

Position paper on the deployment of charging infrastructure

August 2020

Our position in summary

Without charging infrastructure, electric mobility will not take off. Vattenfall therefore welcomes the review of the Alternative Fuel Infrastructure Directive (AFID) and its ambition to stimulate the deployment of charging infrastructure.

Vattenfall is convinced that electric mobility will play a key role to help the EU economy reach carbon neutrality by 2050, by progressively reducing GHG emissions in the transport sector. E-mobility will improve air quality, increase energy efficiency, strengthen security of supply, reduce the dependence on fossil fuels import from outside Europe and unlock flexibility benefits for the grids to better integrate renewable energy sources. The deployment of charging infrastructure is also a significant component of a post-COVID 19 recovery plan, in line with the European Green Deal ambition.

This paper presents Vattenfall's position and policy recommendations on the review of the Alternative Fuel Infrastructure Directive 2014/94/EU.

Vattenfall has set seven priorities:

1. **Align the definition of alternative fuels with the need for zero-emission road transport**
2. **Extend the scope of the directive**
3. **Establish an ambitious framework to allow the large-scale deployment of electric vehicles**
4. **Make standards open and non-discriminatory**
5. **Enable smart charging and ensure the integration of renewable energies**
6. **Introduce a "Right to Plug"**

Background

When the Alternative Fuels Infrastructure Directive¹ was adopted, the market of alternative fuel vehicles was still emerging. Last year, a major milestone was reached when Europe accounted for its first million electric vehicles on the road.² According to the Global EV outlook 2020 released by IEA³, the future market outlook is promising. In order to deliver on the Paris Agreement, all sectors have to contribute their fair share. Even before the Paris agreement was signed, the European Union agreed on a 60% reduction of greenhouse gas (GHG) emissions (compared to 1990 levels) in the transport sector by 2050. European Commission's analysis⁴ shows that achieving these commitments will require a nearly complete decarbonization of the passenger car fleet. Limiting the global temperature rise to 1.5°C will demand a complete decarbonization of transport world-wide by 2050⁵, which also create business opportunities for the European Road vehicle industry. Electrification of transport based on a fossil-free electricity mix is the most effective, efficient and sustainable way to decarbonise the transport sector and reduce air pollution. At the same time, electrification of transport will help achieve the EU carbon neutrality objective by 2050. In pursuing this goal, Vattenfall welcomes the revision of the AFID directive and has identified seven policy priorities:

1. **Align the definition of alternative fuels with the need for zero-emission road transport**

The revision of the AFID directive should reflect the targets of the newly approved policies on vehicle CO2 standards⁶ and public procurement of clean vehicles⁷ in order to address the expected growth of alternatively fuelled vehicles with adequate deployment of charging infrastructure across all Member States post-2020. Particularly in terms of road transport, it is essential to develop a 'sustainable fuel' definition considering the state of the art technologies and align it with the 2050 EU vision for a decarbonised transport sector. This means that fossil fuels should be excluded from the scope and compressed natural gas (CNG), liquefied natural gas (LNG), Liquefied Petroleum Gas (LPG) should not be part of the new legislation going forward.

2. **Extend the scope of the directive**

The current legislation only deals with 'recharging or refuelling points accessible to the public' whereas the majority of charging takes place at home or in the workplace. Also, charging is increasingly available in locations such as supermarkets, hotels and restaurants. The legislation should therefore define and align on what "publicly accessible" means and include further categories in the legislation for privately owned charging which is accessible to the public and privately owned charging which is not accessible to the public. It should also make the distinction between the different charging speeds available.

3. **Establish an ambitious framework to allow the large-scale deployment of electric vehicles**

Effective deployment criteria have to reflect the vehicle market, demographic and geographic parameters, as well as the power required from both the network and user perspectives. Technological and behavioural trends also play a key role to determine the charging infrastructure needs and sufficiency.

¹ Directive 2014/94/EU 22 Octobre 2014 ([LINK](#))

² Source: <https://www.eafo.eu/vehicles-and-fleet/m1>

³ IEA Global EV outlook ([Link](#))

⁴ For example the Impact Assessment (SWD,2017,650/954196) from the EU Commission, 2017 ([link](#))

⁵ ECF, Roadmap 2050, European Climate Foundation, 2011 ([link](#))

⁶ Regulation (EU) 2019/631 ([Link](#))

⁷ Regulation (EU) 2019/1161 ([Link](#))

The European Commission and Member States should consider new metrics and methodologies to assess the best geographical coverage of infrastructure to meet the demand of EV drivers, considering the density of population or the increasing charging speeds and the evolution of batteries technology, among other criteria.

4. **Make standards open and non-discriminatory**

Interoperability standards:

We believe it should be attractive and easy for citizens to switch from fossil to electrified mobility. Charging infrastructure needs to be readily available, easy to find, charge and pay. That's why Vattenfall develops roaming services. The interoperability between us and third parties will ensure easy access anywhere in Europe. Alongside the development of battery capacity that increases EV driving range, it becomes increasingly important to keep roaming coverage high for the purpose of to reduce the range anxiety and boost international travel. In order to roll-out a technical network between market players, connections need to be standardized based on open protocols, available for any company. Many market-players have implemented the open protocol OCPI, which is a very positive development. This standard is open and enables to charge everywhere with clear information about location, availability and price of charging stations. It provides market player opportunity to directly connect (peer 2 peer). As a result, roaming costs are minimized and EV drivers can get maximum benefit and access to added services. The OCPI standard reduces costs for every charge-point operator and represents an additional stimulus for the industry to grow.

Open standards and non-discriminatory:

Standardisation initiatives should create minimum technical standards to ensure successful communication between technologies. To facilitate more data exchange, Vattenfall advocates for the open standards developed by Open Charge Alliance: the Open Charge Point Protocol (OCPP), for hardware communication to charge point operators, which is already widely adopted. Vattenfall also supports the Open Smart Charging Protocol (OSCP), for roaming between charge point operator (CPO) and transmission system operators (TSOs) or distribution system operators (DSOs). OSCP allows DSOs and TSOs to communicate their flexibility over standards as well. Unfortunately, some member state are trying to develop other solutions, while OSCP is funded by EU, proven to work and implemented. Probably, they don't know about OSCP capabilities. Therefore, we recommend the EU to promote the OSCP. Vattenfall also promotes ISO 15118 Plug & Charge, a standard developed by the automotive industry. This standard enables the EV to automatically identify itself to the charging station and get authorized access to the energy it needs to recharge its battery. The driver doesn't need to do anything beyond plug the charging cable into the vehicle and the charging station. This would be a great step forward in the user experience if authentication was automatic. However, to ensure that roaming functions smoothly, it is important that the ISO 15118 standard does not add additional burdens or high implementation costs for E-mobility Service Providing (EMSP) companies which provide EV driver charging contracts, and is compatible with open protocols. Car manufacturers should introduce processes on their cards, that keep thresholds low for other EMSP providers to use ISO 15118 to offer, upload and configure consumer contracts on their cars. It should not be mandatory to join Hubeject⁸, to be able to

⁸ <https://www.hubeject.com/en/plugcharge/>

offer contracts over ISO15118 to EV drivers, because it would drive up consumer prices due to market monopoly. Vattenfall believes that this might represent a risk, as both ISO 15118 and Hubject are owned and/or heavily influenced by several car manufacturers.

We strongly recommend the EU to promote OCPI and OSCP standards in all its Member States and programs. Secondly, we recommend the EU to incorporate these standards in requirement packages for future EU and Member State tenders, in order to stimulate adoption. Thirdly, we recommend the EU to proactively set up a task force to assess the impact on the competitiveness in the market, in case ISO15118 is introduced. The outcome will help to ensure fair competition between businesses, and protects consumer interests.

5. **Enable smart charging, ensure integration of renewables**

A future-proof EV charging infrastructure network must allow smart charging to optimise the grid integration of EVs, maximise their flexibility potential for the integration of renewables, enable flexible pricing in real time and by extension smart charging – the precondition for successful and cost-effective EV grid integration. To harvest these benefits, AFID should include a clear definition of smart charging, and public authorities should include smart charging functionalities in the planning of charging infrastructures. This would be essential to enable electro-mobility market players to provide services to the electricity grids when a significant number of electric vehicles will be on roads and contribute to reduce its impact. Smart charging is also needed to enable innovative solutions of smart vehicle integration such as vehicle-to-grid services.

We recommend the EU to stimulate TSOs and DSOs to develop commercially scalable and compliant grid connections, that enhance tariff differentiation. This would allow charge point operators, who are orchestrating demand from drivers, network operators and electricity markets, to use price incentives to influence charging behaviours of EV drivers.

6. **Introduce a “Right to Plug”**

To accelerate the roll out of the charging infrastructure, it is important citizens have easy access to charging point and are allowed to install charging points in their apartment buildings, neighbourhoods and at work. Any tenant or co-owner should be enabled to install a recharging point for an electrical vehicle. With more than 40% of EU citizens living in apartment buildings, addressing the struggles of this market segment is key. For citizens living in locations without a suitable site where to install such infrastructure, they should have the right to request the installation of EV charging infrastructure in their neighbourhood. Improved and faster infrastructure planning and permitting is essential to meet their needs.

The revised legislation should promote the installation of national building frameworks that give all Europeans the “Right to Plug”. For example, France, Portugal and Spain, have already realised this necessity and implemented favourable rules.

About Vattenfall

Vattenfall is a European energy company with approximately 20,000 employees. For more than 100 years we have electrified industries, supplied energy to people's homes and modernised our way of living through innovation and cooperation. We are determined to enable fossil-free living within one generation. To succeed we must become fossil free ourselves. But that's not enough. We are looking beyond our own industry to see where we can really make a difference. Together with our partners, we are taking on the responsibility to find new and sustainable ways to electrify transportation, industries and heating.

About our E-Mobility solutions

Vattenfall develops and offers charging solutions for EVs, buses and trucks. Together with our partners we have built one of Europe's largest charging networks, InCharge, with over 17 000 charging points established in Sweden, Norway, Germany and the Netherlands, with further markets to be added. Vattenfall is also taking part in initiatives, including the eRoadArlanda, a pilot-project in Sweden, to develop e-roads for electric trucks and other EVs. Also, Vattenfall and Echandia Marine have jointly developed a new concept that can contribute to a more sustainable transport solution for different types of boats and ferries. Wouldn't it be great if we could make use of old electric car batteries? We are developing and testing means of recycling electric vehicle batteries to use them for storing electricity generated by wind and solar power in a cooperative project.

The benefits of E-Mobility

The development of E-Mobility solutions can help to tackle a wide range of problems in the energy sector:

- When electric vehicles are powered with electricity from 100% renewable sources they have zero CO2 emissions per kilometre and are 60% more efficient than conventional cars⁹ Even with the current Dutch/German electricity mix, **electric vehicles emit ~25% less CO2 and are 25% more efficient** than their fossil fired counterparts¹⁰. These numbers will only improve when RES and CO2 policies in the electricity sector will materialize even further. In Sweden, where power generation already is 98% fossil-free, switching to E-mobility already results in primary energy savings of ~40%.
- An increasing penetration of E-mobility also implies **a reduction of oil demand and higher security of supply.**
- **Electric vehicles will help reduce air and noise pollution in our cities and ensure that (EU) Air Quality targets are met.** Big improvements can be made when also heavy vehicles like busses are electrified. Excess emissions from diesel cars cause about 5,000 premature deaths per year across Europe¹¹. Higher exposure to secondary particles and ozone can be traced back to excess NOx emissions from diesel cars, vans and light commercial vehicles. Thousands of premature deaths could be annually avoided if NOx pollution is strongly reduced and avoided.
- **Electric vehicles can help increase the flexibility of the power system** when real time market prices reach the customer, and distribution tariffs & taxes (which generally make up 2/3 of the electricity bill) move in tandem with the wholesale market price.

⁹ Internal combustion engines have an average efficiency of about 30%. If you charge an electric car with an cable its final energy efficiency is about 95%. This means 95% of the electric energy used to charge the battery is transformed into motion energy by the electric motor.

¹⁰ The German Ministry of Environment ([BMU](#)) has calculated that CO2 reductions from switching to EVs already now add up to 23%. Vattenfall estimates show that emission reductions in the Netherlands are ~30% (having a higher share of clean gas generation), while Sweden's low CO2 mix achieves emission reductions >80% and primary energy savings of ~40%

¹¹ 5000 deaths annually from Diesel-gate in Europe, International Institute for Applied System Analysis, 2017 ([LINK](#))