Charging up Europe through binding capacity targets for publicly accessible charging infrastructure and Member State action plans

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ChargeUp
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Contents

Key Messages

1. ChargeUp Europe supports binding minimum capacity targets for publicly accessible infrastructure at Member State level to be set for 2025 and 2030.
2. A minimum threshold of 29,000 MW of installed capacity is needed by 2025 to serve the EV passenger car fleet. This could result in indicative numbers of around 1.1 million publicly accessible charging points, split across nearly 900k AC charging points, over 200k DC charging points and nearly 40k High power charging (HPC) points.
3. This short-term "overbuild" target constitutes a fourfold increase in current capacity and is necessary to ensure political prioritisation – particularly in underserved countries/regions. This will provide a long-term perspective for investment and a more consistent development of the EV market in Europe.
4. A minimum threshold of 66,000MW of installed capacity is needed by 2030 to serve the EV passenger car fleet. This could result in indicative numbers of 1.6 million publicly accessible charging points, split between 1.1million AC charging points, 420k DC charging points and around 90k HPC charging points.
5. These are the absolute minimum capacity thresholds required in order to serve future EV passenger car fleets. To achieve the aims of the Green Deal and ensure charging capacity for all other types of vehicles, we would need to go beyond the minimum thresholds.
6. Targets for publicly accessible infrastructure need to be smart and grounded in robust projections for the development of the market, different use cases and different situations in Member States.
7. In order to deliver on the minimum thresholds, it will be important to set clear definitions for what constitutes a publicly accessible charging point.
8. The targets should fit within a broader charging deployment ambition required to serve all use cases (including private charging) which should be outlined in national charging action plans subject to oversight by the European Commission.
9. This needs to be delivered through a revision of the Alternative Fuels Infrastructure Regulation in order to tackle existing market fragmentation and barriers for scaling up.
10. There is a need for a coherent EU governance regime with consistency between the revised AFID, Energy Performance of Buildings Directive (EPBD) and TEN-T.

1. Introduction

Europe has seen multi-billion euro investments in electromobility in recent years. Electric vehicle (EV) sales have soared, with 1.4 million passenger EVs registered in 2020[1]. That number is expected to grow at least 40% year-on year over the next decade. The European EV charging infrastructure market is expected to be worth 36bn EUR by 2030, with over 42 million passenger EVs on the road[2].

Electric mobility and EV charging can no longer be regarded as an alternative transport fuel segment. The sector is becoming increasingly mainstream and Europe should continue to set the standard for the decarbonisation of transport by putting in place policy enablers for mass electrification.

To make this a reality, a coherent European regulatory framework is needed to ensure the efficient rollout of charging infrastructure in a harmonized way across the EU.

Currently, on the EV infrastructure side, a patchwork of national approaches, lack of competition rules, lack of interoperability of technical requirements and incoherent policy planning models at the EU and national levels risks slowing down the EV transition at the very moment it should be speeding up.

The EV charging sector needs an EU wide governance regime to set the proper ambition for rollout across Member States to ensure even growth across the EU and a seamless driver experience.

ChargeUp Europe previously called for a European Regulation for EV charging infrastructure, which should sit at the core of a dedicated European governance regime, to also include complementary rules and policy enablers for charging infrastructure under the Energy Performance of Buildings Directive and a clear methodology for Member State roll-out plans and funding programmes that should be subject to oversight at the EU level.

Such a Regulation should embed national deployment targets for publicly accessible EV infrastructure, mandate interoperability to enable consumer access and use of charging infrastructure and establish uniform concession and connection requirements. Setting ambitious targets for the roll out of EV infrastructure without a harmonised legal framework to back this up would be a missed opportunity for the sector and for the EU's climate ambitions.

In this paper, developed with its knowledge partner Arthur D Little, ChargeUp Europe outlines the minimum capacity targets for publicly accessible EV infrastructure required at European and national level to serve the charging needs of EV passenger vehicles for 2025 and 2030.

The paper also outlines the key components of Member States Charging Action Plans that should underpin these targets as well as stressing the need for a regulation in order to create a single European market for EV charging infrastructure.

The paper also provides clear definitions for what constitutes as: fully publicly accessible, limited accessibility and private charging.

[1] IEA - *Global EV Outlook 2021*
[2] See Section on market projections

2. Binding minimum capacity targets for publicly accessible infrastructure for Member States

In order to reach the aims of the Green Deal to cut emissions by 55% by 2030 and to reach zero-emissions in road transport by 2050, an ambitious policy approach to e-mobility and infrastructure deployment is necessary for the decarbonization of transport.

More than three quarters of Europe's current EV electricity supply comes from privately owned or operated chargers, primarily because most early adopters of EVs have access to home and private accessible charging stations. In the coming years however, as EVs become increasingly available to the mass market, it is expected that the share of electricity supplied by publicly accessible charging points will increase.

From an aerial view, many parts of Europe's public charging infrastructure remain under-deployed and largely inaccessible. There are currently over 250,000 publicly accessible EV charging points across Europe, of which only 10 percent have a capacity of over 22 kW. This represents just a fraction of the EU's target of one million charging points by 2025 and the ambition to have three million charging stations by the end of the decade.

At the same time, Europe's charging infrastructure is unevenly distributed[3] - 75 percent of the existing public charging stations are located in only four EU member states. And when looking specifically at density, we note Europe's poor average of 13 public charging points per 100 km2. This tale becomes more alarming when taking into account the stark differences between Member States. At the high end, the Netherlands has the highest concentration of public charging points (160 per 100 km2) while Germany, the country with the largest electric fleet, falls below the average with only 12 charging points per 100km2. These numbers show the need for a comprehensive European roadmap for the creation of an interconnected EV charging network. To date, the European policy framework to support publicly accessible charging has been poorly implemented in parts of the EU and its legal basis has led to slow transposition and inadequate and inconsistent enforcement, resulting in a lack of EV charging coverage in many areas across the EU.

Incoherent or non-existent planning models have also acted as barriers to investment, leading to slow deployment in a number of Member States. In many instances, there is simply no oversight, no long-term plan of what is expected or what should be deployed across private, commercial, and public sites over the next decade in order to respond to EV charging needs. However, this is not the case everywhere: Cities and countries with a plan backed by an open market attitude have seen sufficient coverage growth and can show the way.

The EU's fit-for-55 package, through a new Alternative Fuels Infrastructure Regulation, needs to seize the momentum and lead the way for the consistent deployment of EV infrastructure across the Union.

The revised Regulation needs to enable carefully planned and targeted minimum coverage across the EU. **Ambitious binding targets for minimum installed capacity at Member State level should therefore be introduced to ensure less fragmentation among Member States and lead to more consistent development of the EV market in Europe.**

[3] EU Court of Auditors Special Report - *Infrastructure for charging electric vehicles: more charging stations but uneven deployment makes travel across the EU complicated – April 2021*

The setting of binding minimum capacity targets for publicly accessible infrastructure in Member States can ensure political prioritization for EV infrastructure rollout particularly in underserved countries/regions, and provide long term predictability which will encourage private investment and ensure a more consistent development of the EV market throughout Europe.

We support the setting of such binding minimum capacity targets for fully publicly accessible infrastructure, but they must be:

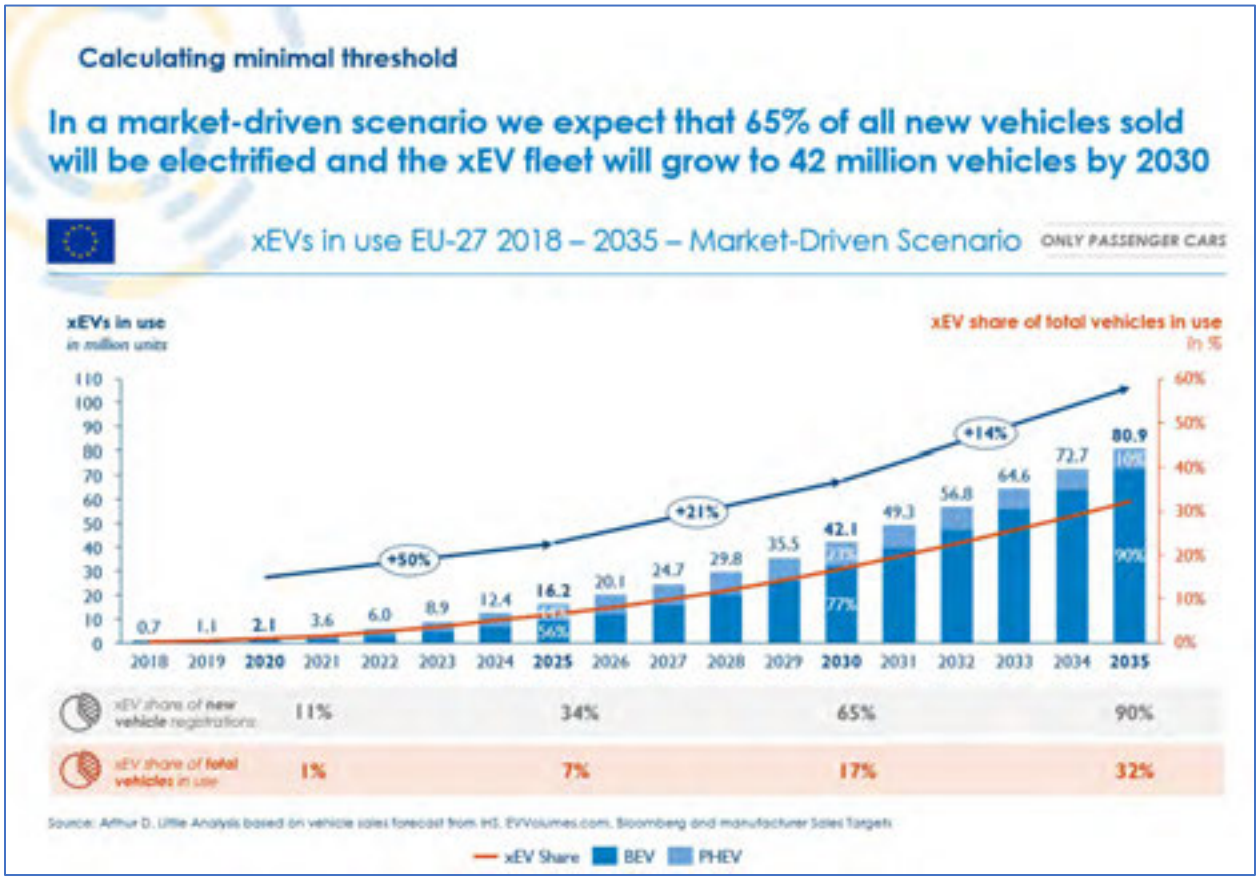
- **Set according to a minimum installed capacity model** which serves the rollout of AC, DC and HPC charging.
- **Grounded on robust projections** for the development of the market and consider the different charging needs, travel habits and domestic/professional situations of EV drivers.
- **Based on a clear, consistent definition of what constitutes "fully publicly accessible"** in order to enable clear counting and monitoring of progress and provide clarity to operators in terms of **requirements.**
- **Designed with a view towards incentivising market-driven uptake** beyond minimum thresholds.
- **Part of a broader charging deployment ambition required to serve all use cases** (e.g. including private charging) which should be outlined in comprehensive national charging rollout plans subject to oversight by the European Commission (See next section).
- **Set in order to give political prioritization in the short term but ensure in the medium to long-term that the right conditions and enablers are put in place for private investment and for the market to grow across the EU**. This can be done by ensuring a harmonized single market for EV charging through the revised AFID and coherence with the Energy Performance of Buildings Directive (EPBD) for private charging and TEN-T for fast charging on major routes.

EV Passenger fleet market development to 2025 and 2030

EV passenger fleet

In 2020, the overall passenger electric vehicle fleet in the EU was just over 2 million, with EVs[4] representing 11% of all new vehicles sold. In the coming years, we expect to see a rapid market expansion.

In a market-driven scenario[5] we expect that 34% of all new vehicles sold will be electrified by 2025, and for the EV fleet to grow to 16 million vehicles. By 2030, the market-driven scenario projects that 65% of all new vehicles sold will be EVs with an overall EV fleet of 42 million vehicles.

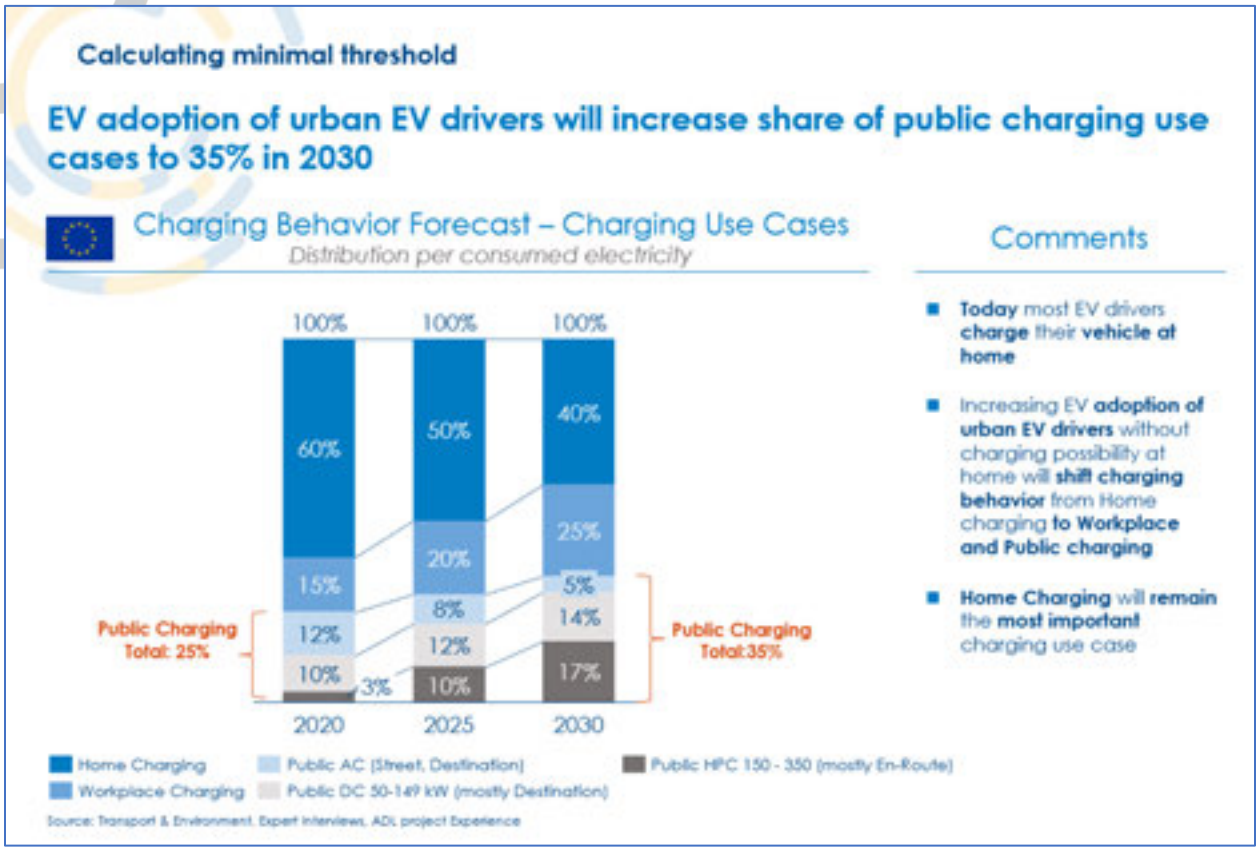


Charging behaviour

We also expect to see a change in charging behavior with public charging increasing from 25% (2020) to a minimum 30% (2025) and minimum 35% (2030) as the growth of urban EV drivers shifts charging behavior from home charging to workplace and other publicly accessible sites, including road and commercial destination charging opportunities.

[4] EVs - battery electric and plug in hybrids

[5] Such market-driven scenario is based on current strategies and manufacturing plans of the major vehicle manufacturers in Europe and existing market forecasts. This market-driven scenario goes beyond the current European CO2 standards for cars, but falls short to meet the Green Deal objectives – See annex II for more details on methodology.



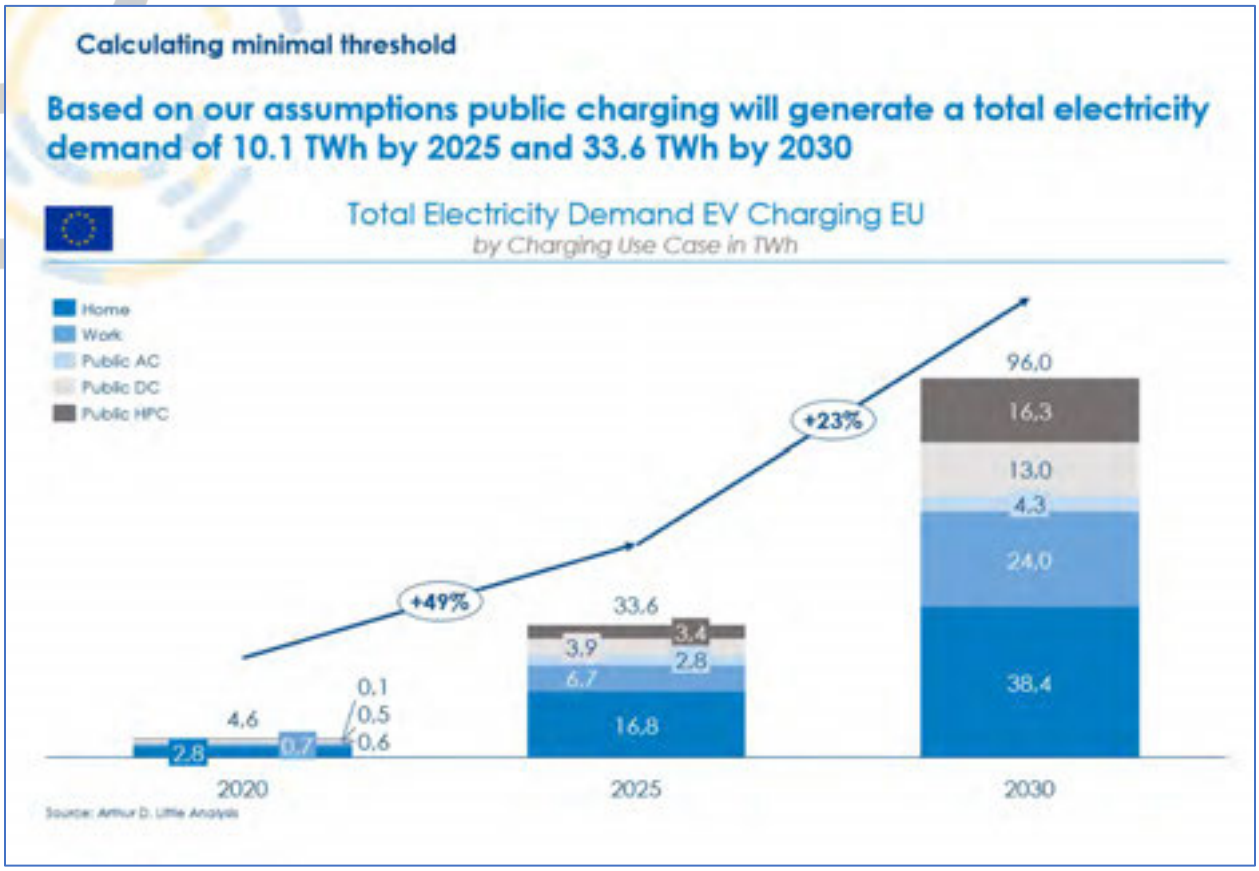
Electricity demand

Given these EV sales and charging behaviour projections, it is critical to understand what this means in terms of required installed EV charging capacity so that the roll out of publicly accessible charging points can be planned to deliver the different types of charging that will be necessary i.e. AC, DC and HPC.

We expect public charging to generate a total electricity demand of over 10,1TWh[6] by 2025 and over 33,6TWh by 2030.

Furthermore, with **an overall total electricity demand of 96TWh for all charging (public and private)**, charging demand will account for only around 3% of total electricity production in Europe by 2030, a rather incremental rise. The increased number of charging sessions will thus not be a question about meeting total volume, but more about preventing local bottlenecks during peak load times.

[6] TWh -Terawatt-hour



Minimum capacity targets for publicly accessible charging for 2025 and 2030

29,000 MW minimum installed capacity needed by 2025

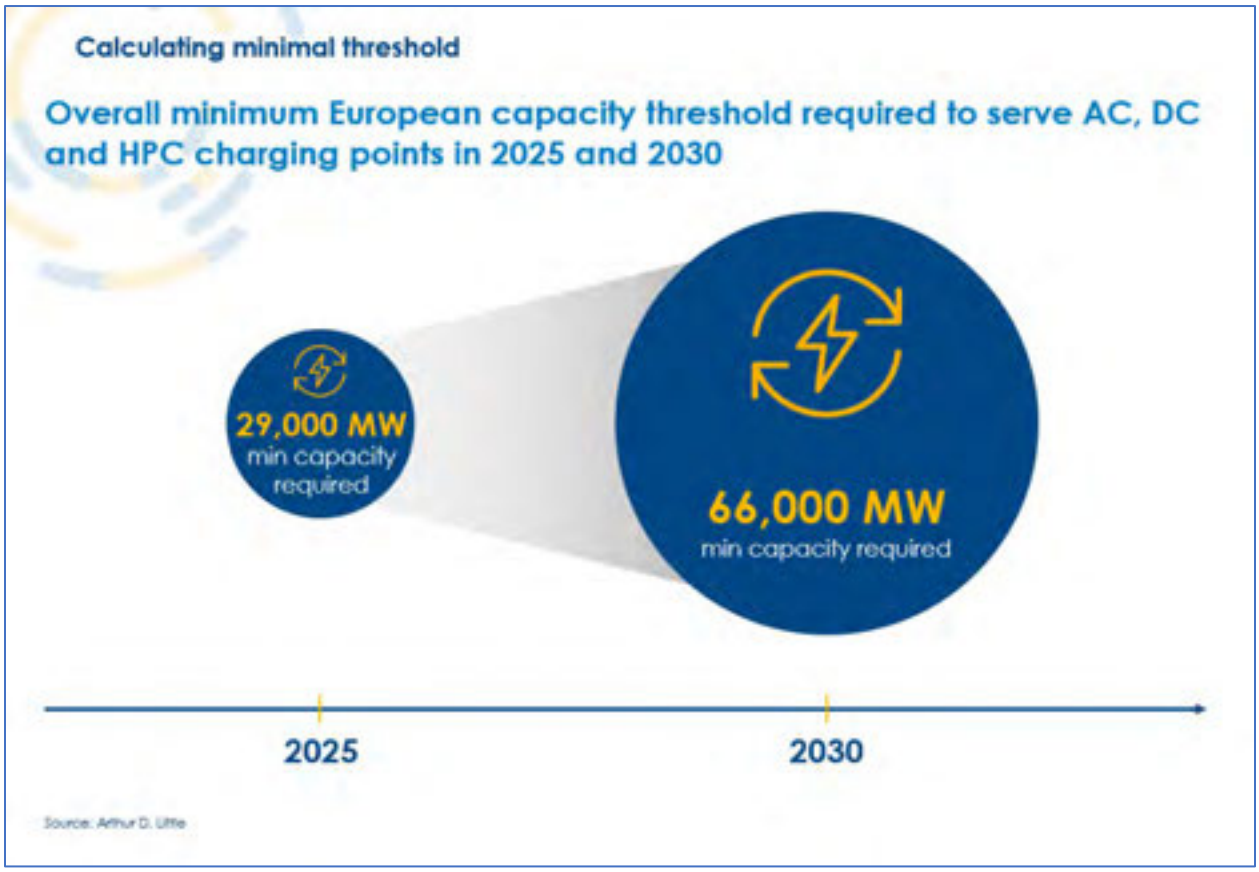
As the market projections show, the size of the EV fleet in the EU will grow eight-fold, from 2 million (2020) to 16 million by 2025, generating total electricity demand of over 10,1TWh (split between: public AC - 2.8TWh; public DC - 3.9TWh and; public HPC - 3.4TWh).[7]

EV uptake will drive infrastructure deployment; in order to ensure the rollout of EV charging infrastructure for these vehicles, a very ambitious short-term rollout target for 2025 is needed. The time to act is now.

- **Based on these projections it will be necessary to install a minimum threshold capacity of at least 29,000MW[8] by 2025.**
- This could result in around 1.1 million publicly accessible charging points with an indicative split of nearly 900k AC charging points, over 200k DC charging points and nearly 40k HPC charging points.

[7] AC , DC (50 - 149kW) and HPC (≥150kW)
[8] MW - MegaWatt

- This would constitute a four-fold increase on current capacity for AC charging and at least ten times the current installed capacity for DC charging.
- **It is fundamental that this capacity is planned and rolled out to serve the different charging segments for AC, DC and HPC.**
- These targets will need to be revised further upwards in anticipation of revised Green Deal ambitions for CO2 vehicle emissions and to meet the charging requirements of vans, buses and other commercial vehicles.
- This short-term "overbuild" target is necessary to ensure political prioritisation – particularly in underserved countries/regions – and provide a long-term perspective for investment and a more consistent development of the EV market in Europe.
- To achieve this rapid increase in infrastructure, strong and coherent policies should help to put market accelerators in place to deliver on charging needs.

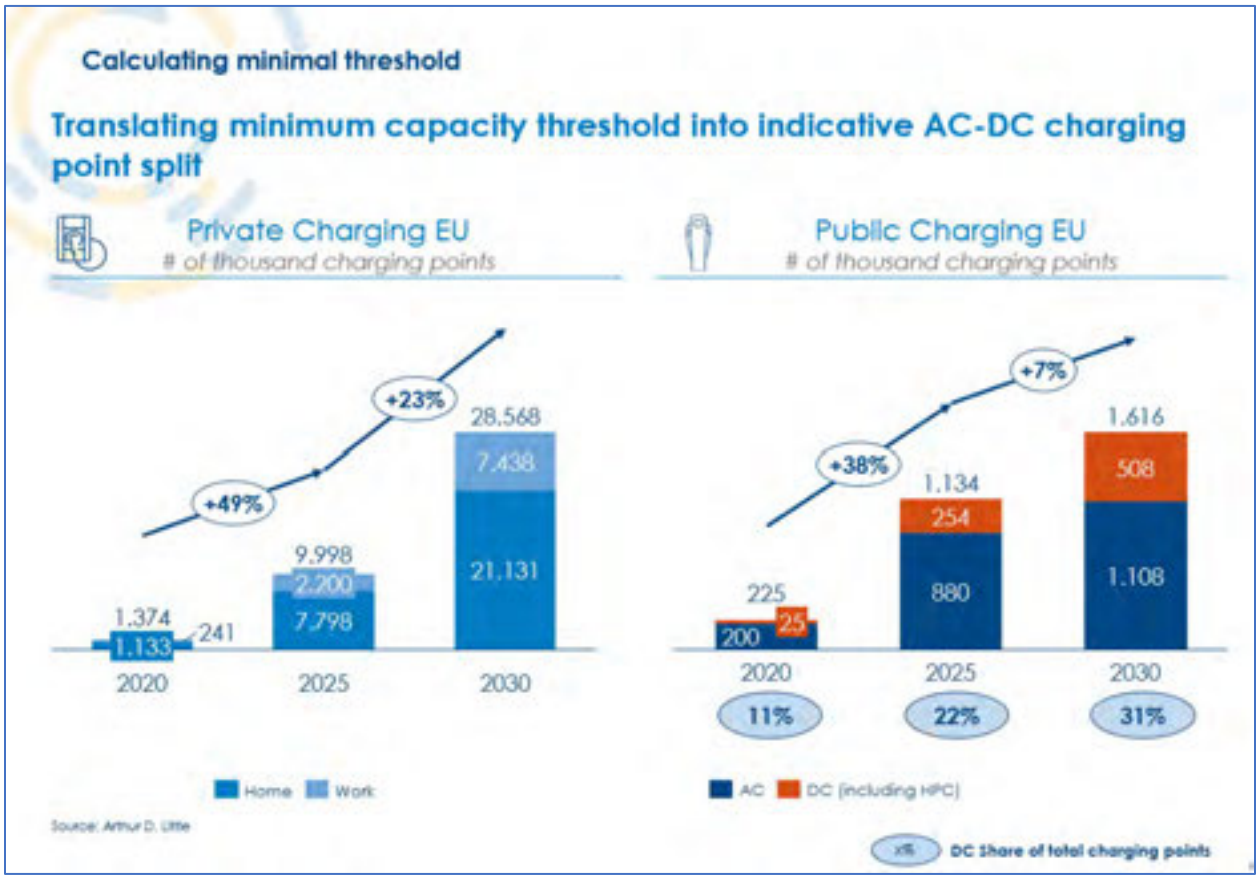


66,000MW minimum installed capacity needed by 2030

After reaching the absolute minimum thresholds for installed capacity for publicly accessible charging points, and as EVs become increasingly widespread, we can expect to see the market of public networks continue to grow and rollout organically and utilization rates increase.

Driven by an expected passenger fleet of 42 million, we expect public charging to generate a total electricity demand of over 33,6 TWh by 2030 (split between Public AC – 4.3 TWh; Public DC – 13 TWh; and Public HPC – 16.3 TWh).

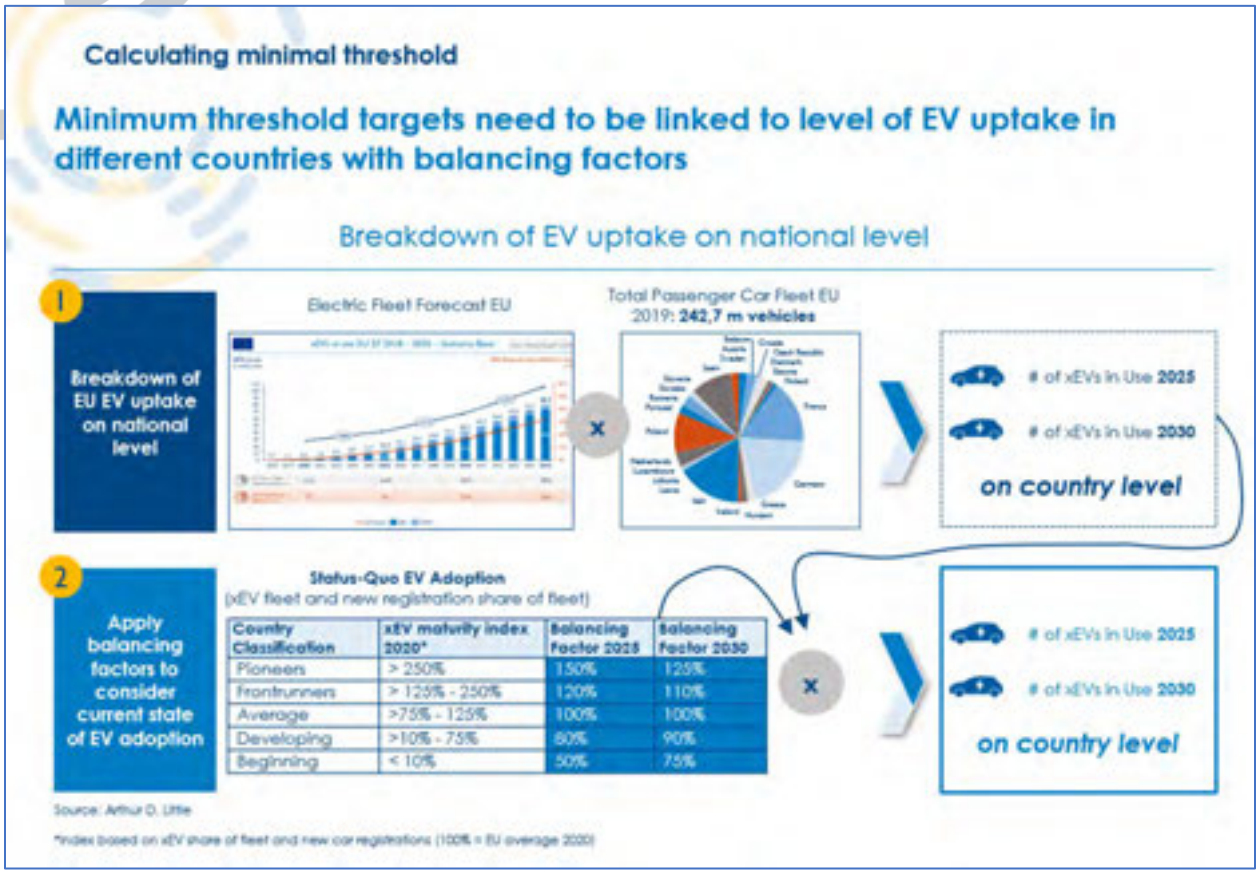
- **To serve these needs it will be necessary to have a minimum installed capacity of at least 66,000MW by 2030 rolled out for AC, DC and HPC charging. This constitutes a tenfold increase on current capacity.**
- This could indicatively result in 1.6 million publicly accessible EV charging points in Europe by 2030, with indicative numbers of 1.1 million AC charging points, over 400k DC charging points and 90,000 HPC charging points.
- A 2025 mid-term review of the 2030 targets would also ensure an important check on the situation regarding EV uptake, market development, and implementation in each Member State and allow further smart planning on the road to 2030.



Applying the minimum capacity targets at Member State Level

As stated above, targets need to be carefully planned and they need to work for the Member States. In order to apply the overall minimum targets for 2025 and 2030 to different Member States, it is important that their unique characteristics and different starting points in terms of infrastructure and EV take-up (amongst others) are taken into account, while overall EV uptake at member state-level must be ambitious for each state.

By examining existing fleet size and EV market maturity in each Member State, and maturity of the EV market we can apply balancing factors that take this into account to enable indicative projections for minimum installed capacity requirements for publicly accessible charging infrastructure.



In the annex, we provide indicative ranges for the rollout of capacity for publicly accessible charging infrastructure and related indicative numbers in terms of charging points per Member State.

3. Definitions for fully publicly accessible, limited accessibility and private charging

The issue of how we define different charging segments is closely linked to target setting; in this regard, it is vital that the right definitions are set which reflect the reality of EV charging.

Our recommendations for binding minimum targets refer to targets for fully publicly accessible charging infrastructure.

In order to enable the correct setting, counting and monitoring of the targets, it is fundamental that a clear definition of fully publicly accessible charging infrastructure is understood.

In the existing AFID legislation, the classification of publicly accessible[9] has not provided the necessary clarity for operators or public authorities. Currently, there also exist various definitions from other sources covering publicly accessible, limited accessibility and private, charging[10].

In the revised legislation, it is key that clear and coherent definitions are set in order to provide clarity to Member States in terms of target setting, counting of charging points, and related issues such as eligibility for public financing and technical and legal requirements. For operators and owners, clarity is needed as the requirements for charging stations will change depending on how they are classified. Finally, users need to know what service and functionality to expect when they charge.

Below, we outline clear definitions and related requirements that should be included in the revised legislation for:

- **Fully publicly accessible charging stations**
- **Limited publicly accessible charging stations**
- **Private charging stations**

Fully Publicly Accessible

Definition	A fully publicly accessible charging station provides Union-wide non-discriminatory access to any EV driver and use of the charging station is not conditional on purchase or use of any other service or contract; Non-discriminatory access includes different terms of authentication, use and payment options.
Requirements & characteristics	Must meet all of the below requirements to be fully publicly accessible. 1. Charging station must be fully interoperable via international "de facto" standards OCPP and OCPI. 2. Roaming must be enabled and is in use with reasonable pricing. 3. Ad hoc payments for charging must be possible (through any payment technology).

[9] DIRECTIVE 2014/94/EU - 'recharging or refueling point accessible to the public' means a recharging or refueling point to supply an alternative fuel which provides Union-wide non-discriminatory access to users. Non-discriminatory access may include different terms of authentication, use and payment;

[10] For Example: Sustainable Transport Forum – Recommendations for Public Authorities on recharging infrastructure - 2020

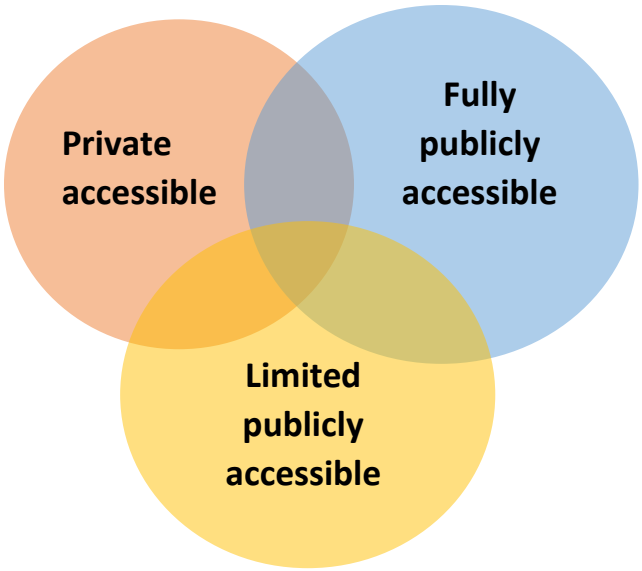
	4. Charging station must be published and mappable - published in the European National Access Point (NAP) database and can be found via standard navigations systems. 5. Charging system must be reachable by the public; not limited to any user group nor require special access permissions. 6. Parking fees can be requested for the parking bay at the charging station and must not be seen as a limitation. 7. Charging station must be publicly accessible for at least 65% of the day by the public if it is limited by opening hours.

Limited Publicly Accessible

Definition	A limited publicly accessible charging station is a charging station where access of use is subject to specific access restrictions, including: limited to a defined group of users; limited access for charging contracts due to lack of roaming capabilities; limited access to the area where the charging stations have been installed; limited access for the public during the day due to opening hours (less than 65% open for public).
Requirements & characteristics	One of the requirements for fully publicly accessible charging stations is not implemented or activated. Examples: 1. Use of other protocol for communication with the charging station. 2. Roaming is not enabled or in use. 3. No possibility to make use of ad hoc payment for charging. 4. Charging station is not published. 5. Opening hours for the public are too short (less than 65% of the day). 6. Charging station can only be accessed by special permission (e.g. Key for gate, taxi license for passing the barrier at a taxi stand, etc).

Private Accessible

Definition	A private accessible charging station is a station that is installed on private ground (drive way, residential building or depot) where access and use of the charging station is reserved for the residents on the property.
Requirements & characteristics	1. Access and use of the charging station is limited only to the residents of the private ground. 2. Guest charging only possible with approval of the owner. 3. Roaming and billing is not enabled and used. 4. Stand-alone charging stations (not connected to any CPO back office) are always seen as private accessible.



When looking at the classification of accessibility for the charging stations, we can see a certain overlap. Certain types of charging stations may have different classifications depending on their characteristics. For example, a home charger is most likely classified as a private charger, because it is only usable by the home owner alone. But when this charger is opened for guest usage, it allows other EV drivers to charge at this station, and can thus be classified as a Limited Publicly Accessible charger.

In the following table, some more examples are given to show that a certain type of charging station can be classified differently depending on its installation, location and configuration.

Type	Description	Characteristics	Classified as
Home Charger	Charger at home of the EV driver	Not connected to CPO back office	Private
		Only in use by Homeowner, no guest charging	Private
		Guest charging active via Roaming	Limited
Residential Area Charger	Charger at a residential area on the public road	Access to charger is public, roaming and ad hoc payment possible, parking fee can apply	Public
Residential Building Charger	Charger at the parking area of a residential building	Charger is installed on parking lot of 1 resident and can only be used by the resident	Private
		Charger is available for all residents of the building and can be accessed by use of special list of charge cards	Limited
Commercial Parking area	Charger at a parking area	Access to charger is open 24/7 and, roaming active and ad hoc payment possible, parking fee applies	Public

	outside or in a building	Access to parking only during shop hours (6am–10pm), roaming and ad hoc payment possible, parking fee applies	Public
		Access to parking area only with special license, roaming and ad hoc payment possible	Limited
Workplace Charger	Charger at the workplace	Charging done via employee card	Limited
		Behind fence and charging starts by plug-in (no authentication)	Private
		Roaming used for authentication, charging station behind barrier with limited access (only employees and approved guests	Limited
		Roaming used for authentication, charging area is publicly accessible and open 24hours, ad hoc possible is possible via Apps	Public
Depot charger	Charger at a depot for charging commercial EVs (e.g. buses)	Access to the depot only allowed for vehicles of the depot	Limited
Corridor charger	Charger along the highways	Access to charger 24/7, open for all public and roaming and ad hoc payment possible	Public

We recommend the inclusion of these definitions in the revised Alternative Fuels Infrastructure Regulation. As the guiding legislation for the European EV charging sector, clear definitions will provide clarity for target setting and counting and set the direction for many other subsequent policy initiatives and financing mechanisms.

4. Member State National Charging Action Plans

The requirement for Member State National Charging Action Plans should be introduced in the revised AFID legislation. Such national plans will be necessary to deliver long-term vision and strategy on how the e-mobility situation should progress in each Member State.

The plans will play an important role in ensuring that the binding minimum targets for publicly accessible infrastructure are achieved in a strategic way that delivers infrastructure where it is needed, where it makes sense and where it can benefit the driver.

Such long-term plans should include measurable quantitative (i.e. the binding targets set in the revised legislation but also indicative targets for private infrastructure) and qualitative targets for e-mobility and/or the deployment of recharging infrastructure. EV Charging infrastructure roll-out cannot be built under a one-solution-fits-all type of approach with a focus on public infrastructure only, and plans should be as comprehensive as possible in all dimensions: tracking scale up rates for all types of vehicles across all charging segments, from private to commercial and public charging, and taking into consideration other factors such as power use and accessibility.

A common methodology for developing such plans should be introduced in the revised legislation. A common EU methodology will allow Member States to develop plans according to their own inputs and unique characteristics, but also allow progress to be monitored, regularly reviewed, and steered in an equitable, transparent, and harmonized way throughout Europe.

In this regard, a common assessment methodology should also be developed to ensure that: (i) no Member State is left behind, and that (ii) EU funding is properly allocated to ensure a truly interoperable European network. The success to date of the TEN-T Regulation demonstrates the effectiveness of a strong regulatory framework in this regard.

Guidelines for the development of national charging action plans

Below, we outline important considerations and guidelines for key elements to be included in national charging action plans.

1. Vision & data

First and foremost, Member States should establish a baseline of information about charging infrastructure and EVs in their country and use this information to develop their action plans to reach political deployment targets and ensure that a well-functioning infrastructure for electric transport can be rolled out.

These strategies require a clear vision on how the local mobility and electricity demand situation should develop alongside data driven planning.

Key Factors to consider include (but are not limited to):

- Existing national infrastructure and country demand analysis
- Specificities of the charging infrastructure in the country – e.g. public vs private
- Geographic coverage
- Urban planning, regional traffic and housing characteristics
- Location identification and prioritization
- Classification of charging points (e.g. different charging speeds)

- Grid capacity and energy demand
- Changes in vehicle fleets
- Technological developments (e.g. in terms of battery size, recharging capabilities, etc.)
- Use cases - light duty vehicles, heavy duty vehicles, fleets

2. Stakeholder involvement

The action plans should be drawn up in collaboration with public and private stakeholders who can provide key input for defining goals and actions for the deployment of charging infrastructure. For example, data on existing charging stations and best locations should be identified and made available to local authorities and relevant market parties to better assess the existing situation, needs and gaps.

3. Regular Review

The progress and realisation of the action plan goals should be reviewed and assessed on a regular basis allowing for corrective measures (legal, regulatory, administrative, financial actions).

4. Addressing investment gaps

Based on country and market analysis, Member States should work with regional and local authorities to address investment gaps in their regions, including coverage of remote areas of the TEN-T Comprehensive road network so that no EU region is left behind on EV infrastructure.

It is important that any public funding for charging infrastructure rollout is designed to fill in market gaps, break through bottlenecks, support innovative and future-proof solutions, create a level playing field, and encourage companies to act on their own.

- The action plans shall support the setting up or expanding of incentive programs for stimulating rational and private investment by citizens and commercial entities in the roll-out of charging infrastructure.
- Member States should look at local financing tools to establish or provide rate reductions, co-financing, risk-offsets, etc. when green performance indicators are met for EV infrastructure projects.
- Member States or local governments should be able to directly purchase EV infrastructure.
- Extending existing incentive measures for electric vehicle purchase and ownership (e.g. registration tax, annual circulation tax and other non-fiscal stimuli) and the introduction of other 'perks' of EV ownership such as using the bus lane, free parking at municipal lots, etc. can encourage uptake.

5. Right to Plug

Member States should increase the ambition for cabling for both residential and non-residential, public and private buildings in order to address EV driver charging needs. A 'Right to Plug' should be promoted in national action plans which will accelerate the relatively slow uptake of EV charging infrastructure in buildings. This should:

- Address non-financial barriers to installing EV infrastructure such as building and fire codes and apartment governance rules to provide clarity and guidance for local authorities to make such deployments simpler and less administratively challenging, lengthy, and costly.

- Make installing EV ducting and cabling as straightforward and regular as any other building safety requirement.
- Provide administrative peace-of-mind and make it as easy as subscribing to an electricity provider. Member States or regions should set-up an easily accessible web portal combining services of various building, parking, and installer organisations with streamlined permit and installation procedures.
- Citizens living in locations without a suitable location to install such infrastructure should have the right to request the installation of EV charging infrastructure in their neighbourhood and the building manager/municipality, has the responsibility to facilitate their request or explain why it cannot be done – the default stance becomes if a request is made, it should be accommodated.
- Dedicated 'right to request' websites at regional or city level should be set up to cater for the charging needs of EV drivers who do not own or rent a private parking spot.

6. Grid Connection

To accelerate the rollout of infrastructure, the time for connection time needs to be sped up. Currently, processes for granting approval can be lengthy and opaque. This is a major bottleneck which impacts businesses and consumers alike and slows market growth. In order to ensure the speedy and efficient rollout of EV charging infrastructure and growth of the EV market, DSO processes need to be adapted.

Time & procedure: Member States should define a maximum amount of time between a request for a permit and realisation of the connection to the grid. In this regard, we would recommend an 8-12 week period for AC charging infrastructure and 4-6 month period for DC infrastructure as the industry standard.
Prioritization: Additionally, given the urgency to address climate change and relatively simple nature of most EV charging infrastructure requests, EV charging infrastructure requests should be prioritised, particularly if other pending requests will not lead to tangible sectorial carbon savings.
Enact local legislation: Stipulating responsibility of DSOs to establish grid connection and access to each requested meter for EV charging infrastructure can speed up rollout.

7. Fast charging concessions planning and open tenders

In the case of DC fast charging, the foremost barrier is the access to public land along highways and main traffic corridors, as well as in cities where land is scarce. As part of the national charging action plans, Member States should develop **land-allocation strategies for fast charging stations on highways, busy traffic corridors and in cities**. It is important that allocation is carried out according to:

Open, non-discriminatory procedures

- Ensuring that public procurement processes are non-discriminatory and based on an open market model; these concessions should be accessible to all interested, relevant market parties, including SMEs and independent charging operators.

Appropriate contract duration

- Member States should introduce guidelines for the sustainability and quality of EV charging concessions, including for contract duration. At least 15 years is needed to make a business case

that covers losses over the initial years when EV charging demand across different vehicle segments is still relatively low.

Adequate physical space

- It is essential that concessions include sufficient physical space to build a full station that can be modularly scaled up as demand grows.

8. Promote innovative smart and bidirectional charging

- Member States should promote and foster the development of smart charging and EV storage technologies with the goal to integrate mass renewables into the energy system, improve grid efficiency and overall climate impact.
- Smart Charging should ensure that charging stations, electric vehicles, and energy infrastructure work together in a system to monitor and manage energy transfer, either to or from the vehicle.
- This smartness should run a spectrum and include demand flexibility (when and at what speed and power a vehicle charges), to dispensing energy from the vehicle V1G (vehicle to grid) and V2X (Vehicle to anything) applications.

9. Build the capacity of local officials

- It will be important to build local official capacity on EV charging deployment effectively.
- Guidance and trainings should be established for key stakeholders and existing professionals (,e.g. building designers, building managers, architects, fire authorities, electrical inspectors, etc.) to teach them how to design for the electrified future, what to look for in their safety inspections, etc.
- Immediate investments into training the workforce are needed to facilitate the building, installation, operation, and maintenance of charging infrastructure and related technologies. Target groups and skillsets include electricians, software developers, installers, and renewable energy technologies.

10. Create a proper regulatory framework around parking

- Define and allocate fines to ICE drivers who occupy EV charging spots:
- Allow CPOs to put in place a pricing model to discourage EV drivers who park for too long
- Develop a special e-parking licence: applications for e-parking licences get priority and are usually issued within weeks.
- Create standardized e-license procedures and establish a national approach on how local governments should set the correspondent licensing fees, under their municipal tax-codes, given the economic activity carried out by the CPOs (e-charging vs parking). Disproportional fees directly impact CPO prices, weakening the associated business case, and hampering investments, particularly where utilization of chargers is expected to be lower.
- Within urban planning practices, consider a long-term strategy for allocating parking spaces and charging hubs (for high power charging) for EV charging in urban planning, considering that the large majority of the car fleet will become electric in the long term.

5. Delivering a Harmonised EV charging market through Regulation

Setting ambitious targets for the roll out of EV infrastructure without a harmonised legal framework to back it up would be a missed opportunity for the sector and for the EU's climate ambitions.

While the EU has succeeded in creating a pan-European market for zero-emission vehicles (via Regulation), there is clear evidence of market fragmentation when it comes to charging infrastructure. The current AFID regulatory framework has been poorly implemented. Its legal basis has led to inadequate enforcement, which in turn has led to uneven and underdeveloped charging infrastructure networks in many parts of Europe.

While certain Member States have been highly ambitious and are electrifying rapidly, others are far more conservative and moving more slowly with large disparities across different parts of Europe. As a result, they are falling further behind, with a negative impact on future labour, tourism, commercial and industrial development. An open Europe in terms of mobility and free movement of people and goods needs to be supported with harmonization of investments in charging infrastructure and related grid systems and uniform requirements for customer experience, from cars to trucks.

Current issues include divergent hardware, metering or accessibility requirements, discriminatory concession procedures, a lack of public site allocations for fast charging and incoherent National Policy Frameworks which have all acted as barriers to investment and led to fragmented deployment across the EU.

This creates barriers to roll-out, pushes up consumer prices, impacts the quality of services that can be provided to drivers and directly hinders our sector's capacity to scale faster across Europe. Ultimately, this lack of harmonization is a threat to the investment plans of the European automotive Industry and the EU's decarbonization ambitions for the transport sector as a whole.

The solution is to revise AFID in the form of a Regulation which can deliver harmonized rules and requirements and prevent national fragmentation to the benefit of investors and EV drivers alike.

A Regulation can

- **Enable the development of a single market for EV charging which will ensure that the highest level of customer service and choice is delivered at the most competitive prices for EV drivers.**
- **Stimulate investor confidence in a well-functioning internal market and enable even deployment across the EU, preventing the development of a 2-speed Europe.**
- **Ensure consistent minimum technical requirements for interoperable hard- and software across all Member States that would enhance the EV driving experience and facilitate even more competitively priced charging services.**
- **Oblige operators of EV charging infrastructure to participate in roaming with other European operators and EV service providers, ensuring that drivers can travel and charge seamlessly across the EU.**
- **Tackle transparency and governance challenges in relation to electricity grid integration and facilitate and speed up the approval of EV charging infrastructure grid connection requests.**

Barriers that need to be tackled through a Regulation

Below we outline existing obstacles which the Regulation should aim to address in the name of creating a harmonised single market for EV charging infrastructure in the EU.

1. Hardware Requirements

Some EU countries have interpreted Annex II (Point 1.1.1.) of the existing AFID by mandating a shutter on the socket of charging stations. Additionally, there are other national hardware requirements, e.g. mandatory Type E (Shuko) hardware requirement for publicly accessible charging stations which are causing market fragmentation.

As a consequence, it is not permitted to sell cable attached stations in those countries. This limits the choice for the end-consumer but also neglects the driver's experience as cable attached stations have proven to be more convenient for charging.

Recommendation: Removing this provision (the option for Member States to make the shutter a mandatory requirement) from Annex II (Point 1.1.1.) of the current AFID and set the same minimum harmonized hardware requirements across all EU Member States.

2. Metering

Some EU member States have put in place national legislation imposing specific AC and DC metering requirements on publicly accessible charging stations. The current situation leads to higher development and rollout costs for manufacturers, operators and consumers, and risks undermining the roll-out of kWh-pricing.

There is a risk of non-harmonized metering and related certification requirements in Europe, in particular for DC metering as DC metering is not uniformly defined and classified under the Measurements Instruments Directive.

Recommendation: The revised Regulation for EV infrastructure should address this question and propose uniform EU measurement and certification requirements in all Member States including for DC.

3. Distribution System Operator responsibilities and processes

In some EU countries, local DSOs do not apply the EU legislation with respect to ownership and operation of charging points (separation of ownership and operation).

DSOs should not exceed their role as neutral market facilitators and get directly involved in the deployment and management of EV Charging Infrastructure, which could lead to market distortion and concentration in an industry that is already functioning and is based on rational business models.

With regard to grid connections, timeframes for connection to distribution grids and approval processes for charging infrastructure vary significantly from one Member State to another, and are often too lengthy and opaque, creating major bottlenecks to market growth.

Recommendation: The EU should assess the implementation of the electricity market design directive and use the Regulation to clarify the role of DSOs in the marketplace which should be limited to addressing specific market gaps.

The EU should ensure that DSOs facilitate access to technical information about the grids they operate, in particular with regards to power availability, ultimately enabling market agents to efficiently deploy EV charging infrastructure when and where demand for charging points emerge.

In order to ensure the speedy and efficient rollout of EV charging infrastructure and growth of the EV market, DSO processes need to be adapted. **A maximum amount of time should be defined and mandated between a request for a permit and the realisation of the connection to the grid.** In this regard, we would recommend an 8-12 week period for AC charging infrastructure and 4 -6 month period for DC infrastructure as the industry standard.

4. Roaming

In some countries, certain public networks are not open for roaming. Roaming is key for the driver experience. Today, more than 90% of the charging transactions are initiated via a roaming agreement. It enables the driver to access as many stations as possible through interoperability and contractual agreements between e-mobility services providers.

With no roaming, the driver has less opportunities to charge, there is a higher cost for charging due to less competition and lower utilization rate of installed stations.

Recommendation: The revised legislation should mandate minimum roaming obligations for publicly accessible charging stations.

5. Interoperability

The development of e-mobility across the single market will depend on open interoperable technology and communication protocols. ChargeUp Europe welcomes the various standardisation initiatives that are underway in our industry today, provided they facilitate the ease of doing business among the various actors in our value chain, are non-discriminatory in nature, ensure open and equal access and do not create technology lock ins or closed ecosystems.

The adoption of open, non-discriminatory and uniform communication protocols (such as OCPP and OCPI) and related standards in EV charging infrastructure are fundamental to facilitating a seamless charging experience for the driver across charging networks and across Member States.

Recommendation: The revised legislation should ensure interoperability between all actors of the EV ecosystem and ensure that publicly accessible EV charging infrastructure is not built as a closed ecosystem. In this regard, any tenders for publicly accessible stations should require open protocols.

6. Payments

For ad-hoc charging sessions, there should be an open approach towards the payment technologies offered on publicly accessible charging stations.

Payment methods are constantly changing and, what may seem like a permanent fix today, could quickly become outdated tomorrow. From RFID cards to mobile apps and contactless payment options, EV charging stations already come equipped with solutions for site hosts to collect payments from EV drivers. Moreover, the EV market is already working and rolling out new ways to activate charging sessions and payments, like Plug & Charge, whereby the vehicle initiates the session upon plugging in.

Recommendation: Ad-hoc payment should remain a minimum requirement for publicly accessible charging infrastructure, but the revision should maintain an open approach towards payment

technologies so that EV charging stations can work with all new payment technology options across the EU.

7. Pricing

There is a lack of clarity on the definition of 'non-discriminatory' pricing under the current legislation.

The obligation on Member States to ensure that prices charged by the operators of recharging points accessible to the public are reasonable, easily and clearly comparable, transparent and non-discriminatory has not been transposed properly into national law.

Clear information should be provided by the Charge Point Operator (CPO) and e-mobility service provider (EMSP) to consumers so that they know what they are paying for at publicly accessible charging stations before charging.

Recommendation: The revised legislation should make clear what constitutes discriminatory pricing and ensure that it does not occur at publicly funded infrastructure. The revised legislation should also set out guiding principles as to what information needs to be displayed without prescribing the manner in which this should be done.

8. Concessions

Currently, there is a fragmented approach across Member States on the allocation of locations for fast charging stations and open tender processes for public locations (e.g. highways). To create an open market and level playing field, it is important that suitable sites are selected on prime locations and that tenders are drawn up for these sites through a public and transparent process. Such tenders for EV charging infrastructure should be separated from tenders for petrol, so that new players without a petrol footprint can also access this new market.

Recommendation: The European Commission should provide guidance and ensure that highway concession procedures are carried out according to non-discriminatory and open market procurement processes, in line with principles of EU competition law,

The Commission should instruct Member States to come up with a land-allocation strategy for fast chargers on highways on busy traffic corridors.

ANNEX 1 - Binding minimum targets by Member State for the market driven scenarios

In the below table, we outline the breakdown of calculated capacity targets by country according to our minimum threshold scenario and two alternative scenarios whereby there is (i) a higher share of AC charging and (ii) a higher share of public charging (45% compared to 35% of minimum threshold scenario).

The table also provides an indicative number of charging points, split across AC, DC and HPC charging.

Country Targets	2025 - min threshold	2025 -higher AC share	2025 - higher public charging share	2030 - min threshold	2030 - higher AC share	2030 - higher public charging share
Austria						
Total Power (MW)	**753**	**729**	**817**	**1,532**	**1,449**	**2,090**
Total Charging Points	29,131	28,842	29,951	37,191	45,523	51,325
AC	22,606	22,606	22,606	25,493	36,357	34,218
DC	5,544	5,313	6,237	9,648	7,421	14,843
HPC	982	924	1,109	2,050	1,744	2,264
Belgium						
Total Power (MW)	**869**	**841**	**942**	**1,767**	**1,672**	**2,411**
Total Charging Points	33,607	33,274	34,553	42,904	52,516	59,210
AC	26,079	26,079	26,079	29,409	41,943	39,475
DC	6,396	6,129	7,195	11,130	8,562	17,123
HPC	1,133	1,066	1,279	2,365	2,012	2,611
Bulgaria						
Total Power (MW)	**186**	**180**	**202**	**620**	**587**	**846**
Total Charging Points	7,207	7,136	7,410	15,056	18,430	20,779
AC	5,593	5,593	5,593	10,321	14,719	13,853
DC	1,372	1,314	1,543	3,906	3,005	6,009
HPC	243	229	274	830	706	916
Croatia						
Total Power (MW)	**108**	**104**	**117**	**358**	**339**	**489**
Total Charging Points	4,164	4,123	4,281	8,699	10,648	12,005
AC	3,231	3,231	3,231	5,963	8,504	8,004
DC	792	759	892	2,257	1,736	3,472

HPC	140	132	158	480	408	529
Czech Republic						
Total Power (MW)	**373**	**361**	**405**	**1,241**	**1,174**	**1,694**
Total Charging Points	14,426	14,283	14,832	30,137	36,889	41,591
AC	11,195	11,195	11,195	20,658	29,462	27,729
DC	2,745	2,631	3,089	7,818	6,014	12,028
HPC	486	458	549	1,661	1,413	1,834
Cyprus						
Total Power (MW)	**32**	**31**	**35**	**107**	**102**	**146**
Total Charging Points	1,247	1,234	1,282	2,605	3,188	3,595
AC	968	968	968	1,785	2,546	2,397
DC	237	227	267	676	520	1,040
HPC	42	40	47	144	122	159
Denmark						
Total Power (MW)	**495**	**479**	**537**	**915**	**866**	**1,249**
Total Charging Points	19,150	18,960	19,689	22,225	27,204	30,672
AC	14,860	14,860	14,860	15,234	21,727	20,449
DC	3,644	3,492	4,100	5,766	4,435	8,870
HPC	645	607	729	1,225	1,042	1,353
Estonia						
Total Power (MW)	**49**	**48**	**54**	**116**	**115**	**171**
Total Charging Points	1,915	1,896	1,969	3,780	4,709	5,277
AC	1,486	1,486	1,486	2,742	3,910	3,680
DC	364	349	410	1,038	798	1,596
HPC	65	61	73	0	0	0
Finland						
Total Power (MW)	**407**	**394**	**441**	**827**	**782**	**1,128**
Total Charging Points	15,725	15,569	16,167	20,075	24,573	27,705
AC	12,202	12,202	12,202	13,761	19,625	18,471
DC	2,993	2,868	3,367	5,208	4,006	8,012
HPC	530	499	599	1,107	941	1,222
France						
Total Power (MW)	**5,711**	**5,529**	**6,195**	**11,614**	**10,990**	**15,850**
Total Charging Points	220,903	218,713	227,121	282,019	345,199	389,198
AC	171,419	171,419	171,419	193,312	275,697	259,479
DC	42,039	40,288	47,294	73,160	56,277	112,554
HPC	7,444	7,007	8,408	15,547	13,225	17,165

Germany						
Total Power (MW)	**7,131**	**6,904**	**7,735**	**14,501**	**13,722**	**19,791**
Total Charging Points	275,823	273,089	283,587	352,134	431,022	485,960
AC	214,037	214,037	214,037	241,373	344,240	323,991
DC	52,491	50,304	59,052	91,349	70,269	140,537
HPC	9,295	8,748	10,498	19,412	16,513	21,432
Greece						
Total Power (MW)	**327**	**316**	**354**	**1,087**	**1,029**	**1,484**
Total Charging Points	12,638	12,513	12,994	26,403	32,318	36,437
AC	9,807	9,807	9,807	18,098	25,811	24,293
DC	2,405	2,305	2,706	6,849	5,269	10,537
HPC	426	401	481	1,455	1,238	1,607
Hungary						
Total Power (MW)	**380**	**367**	**412**	**947**	**896**	**1,293**
Total Charging Points	14,681	14,536	15,095	23,003	28,156	31,745
AC	11,393	11,393	11,393	15,767	22,487	21,164
DC	2,794	2,678	3,143	5,967	4,590	9,180
HPC	495	466	559	1,268	1,079	1,400
Ireland						
Total Power (MW)	**270**	**262**	**293**	**600**	**568**	**819**
Total Charging Points	10,463	10,360	10,758	14,572	17,837	20,111
AC	8,119	8,119	8,119	9,989	14,246	13,408
DC	1,991	1,908	2,240	3,780	2,908	5,816
HPC	353	332	398	803	683	887
Italy						
Total Power (MW)	**3,940**	**3,814**	**4,274**	**9,833**	**9,305**	**13,420**
Total Charging Points	152,395	150,884	156,684	238,775	292,267	329,519
AC	118,257	118,257	118,257	163,670	233,422	219,691
DC	29,002	27,793	32,627	61,942	47,648	95,295
HPC	5,136	4,834	5,800	13,163	11,197	14,533
Latvia						
Total Power (MW)	**41**	**40**	**44**	**136**	**129**	**186**
Total Charging Points	1,582	1,566	1,627	3,305	4,046	4,561
AC	1,228	1,228	1,228	2,266	3,231	3,041
DC	301	289	339	857	660	1,319
HPC	53	50	60	182	155	201
Lithuania						
Total Power (MW)	**79**	**76**	**85**	**262**	**248**	**357**
Total Charging Points	3,045	3,014	3,130	6,360	7,785	8,778

AC	2,363	2,363	2,363	4,360	6,218	5,852
DC	579	555	652	1,650	1,269	2,538
HPC	103	97	116	351	298	387
Luxembourg						
Total Power (MW)	**64**	**62**	**69**	**130**	**123**	**177**
Total Charging Points	2,464	2,440	2,534	3,146	3,851	4,342
AC	1,912	1,912	1,912	2,157	3,076	2,895
DC	469	449	528	816	628	1,256
HPC	83	78	94	173	148	191
Malta						
Total Power (MW)	**32**	**31**	**34**	**79**	**75**	**108**
Total Charging Points	1,225	1,212	1,259	1,919	2,349	2,648
AC	950	950	950	1,315	1,876	1,765
DC	233	223	262	498	383	766
HPC	41	39	47	106	90	117
Netherlands						
Total Power (MW)	**1,670**	**1,617**	**1,811**	**3,087**	**2,921**	**4,213**
Total Charging Points	64,587	63,947	66,405	74,960	91,753	103,448
AC	50,119	50,119	50,119	51,382	73,280	68,969
DC	12,291	11,779	13,828	19,446	14,958	29,917
HPC	2,177	2,049	2,458	4,132	3,515	4,562
Poland						
Total Power (MW)	**1,517**	**1,469**	**1,645**	**5,048**	**4,777**	**6,889**
Total Charging Points	58,673	58,091	60,324	122,572	150,032	169,155
AC	45,530	45,530	45,530	84,018	119,825	112,776
DC	11,166	10,701	12,562	31,797	24,459	48,919
HPC	1,977	1,861	2,233	6,757	5,748	7,460
Portugal						
Total Power (MW)	**778**	**753**	**844**	**1,582**	**1,497**	**2,159**
Total Charging Points	30,088	29,789	30,935	38,412	47,017	53,010
AC	23,348	23,348	23,348	26,330	37,551	35,342
DC	5,726	5,487	6,442	9,965	7,665	15,330
HPC	1,014	954	1,145	2,117	1,801	2,338
Romania						
Total Power (MW)	**430**	**416**	**466**	**1,430**	**1,353**	**1,952**
Total Charging Points	16,622	16,457	17,090	34,725	42,504	47,922
AC	12,899	12,899	12,899	23,802	33,946	31,949
DC	3,163	3,031	3,559	9,008	6,929	13,859
HPC	560	527	633	1,914	1,628	2,113

Slovakia						
Total Power (MW)	**149**	**144**	**162**	**496**	**469**	**676**
Total Charging Points	5,760	5,703	5,922	12,033	14,728	16,605
AC	4,469	4,469	4,469	8,248	11,763	11,071
DC	1,096	1,050	1,233	3,121	2,401	4,802
HPC	194	183	219	663	564	732
Slovenia						
Total Power (MW)	**124**	**120**	**135**	**310**	**293**	**423**
Total Charging Points	4,798	4,750	4,933	7,517	9,202	10,374
AC	3,723	3,723	3,723	5,153	7,349	6,917
DC	913	875	1,027	1,950	1,500	3,000
HPC	162	152	183	414	353	458
Spain						
Total Power (MW)	**2,491**	**2,412**	**2,703**	**6,218**	**5,884**	**8,487**
Total Charging points	96,374	95,418	99,087	151,000	184,828	208,386
AC	74,785	74,785	74,785	103,504	147,615	138,932
DC	18,341	17,576	20,633	39,172	30,132	60,264
HPC	3,248	3,057	3,668	8,324	7,081	9,190
Sweden						
Total Power (MW)	**913**	**884**	**990**	**1,688**	**1,597**	**2,304**
Total Charging Points	35,318	34,968	36,312	40,991	50,174	56,569
AC	27,407	27,407	27,407	28,097	40,072	37,715
DC	6,721	6,441	7,561	10,634	8,180	16,359
HPC	1,190	1,120	1,344	2,260	1,922	2,495
EU Total Power (MW)	**29,316**	**28,383**	**31,800**	**66,529**	**62,962**	**90,813**
EU Total Charging Points	1,134,009	1,122,769	1,165,931	1,616,518	1,978,745	2,230,924
AC	879,984	879,984	879,984	1,108,206	1,580,495	1,487,525
DC	215,809	206,817	242,785	419,408	322,622	645,243
HPC	38,216	35,968	43,162	88,904	75,629	98,156

ANNEX 2 - Methodology for calculating binding minimum targets

See the link below for the detailed overview of the methodology:

- Methodology for calculating binding minimum targets

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