should already address the integration of autonomous charging systems of the future. A trans-European charging network for trucks has to be established.

3. Promoting and implementing innovation as well as ensuring freedom and privacy of data

- **Tariffing** in contract-based charging and **value-added services** are **key areas of innovation**; in order to secure customer-oriented development and flexibility, detailed prescriptions should be avoided and the current focus of the AFID on ad hoc charging should be maintained.
- Apart from enhanced customer-friendliness, future-proof recharging infrastructure will need to address the **integration into the wider electricity system to enable sector coupling**. In order to ensure that this is the case, appropriate rules to enable flexible energy markets, which are needed to support vehicle-to-grid technology, need to be implemented. The further uptake will be featured by the CCS communication protocol ISO 15118.
- The future regulatory framework should support flexibility, enable and incentivize **load management** and smart charging via the use of vehicle batteries as well as intelligent bidirectional charging for use cases at home and at the workplace. Therefore, **targets** should be **set by every Member State** addressing scalable technical framework conditions with regards to communication, data, security and billing standards.

- In a European single market for data shaped by the European strategy for data⁶, **actors need to have access to extensive and comprehensive data respecting consumer privacy aspects** in the right quality in order to enable consumers to make use of value-added services.
- Moreover, **consumers** shall have the right **to freely control their data** related to the charging process (e.g. ISO 15118) and legitimate market players to offer additional services.

⁶ <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1582740216296&uri=CELEX:52020DC0066>