

Accelerating Electric Recharging Infrastructure Deployment in Europe

Position Paper of the Platform for Electro-Mobility

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Background

2016 and 2017 are set to be decisive years for accelerating the deployment of electric recharging infrastructure and subsequently for paving the way for an EU Single Market for electro-mobility. In fact, November 2016 is the deadline for the submission of EU Member States' National Policy Frameworks (NPFs) which will lay out each country's implementation plan for the Alternative Fuels Infrastructure (AFI) Directive 2014/94/EU. The next months will therefore be crucial for Member States as well as EU policy makers to ensure a coordinated implementation of the AFI Directive throughout the EU and to define key measures to remove barriers to the deployment of charging infrastructure in the private and public domain.

The AFI Directive aims to address consumer anxieties by (i) facilitating the deployment of private recharging points, (ii) mandating the build-up of sufficient numbers of publicly accessible charging stations and (iii) setting EU-wide harmonised standards for charging connectors as well as for user information requirements. While this is an important step in the right direction, a common understanding, increased Member States' coordination and timely and appropriate implementation of the Directive across Europe will be crucial.

To this end, this paper provides a number of recommendations for the implementation of the Directive and more specifically for a pragmatic and innovation-oriented implementation of standards mandated by the AFI Directive; namely the deployment of normal- and high-power recharging infrastructure; intermodal electro-mobility synergies; shore side electricity; smart charging; payment solutions and appropriate parking schemes. If left unchecked, these issues could have negative consequences for the wider uptake of electro-mobility, by damaging investor confidence in the technology and burdening EV users with higher costs as a result of market fragmentation and the prevalence of proprietary solutions.

1. What kind of recharging infrastructure is needed?

a. An open and innovation-driven approach is paramount to allow improved technologies and business models to emerge

The harmonisation of technologies and common standards are key for the mass rollout of current and future EVs across Europe, which makes the AFI Directive's implementation of crucial importance. Nevertheless, the Platform for Electro-Mobility would like to stress that

the EV market is a fast moving environment where technological and business innovations are crucial and should also be facilitated and promoted. This is essential in order to create a competitive market where services and products are constantly improved to the benefit of end users.

In this regard, the Platform would like to insist on the need to avoid any negative impact of the AFI Directive on technological and business innovation. In particular, it should be clear from the AFI Directive that connector specifications (see art. 4.4 of the AFI Directive) are minimal requirements that apply ONLY to “publicly accessible recharging points”. The AFI Directive should therefore avoid imposing unnecessary connector specifications to new-built recharging points that are only privately, and not publicly used i.e. where the actual user group and vehicles served are limited. In fact currently 80% of all electric cars capable of high power charging in Europe use a different high power charging technology (e.g. CHAdeMO, Tesla Supercharger) than the connector mandated by the AFI Directive (Combo2). Only about 15% of newly sold electric cars are optionally equipped with the DC high power charging connectors mandated by the Directive¹.

Such a clarification would be consistent with the connector specifications mandated for the other alternative fuels in the scope of the Directive which apply only to publicly accessible recharging points (see art. 5.2 of the AFI Directive on hydrogen). It would enable further technological innovation towards more advanced charging solutions, in particular “very high power charging” solutions. In fact the industry now expects that by 2020 a majority of new electric cars will be capable of accepting 150 kW or even possibly 350 kW charging i.e. much more than the 50 kW provided within the current standards on both passenger vehicles and charging equipment at present.

It is important that specifications mandated in the Directive do not become a barrier to further charging infrastructure development. Otherwise the implementation of the charging specifications on private stations would end up being detrimental to companies that have invested in other charging solutions as well as to end users. It would ruin investors’ and consumers’ confidence and unintentionally slow down the overall uptake of electro-mobility.

Despite the intention of the AFI Directive to create uniform rules across the European Union, different interpretations of the Directive’s definition of “public accessibility” have been observed in different Member States. It is essential that Member States coordinate on one single definition based on art. 2.7 of the AFI Directive that would be consistent with the initial intent of AFI Directive to give private charging points flexibility to offer different technologies and business models.

The Platform calls:

- On Member States to avoid an inflexible implementation of connector requirements of the AFI Directive. The Directive’s implementation should allow operators of recharging points not accessible to the public to offer diverse charging technologies. Operators of publicly accessible charging points, on the other hand, should be encouraged to offer multi-standard-solutions, capable of accommodating new standards.

¹ European Alternative Fuels Observatory, Vehicle Stats: <http://www.eafo.eu/vehicle-statistics/m1>

- On Member States to uniformly follow the definition of “public accessibility” (art. 2.7 of the AFI Directive) as suggested by a growing number of Member States to ensure timely and coordinated implementation across Europe.

b. Normal power recharging infrastructure is the backbone of daily EV charging

Normal power recharging from 3.7 to 22 kW is the backbone for the daily recharging of passenger Electric Vehicles (EVs). In fact 88% of EU public recharging infrastructure today consists of normal power recharging points. According to the latest 2016 statistics from the European Alternative Fuels Observatory (EAFO) 82,660 out of 92,118 charging points in Europe provide normal power charging (up to 22 kW)². Even in Norway, the country with the highest penetration of passenger EVs per capita, 87% of the total EV infrastructure provides normal power charging³. Daily normal power charging up to 22 kW (at the workplace or overnight) offers the most convenient charging experience for passenger EVs. Furthermore, normal power charging facilitates the integration of EVs into the electricity grid through smart charging solutions (for more details on this topic see section 4 of this paper).

The European Commission and Member States should strongly support the build out of normal power recharging infrastructure wherever cars are parked for a longer time. Technologies for normal charging are now widely available, but regulatory and financial measures are needed to achieve larger scale deployment.

Though charging for Light Electric Vehicles (LEVs) uses typical domestic charging, barriers of security and charging still have to be overcome. The LEV category too requires a publicly accessible network of charging points which should not be confused with the so-called normal charging for passenger EVs (more on this topic in Section 3).

The Platform calls:

- For a simplification of regulations and approval procedures to facilitate the deployment of individual charging points in existing apartment/office buildings. In the new Spanish apartment building regulation for example, EV owners only need to notify other co-owners to install a charging point at own costs. This eliminates the need for uncertain and long approval procedures.
- For refurbished homes, apartment and office buildings, car parks and commercial centers with off street parking to include provisions for EV and LEV charging⁴. As an example, the newly passed French building code⁵ requires new apartment buildings to equip 50% and commercial/office buildings to equip 10% of parking spaces with conducts for minimum 7 kW charging. At EU level, similar measures should be

² European Alternative Fuels Observatory, Infrastructure Stats: <http://www.eafo.eu/electric-vehicle-charging-infrastructure>

³ European Alternative Fuels Observatory, Infrastructure Stats: <http://www.eafo.eu/electric-vehicle-charging-infrastructure>

⁴ Platform for Electro-Mobility, Position Paper, www.platformelectromobility.eu

⁵ French Building Code (Decree no. 2016-968 of 13 July 2016); <http://www.ave-re-france.org/Uploads/Documents/1468860827ed6bb57e980cf9e0be18453638a79929-D%C3%A9cret%2013%20juillet%202016.pdf>

included in the review of the Energy Performance of Buildings Directive by end of 2016.⁶

- On European cities to ensure simplified permitting procedures and to provide coordinated financial incentives for the deployment of on and off-street charging infrastructure based on the city land-use planning as defined in their Sustainable Urban Mobility Plans. Public charging infrastructure is in fact essential for e-car sharing schemes and for private EV owners with no off-street parking.

c. DC high power recharging: a prerequisite for rendering electric vehicles a true substitute for ICEVs

DC high power recharging is crucial to allow convenient full electric long distance driving and to make EVs a viable alternative to ICEVs. As such, high power charging is key to changing the perception of EVs as constrained to the urban environment and to demonstrating EVs as a viable alternative to conventional ICEVs.

As battery autonomy grows to several tens of kWh, **high power charging points for electric cars will need to offer higher power capabilities (e.g. 150 kW compatible for existing and new EVs) to allow full electric long distance travel.** 50 kW high power charging points deployed across Europe are viable for rapid recharging in urban environments, but require 30 minutes to charge a range of 120 km. This does not offer a viable highway alternative to ICEVs. On the contrary, 150 kW charging points will allow for drive vs. charge cycles very similar to ICEVs with 2 hours drive time vs. 20 minutes charge time. Tesla's EU-wide 135 kW Supercharger network has already shown that this works. It is therefore critical for policy makers to focus on the deployment of such higher power charging points when supporting the deployment of charging points along major EU corridors. Needless to say, the connector specifications (art. 4.4) of the AFI Directive are minimal requirements and that other types of connectors shall be able to collocate in these higher power chargers.

These 150 kW charging points should replace existing 50 kW charging points on strategic locations. Regrouping multiple 150 kW charging points for cars on one site rather than deploying single 150 kW charging points on multiple sites can allow significant reduction in the costs of each charging point and foster the business case for investors. A cadastre of grid connection points of the appropriate local DSO for planning EV infrastructure would be helpful as a Joint Research Centre study showed for the region of Alto Adige/ Südtirol⁷. In addition, building high power charging hubs with larger grid connections could offer synergies with other electricity supply purposes, such as electric road freight along EU corridors.

⁶ Inception Impact Assessment: Review of the Energy Performance of Buildings Directive; http://ec.europa.eu/smart-regulation/roadmaps/docs/2016_ener_001_epbd_smart_buildings_en.pdf

⁷ JRC: Optimal allocation of electric vehicle charging infrastructure in cities and regions (2016) <http://publications.jrc.ec.europa.eu/repository/handle/JRC101040>
http://publications.jrc.ec.europa.eu/repository/bitstream/JRC101040/allocatechargingpoints_sciencepolicyreport_eurreport_online.pdf

While long distance travel represents a limited amount of trips for any passenger vehicle, it is essential to offer 360° electric mobility. For this use case, high power charging around 150 kW – downward compatible - is needed to offer acceptable charging times for users and accelerate electric mobility adoption as a whole.

Therefore, the Platform calls:

- On the European Commission and Member States to use the opportunity of the mid-term Multi-Annual Financial Framework revision to increase the resources allocated to the Connecting Europe Facility, to fund multiple high power charging point locations in future calls.
- Similarly, for all new EU- or nationally-funded charging infrastructure that would link two urban nodes and/or Member States within the Trans European Network for Transport corridors to include multi-standard, downward compatible 150 kW high power charging points that can cater to all current and future EVs. In doing so, they shall seek to exploit potential synergies with other innovative solutions for electric road freight.

d. Deploying charging infrastructure for electric buses

As the technology matures, several of the largest European cities now intend to purchase electric buses in the near future. All the different possible technologies are currently being tested through demonstration projects (e.g. ZeEUS, or “Schaufenster Elektromobilität” in Germany). One obstacle for the deployment of electric buses remains their significantly higher prices, for which operators do not have enough national or regional funding opportunities.

As concerns the charging infrastructure, as long as the capacity of batteries is still below the range a bus typically drives in a day, opportunity charging⁸ stations will be needed in many spots throughout the bus route, whereas operators will eventually aim at exclusively overnight charging once the batteries are able to ensure the range of a full day’s service.

As a consequence, in the longer term, the need for charging infrastructure across the city may change.

Currently it remains difficult to install bus charging stations due to the high administrative burden to get the building permit. The length, complexity and costs of this process have an impact on the total cost of ownership. Once charging points are established, this limits the flexibility of the bus use and can impact the whole operation of the bus network.

Depending on the local circumstances, bus operators need high-power opportunity charging points in order to minimise the time a bus is out of service for being recharged during service hours. In order to keep the same flexibility of operation as for a diesel bus

⁸ Opportunity charging utilises the short breaks in bus operation (e.g. at bus stops or at the end of route break) for high power charging.

network, it is necessary to develop an optimised network of charging points. This will reduce the running costs of electric bus operations, but requires a higher initial investment.

Electric bus operators need to select appropriate points in a city for opportunity charging stations, which will vary from one city/region to another, depending on the routes and bus timetables.

As operators start using electric buses and depend on the technologies currently available, it is important that electric bus charging infrastructures, including those for induction charging, are standardised as soon as possible. These procedures are expected to be finalised by 2019 by a regular or by 2017 by an accelerated procedure.

The Platform calls for:

- An accelerated standardisation of the charging interface for electric buses.
- European funds to be made available for purchasing electric buses and setting up the charging infrastructure.
- Easy administrative procedures in the deployment of high-power opportunity charging points in carefully selected areas of the city.

2. Exploiting intermodal electro-mobility synergies

When relevant, the establishment of recharging points in cities should make use of existing infrastructures such as railway stations and connections to the electric infrastructure already in place for public (and private) transportation, such as ships, trains, trams, metros and trolley buses. These can ideally be combined with electric car renting schemes and e-bikes, which enhance inter-modality. Such a use of existing infrastructure would help in reducing the need for civil works for new grid connections as well as the associated costs.

Public-private transport synergies could include integrated usage and payment solutions. In Berlin, for example, public EV recharging points can be accessed using public transport subscription cards as minimal authentication system, which has already been put in place for other transport modes such as public transport and bikes. Similarly, in order to motivate commuters to use electric vehicles as part of commuting and other inter-city journeys, an EV for shared use was made available at a train station near Copenhagen/Malmö area. For fast and easy access, the EV was equipped with a reader that accepts the travel card already widely used for authentication at public transport. Having one card for all permits a seamless and inter-modal mobility⁹.

Synergies between land and maritime transport should not be neglected. Local electric and hybrid ferries are becoming more common, especially in Nordic countries, and are

⁹ Green eMotion Final Report, http://www.greenemotion-project.eu/upload/pdf/deliverables/D11_8-Final-publishable-summary-report-V1_4.pdf. Similar integrated services have been tested in Berlin, https://www.bemobility.de/bemobility-de/start/bemobilty_12_13/

expected to be deployed elsewhere as they lower ships' operational expenditures and reduce air pollution (nitrogen oxides, sulphur oxides and particulate matter)¹⁰. This will require the deployment shore-side electricity supply ("SSE" i.e. enabling ships at berth to plug to the national grid and so to shut down their engines), and charging infrastructure which could share electrical elements with land vehicles' charging stations.

The roll-out of electric recharging infrastructure requires significant investments by Public Transport Authorities and Public Transport Operators. One way of relieving these costs could be by enabling Public Transport Authorities and Public Transport Operators to recover parts of the initial investment by selling energy (which can be recovered energy from public transport systems) at charging points also to private customers. Unfortunately, there is no legal clarity as to whether the Public Transport Authorities and Public Transport Operators are allowed to sell energy (see more on this point in section 4).

The Platform calls for:

- Investments to be directed towards charging stations that foster inter-modal mobility and make use of existing electric infrastructure from public transport.
- Further investments to be directed towards the deployment of systems capable of recovering, storing and reusing the braking energy of rail-based public transport.
- Public Transport Authorities and Public Transport Operators to be granted the right to recover parts of the initial investment by selling energy at charging points also to private customers.
- Technical specifications related to shore-side electricity set out in the AFI Directive should be enforced as soon as possible¹¹.
- The commitment of Member States to deploy by 2020 SSE in berths close to large residential/commercial areas and in all cruise ships and ferry terminals, and in particular in ports of the TEN-T core network.

3. Electro-mobility in cities: ensuring appropriate parking schemes to maximise benefit from existing EV infrastructure

Public parking schemes need to be adapted to electro-mobility. In particular, putting appropriate parking schemes in place is essential for ensuring that charging points are optimally used. EV charging/parking slots across Europe are often blocked by ICEVs. Signage for charging points for electric vehicles should be enforced, and misuse by ICEVs made punishable with fines/towing as is now done in some European cities that have adopted a large charging point deployment scheme like Amsterdam, Berlin, and Paris. Surprisingly this is still not the case in many other European cities.

¹⁰ EEA, *The impact of international shipping on European air quality and climate forcing*, 2013: <http://www.eea.europa.eu/publications/the-impact-of-international-shipping>

¹¹ AFI Directive 2014/94/EU, Annex II Art. 1.7

In addition, when EV usage ramps up and in order to enable optimal use and availability of public charging infrastructure to EV drivers, public authorities and operators of publicly accessible recharging points should implement tariff structures in which charging fees also include regular time-based parking fees, e.g. when charging itself is over as is done for example in Amsterdam. This acts to prevent misuse by both private EV owners and EV car-sharing companies of publicly accessible charging spots during the day while still allowing for convenient overnight charging.

Today, light electric vehicles (LEVs), including electric bicycles, make up for the EU's most mature electro-mobility market. Annual sales are around 1.5 million vehicles, whilst the European fleet consists of several million vehicles. The relevance of LEVs has been recognised in the AFI Directive, especially through art. 4.13. And whilst the prescribed standardisation is underway in IEC TC69, more needs to be done to facilitate the use of LEVs. Charging infrastructure is much less of an issue for LEVs than for EVs. Parking infrastructure, however, is much more of a problem. The lack of parking space/infrastructure is very often resulting from lack of awareness. Therefore, the European Commission and Member States should strongly encourage and support the provision of parking space/infrastructure for LEVs in connection with the development of public charging infrastructure. Appropriate parking schemes to ensure optimum use of recharging points should include parking for LEVs.

Implementing new forms of infrastructure in the urban environment is extremely challenging. There is already considerable competition for space and many cities have experienced delays, challenges and additional costs when implementing other environmentally advantageous infrastructure measures such as bike sharing, car sharing and public transport facilities. With this in mind Member States should ensure that the decision on how many charging stations and where they should be located should remain with the city governments that can balance the diverse demands on space at a local level.

The Platform therefore calls:

- For giving local public authorities the competence to decide how and where to implement charging stations in areas where there are diverse transport modes.
- For the provision of appropriate parking schemes, which include appropriate parking for LEVs to ensure optimum use of recharging points.
- For the addition and prioritisation of EV and LEV charging spots within national parking regulations to enable towing away of wrongly parked vehicles (first and foremost ICEVs).
- For a publicly accessible network that allows LEVs to be charged at public transport hubs and buildings with large numbers of commuters.
- For the progressive introduction of time-based pricing signals in order to stimulate correct parking behaviour for EV users and to avoid excessive over-staying when charging is finished.

4. Smart charging: making EVs an asset to the electricity value chain

Smart charging¹² technologies (Grid to Vehicle available today and possibly Vehicle to Grid in future) make EVs a valuable asset in the electricity value chain while reducing the costs of charging to EV owners. In terms of available electric capacity, the system can cope with an extensive electrified fleet. But a fully electrified fleet would still have impacts on local load at certain times and some local or regional strengthening of the grid would therefore be needed. However, smart charging of EVs can also reduce investments in grid capacity going forward^{13 14}.

While parked (90% of their lifetime¹⁵), thanks to smart, controlled charging, EVs can provide flexibility services to the electricity system like (i) “valley filling” (shifting consumption to times when energy is under-utilised), (ii) “peak shaving” (avoiding charging or sending power back to the grid when demand is high) and (iii) ancillary services (voltage control, frequency regulation) at system level and at local level.

Smart charging is essential for a cost-effective energy transition and for facilitating consumers’ adoption of EVs. Smart charging leads to significant CO₂ savings by avoiding the use of gas- and coal-powered peak generation power plant and enabling a better integration of renewables into the electricity system. It can also reduce the cost of charging as it provides consumers with an opportunity to charge off-peak hours and benefit from the energy stored in their batteries.

Normal power charging (<20 kW) offers the greatest opportunity for demand-response and smart charging, as it accounts for around 90% of the energy charged by an EV. As it is expected that many people will connect their vehicle after work in the evening, which will further increase the demand for electricity at evening peak times, smart charging can bring great benefits by postponing the moment of charging to a time of low demand on the grid, e.g. during the night. Such a shift will not limit the user’s comfort, as the vehicle is generally parked for a much longer time than it takes to recharge the battery, so there is enough flexibility that can be exploited.

In general, several EU projects have shown that ‘Plug in while Parking’ is a very promising instrument. EVs remain connected to the grid in comparison to charging only occasionally on demand for a few hours¹⁶. This enables full benefits for flexible power management to offer flexibility to the grid.

¹² Smart charging consists of adapting EV battery charging patterns in response to market signals, such as time-variable electricity prices or incentive payments, or in response to acceptance of the consumer’s bid, alone or through aggregation, to sell demand reduction/increase (grid to vehicle) or energy injection (vehicle to grid) in organised electricity markets or for internal portfolio optimisation.

¹³ Ecofys, *Waarde van Congestie management*, (2016)

¹⁴ Cambridge Econometrics, *Fuelling France* (2015), Executive report, p. 10. “In France, (...) smart charging system would allow more than 20 million vehicles to be integrated. “, see also Figure 2 “Costs and benefits of integrating rechargeable vehicles in electricity distribution networks in France”.

¹⁵ Paul Barter, “Cars are parked 95% of the time”. *Let’s check!*, (2013), Reinventing Parking website: <http://www.reinventingparking.org/2013/02/cars-are-parked-95-of-time-lets-check.html>

¹⁶ EU project GridTech, Deliverable 3.1 Appendix: [Electric Vehicles \(EVs\) & their Future Potential to provide Ancillary Services by Smart Charging - 2015.](http://www.gridtech.eu/images/Deliverables/GridTech_D3.1_Appendix_EV_for_ancillary_services.pdf)
http://www.gridtech.eu/images/Deliverables/GridTech_D3.1_Appendix_EV_for_ancillary_services.pdf

Potential for modulation on high power charging points (>22 kW) is fairly limited. First, high power charging accounts for only 10% of the energy charged by EVs and hence offers a relatively limited market overall. Also high power charging happens in a much more equally distributed way during the day, i.e. the modulation of high power charging would offer much less potential to ease impact on the grid. Finally, the fundamental aim of high power charging is to allow for a rapid refill where parking time is limited to the recharging time of the vehicle.

Equipping fast charging stations with stationary batteries could ease the demand on the grid at peak times. The storage could provide electricity for high-power charging and fill back up with electricity over a longer period when no vehicle is connected to the high power charging facility. Options of adding battery storage to charging stations are only to be evaluated and decisions on whether or not to include them are to be made by charging station owners, as the cost-benefit analysis will depend on location-specific elements such as electric grid, frequency of stations usage etc.

In the context of the Energy Market Reform in 2016 EU policy makers should include measures to facilitate smart charging. On both European and national level, policy makers, regulators and infrastructure operators should help to build business models for smart charging, and provide EV drivers with the right incentives to use smart charging.

The Platform suggests that:

- The design of the New Energy Market needs to **ensure consumers can easily use smart charging and gain access to demand-response services:**
 - Accelerate deployment of smart metering and stimulate consumers' demand for flexible consumption, as proposed by the AFI Directive¹⁷;
 - Eliminate double grid fees for energy storage.
- The design of the New Energy Market should **enable providers to offer new services to consumers:**
 - Enable electricity retailers and new market entrants to offer real-time pricing, based on wholesale market prices;
 - Create a market open to any new entrants that can offer demand-response services and establish clear duties and rights for retailers and independent aggregators.
- The design of the New Energy Market should **enable market players to use smart charging and demand response for different purposes:**
 - Ensure that existing retailers and new market entrants have a real opportunity to participate in energy markets through aggregation;
 - Enable Distribution System Operators (DSOs) to procure demand-side flexibility for local system management through a market-process (e.g. calls for tender or from a local distribution constraints market).

¹⁷ AFI Directive 2014/94/EU, art. 4.7

5. Payment solutions: enabling seamless access and payment for publicly accessible stations

Payment solutions on publicly accessible charging points across Europe need to be economical, easy and customer friendly. These should encompass both: ad-hoc/direct payment (i.e. directly paying the Charging Point Operator “CPO” for each charging session) and subscription-based payment (i.e. contract with a so-called eMobility Service Provider “eMSP” that offers access to a wide range of charging points and services, slightly similar to a mobile phone provider, and potentially linked to a multi-modal public transport subscription). No option should be neglected in order to accelerate the deployment of charging infrastructure in Europe, foster the provision of different services to consumers and the development of electro-mobility at large. However, an open competitive market is needed for service providers to develop most customer-friendly services.

Ad-hoc payment options are necessary to ensure basic interoperability and overcome range anxiety. From a user perspective, the insurance that one will be able to charge in an ad-hoc manner at the next publicly accessible charging point is vital to overcome range anxiety and to allow for cross-border electro-mobility. Ad-hoc charging options on publicly accessible points are therefore necessary from a user perspective and advised in art. 4.9 of the AFI Directive.

Subscription-based charging can allow for more advanced services to be provided to consumers and operators. Today, most EV owners charge using subscription-based solutions.¹⁸ Interoperable subscription based charging across operators allows for a seamless recharging experience across Europe using one single charging contract (e.g. your home charging contract), one single access method (e.g. mobile phone App) and one single invoicing system (e.g. one monthly charging invoice). In this regard, several technologies and services (roaming, mobile metering) are being developed today to offer Europe-wide subscription based recharging.

Furthermore, subscription-based charging could facilitate the deployment of advanced, real time charging services, such as possible reservation and smart charging options). Such services can both improve user experience (e.g. easier charging point access, reduced charging prices via the use of smart charging) and overall integration of electro-mobility in the energy market (e.g. smart charging solutions) and in the transport system (e.g. infrastructure to vehicle communication, as well as connections to multi-modal transport and public transport subscriptions).

The Platform is convinced that:

- Payment solutions should encompass both ad-hoc/direct payment and subscription-based payment, neither of which should be neglected in order to speed up the build up of charging infrastructure in Europe. While the possibility for ad-hoc charging is necessary, the opportunity for subscription-based charging for final consumers (e.g. seamless cross-EU interoperability using one single charging contract), for the

¹⁸ Sustainable Transport Forum, Sub-group SGEMS, Deliverable 1.1

integration of electro-mobility in the electricity market at large (e.g. smart charging) and for a multi-modal mobility system should not be neglected.

- EU policy makers should keep an open approach as to the means and technologies used to offer access and payment on publicly accessible stations in order to avoid excessive costs to operators and to promote innovative solutions.

6. EV Charging Services: Enabling more choice and more transparency for consumers

A primary factor in encouraging the market uptake of EVs will be the ability for consumers to choose from different charging services. A key principle guiding progress towards a consumer-driven electro-mobility market in Europe should be the provision of transparent information with regards to pricing, level of service, origin of the electricity and the ability for consumers to easily choose/change between different charging services or providers.

It is therefore critical to guarantee an open and competitive market framework for charging where all parties can contribute to the rollout of charging infrastructure, and products and services are constantly improved to the benefit of consumers.

- a) It is important that art. 4.12 of the AFI Directive is implemented in Member States i.e. **possibility for charging point operators to contract “another electricity supplier than the one supplying electricity to the household or premises where the recharging point is located”**. In some countries it is still not possible to have multiple grid connections and suppliers on the same premises. It is however necessary to enable the development of specific charging offerings at both private and publicly accessible recharging points.

It is also critical that the implementation of the AFI Directive and the upcoming EU Energy Market Reform **ensure the provision of charging services organised as an open competitive market** not necessarily attached to traditional market roles like DSOs or electricity retailers. This is a prerequisite to open the market to new technologies and businesses.

- b) In fact, as pointed out in the AFI Directive itself: *“the establishment and operation of recharging points for electric vehicles should be developed as a competitive market with open access to all parties interested in rolling-out or operating recharging infrastructures”* (AFI Directive, recital 30) i.e. not only existing electricity market players.
- c) In cases where publicly accessible charging stations are to be put on public land or are publicly funded, choosing an operator needs to go through a competitive bidding process.

EU regulators and policy makers should also encourage EV charging services that offer renewable energy, remain affordable, reasonable and are proportionally priced. While electric mobility should develop as a free and open market (see recital 30 of the AFI

Directive), art. 4(10) of the AFI Directive especially mentions that “*Member States shall ensure that prices charged by the operators of recharging points accessible to the public are reasonable, easily and clearly comparable, transparent and non-discriminatory*”. This appears essential for all charging infrastructure funding programmes by the EU and Member States. In fact, failure to achieve this bears the risk of undermining one of the core benefits of EV ownership, namely the lower TCO.

Drawing on the above, the Platform recommends to:

- Ensure proper implementation of art. 4.12 across Member States so as to facilitate the development and business of charging point operators.
- Use the AFI Directive and upcoming Energy Market Reform to confirm that charging services are different from traditional electricity market roles.
- Facilitate an open framework for the deployment of all types of technical and commercial solutions that can improve consumer service and choice like for example roaming, mobile metering or any other solution.
- Enable an open market and ensure affordable, transparent and non-discriminatory pricing for charging services, especially for charging points in the public domain or that are publicly funded.
- Encourage EV charging services that offer renewable energy, remain affordable, reasonable and proportionately priced.

