SUSTAINABLE TRANSPORT FORUM

Best practices guide for permitting and grid connection procedures for recharging infrastructure

This Report has been drawn up by Task Force 1 of the Sustainable Transport Forum sub-group on best practices of public authorities to support the deployment of recharging infrastructure. Task Force 1 was coordinated by DG MOVE of the European Commission and operationally led by POLIS –the network of European cities and regions cooperating for innovative transport solutions–, under the EAFO 3.0 contract with the European Commission. Special thanks goes to the core reviewers Jaap Burger of Regulatory Assistance Project, Rob Cillessen of Stichting ElaadNL and Pieter Looijestijn of Metropolitan Region Amsterdam-Electric (MRA-E). A full overview of authors, coordinators and the core review team is provided in Annex 3 to this Report.

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Executive summary

This report highlights the key findings and recommendations from the Sustainable Transport Forum's 'public authorities' (STF-PA) subgroup survey, conducted from September to December 2021, on the procedures of public authorities, and experiences of market participants with permitting and grid connection procedures for recharging infrastructure. The survey involved 14 local, regional and national public authorities and 11 private stakeholders (market participants such as recharging point operators (CPOs), electricity supply companies, car manufacturers and interest groups). On the one hand, public authorities were asked to provide information about their permitting procedures for recharging points, and distribution system operators (DSOs) and transmission system operators (TSOs) about their grid connection procedures for recharging points. On the other hand, market participants were asked to identify the issues they experienced in relation to permitting and grid connection procedures for recharging infrastructure, along with potential good practices encountered, with a view to disseminating those at the EU level. In relation to the **permitting procedure**, the problems identified range from lengthy processes involving many different administrations, to compliance with a multitude of diverging local permitting regulations, which leads to extra costs and delays. Participants also highlighted a lack of technical knowledge of public administrations and an overall lack of resources to deal with the growing number of requests. In relation to the **grid connection procedure**, the challenges encountered relate to the lack of grid capacity, the lack of prioritisation by DSOs while treating grid connection requests, the lack of qualified staff / certified technicians, or insufficient transparency on the available grid capacity. Transparency on the status of a grid connection request is also a recurrent issue.

While prioritising the problems, bottlenecks and limitations of the **permit application procedure**, 'lack of transparency on timing' was the most relevant problem identified by the respondents, with 'cumbersomeness/heaviness of the administrative procedure' also mentioned. These issues mostly result from a lack of a specific and clear framework and a lack of consistency of processes between the different public authorities, which leads to long approval times.

As for the problems, bottlenecks and limitations of the **grid connection procedure**, 'timing of procedure' was considered the most relevant problem, followed by 'lack of clarity regarding the application procedure and/or competent authorities assessing the permit application' and 'cumbersomeness/heaviness of the administrative procedure'. Like in the permitting procedure, these issues have a similar background to most of the other problems identified (i.e. ambiguous permit procedures, lack of standardisation and added costs).

The above survey results suggest four main groups of problems and bottlenecks regarding the permitting and grid connection processes.

1. Lack of clearly defined timelines and standardised procedures, together with a lack of experienced staff and technical capacity on the part of the public authorities (either at the local or regional level) and DSOs. This delays the permitting and grid connection processes and increases the costs of the procedure.
2. Lack of transparency on costs, both for the permitting procedure fees, as these vary greatly among local authorities where some include, for example, parking permit-

ting fees, and for the grid connection procedure, which sometimes includes several variable items such as grid fees, grid capacity studies and other costs that result in unpredictability.
3. Lack of cooperation between public authorities and DSOs/TSOs to accelerate the connection of recharging points to the grid.
4. Lack of joint planning between public authorities, CPOs and DSOs/TSOs for recharging needs, which means that recharging infrastructure roll-out cannot be appropriately aligned with urban planning and mobility and grid planning.

These bottlenecks might not apply to all EU Member States equally, as the specific situations at the Member-State level may differ. As part of the work done under the STF-PA taskforce 1 recommendations, an attempt was made to reach a general conclusion that covers most Member States.

These problems and bottlenecks might put at risk the timely reaching of the alternative fuels infrastructure regulation (AFIR) targets, both the fleet-based deployment targets set at the Member-State level and the distance-based targets along the trans-European transport network. The lack of a comprehensive electric vehicle (EV) recharging infrastructure, both for passenger cars and commercial vehicles (light-duty vehicles and heavy-duty vehicles) in turn could hinder the widespread uptake of EVs in the EU and the decarbonisation of the transport sector. Both public authorities and market players should also increase cooperation and establish communication channels in liaison with DSOs, to streamline these processes. This report highlights a set of recommendations to the Member States to implement practical solutions for these issues. It also provides a series of good practice examples to support public authorities and DSOs to streamline the permitting and grid connection procedures.

Based on the foregoing, this report recommends a set of measures to overcome the issues identified, both for the permitting and for the grid connection procedure.

Permitting procedure

- All procedures for the permitting process required to set up recharging infrastructure should have defined timelines that are as short as possible, along with details on when they may be extended and under what conditions. This would bring clarity and predictability to the permitting process. Based on the example from the city of Stockholm, and the European Parliament recommendations, AFIR Article 13 should be amended stating that the permitting process including approval should last no more than 3–6 months, ensuring that this does not conflict with already existing national laws.
- Local public authorities should be provided with technical support by Member States as part of the national policy frameworks defined under AFIR, to put into place streamlined procedures for grid-permitting processes required for the deployment of recharging infrastructure. Strengthening administrative capability, harmonising legal frameworks and exchanging relevant best practices should all be part of this technical support.
- In order to accelerate and streamline the permitting procedure, local authorities are encouraged to select a specific number of adequate locations for their EV recharging infrastructure and, for these, to introduce a pre-approval process that can simultaneously help to reduce delays.
- Whenever possible, public authorities should establish standardised application procedures for the whole administrative process, together with online specifications identifying the necessary documentation. This should be established at the Member-State level, on the basis of the guidelines issued at the EU level.
- With the support of national authorities, local authorities are encouraged to establish a 'one-stop-shop' approach to support the permitting process (considering the advantages of concentrating technological, environmental and legal expertise), to minimise the number of authorities involved in the process, to maximise efficiency and to facilitate the permitting process.
- During the permit-granting process for the deployment of recharging infrastructure, public authorities are encouraged to establish clean communication channels with CPOs, to exchange comprehensive and transparent information regarding all requirements and evaluation criteria, including complaint mechanisms.
- Whenever possible, local authorities should adopt evaluation checklists to help private companies and CPOs better understand the criteria behind the assessment of a permitting authorisation procedure, thus giving predictability and a streamlined process.
- To simplify the procedure and replace the usage of paper, completely digital permit-granting processes and e-communication should be prioritised. Online access to pertinent data, such as application forms for environmental, building and other permits, together with details on associated fees, should be made easily available. This could save a significant amount of time spent searching for information about requirements and process.
- Member States should set up a contact point tasked with regularly monitoring the main bottlenecks in the permitting procedures, and addressing the issues encountered by public authorities and CPOs during the deployment of recharging infrastructure.
- Permitting fees should be harmonised as much as possible, in particular in neighbouring jurisdictions, but should nevertheless respect the autonomy of local authorities in the establishment of these fees. These should also be made clear from the beginning of the permit procedure.

- To promote the adoption of innovative technologies and solutions, including for the accessibility of the recharging infrastructure by vulnerable groups and people with disabilities, public authorities should allow the technological and physical specifications of their recharging infrastructure to be updated in the interim between the permit application and the deployment. This will ensure that the recharging infrastructure is deployed in a future-proof way.

Grid connection procedure

- National, regional and municipal authorities should coordinate with DSOs to implement long-term grid planning and stimulate grid investments that take account of the current and future requirements for the roll out of recharging infrastructure. This should be aligned with cities' sustainable urban mobility plans. This will enable forward-looking network planning and construction over the short, medium and long terms.
- DSOs should provide public information on grid capacities, such as hosting capacity maps for optimal locations. This would facilitate the grid connection process since it would reduce the number of requests that might not be feasible, grid-wise.
- DSOs should apply a transparent and digital procedure for grid connection applications to speed up the process. The creation of digital portals by DSOs, together with automated data exchange from DSOs towards local and regional authorities and CPOs, will also contribute to reducing the grid connection timelines, and therefore decrease costs.
- National authorities should define harmonised rules for the grid connection procedures with a focus on defining clear and strict deadlines, where DSOs should provide minimum connection times for applicants and ensure that these are fulfilled. According to a recent set of recommendations from ChargeUp Europe, these timelines should not be longer than 12 weeks for power requests below 100 kW and should be up to 6 months for power requests between 100 kW and 350 kW, and up to 8 months for power requests above 350 kW.
- Public authorities should coordinate with CPOs and DSOs to define clear roles and responsibilities, and should cooperate during the implementation of any applicable rules and procedures for the grid connections. Besides this coordination, the existence of standardised procedures, together with the digitalisation of the grid connection procedures, would reduce the administrative burden of the process.
- Local authorities and DSOs should be encouraged to communicate, to adjust other network construction needs to the connection of recharging stations to facilitate the permitting and connection process. This would also bring predictability to the grid connection procedures.
- For grid connections, when no significant adverse environmental or social impact is anticipated, as is the case with recharging infrastructure, both public authorities and DSOs should design streamlined procedures and follow a simple-notification procedure.
- DSOs should provide information on grid contingencies and bottlenecks in advance, to ensure that CPOs' and public authorities' strategies for the deployment of recharging infrastructure are aligned with DSOs' capacity to provide adequate connections without the need of costly interventions. Additionally, they should also allow recharging infrastructure to be connected ahead of upgrades by making the offering of flexible capacity arrangements as a short-term solution mandatory.

1. Introduction

1.1. Objectives and scope

This Report has been drawn up by Task Force 1 of the Sustainable Transport Forum sub-group on best practices of public authorities to support the deployment of recharging infrastructure. Task Force 1 was coordinated by DG MOVE of the European Commission and operationally led by POLIS –the network of European cities and regions cooperating for innovative transport solutions–, under the EAFO 3.0 contract with the European Commission.

The present report aims to establish itself as a support tool for public authorities on the permitting and grid connection procedures to support the deployment of recharging infrastructure in their territories. It identifies the main issues, problems and bottlenecks that obstruct and delay the permitting and grid connection procedures for new recharging points, and identifies **best practices** by frontrunner cities that can be shared with other cities and regions initiating the roll-out of recharging infrastructure.

For clarity purposes, within this report, permitting is considered as **any process/procedure where a CPO needs to ask for an administrative/construction/environmental permit from the public authority, either under an open market or under a tender / public concession.**

This document summarises and highlights the key results of the survey conducted from September to December 2021, involving 14 local, regional and national public authorities and 11 private stakeholders (market participants such as CPOs, supply companies, manufacturers and interest groups), involving two distinct questions for public authorities and private stakeholders. The survey was structured in two main parts:

a. construction permitting procedures,
b. grid connection procedures.

The questions of the survey were prepared by POLIS (the network of European cities and regions cooperating for innovative transport solutions). They were gathered in an online form and distributed to different stakeholders, to which 25 replied. The survey included distinct questions for public authorities and market stakeholders. POLIS analysed the results and drafted the report below, with support and review from the Directorate-General for Mobility and Transport, the Regulatory Assistance Project and Stichting ElaadNL.

It should be noted that this report is a capture of the situation in terms of permit procedures at a specific point in time and only in defined locations (those of the respondents). It does not pretend to provide a complete picture of permitting procedures in Europe, nor does it claim to be valid over a longer period, as the situation evolves quickly at the local, regional and national levels. Nevertheless, it can be used as a starting point for authorities and stakeholders interested in improving the framework and processes around recharging point building and grid connection.

1.2. Policy context

As part of the Green Deal, the European Commission's sustainable and smart mobility strategy was published in 2020 and sets the foundation for how the EU transport system can achieve its green and digital transformation and become more resilient to future crises. It is structured around three key objectives.

- **Sustainable mobility.** An irreversible shift to zero-emission mobility.
- **Smart mobility.** Achieving seamless, safe and efficient connectivity.
- **Resilient mobility.** A more resilient single European transport area for inclusive connectivity.

The outcome should be a 90 % cut in transport greenhouse gas emissions by 2050, in line with the EU's requirement to achieve climate neutrality by 2050. The sustainable and smart mobility strategy therefore makes it a key priority to boost the uptake of zero and low-emission vehicles, renewable and low-carbon fuels, and related infrastructure for all modes of trans-

port, without further delay. In this context, it is imperative that no EU region or territory is left behind, and that regional disparities in the deployment of alternative fuels infrastructure are duly addressed in less-developed regions or regions with specific needs and circumstances.

Boosting the uptake of renewable and low-carbon fuels must go together with the creation of a comprehensive network of publicly accessible recharging and refuelling infrastructure, to fully enable the widespread uptake of low- and zero-emission vehicles in all transport modes. The deployment must keep pace with these developments; it should not become a barrier to market development. Moreover, the infrastructure must not only be physically there, but it must also be easy to use. The sustainable and smart mobility strategy enhances the ambition set out by the 'Recharge and refuel' European flagship initiative under the Recovery and Resilience Facility that, by 2025, at least 1 million out of up to 3 million publicly accessible recharging points and 500 out of the 1 000 hydrogen refuelling points that will be needed by 2030 should be installed along EU roads. It also notes the ambition to support ports and airports in their transition to zero- and low-emission, multimodal transport, to support transport hubs and to encourage the use of renewable and low-carbon fuels.

As part of the 'Fit for 55' package, the recently adopted regulation on the deployment of alternative fuels infrastructure (AFIR) is a key policy initiative to achieve the ambition set out in the sustainable and smart mobility strategy. This plan is published alongside the legislative proposal and outlines a set of supplementary measures to support the rapid roll-out of alternative fuel infrastructure.

The roll-out can be accelerated by improving the overall framework for planning, permitting and procuring such infrastructure in the EU, and by both increasing and better targeting public support. Moreover, common technical specifications for vehicles, infrastructure and infrastructure use services are essential for scaling up market action, as they create certainty for market investment. Achieving an early mutual understanding of how to bridge the remaining standardisation gaps will facilitate such action.

Published in 2021, the Commission's strategic roll-out plan was established to support the AFIR proposal by outlining a set of supplementary measure to support the rapid deployment of alternative fuels infrastructure.

Public authorities at all levels of governance play a significant role in developing this market. By adjusting their concession or licence procedures, public procurement procedures or grant award procedures, public authorities can help shape market developments in the following areas.

- **Public support** to install recharging and refuelling points remains necessary in many cases. The authorities will have to plan these works properly, while also stipulating the right minimum requirements and service standards that allow for market competition, positive user experience and that avoid locking in specific technology solutions.
- **Planning and permitting** are also crucial factors that influence the overall speed and scale of infrastructure roll-out: already today, CPOs face difficulties in finding suitable locations in some instances. The time needed to get permits to install the infrastructure can vary by location, particularly for grid connections.
- **Concession procedures** can be a further constraint. Licencing, concessions and public procurement processes for recharging stations often favour larger (for large-scale investments/concessions) or regional stakeholders (for local investments). This is true for concession practices (especially on highways but also in urban areas), where a lack of transparency and competition in the award procedure and an inappropriate duration of concessions were the most pressing issues.
- Public authorities must also consider how to allocate in an optimal way increasingly scarce space among competing demands (e.g. for

walking or cycling, recreation or recharging vehicles). The deployment of recharging and refuelling infrastructure must be considered as part of the overall **sustainable urban mobility planning**. If these procedures are done properly, public authorities are in a powerful position to stimulate and accelerate the deployment of future-proof, state-of-the-art, cost-efficient, energy-efficient, grid-beneficial, truly interoperable and user-friendly solutions with high service standards. In this context, it is important to learn from the experience of frontrunners, avoid mistakes and borrow the practices that have proven to be successful. The involvement of local governments in EU-funded research and innovation projects under Horizon 2020 and Horizon Europe, together with technical and scientific partners, can greatly support this exchange and dissemination of experiences and good practices.

However, as seen above, electric mobility is a complex, cross-sectoral ecosystem that involves several actors. Public authorities must coordinate with CPOs and DSOs to ensure a seamless permitting procedure, and to ensure that the electricity distribution grid serves the required connection point. There is sometimes a multiplicity of competent public authorities responsible for the permitting process, and these often adopt vastly different approaches. This brings challenges and limitations to CPOs applying to install and operate a recharging point, like added costs and bureaucracy. Public authorities and DSOs also sometimes lack the knowledge and technical resources to deal with the increased demand from CPOs responding to the needs of EV users.

The Commission's STF was set up to assist the Commission in implementing the EU's activities and programmes aimed at fostering the deployment of alternative fuel infrastructure to contribute to the EU's energy and climate goals. The STF serves as a platform for structural dialogue, exchange of technical knowledge, cooperation and coordination between the Member States and relevant public and private stakeholders. STF subgroups are important facilitators when delivering policy recommendations to public authorities.

A dedicated STF subgroup was established in early 2021 to function as a platform for exchange between public authorities on all matters to promote and facilitate the development of high-quality recharging infrastructure. This includes, for example, approaches to harmonisation and simplification of permitting and grid connection procedures. Under this **subgroup on best practices of public authorities to support the deployment of recharging infrastructure** (STF-PA), a set of recommendations for public authorities for procuring, awarding concessions, licences and/or granting support for electric recharging infrastructure for passenger cars and vans was already drawn up (the 2020 STF recommendations for recharging point tenders), along with a summary handbook. The recommendations are designed as practical guidelines for public authorities that are either looking to procure recharging infrastructure or to award concessions for their roll-out and/or operation, linked to the granting of government support. The recommendations include off-the-shelf best practice examples, ready for use by national, regional and local authorities.

In addition to these recommendations, the subgroup is also responsible for discussing approaches to harmonisation and simplification of permitting and g rid connection procedures as part of a specific task force, to identify a best practices guide for permitting and grid connection procedures and inform the implementation of AFIR, which is currently under trialogue negotiations between the European Parliament, the Council of the European Union and the Commission. This task force is chaired by the Commission (the Directorate-General for Mobility and Transport) and coordinated by POLIS. The work developed so far will be highlighted in the following sections.

2. Analysis of the survey results – public authorities

2.1. Overview of participants

The survey dedicated to public authorities received a vast majority of answers from local authorities: out of 14 respondents, 10 are local authorities (city, municipality, etc.), three are regional authorities (a federal or regional state entity, province, department, etc.) and only one is a national authority (transport ministries, agencies).

Regarding the responses to the questions for public authorities: the participating national authority only answered questions in relation to the fast-recharging network along the highways in its country.

Most responses came from authorities located in Europe; only one respondent comes from the United States. Two respondents come from Italy and two others from the Netherlands, and all other respondents come from different European countries: Belgium, Germany, Greece, Hungary, Ireland, Poland, Spain, Sweden and Switzerland. The national authority represents road offices in Switzerland, while regional authorities are from California, Thessaloniki, and the cooperation of Flevoland, North Holland and Utrecht.

More detailed information about respondents can be found in the annex.

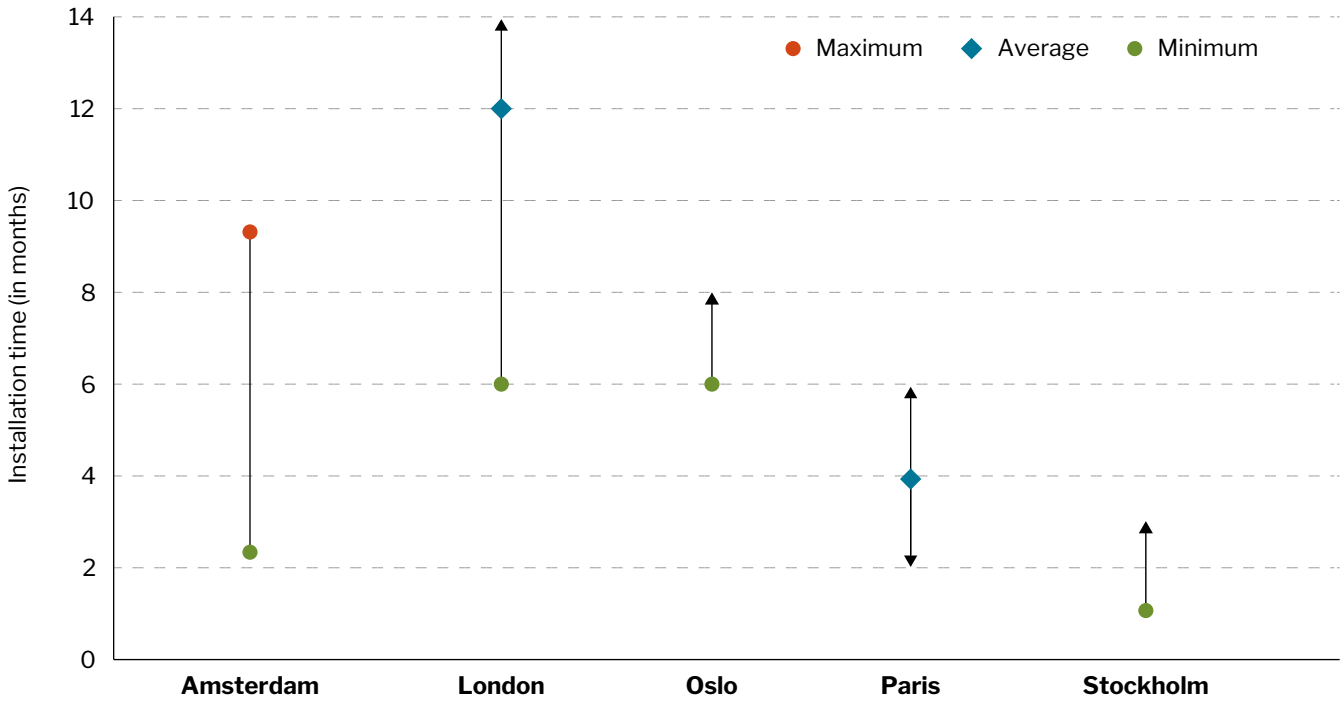
2.2. Summary of responses

From the public authorities' answers, most of them have two distinct procedures to obtain a permit to build a recharging point and connect this recharging point to the grid. While the building permit is usually granted by the local authority (as related to public space occupation), the grid connection is mostly a competence of the national grid operator.

The entire process, from the application to build a recharging point to its operation, usually lasts from 2 to 6 months but has unlimited or very long-time validity, which means that it might last much longer. It requires documentation on the planned dimensions and views of the construction, the electrical installations, and agreements with or certification from the required authorities. These timings are in line with a recent benchmark produced by the International Council on Clean Transportation (ICCT) in 2021 with a selected group of cities (Amsterdam, London, Oslo, Paris and Stockholm), where the time needed to install an alternating current (AC) recharger ranged from 1 month minimum (in Stockholm) up to 14 months maximum (in London).

These discrepancies are often a source of complaint by the CPOs and can hinder the uptake of electric mobility in Europe, given the resulting uneven deployment of recharging infrastructure.

Figure 1: Time needed to install an AC regular charging station in selected cities (Source: ICCT, 2021)



Prices are mostly defined on a case-by-case basis by national grid operators. The abovementioned benchmark study by the ICCT has identified costs between EUR 3 300 and EUR 10 000, depending on the city and type of recharging point. But the values can be much lower, as in the example of Amsterdam, where a grid connection for an AC recharging point costs around EUR 1 000.

Information and support on the procedure are available in brochures and through dedicated desks or contacts. Authorities recognise the need for **standardisation** of the procedure, along with **integration** with wider urban development plans and **simplification** of various parts (e.g. cultural protection or power output restrictions). Other potential improvements quoted are the public availability of transmission lines, grid capacity maps and strategic analyses of EV hub spots.

The permitting procedure times are longer for direct current (DC) chargers. According to the European Automobile Manufacturers Association's (2022) white paper on EU charging: '*Streamlining the infrastructure planning process would play a key role in reducing lead times. Regarding the EVCI setup of DC 150 kW or higher chargers, the time necessary can range between seven and 20 months depending on country specificities. Stockholm is a leader in this area, with an average end-to-end installation time of seven months. While the city's planning-oriented approach requires an upfront time investment to identify and publish potential charging locations in collaboration with DSOs, this accelerates CPO planning and feasibility assessments. It also speeds up approval processes since both the DSOs and the city perform high-level feasibility screenings before publishing potential charging point locations. Stockholm's approval time is around three months; in contrast, Portugal requires 12 months. […] Including speed of grid access as an annual efficiency improvement metric for the DSOs could potentially improve lead times attributed to grid upgrades needed for EV charging infrastructure rollout.*'

2.3. Detailed comparative analysis between public authorities respondents

2.3.1. Authorities involved in permitting procedures

Table 1: Types of permits required by public authorities, and the responsible entities for each

Respondent	Permit required	Granting authority
Antwerp, Belgium	Coordinated building and environmental permit	Municipality
Budapest, Hungary	Permit to use public space	Municipality
	Grid connection permit	DSO
	Operation permit (condition for other permits)	Hungarian Energy and Public Utility Regulatory Authority
California, United States	All permit parameters in one application	Cities and counties
Cork, Ireland	No permit required	
Cracow, Poland	No permit, per se, required	
	Construction notification	Architectural and construction administration authority
	Construction permit if transformer station (TS) needed	Architectural and construction administration authority
Federal Roads Office (FEDRO), Switzerland	Permit to operate recharging point	FEDRO
	Permit to use the spot itself	
	Permit to build	Local authority (canton/commune)
Florence, Italy	Permit to use public space	Municipality
	Excavation permit	
	Protected area permit	Cultural Heritage Protection Authority
	Grid connection permit	Distributor
Gothenburg city parking, Sweden	Construction permit	Not the municipality

Respondent	Permit required	Granting authority
MRA-E, Netherlands	Permit to use public space (normally only required for larger DC recharging stations)	Local authority (different permits integration in different cities)
	Decision to reserve parking	
	Permit for new cabling in the ground (DSO requests from the local authority)	
	Permit for excavation (DSO requests from the local authority)	
	Additional permit when close to public waterworks or other special permits, like in protected urban areas	
	Grid connection approval	DSO
Rome, Italy	Installation permit on public land, including construction and refurbishment	Rome administration mobility department
	Technical parameters of the installation	National plan for recharging infrastructures
	Grid connection permit	Areti S.p.A. – entity holding the ministerial concession for the electricity distribution service in Rome
Thessaloniki, Greece	Construction permit	Municipality
	Environmental operating permit	Municipality, legally binding advice from Thessaloniki Transport Authority, technical advice and permission from national DSO and the Hellenic Electricity Distribution Network Operator

2.3.2. Procedure steps

Table 2. Administrative process for permitting procedure from each public authority

Respondent	Procedure steps	Required documents	Timeline	Permit validity
Antwerp, Belgium	1. Permit for public domain works (if applicable) 2. Permit for additional construction works (if necessary)			Unlimited duration

Respondent	Procedure steps	Required documents	Timeline	Permit validity
Budapest, Hungary	Request permit to the Hungarian Energy and Public Utility Regulatory Authority	'All relevant documentation'	75 days	18 months until operations start, then not specified
California, United States	Depends on local jurisdiction			
FEDRO, Switzerland	1. Local building permit 2. FEDRO application	— General plan — Location — Plan of the front and side views of the fast-recharging station — Piping plan from the outlet of the transformer — Simplified schematic diagram of the electrical installations — Boundary plan of the property of the work — Project plans for the building permit application — Copy of the building permit		30 years
Florence, Italy	Like any public installation – currently only under EU-funded measures 1. Space occupation permit 2. Excavation permit 3. If necessary, cultural heritage protection permit	— Details of the recharging point dimensions — Agreement with electricity provider proving grid connection capability — Details of the excavation works dimension, techniques and materials — Design and rendering of the visible part of the recharging point	1. 30 days 2. 60 days 3. 30 days	

Respondent	Procedure steps	Required documents	Timeline	Permit validity
MRA-E, Netherlands	1. Select location: 2. reserve parking spot, 3. grid connection including: — cabling permit (DSO request from local authority); — digging permit (DSO request from local authority)		2: 6 weeks, complaints possible 3: 18 weeks maximum	
Rome, Italy	1. Obtain energy intake point from local energy provider 2. Group installation permit request for 40 recharging points 3. Approval by the 'services conference' 4. Installation authorisation from the municipality 5. Traffic decree issuance	— Technical-administrative documentation for recharging point group installation — End-of-work declaration and testing certification	6 months on average	
Stuttgart, Germany	Public tenders for AC- and DC-chargers building and operating concessions. Grid connection by the local grid operator, 'Stuttgart Netze', a publicly owned independent company	— Details of applicant and operator — Previous references — Desired infrastructure location — Infrastructure information (performance, measures, etc.)		
Thessaloniki, Greece	For public recharging points, update the plan for vehicle recharging infrastructure (*ΣΦΗΟ* in Greek) at least every 5 years For private recharging points: 1. municipal planning permit, 2. Hellenic Electricity Distribution Network Operator operational permit	For public recharging points: methodology to define locations (incl. consultations), operation business model, all CPO contractual relations with other operators For both types: tax identification number, registered office and legal representative	For publicly accessible recharging points, an operation carried out within 1 year of installation	

2.3.3. Support for application

Table 3: Examples of the distinct types of support provided by public authorities in the permit application

Respondent	Provided support	Potential improvements	Documents
Antwerp, Belgium	Dedicated permit application desk		
Barcelona, Spain	Basic guide on vehicle and recharging types; collaboration agreement between vehicles manufacturers, electrical installers and real estate managers	Training people granting permits and the different parties of the agreement; update the guide	Special urban development plan part on electricity supply for vehicles
Cork, Ireland	Guidelines for planning EV recharging infrastructure for privately owned developments in Cork city	National deployment of EV identification on number plates; municipal policy; long-term plan based on best practices; municipal licence system aligned with land use; EV strategy document including processes, liabilities and costs	EV recharging infrastructure guidelines
Budapest, Hungary		Simple and client-friendly procedure	
California, United States	Tailored information brochure, recent legislation to add mandatory timelines to permit review and approval of EV charging stations applications		Permit flyer, permit factsheet, scorecard
Cracow, Poland		National procedures should be simplified	National regulation documents
FEDRO, Switzerland	Tender documents for fast-recharging points construction and operation		Permit example, permit process factsheet, recommendations on the factsheet, operators' review guide
Florence, Italy		Cultural Heritage Protection Authority permit could be avoided	
Gothenburg parking company, Sweden		Shorten the permit process for increasing the power output on existing and new grid connections	

Respondent	Provided support	Potential improvements	Documents
MRA-E, Netherlands	Dedicated permit application desk; online info for e-drivers; network development map; recharging station management portal	Research in progress, no insights given	Licencing information and concept of recharging stations network
Rome, Italy	Tailored info brochure	Regulation defining specific criteria for greater archaeological value areas; planned road works in coherence with other interventions planned on the road section	Electric recharging installation modalities documentation
Rotterdam, Netherlands	Regulation for residential buildings, built parking and brochure for residential building owners	Include parking in the city vision for urban development	
Stuttgart, Germany	Coordination unit for electric mobility	Standardise processes (foundation, measurement, etc.)	
Thessaloniki, Greece		New process: need to test before improving	National press release

2.3.4. Grid connection procedure

Table 4: Grid connection parameters identified by public authorities, and potential improvements

Respondent	Key parameters	Responsible entity	Building permit condition	Provided support	Potential improvement	Pricing
Antwerp, Belgium	Specific procedure applying to all parameters	DSO	No	DSO point of contact (POC); pre-meeting opportunity	Public maps of transmission lines and grid capacity	Public, depending on size, location, etc
Barcelona, Spain	Specific procedure applying to all parameters		Yes	Pre-application meeting opportunity	Public map of transmission lines	Public, fixed up to 100 kW, then evaluated by the DSO

Respondent	Key parameters	Responsible entity	Building permit condition	Provided support	Potential improvement	Pricing
Budapest, Hungary	Specific procedure applying to all parameters	DSO	No	DSO POC; pre-meetings opportunity	Address workforce shortage	Not public, case-by-case calculation by the DSO
California, United States	Different procedures in different cities	In Los Angeles: Los Angeles Department of Water and Power	No, but depends on the municipality	Public map of transmission lines and sufficient capacity; DSO dedicated team and POC; pre-meeting opportunity	Show service impacts, such as whether you can connect to an existing transformer or whether an upgrade will be needed; standardise the help with the site selection process	Not public, case-by-case calculation by the DSO, quote opportunity in some cities
Cork, Ireland	Specific procedures depending on the power output of connected recharging points	Distribution network operator (DNO)	No	Pre-meeting opportunity; public map of transmission lines	Strategic analysis of city fast-recharging EV requirements and the establishment of EV hub spots, aligned with DNO	Public, depending on size, location, etc
FEDRO, Switzerland	Specific procedure applying to all parameters	The Federal Inspectorate for Heavy Current Installations and energy provider	Yes			
Florence, Italy	Specific procedure applying to all parameters	DSO, compliant with national authority for energy and gas regulations	No, but discussions with the municipality	Public map indicating sufficient capacity points		Not public, case-by-case calculation by the DSO, quote opportunity

Respondent	Key parameters	Responsible entity	Building permit condition	Provided support	Potential improvement	Pricing
Gothenburg, Sweden	Specific procedures depending on the size of the grid connection itself					
MRA-E, Netherlands	Different procedures based on connection size and recharging point model					
Rome, Italy	Specific procedure applying to all parameters	DSO	No, but the DSO advises the city for building permits		Public map of grid capacities; easier and shorter application and installation procedures	Not public, case-by-case calculation by the DSO
Rotterdam, Netherlands	Specific procedure applying to all parameters	DSO/TSO	No	DSO POC, pre-meeting opportunity	Public map of transmission lines; coordinate with planned grid reinforcement	Publicly available, dependent on location, connection size, etc
Stuttgart, Germany	Specific procedures depending on the power output of connected recharging points	Local public independent grid operator	No, but DSO advises the city for building permits	Public map of transmission lines; DSO dedicated evaluation team and POC; cooperation with the city	Standardise grid connection rules between regions	Not public, case-by-case calculation by the DSO, incl. underground working
Thessaloniki, Greece	Specific procedures depending on the power output of connected recharging points		No, but the DSO advises the city for building permits	DSO dedicated team, pre-meeting opportunity		Not public, case-by-case calculation by the DSO

3. Analysis of the survey results – market players

3.1. Overview of participants

The survey dedicated to market participants had 11 respondents, eight of which are private organisations (mostly small and medium-sized enterprises) and three are public. The respondents can be subdivided into distinct categories (some of them incorporate more than one category), including:

- one vehicle or equipment manufacturer/ supplier (Tesla);
- one energy distribution or supply company (Iberdrola);
- six CPOs (Fastned, Greenway Polska, Greenway Infrastructure, EnBW Mobility+, ChargeUp Europe, Tesla);
- two charge point manufacturers (ChargeUp Europe, Tesla);
- two e-mobility roaming platforms (e-clearing.net, ChargeUp Europe);
- three interest groups (AVERE, Stichting ElaadNL, ChargeUp Europe);
- two other entities (Autovie Venete, ChargeUp Europe).

These market participants are present in all Member States except Cyprus and Malta (six respondents in France, Italy and the Netherlands; four respondents in Belgium, Germany, Spain, Austria and Poland; three respondents in Greece, Croatia, Luxembourg, Hungary, Portugal, Slovakia and Finland; two respondents in Czechia, Denmark, Ireland, Latvia, Romania, Slovenia and Sweden; one respondent in Bulgaria, Estonia and Lithuania). Some of them are also present in non-EU countries (three respondents in Switzerland and the United Kingdom, one respondent in Brazil and one respondent in Lichtenstein), or even worldwide, as in the case of Tesla.

Detailed information about the survey can be found in the annex.

3.2. Summary of responses

The survey questions for market participants identified **six** specific challenges related to permitting procedures and asked for a ranking between these issues, based on their importance as obstacles for the installation and operation of recharging points.

While prioritising the problems, bottlenecks and limitations of the **permit application procedure**, five out of the seven respondents ranked 'lack of transparency on timing' as the most relevant problem, with 'cumbersomeness/heaviness of the administrative procedure' mentioned as the most relevant issue by AVERE. Three of the respondents also considered other issues as being the most relevant for them, although these issues have a direct relation with most of the other problems identified: lack of a specific and clear framework and consistency of processes between the different authorities, which leads to long approval times.

The priority levels defined below are an average of the ranking given by all the respondents.

Table 5: Market player's prioritisation of the key issues related to the permit application procedure

Problems, bottle-necks and limitations	Priority level	Main issues related to permitting application procedure
Timing of procedure	1	— **Absence of specific code for e-recharging infrastructure**, permit submitted to many internal stakeholders (Portugal, Slovenia) — **Building law was used but building authority not given a deadline** for final notification. Without this, construction cannot start (Slovenia) — Having **defined deadlines but differences in requirements interpretation** (Poland) — **Local/regional/national authority replies using maximum time pre-defined. If modifications apply, the period re-starts** — **Not clear which procedure will be used: regular (8 weeks) or extended (26 weeks)** (Netherlands) — The procedure to request a building permit is transparent, but **sometimes it takes a long time for the permit to be approved** (Netherlands) — Time for decision-making slows down roll-out and makes planning for deployment extremely hard
Cumbersomeness/ heaviness of the administrative procedure	2	— **Extra details on timelines by different stakeholders** — Different **permits are needed, several reports requested or specific compliance required** — **Lack of guidance within permitting authorities** — **New construction permit for the extension of existing infrastructure** — Installation of a recharging point in an infrastructure that already has road access permit requires certification **agreements through a notary public**
Lack of clarity regarding the application procedure and/or competent authorities assessing the permit application	3	— **Several public authorities have a say due to the characteristics of the territory** (seismic, archaeological, historical or of landscape interest, local administrative autonomy) (Italy) — **Not clear what a 'recharging station'** is. Is it only the **charger or also the connection** + **parking places**, etc.? This could result in dividing the investment into stages and obtaining building permits (Poland) — **Old legislation** (Slovenia) — **Change of responsible** permitting body, unclearness of permitting body or change of permitting body during the process, new permitting body **without sufficient resources, not capable to work** — Unpredictable response times and final decisions from **municipal authorities, each could have its own procedures** — **Most local authorities and municipalities do not have a specific and clear framework** for the process of obtaining the local permits for the occupancy of public domain spaces for the installation and operation of recharging infrastructure. This leads in many cases to exceptionally long processes (Portugal)

Problems, bottlenecks and limitations	Priority level	Main issues related to permitting application procedure
Absence of a clear assessment framework / evaluation criteria	4	— **Different authorities, lack of standardisation of requirements** in the permitting phase — Some **building offices ask for a statement from the DSO even in cases when the connection is to the DSO grid** (Slovenia) — Extra statements: **technical inspections not relevant for any certificated recharging station/equipment** (Slovenia) — Additional inspections **that are not part of the existing procedure** (Slovenia)
Lack of transparency on costs	5	— **Every municipality has their fee ordinance** (*legesverordening*). Permit **fees are often only made clear after completing the permit procedure**. Costs vary significantly per municipality (Netherlands) — **Critical that local authorities have a clear understanding of the EV recharging business**. In some countries (e.g. Portugal) some municipalities establish e-permit fees based on the parking fees. **Revenues are different and parking operation/ management cannot be a responsibility of the CPO**
Other	—	— Local governments end up defining permitting fees and obligations, based on other activities (i.e. parking), **that are not compatible with the activity of a CPO** — There is no statutory definition of what a recharging station is, leading to other procedures (i.e. building code) being used to cover requests to install recharging infrastructure (Romania, Slovakia) — Ambiguous legal requirements for recharging stations (Poland) — Cumbersome procedures, **the lack of homogeneity among different administrations** (competencies are distributed at a state, regional and municipal level) **and the long approval times** are the principal limitations

As for the problems, bottlenecks and limitations of the **grid connection procedure**, 'timing of procedure' was considered the most relevant problem by three out of the seven respondents. 'Lack of clarity regarding the application procedure and/or competent authorities assessing the permit application' was mentioned as the most relevant issue by one of the respondents and 'cumbersomeness/heaviness of the administrative procedure' was identified by another. Three of the respondents also considered 'other problems' as being the most relevant for them. Like in the permitting procedure, these issues have a similar background to most of the other problems identified: ambiguous permit procedures, lack of standardisation and added costs.

Table 6: Market player's prioritisation of the key issues related to the grid connection procedure

Problems, bottlenecks and limitations	Priority level	Main issues related to grid connection procedure
Timing of procedure	1	— Differences among Member States but usually timing in regulation (though this is not always followed) — **The regulator might be involved** in adding extra time — Differences if it is a local grid operator or not — **Centralised distribution grid not adapted** to current needs — Time to confirm grid capacity, sign the contract, process advanced payments, etc — Preparing the grid connection — **Requests for unnecessary documentation from the DSO** — **Too many steps, inefficient process**, time to install and operate low voltage infrastructure takes 7–22 months, medium voltage 15–32 months (Spain)
Lack of transparency on costs	2	— Costs are clear in the quotation upfront and rarely differ much afterwards, but there is a large discrepancy concerning the cost of the grid across main grid operators — **Grid study cost to be paid upfront**, **cost of realisation of grid connections very unpredictable.** Operators reserve available capacity without using it, which prevents other operators becoming active in that region
Lack of clarity regarding the application procedure and/or competent authorities assessing the permit application	3	— **No clearly defined procedure** for the actual and available (low) voltage power in each location — Not knowing if able to connect to low or medium voltage — Not being sure what the limit for connection to the grid is. DSO decisions are very variable and do not depend on capacity as sometimes it is authorised and sometimes not, even when this capacity exists — **No specific counterparts**, different people to be contacted

Problems, bottlenecks and limitations	Priority level	Main issues related to grid connection procedure
Cumbersomeness/heaviness of the administrative procedure	4	— **Grid operators take too long to provide planning**. Once planning is established, these are rarely met — **Grid operators do not proactively communicate delays**, resulting in completed fast-recharging stations, but with a delayed grid connection and thus no power — **New grid connection lines installed by DSOs do not always run up to the land plot of the recharging station or that land plot's border**, which means it could be necessary for CPOs to finance and build new connection lines on adjacent land plots, and in some case obtain permits for crossing these land plots — Hard procedure if own TS must be built — **Technically complex questionnaires**, no specific application forms for recharging infrastructure, specific conformity declarations needed from recharging infrastructure suppliers — Some elements need to be transferred to DSOs (such as transformers or network extensions). This process includes the verification of all the administrative authorisations, permits and normative compliance resulting in a long procedure
Absence of a clear assessment framework / evaluation criteria	5	— **Absence of knowledge about how the DSO evaluates requests.** Only a statement is obtained. There are no discussions with the DSO, there are only clear statements YES/NO for requested connections. If YES, there are also given conditions, if NO, there is only the statement that it is not possible on their side to connect because of lack of network capacity — **Power input in grid connection offer not clear/visible** Grid connection point/location not clearly displayed in grid connection offer — **Denial of second grid connection because of another already existing grid connection in the area** — **Not clear if the permit will be for a low or medium voltage. No information on how the application will be classified** until the contractual terms of connection are received (Poland)

Problems, bottlenecks and limitations	Priority level	Main issues related to grid connection procedure
Other	—	— The length of time required to upgrade grid connections, with unclear statements from the DSO, timelines not met (Netherlands) – The following issues (Germany) • Over 870 different DSOs without unified procedures • Not able to query the price of a grid connection before submitting the request for the grid connection, which makes it difficult to build a business plan • Calculating both one-off and running costs means that the cost per station is high, and not clear • Currently, the price of power is based on an annual peak output, whereas a monthly calculation would be much fairer • Many network operators require remote control technology in the transformer (15–20 % more expensive), which must be paid by the CPO but gives the CPO no added value. These costs should be borne by the grid operator • Lack of easy and open access to any information on the grid capacity and associated data: this should include data on grid topology and details on grid connection in the respective site. If technical details are not open based on justified reason, the applicant should get access to this data based on inquiry in a swift manner

3.3. Detailed comparative analysis between market stakeholder respondents

With regards to grid connection procedures, some of the respondents have no direct activity related to this process because they do not apply for grid connections themselves. However, some market stakeholders like AVERE have an indirect experience and provided their inputs/responses based on input from their members (which include CPOs and grid operators).

3.3.1. Procedures when applying for a grid connecting to recharging points

Table 7: Procedure steps and actors involved when applying for a grid connection, based on the input from the respondents

Respondent	Procedure steps	Actors involved	Identified issues
Fastned	1. Request quotation from **grid operator** (prices vary a lot per grid operator and depend a lot on the proximity of the existing mid voltage grid). Lead times for quotations are sometimes exceptionally long, but mostly within 3 weeks 2. Arrange for a TS to be placed before the grid operator builds the grid connection 3. Arrange a site visit by the metering company 4. Arrange a contract with an energy supplier 5. Have the grid operator realise the grid connection. At the moment, this takes around a year, or even up to 4 years	DSO Metering company	
AVERE	Variations between members		
GreenWay Polska	Send an application to connect to the DSO The construction of a low voltage connection requires a fee to the DSO in the amount of approximately EUR 400–500 for 150 kW of connection power. A low voltage connection option applies to power up to approximately 150 kW, and is available in 95 % of the locations These are the five largest DSOs in Poland: — Energa Operator — Tauron — PGE — Enea — Innogy	DSO	After applying for a connection, there is no information on how the application will be classified (low or medium voltage) until the terms of connection are received with the contract The process is very long: about 18 months of waiting for the construction of a power connection through the DSO In locations where it is not possible to connect at low voltage, it is essential to connect at medium voltage. In this respect, most often the entire investment or its significant part is on the side of the connected entity. Then it is necessary to build medium voltage lines and TSs with own resources, the cost of which is dependent on the length of the connection – minimum EUR 40 000. The time it takes to build a connection depends heavily on the design process and obtaining the property rights that must be exceeded to build the connection

Respondent	Procedure steps	Actors involved	Identified issues
GreenWay Infrastructure	Approximately one third of GreenWay locations in Slovakia are connected directly to a DSO, and the rest are connected to the internal low voltage grid of the premises. When requesting a capacity of up to approximately 22 kW / 40A, the answer from the DSO takes 3–4 weeks. If more capacity for a DC charger (> 50 kW) is requested, the answer from the DSO takes 4–38 weeks. In Slovakia, there are three standard DSOs that approve and provide grid connection to their network: ZSD (Západoslovenská distribučná a.s.) – operates in the western part of Slovakia; SSD (Stredoslovenská distribučná a.s.) – operates in the middle part of Slovakia; VSD (Východoslovenská distribučná a.s.) – operates in the eastern part of Slovakia. In some cases, such as in some bigger shopping centres, there are 'local distribution operators'. In those cases, GreenWay is in communication with them about the grid connection, and they contact the standard DSO if there is a need to extend their contracted reserved capacities for the shopping centre.	DSO	The procedures related to DSO connections are time consuming and take from 14 weeks to 1 year longer than connections to the internal grid of the premises. This longer period is due to the speed of response to technical conditions of the grid connection to the requested capacity. If there is not enough capacity in a certain location, Slovak DSOs usually require the installation of a TS and the management of all the related documentation and permits for this TS, and also for the medium voltage connection route. All permits and other issues related to access to land for the connection (which can take a couple of years to solve on the side of the CPO) are on the side of the CPO. GreenWay Infrastructure perceives that in the large majority of such cases, DSOs are not willing to build a new TS at their expense. The grid connection fee (one-time fee) for connection to a new-built TS is high (EUR 57/kW, e.g. for a 250 kW TS, the price is EUR 14 000). Therefore, when there is not enough capacity for the connection of even one recharging point, the CPO might simply decide not to proceed with any project on that location, since it risks becoming too costly, complex and time-consuming.

Respondent	Procedure steps	Actors involved	Identified issues
EnBW Mobility+	1. Pre-application for grid connection. 2. Application for grid connection by the CPO. 3. Several follow ups with the DSO. Several exchanges on requirements for transformer with the DSO (CPO, DSO, transformer supplier). Offer from the DSO. Order from the CPO. Confirmation from the DSO.	CPO DSO Transformer supplier	

3.3.2. Type of requirements/specifications/information to be provided

Table 8: General information to be provided when applying for a grid connection, based on the input provided

Respondent	Information/specifications to be provided
Fastned	– Grid voltage – High voltage installations to be delivered by grid operator and built in the high voltage side of the TS – Capacity of the grid connection (there are distinct categories per grid operator) – Capacity of the TS
AVERE	Variations between members
ChargeUp Europe	Minimum requirements (data and documents) of a grid connection request process may differ from Member State to Member State. Some requirements that may need to be provided are: — technician responsible for the electric installation; — electricity delivery point location data; — available power of the delivery point; — installation power distribution diagram; — implementation plan with proposed power distribution at the delivery point to be built to supply electricity to recharging station; — technical description of the delivery point, according to the DSO guidelines In some countries (Portugal) depending on the power requested for the delivery point, whether low or medium voltage, the grid connection request process can be more complex, and additional technical documents may be requested by the DSO

Respondent	Information/specifications to be provided
Stichting ElaadNL	Before a recharging station can be connected to the electricity grid, that specific type of recharging station must be approved by ElaadNL on behalf of the DSOs because of the grid connection specifications (https://elaad.nl/onderwerpen/laadpaalkeuringen/)
GreenWay Polska	— Size of grid connection — Type of chargers — Power of recharging points
EnBW Mobility+	— Power output — Capacity needed — Voltage level — Transformer specifications — Power input — Restrictions by the DSO for recharging power input — Location of grid connection

4. Construction permits main issues and best practices

4.1. Timing of procedure

Most of the respondents have identified issues that not only relate to the lack of clarity regarding the timeline of the permitting procedures, but that are also related to the lack of response from permitting authorities to finalise approval procedures in a timely way. This is mostly due to a shortage of resources and different procedures between offices, which can cause uncertainty and stalemates when more than one authority and/or internal stakeholder needs to be involved.

Table 9: Market players' key issues related to the timing of permitting procedure

Respondent	Problems identified
AVERE	Permitting procedures often take too long across several Member States. In many cases, procedures allow authorities (local/regional/national) to reply in a pre-defined time frame (usually 30 days). Real-life practice implies that the administration fully uses the given time frame or, in extreme cases, does not respect it. If the authority requests a modification or modifications in the submitted documents (drawings, descriptions, technical reports), this 30-day period restarts, which can be the case multiple successive times, leading to lengthy delays.
Tesla	Approval for operation from the energy department adds time before allowing CPOs to operate. Lately, timelines have been slipping (this might be the result of the COVID-19 outbreak and a lack of staff) (Portugal).
Fastned	It is difficult to anticipate whether a municipality in the Netherlands will handle a request using a regular procedure (8 weeks) or an extended procedure (26 weeks) (Netherlands).
ChargeUp Europe	Many municipalities do not have specific regulations / local codes for the installation/operation of EV recharging infrastructure on public locations, which requires the evaluation and assessment of many internal stakeholders and may take many months to be approved. Eventually, the final decision/approval on granting the permit requires a collegial decision from the city council. The entire process may last for more than 12 months (Portugal, Slovakia).
GreenWay Polska	Even when deadlines are clearly defined, offices interpret the applicable requirements differently, meaning that it is often necessary to supplement applications that are only necessary in some offices, which causes an additional time delay (Poland).
GreenWay Infrastructure	In the building law, the building authority does not have a fixed deadline for issuing a final notification on a submitted application. Because construction can only begin when the building authority issues the notification that it has no objections, it can create a stalemate if the building authority does not act properly and in a timely manner. In practical terms, for standard cases, the building authority takes 30–40 days to approve a submitted application. But sometimes this takes up to 90 days if there is the need to submit additional statements from third parties / institutions (Slovakia).
EnBW Mobility+	Usually, the timeline is completely unclear.
Iberdrola	Considering all the different steps when installing recharging points, the entire process is so inefficient that the time to install and operate a low voltage recharging point facility takes around 7–22 months; and around 15–32 months for medium voltage recharging points (Spain).

4.1.1. Best practices identified by the respondents

Below are some permit application procedures identified by the respondents, based on their clear timelines for decision-making, as good practice examples. Also included are examples based on the input provided by the California Energy Commission.

In the United States, the state of California implemented the 'Permitting Olympics' (https://business.ca.gov/industries/zero-emission-vehicles/plug-in-readiness/permitting-olympics/), which is an effort to encourage local governments to comply with streamlined approval requirements for EV recharging stations. Permitting medals are awarded to jurisdictions that have streamlined permits for EV recharging stations, based on all the jurisdictions within the county as follows:

- counties with 100 % streamlined region = gold;
- counties with 75 % streamlined region = silver;
- counties with 50 % streamlined region = bronze.

4.2. Cumbersomeness/heaviness of the administrative procedure

The respondents have identified cumbersomeness issues that also strongly correlate with the approval time of the permitting procedures. This mostly comes from excessive bureaucracy involving requests for extensive documentation, which in some cases can be unnecessary and could be replaced by simpler/less documentation.

Table 10: Market players' key issues related to the cumbersomeness of the permitting procedure

Respondent	Problems identified
AVERE	According to AVERE, permitting tends to be a very bureaucratic and lengthy process, due to a lack of guidance to the permitting authorities, which often requires unnecessary documentation or artificially prolongs the process.
ChargeUp Europe	Depending on the country, some heavy and overly cumbersome applications can be found. Seismic compliance is requested in areas with minimal risk factor (Italy). A land permit is then requested, after which a building permit is also needed (Slovakia). There are examples of requests for unnecessary documentation from the DSO when connecting a recharging station to the internal network of a shopping mall (Slovakia).
EnBW Mobility+	Construction permits to extend existing recharging hub.
Fastned	Municipalities can take an extremely long time to assess certain reports/plans, such as a soil report or spatial planning report. There is often a certain department that must assess it. The civil servant / contact person depends on these departments, often making lead times vague and long (Netherlands).

Respondent	Problems identified
GreenWay Infrastructure	To get a separate land permit, and only then be able to get the building permit; this is usually expected when building a new TS. It is too cumbersome. Building law No 50/1976 (Slovakia).
GreenWay Polska	A building permit is needed for a pillar station. Only an announcement is needed for a container station (Poland).
Iberdrola	According to the road access regulation (https://www.boe.es/buscar/act.php?id=BOE-A-1998-1457), to install a recharging point in an infrastructure that already has a road access permit the agreement needs to be certified through a notary public between the two parties, making the procedure much harder. A statement of responsibility should be enough. There is no specific support and no mechanism to facilitate the permitting process. Even worse, in some cases, recharging points are treated as large projects that need many permits, so the permitting process becomes cumbersome (Spain).
Tesla	The process can be highly complex and lengthy due to the many approval steps, summarised below. 1. Approval for endorsing an operation from the industry department: • distribution grid operator part: 1–2 months; • medium voltage part: 1 month; • low voltage part: 1–2 weeks. 2. Approval for construction from local municipality: • main permit: 3–6 months; • additional permits (optional): — highway authority: 6–9 months, — public announcement: 3 months, — environmental: 6–9 months, — archaeological: 3 months. — higher authority approval: 6 months. 3. Approval for construction from industry department (250 kW law): 4 months. 4. Approval for civil works: • main permit: 4 months; • additional permits (optional): — Declaration of public interest/*déclaration d'utilité publique* (public utility for expropriations): 12–24 months. Time for permitting leads to 1 year + deployment timelines for high power recharging infrastructure. It is costly as well (Spain). Detailed and specific requirements are needed for technical assessments from the Polish Office of Technical Inspection. This increases the complexity of deploying chargers that are accepted in all Member States without additional work. Product recognition could be more aligned with other countries (Poland).

4.2.1. Best practices identified by the respondents

Below are some permit application procedures identified by the respondents, based on their straightforward/easy permit application procedure(s), as good practice examples. Examples based on the input provided by the California Energy Commission are also included.

In the Netherlands, the application process is entirely online and very clear, via a single portal. CPOs can request the environmental permit at the *Omgevingsloket Online* (Online service counter for environmental permits), using a standard form. The request will automatically be sent to the right authority/municipality. Regular public recharging infrastructure up to 3 × 80 A is largely rolled out via concessions organised by regions/provinces; municipalities can also participate. In the case of a concession, a CPO very often receives exclusivity to install recharging stations and to exploit the recharging infrastructure during an agreed operating period. Recharging stations are rolled out proactively based on data and predictions or based on a request from a citizen with an EV. A concession is always put out to European tender, and the award is made based on quality and price. Municipalities that do not participate in a concession often use the 'open market model', which means that all CPOs that meet the conditions of the relevant municipality can conclude a contract and can install recharging stations within the guidelines of that municipality. More information available at: https://www.omgevingsloket.nl/Zakelijk/zakelijk/home/wat-is-omgevingsloket?init=true.

4.3. Lack of clarity regarding the applicable procedure and/or competent authorities

When identifying issues related to the lack of clarity regarding the permitting procedure and/or competent authorities, the respondents highlighted the necessity to involve several public authorities, which delays the process and makes the definition of what a 'recharging station' is unclear, and whether it includes the associated parking places or not. Again, lack of adequate response time from permitting authorities to finalise approval procedures is mentioned by several respondents.

Table 11: Market players' key issues related to the clarity of the permitting procedure

Respondent	Problems identified
ChargeUp Europe	In many countries, since several public authorities have a say in the process, and due to the characteristics of the territory (seismic, archaeological, of historical or landscape interest, local administrative autonomy), the person in charge of granting the final approval has to wait for many stakeholders that might or might not be involved (Italy). The decision and requested related statements from different institutions are at the discretion of the desk officer from the local building authority. This person's familiarity with what a recharging station is and their experience in approving them are determining factors in the smoothness of the process. If the agenda is quite new to them or they are more cautious, they may ask for more statements from different authorities, certification bodies, DSO, etc. (Slovakia).

Respondent	Problems identified
EnBW Mobility+	Change of responsible permitting body, unclearness of permitting body or change of permitting body during the process, new permitting body without sufficient resources, not capable to work.
Fastned	Procedure is quite clear. An environmental permit is requested via *omgevingsloket* using a standard form. The request will automatically end up with the right authority/ municipality. Even when the procedure to request a building permit is transparent, it sometimes takes a long time for the permit to be approved (Netherlands).
GreenWay Infrastructure	The most relevant legislation for installing new recharging infrastructure is the Slovak building law No 50/1976. It is old and dates back to 1976 (https://www.zakonypreludi.sk/zz/1976-50) (Slovakia).
GreenWay Polska	Lack of clarity regarding what a 'recharging station' is, as it might be only the EV recharger or also include connection plus surrounding parking places. Some offices do not object to construction applications for the full scope of investments, and the remaining part requires dividing the investment into stages and obtaining building permits (e.g. for pole TSs).
Iberdrola	Response time and final decisions from municipal authorities are unpredictable. The situation is even worse considering the substantial number of municipal authorities, in many cases each one with a different procedure. Activity licencing is then a big setback. A homogeneous procedure at the national level (with EU guidelines and benchmarks) should be established.

4.3.1. Best practices identified by the respondents

Below are some permit application procedures identified by the respondents, based on their clarity, regarding the applicable procedure and/or competent authorities' assessment, as good practice examples. Examples based on the input provided by the California Energy Commission are also included.

In the **Netherlands**, the National Charging Infrastructure Agenda (NAL) focuses on rolling out sufficient recharging infrastructure to achieve the climate goals. The NAL is part of the Dutch Climate Agreement and must provide sufficient recharging infrastructure to achieve the climate targets. It contains about 70 measures that should contribute to this, and established six NAL regions that, in collaboration with their municipalities, are responsible for the regional measures and the roll-out of recharging infrastructure. All NAL regions have drawn up a regional approach to recharging infrastructure, and an important regional measure is that every municipality must provide a 'recharging vision' and an 'installation/location policy' for all types of recharging infrastructure (https://www.agendalaadinfrastructuur.nl/default.aspx).

Examples:

- https://raad.ridderkerk.nl/documenten/Raadsinformatiebrieven-RIB/2021-07-16-RIB-Laadvisie-Ridderkerk-visie.pdf
- https://lokaleregelgeving.overheid.nl/CVDR674048/1

The national Knowledge Platform for Charging Infrastructure has also drawn up guidelines and formats for this. The guidelines set out a clear step-by-step plan: from initiative to selection of technical solution, to tendering, licencing, installation and infrastructure (https://nklnederland.nl/wp-content/uploads/2021/12/Guidelines-for-the-realization-of-charging-plazas.pdf).

In Slovakia, most cities offer a standardised form on their web page to announce small constructions. Such a simplification of the permit application procedure can greatly reduce the practical lead time of the permitting procedure. For small structures that perform an additional function to the main structure, and which cannot substantially affect the environment, it is sufficient to notify the building authority in advance by filling in the form and providing some additional technical information. The processing time takes up to 30 days from the submission of the notification or its completion. For CPOs, having a common starting point allows for an easier and quicker permitting procedure. Examples:

- https://www.pezinok.sk/uploadfiles/File/samosprava/tlaciva/ohlasenie_drobnej_stavby.pdf
- https://www.piestany.sk/ako-vybavit/obcan/stavebny-poriadok/ohlasenie-drobnej-stavby/

In California, Assembly Bill No 1236 requires all cities and counties to develop an expedited, streamlined permitting process for all levels of EV recharging stations. As the result of this bill, all permit parameters are included in one simple application checklist, called the 'Permitting electric vehicle charging stations scorecard' (https://static.business.ca.gov/wp-content/uploads/2020/01/Permitting-Electric-Vehicle-Charging-Stations-Scorecard.pdf), which is reviewed by the authority having jurisdiction (either cities or counties).

4.4. Absence of clear assessment framework / evaluation criteria

The respondents clearly highlighted the need for a standardisation of requirements in the permitting phase, including formats, documentation needs and terms of connection.

Table 12: Market players' key issues related to the assessment and evaluation of the permitting procedure

Respondent	Problems identified
AVERE	Experience from Croatia implies the need for the standardisation of requirements in the permitting phase, including the format and content of miscellaneous documents. With regard to the highway network in this single Member State, the number of applicable permitting procedures is directly proportional to the number of highway operators (currently four) (Croatia).
ChargeUp Europe	In some countries, applicants experience uncertainty regarding the outcome of a permit application. For example, when applying for a connection, the applicant never knows whether they will get it at low or medium voltage. Moreover, there is no information on how the application will be classified until the contractual terms of connection have been received (Poland).
GreenWay Polska	After applying for a connection, there is no information on how the application will be classified (low or medium voltage) until the terms of connection are received with the contract (Poland).
GreenWay Infrastructure	Some building offices ask for a statement from the DSO, even in cases where CPOs are connecting to the internal premises electric network, and not to the DSO grid. Sometimes they also ask CPOs to submit a statement from a technical inspection organisation as part of the design documentation, which is not relevant for any certificated recharging station/equipment. Some offices also request an additional inspection after the recharging station has been constructed and installed, even when using the 'announcement of small building process' procedure. Such an inspection is not standard under the 'announcement' procedure and is normally used only in building permit processes after construction. There is no standard procedure. The local building offices have different procedures based only on their competences and experience.

4.5. Lack of transparency on costs

Two of the respondents identified the issue of the way that the permits fees based on parking / occupancy of public space have a direct, negative impact on the business model of the operators, which cannot ensure the costs and obligations related to parking management.

Table 13: Market players' key issues related to the lack of transparency on costs of the permitting procedure

Respondent	Problems identified
Fastned	Every municipality has their own fee ordinance (*legesverordening*). Permit fees are often only made clear after completing the permit procedure. Costs vary significantly per municipality, ranging from EUR 800 to EUR 17 000 (Netherlands). This applies to fast recharging grid connections.
ChargeUp Europe	In principle, it is critical that local authorities have a clear understanding of the EV recharging business. In some countries (e.g. Portugal), some municipalities have been establishing e-permits fees based on the fees for parking. However, these are different activities with their own characteristics and expected revenues. In many cases, a parking permitting annual fee can cost more than the total revenue a CPO would be able to charge from an EV driver. Additionally, CPOs are not / should not oversee 'parking management', meaning, a CPO cannot be responsible for any obligations regarding oversight and cannot inspect the occupancy of parking spaces dedicated to EV recharging. On the contrary, local authorities must ensure that CPOs promote the necessary oversight on the occupancy of such parking spaces. The typical cost matrix of a CPO is already quite large and involves costs, such as: (i) charger and installation costs; (ii) legal and regulatory technical certifications; (iii) electricity for the operation of the point; (iv) preventive and corrective maintenance; (v) periodic inspection of recharging points; (vi) regular management of assets to monitor the operation and detection/diagnosis of malfunctions; and (vii) 24-hour helpline to users. Some local authorities in Portugal want to make CPOs responsible for parking management, an activity that CPOs are not qualified to execute and the processes are not in place for them to do so. Assigning obligations to CPOs related to parking management will result in additional costs and increase the complexity of CPOs' operations, which will also lead to higher prices for the consumers. It is crucial that there be a clear segregation of activities and responsibilities under the permitting procedures – EV CPO and parking.

4.6. Any other specific problems, bottlenecks or limitations

Any other issues identified by the respondents outside of the previously mentioned categories are listed below.

Table 14: Any other issues identified by the market players on the permitting procedure

Respondent	Problems identified
Tesla	Up to 16 weeks lead time for permits for substations and civil construction works. A high power recharging infrastructure site does not need a permit unless it is a greenfield, but the substation does. The municipality is the authority responsible for issuing permits. Building can begin up to 4 weeks after the building permit has been granted (the permit approval must be published in national papers so that third parties have the opportunity to object to the permit). Finally, there is an additional waiting time of up to 4 weeks from the moment when the infrastructure is completed until it can actually be used, due to having to wait for the municipality to confirm that the installations are ready and safe to use (Sweden). Buildability index – new substations require available m^3 to be deployed. This leads to rejection of sites due to higher costs (Italy).
GreenWay Polska	It is often more difficult to agree on the organisation of the traffic (temporary and target) than it is to agree on the design itself and to obtain its building permit. Often, after agreeing on the design, it turns out that it is necessary to change the assumptions, for example, regarding the foundation of the charger due to non-compliance with local requirements regarding traffic organisation (these requirements are interpreted differently in various places) (Poland).
GreenWay Infrastructure	In some cases, it is quite difficult to get a positive statement from the traffic inspectorate to get new parking signs, which should regulate/reserve existing parking places at recharging stations as only being for EV recharging purposes. In the existing 'old' parking norm, there is no information about EV parking places and their impact on static transport. When there is the need to reserve existing parking places for EV recharging only, the regulatory authority sees it as decreasing the number of parking places in that area, which prevents EV chargers with 1–2 parking places from being built in places where there are already a limited number of parking places (e.g. in front of any shopping centre). A certain percentage of parking places should be designated for EV recharging (Slovakia).
EnBW Mobility+	Unclear bodies, resources, changes in responsibilities, and no national standardised permission framework/documents.
Iberdrola	There are no simplified procedures to install low voltage recharging points. At a municipal level, not all city councils recognise recharging service activity in their by-laws. This even blocks permit applications. Recharging points cannot be installed on rural land, while fossil fuel service stations can. Recharging points should be allowed too.

5. Grid connection permits main issues and best practices

5.1. Timing of procedure

The respondents highlighted the long waiting times between the COP request for a grid connection and the response from the grid operators / DSO, which can lead to significant delays and severely impacts the implementation costs of a recharging point.

Table 15: Market players' key issues related to the timing of grid connection procedure

Respondent	Problems identified
AVERE	Building the grid connection often requires considerable time and implementation costs. The required time is often unnecessary and based on building a centralised distribution grid based on a legacy approach. The lead times, such as confirming the grid capacity, signing the contract and processing advanced payments, can take months or more than 1 year (in extreme cases, preparing the grid connection takes multiple years).
Tesla	Grid connection assessments can take up to 3 months, delaying the CPO's due diligence processes. The grid operator's post-construction process includes the following. • Private installation only: 1 month for construction to be approved and 1–2 months for connection. • Civil construction works + private installation: 1 month for construction to be approved, 1–2 months for land rights agreement (*Convenio de Cesión* or Land Cession Agreement), 1–2 months for connection. • Note on land cession agreement: sometimes this agreement must be certified by a notary, increasing the process by an additional 1–2 months (Spain). Long lead time on: 1. grid operator feedback on available capacity; 2. delivery of connection (sometimes 6–12 months on 2 MW + connection), which can be even longer than a year in some cases. National setup encompasses a national TSO, and when planning for grid usage, grid operators with a bigger geographical network have priority. This means that the smaller local grid operators need to ask for capacity from bigger operators. A process that also takes a lot of time. (Sweden) Long lead time on: 1. application for concession (regulator); 2. grid operator feedback on capacity questions and connections (Norway). Grid operators are increasingly not meeting the deadlines that are prescribed by the law (the law itself is a good thing as it gives guidance) (Netherlands).
Fastned	It takes grid operators a long time to communicate their planning to the CPO. These are often delayed far beyond what was originally agreed. This is exacerbated by the grid operator not proactively communicating the delay, and the CPO only finding out extremely late in the process.

Respondent	Problems identified
ChargeUp Europe	Currently, the time for connection to the grid differs vastly from Member State to Member State, and the process for granting approval can be lengthy and opaque. This is a major bottleneck, which impacts businesses and consumers alike and slows market growth. In principle, a maximum amount of time should be defined and mandated between the request for a permit and the realisation of the connection to the grid. In this regard, ChargeUp Europe would recommend an 8–12-week period for AC recharging infrastructure and a 3–4-month period for a DC infrastructure as the industry standard. To ensure compliance, penalties for failure to meet these deadlines could be introduced. It is currently customary practice among DSOs to treat all grid connection requests equally. However, given the urgency to address climate change and the simple nature of most EV recharging infrastructure requests, thanks to the use of standard hardware profiles, EV recharging infrastructure requests should be prioritised, particularly if other pending requests will not lead to tangible sectorial carbon savings. To further enable the sector to scale and speed up the roll-out of EV recharging infrastructure, improving information sharing will aid the transparency and proper functioning of the EV infrastructure market. For example, if DSOs share information regarding the dates when a connection request is made and when replies are due, and outlines the process clearly online, then this could reduce delays, reduce uncertainty for market parties and improve the investment potential of the sector. DSOs should also make heat maps of available connection points / power levels, so interested parties can plan projects without needing to bother the DSO each time.
GreenWay Polska	Standard deadlines for connection above low voltage are 18 months. However, this is not a certain date, and it is often much longer (Poland).
GreenWay Infrastructure	The standard response time of the DSO responsible for the middle part of Slovakia, *Stredoslovenská distribučná a.s.,* to obtain the technical information regarding whether there are any possibilities for a connection is 210 days or more. After the first 30 days, a prescribed letter is sent, stating the need to investigate the location for another 180 days. Near the end of the 180 days, a negative statement is usually sent. When following up on this, CPOs are informed that they should apply for a connection agreement instead of asking for an informative feasibility study only. This still might result in a decision stating that the connection is not possible.
EnBW Mobility+	No information from DSOs about: • timeline for delivery grid connection offer; • construction start and end date; • operation start date.
Iberdrola	Even though the grid connections timeline is regulated, in some cases, the request for extra documentation or evidencing material mistakes delays the outcome.

5.2. Lack of transparency on costs

The respondents criticise the discrepancies between the expected and 'real' connection tariffs, due to unforeseen extra costs that reduce predictability and transparency.

Table 16: Market players' key issues related to the lack of transparency on costs of the grid connection procedure

Respondent	Problems identified
e-clearing.net	A grid study costs EUR 2 500. This adds unforeseen costs as the result is often that no capacity is available (Italy). The Flemish region of Belgium has the same issue. Grid study adds unforeseen costs. The cost of realisation of grid connections is very unpredictable as grid upgrades are not socialised. This creates the risk of some operators reserving/grabbing available capacity without using it, which prevents other operators from becoming active in that region (Belgium).
Fastned	Costs are clear in the quotation up front, and rarely differ much afterwards. However, there is a large discrepancy with respect to the cost of the grid connection – across the three main grid operators, the cost is around EUR 27 000 for the cheapest and around EUR 50 000 for the most expensive. This does not include the costs of cabling, which is usually extra and paid for by the metre (and can also add tens of thousands of euro) (Netherlands).
ChargeUp Europe	The issue of grid connection fees and capacity charges should be reviewed for the e-mobility recharging infrastructure sector. CPOs would welcome predictable and proportionate fees and costs in the preparation of the business case for a recharging location.
Stichting ElaadNL	The connection tariffs are clear, that is because the realisation of grid connections is regulated. This means that the DSOs carry out these activities at an annual fixed rate (for small consumption connections up to 3 × 80 A). For those connections, a new tariff structure that is more suitable for recharging station connections is being considered. But this is still under development and will become clearer in the coming years (Netherlands).

Respondent	Problems identified
GreenWay Infrastructure	The grid connection costs are regulated by the Regulatory Office for Network Industries. https://www.urso.gov.sk/cenove-rozhodnutia-2017-2024/ For complex projects where a new TS needs to be built, CPOs always have to bear the costs. Those costs often consist of two parts: first a grid connection fee (set by the Regulatory Office for Network Industries) to the DSO (e.g. for a capacity of 350 kW the cost is approximately EUR 20 000); second the costs for constructing the medium voltage TS (if a CPO wants it to be finished quicker than the 300 days it would usually take after receiving all the permits from the DSO). So, the initial cost to have a new grid connection on a location, where the DSO does not have free capacity (which is usually everywhere above 125 A), is very high (approximately EUR 110 000: EUR 40 000 for a new TS, EUR 20 000 to the DSO for the connection fee, EUR 20 000–30 000 for a medium voltage connection, EUR 10 000 for a low voltage connection, EUR 10 000 for documentation and EUR 10 000 for the management around it), and the building of such a new grid connection can imply between 2–3 years of work (Slovakia).
EnBW Mobility+	No transparency on the composition of the contribution towards grid connection costs. No transparency on the amount of the contribution towards grid connection costs.

5.2.1. Best practices identified by the respondents

Below are some grid connection procedures identified by the respondents, based on their particularly transparent cost information, as good practice examples.

In the **Netherlands**, the realisation of grid connections is regulated. This means that the DSOs carry out these activities at an annual fixed rate. In contrast to connecting a recharging station to the electricity grid, the installation of the recharging station is not regulated and is carried out by the market party.

In the city of **Barcelona**, grid connections up to 100 kW in urban areas have a regulated (by law) low flat tax. Network growth must be paid by the DSO. Other cases need to be evaluated by the DSO.

Poland developed an e-tariff scheme charged by the DSO to the CPO, shifting from high-standing charges (capacity-based) to consumption-based charges. This ensures that CPOs are not paying for 'available capacity' that is not actually being used by recharging stations with low utilisation. More information available at https://www.kg-legal.eu/info/it-new-technologies-media-and-communication-technology-law/important-information-for-e-mobility-market-in-poland/.

In the municipality of **Cork**, the pricing method is publicly available in an official document published by ESB Networks, the Irish electricity provider.

5.3. Lack of clarity regarding the applicable procedure and/or competent authorities

The respondents highlighted the lack of a clearly defined procedure for grid connections and the lack of clearly defined counterparts from DSOs. These issues are expected to become less relevant with time, and as DSOs become more familiar with connection requests for recharging points, the situation will improve.

Table 17: Market players' key issues related to the clarity of the grid connection procedure

Respondent	Problems identified
ChargeUp Europe	In some countries, applicants may experience a lack of clarity regarding the grid connection procedure. In Poland, for example, there is no clearly defined procedure for the actual and available low voltage power in each location. The applicant never knows if they will be able to connect to the low or medium voltage grid.
GreenWay Polska	There is no clearly defined procedure for the actual and available low voltage power in each location. You never know if you will be able to join on low or medium voltage (Poland).
GreenWay Infrastructure	he limit for connection to the grid is unclear. In some cases the DSO allows CPOs to connect to their existing TS, even when a large capacity is requested (e.g. 400 A), while in other cases the DSO refuses connection requests for very small capacities (eg. 100 A or 125 A). In particular when there is insufficient capacity on an existing TS, the DSO's handling of grid connection requests appears arbitrary. In certain cases the DSO would offer to upgrade its TS in the next 2–3 years, while in other cases the DSO would not propose such upgrade without giving reasons. In other cases still, the DSO would accept the grid connection request though on condition that CPOs build their own TS, or even that CPOs prepare and obtain permits for a new DSO TS.
EnBW Mobility+	No specific counterparts, different people to be contacted.

Respondent	Problems identified
Iberdrola	The specific permitting process for high voltage recharging points is often slow due to certain particularities (need to build secondary substations, higher level of network reliability, automation of the high voltage network) and when clarification is needed, it is sometimes difficult to contact some DSOs. This situation is expected to improve, as DSOs become more familiar with connection requests for recharging points at this voltage level. However, lean regulation, clear guidelines and regulatory signals can accelerate the process.

5.3.1. Best practices identified by the respondents

Below are some grid connection procedures identified by the respondents, based on their particularly clear grid connection process, as good practice examples.

In general, municipalities in the **Netherlands** require the same information/reports. This makes it easier to anticipate questions and requests for information. There is also a network development map and a recharging station management portal supporting the recharging point installation procedure. In addition, agreements have recently been made between regional governments (NAL regions) and DSOs about recharging infrastructure for the purpose of grid impact; based on the agreements of the Dutch Climate Agreement and the NAL, municipalities make plans (recharging visions and installation policies) for recharging infrastructure in their region/municipality. ElaadNL has made forecasts for this, which the NAL regions can use (https://www.elaad.nl/projects/elaadnl-outlooks/), and the DSOs have developed a national grid capacity map (https://capaciteitskaart.netbeheernederland.nl/). Three NAL regions (the western part of the Netherlands, including the four largest cities) have also made their own regional prognosis that they use for planning

(https://experience.arcgis.com/experience/298ce66c9694478c906a929cc4a64032/page/Uitleg/).

The city of **Sacramento** informs applicants upfront on how to design projects in a way that avoids having a negative impact on vulnerable locations, like heritage sites, to facilitate the reviewing process. This type of guidance can be provided to applicants on a city or county permitting website, using permitting checklists and factsheets, and can be reiterated at pre-application meetings, which are often recommended for larger projects. Sacramento also clearly communicates that building recharging stations in existing parking lots will not lead to any onerous requirements that could make the project infeasible – effectively eliminating uncertainty for a recharging point developer.

5.4. Absence of clear assessment framework / evaluation criteria

With regard to this problem, respondents mostly point to a lack of transparency in the evaluation process, with answers from the DSO that are sometimes too laconic and the absence of dialogue / later discussion.

Table 18: Market players' key issues related to the assessment and evaluation of the grid connection procedure

Respondent	Problems identified
ChargeUp Europe	In some countries, applicants are experiencing uncertainty about the outcome of a grid connection. For instance, applicants do not know how the DSO evaluates their request. They only ever receive a statement that they must accept. There are no discussions with the DSO; there are only clear 'YES/NO' statements for requested connections (Slovakia).
GreenWay Infrastructure	CPOs do not know how the DSO evaluates their grid connection requests, as the DSO only provides a 'YES/NO' answer without giving reasons. There is also no possibility to ask for clarifications from the DSO. (Slovakia).
EnBW Mobility+	Power input in grid connection offer not clear/visible. Grid connection point/location not clearly displayed in grid connection offer. Denial of second grid connection because of another already existing grid connection in the area.

5.5. Cumbersomeness/heaviness of the administrative procedure

The respondents mostly point to the technicality/bureaucracy associated with grid connection procedures, with answers from the DSO that are sometimes too laconic and the absence of dialogue / later discussion. Furthermore, grid operators sometimes cause delays, which are not communicated or do not supply the full connection between the grid and the recharging point, incurring added costs on the CPO.

Table 19: Market players' key issues related to the cumbersomeness of the grid connection procedure

Respondent	Problems identified
Fastned	Grid operators take too long to supply a timeline of grid connection works, often more than a month. Once such a timeline is established, CPOs depend on this for their own construction works, while in practice the DSOs rarely meet these timelines. Grid operators do not proactively communicate delays, resulting in completed high power recharging stations which however are not yet connected to the grid and therefore cannot supply any power.
ChargeUp Europe	Direct contact with the technical team from the DSO would help CPOs to clarify technical issues related to the projects. Currently, it is only possible to ask questions to the technical team through a general email or call centre (Portugal). The DSO does not always install new grid connection lines up to the land plot of the recharging station or that land plot's border, which means that it could be necessary for CPOs to finance and build new connection lines on adjacent land plots, and in some case obtain permits for crossing these land plots. This is extremely complicated (Poland). All additional infrastructure from the nearest grid connection point to the recharging station must be arranged, built and paid for by the CPO, meaning cables, TS if needed, etc. The CPO is also responsible for negotiating access to land/easements with all relevant property owners (water authorities etc.), at its own expense. It is expensive, time-consuming and not always successful (Slovakia).
GreenWay Polska	Not all connections to the recharging station location or the plot border are led by the DSO, some connections often need to be built on foreign plots, using CPO own resources to obtain permits for crossing these plots, which is extremely difficult (Poland).
GreenWay Infrastructure	If there is not enough capacity in the requested location, the only option for the CPO is to build its own TS, which is a hard procedure. The standard procedure for the DSO is to prepare a complex contract within 6 months, stipulating that CPOs should be responsible for developing everything, including the medium voltage connection. Furthermore, CPOs must also negotiate with all affected landowners through easement contracts, provide complex design documentation for the entire construction process, request complex permits for a TS and for all medium and low voltage connections, and pay for all the construction costs on the EV recharging site. In the last 3 years GreenWay has had similar issues in three locations, all concerning Slovak DSOs. Out of the three construction was only finished for one location. The entire process took more than 2 years. Unfortunately, there was no positive outcome to building an own TS or to increasing the capacity of the DSO TS on their site.
EnBW Mobility+	Technically complex questionnaires, no specific application formulars for recharging infrastructure, specific conformity declarations needed from recharging infrastructure suppliers.

Respondent	Problems identified
Iberdrola	Sometimes some elements need to be transferred to DSOs (such as transformers or network extensions). This process includes the verification of all the administrative authorisations, permits and normative compliance of those elements, meaning that, in some cases, the procedure can be very long because not all the DSOs are fully equipped to process all this information quickly. Simplifying the administrative procedure with the local authorities will also simplify the connection procedure with the DSOs.

5.5.1. Best practices identified by the respondents

Below are some grid connection procedures identified by the respondents, based on their straightforwardness/easiness, as good practice examples.

In order to carry out these activities efficiently, so that, for example, the street only needs to be opened once, the one-step principle is applied in some cities in the **Netherlands**. This means that the DSO's contractor, on behalf of the market party, also carries out the non-regulated work and therefore installs and connects the recharging station at the same time. For this purpose, agreements must be made between the market party, the DSO and the contractor with regard to prices and other conditions.

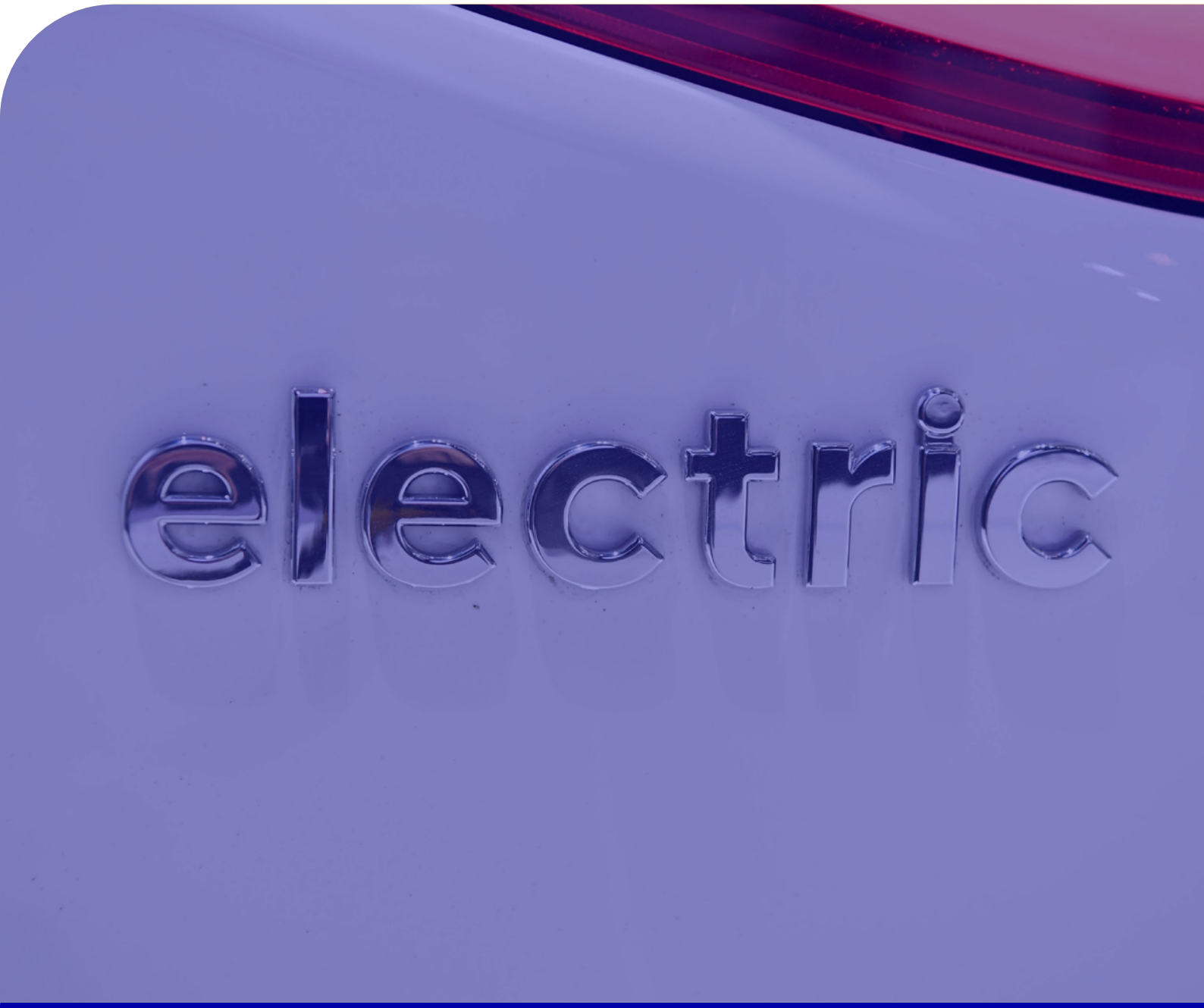
In **Spain**, to facilitate the user experience and avoid any issues, the DSO of Iberdrola Group, I-DE, provides on its website a description of the whole procedure from the connection request to its completion, including technical requirements and other information. More information available at: https://www.i-de.es/socdis/gc/prod/es_ES/contenidos/docs/Guia_Detallada_Vehiculo_Electrico.pdf.

5.6. Any other specific problems, bottlenecks or limitations

Any other issues identified by the respondents outside of the previously mentioned categories are listed in the following table.

Table 20: Any other issues identified by the market players related to the grid connection procedure

Respondent	Problems identified
Fastned	Lack of capacity on the grid. There is a huge (and ever growing) demand for electricity, which results in increasing stress on the grid. While grid operators are working hard to increase grid capacity, Fastned fears that this is moving too slowly. Not only are new recharging stations often waiting for a grid connection, but it also occurs that when those new grid connections are finally put in place, they can only provide for a fraction of the capacity required for the recharging stations. Fastned therefore strongly pleads for a prioritisation of grid connection and upgrade requests linked to the installation of high-power recharging stations.
e-clearing.net	Slower realisation of grid connections lately (Portugal). Slower realisation of grid connections lately (Netherlands).
ChargeUp Europe	It is currently customary practice among DSOs to treat all grid connection requests equally. However, given the urgency to address climate change and the simple nature of most EV recharging infrastructure requests, thanks to the use of standard hardware profiles, EV recharging infrastructure requests should be prioritised, particularly if other pending requests will not lead to tangible sectorial carbon savings.
GreenWay Infrastructure	The operational costs for medium voltage connections are too high, which makes the economics of any recharging point connected to the medium voltage grid too expensive (e.g. when connecting a 1 × 150 kW charger, the monthly cost for reserved capacity is EUR 960). In 1 month, CPOs can expect approximately 1 500 kWh (15–25 recharging sessions) to be dispensed at a single high-powered station. The cost for it is approximately 0.05 (distributional variable fees) + 0.1 (electricity price) = 0.15 × 1 500 × 1.05 (losses) = EUR 236. So, total energy costs are EUR 1 196 + value added tax. GreenWay average price per 1 kWh on an ultra-fast charger is EUR 0.408 + value added tax. Revenues are EUR 612. Total loss per month is approximately EUR 584. This means that when the grid connection for an operational recharging station is delayed for a protracted period, this will have an exceptionally negative impact on the business case. Moreover, if DSOs on top require CPOs to bear the high investment costs for a new grid connection (new TS) without any incentives, the cost for such projects becomes prohibitive.
EnBW Mobility+	Lack of information about timeline for fulfilment. Lack of information as to why fulfilment will not be started and operated, no information about what the problems are. Lack of construction capacities on the side of the DSO.



6. Conclusions and recommendations

This report highlights the key results of the STF-PA survey conducted from September to December 2021, involving 14 local, regional and national public authorities and 11 private stakeholders (market participants such as CPOs, supply companies, manufacturers and interest groups). The participants in the survey were asked to identify obstacles encountered in relation to permitting and grid connection procedures for recharging infrastructure in the EU, together with potential good practices to overcome such obstacles, with a view to disseminating these at the EU level.

In relation to the permitting procedure, these problems range from lengthy processes, involving many different administrations and stakeholders, to compliance with a multitude of differing permitting regulations at the local level, which, in turn, leads to unnecessarily high costs and delays. This is also partially explained by the lack of technical know-how and resources from public authorities to deal with the growing number of requests. This will only aggravate the situation in the coming years, as a result of the expected accelerated EU-wide deployment of recharging infrastructure.

With respect to the grid connection procedure, the challenges encountered relate to a lack of or insufficient transparency on available grid capacity, a lack of prioritisation by DSOs in treating grid connection requests, lack of qualified staff / certified technicians and a lack of transparency regarding costs for new grid connections or upgrades.

The survey results suggest four main groups of problems and bottlenecks regarding the permitting and grid connection procedures.

1. Lack of clearly defined timelines and standardised procedures, and a lack of experienced staff and technical capacity on the part of the public authorities (either at the local or the regional level) and DSOs. This delays the permitting and grid connection processes and increases the costs of the procedure.
2. Lack of transparency on costs, both for the permitting procedure fees, as these vary greatly among local authorities where some include, for example, parking permitting fees, and for the grid connection procedure, which sometimes includes several variable items such as grid fees, grid capacity studies and other costs that result in unpredictability.
3. Lack of cooperation between public authorities and DSOs/TSOs to accelerate the connection of recharging points to the grid.
4. Lack of joint planning between public authorities, CPOs and DSOs/TSOs for recharging needs, which means that recharging infrastructure roll-out cannot be appropriately aligned with urban planning and mobility and grid planning.

These bottlenecks might not apply to all Member States equally, as the specific situations at the Member-State level may differ. As part of the work done under the STF-PA taskforce 1 recommendations, an attempt was made to reach a general conclusion that covers most Member States.

These problems and bottlenecks might put at risk the timely achievement of the proposed AFIR targets, both the fleet-based deployment targets set at the Member-State level and the distance-based targets along the trans-European transport network. In turn, the lack of a comprehensive EV recharging network, both for passenger cars and commercial vehicles (light-duty vehicles and heavy-duty vehicles), risks delaying the widespread uptake of EVs in the EU and the decarbonisation of the transport sector.

Both public authorities and market players should also increase cooperation and establish communication channels in liaison with DSOs, to streamline these processes.

Based on the foregoing, this report recommends a set of measures to overcome the issues identified, both for the permitting and for the grid connection procedure.

6.1. Recommendations for a streamlined permitting process

Bottleneck 1: lengthy procedures

- Local public authorities should be provided with technical support by Member States as part of the national policy frameworks defined under AFIR, to put into place streamlined procedures for grid-permitting processes required for the deployment of recharging infrastructure. Strengthening administrative capability, harmonising legal frameworks and exchanging relevant best practices should all be part of this technical support.
- All procedures for the permitting process required to set up recharging infrastructure should have defined timelines that are as short as possible, along with details on when they may be extended and under what conditions. This would bring clarity and predictability to the permitting process. Based on the example from the city of Stockholm, and the European Parliament recommendations, AFIR Article 13 should be amended stating that the permitting process including approval should last no more than 3–6 months, ensuring that this does not conflict with already existing national laws.
- In order to accelerate and streamline the permitting procedure, local authorities are encouraged to select a specific number of adequate locations for their EV recharging infrastructure and, for these, to introduce a pre-approval process that can simultaneously help to reduce delays.

Good practice example

In its recharging master plan, which seeks to provide 4 000 public recharging points by 2022, the city of **Stockholm** is addressing the problems associated with a lengthy permitting process. The objective is to ensure that installing recharging stations is as simple as it is feasible, while simultaneously ensuring high station utilisation. Through cooperation with the grid operator Ellevio, the municipal planning division and nearby companies, the city has identified priority areas for public recharging investment as part of the strategy. Each site will have room for 4–10 charge points, intended either for overnight resident recharging or rapid recharging for taxis or commercial vehicles. These locations are 'pre-authorised' for the installation of recharging stations, and a public web map displaying the number and kind of approved chargers, electrical connections and site conditions is made accessible for viewing. Private operators may submit statements of interest for specific sites. Only 30 sites may be requested by each operator in a round in order to foster competitiveness. After receiving formal approval, the operator is put in touch with the grid operator to promote a quick installation.

Good practice example

In the United States, the state of **California** implemented the 'Permitting Olympics' (https://business.ca.gov/industries/zero-emission-vehicles/plug-in-readiness/permitting-olympics/), which is an effort to encourage local governments to comply with streamlined approval requirements for EV recharging stations. Permitting medals are awarded to jurisdictions that have streamlined permits for EV recharging stations, based on all the jurisdictions within the county as follows:

- counties with 100 % streamlined region = gold;
- counties with 75 % streamlined region = silver;
- counties with 50 % streamlined region = bronze.

Bottleneck 2: lack of clarity of the procedures

- Whenever possible, public authorities should establish standardised application procedures for the whole administrative process, together with online specifications identifying the necessary documentation. This should be established at the Member-State level, on the basis of the guidelines issued at the EU level.
- With the support of national authorities, local authorities are encouraged to establish a 'one-stop-shop' approach to support the permitting process (considering the advantages of concentrating technological, environmental and legal expertise), to minimise the number of authorities involved in the process, to maximise efficiency and to facilitate the permitting process.

Good practice example

In the **Netherlands**, the MRA-E was founded in 2012 to support municipalities in the three provinces of Flevoland, North Holland and Utrecht with the development and implementation of EV policies. The municipalities share experiences and knowledge, develop demonstration projects, develop standard documents / templates to be used by all, and jointly procure/manage recharging infrastructure. The cooperation ensures more streamlined and harmonised permitting procedures at the regional and local levels.

More information available here: https://www.mra-e.nl/.

Good practice example

In **California**, Assembly Bill No 1236 requires all cities and counties to develop an expedited, streamlined permitting process for all levels of EV recharging stations. As the result of this bill, all permit parameters are included in one simple application checklist, called the 'Permitting electric vehicle charging stations scorecard' (https://static.business.ca.gov/wp-content/uploads/2020/01/Permitting-Electric-Vehicle-Charging-Stations-Scorecard.pdf), which is reviewed by the authority having jurisdiction (either cities or counties).

Good practice example

In **Slovakia**, most cities offer a standardised form on their web page to announce small constructions. Such a simplification of the permit application procedure can greatly reduce the practical lead time of the permitting procedure. For small structures that perform an additional function to the main structure, and which cannot substantially affect the environment, it is sufficient to notify the building authority in advance by filling in the form and providing some additional technical information. The processing time takes up to 30 days from the submission of the notification or its completion. For CPOs, having a common starting point allows for an easier and quicker permitting procedure.

Examples:

- https://www.pezinok.sk/uploadfiles/File/samosprava/tlaciva/ohlasenie_drobnej_stavby.pdf
- https://www.piestany.sk/ako-vybavit/obcan/stavebny-poriadok/ohlasenie-drobnej-stavby/

Good practice example

In the **Netherlands**, the NAL focuses on rolling out sufficient recharging infrastructure to achieve the climate goals. The NAL is part of the Dutch Climate Agreement and must provide sufficient recharging infrastructure to achieve the climate targets. It contains about 70 measures that should contribute to this, and established six NAL regions that, in collaboration with their municipalities, are responsible for the regional measures and the roll-out of recharging infrastructure. All NAL regions have drawn up a regional approach to recharging infrastructure, and an important regional measure is that every municipality must provide a 'recharging vision' and an 'installation/location policy' for all types of recharging infrastructure (https://www.agendalaadinfrastructuur.nl/default.aspx).

Examples:

- https://raad.ridderkerk.nl/documenten/Raadsinformatiebrieven-RIB/2021-07-16-RIB-Laadvisie-Ridderkerk-visie.pdf
- https://lokaleregelgeving.overheid.nl/CVDR674048/1

The national Knowledge Platform for Charging Infrastructure has also drawn up guidelines and formats for this. The guidelines set out a clear step-by-step plan: from initiative to selection of technical solution, to tendering, licencing, installation and infrastructure (https://nklnederland.nl/wp-content/uploads/2021/12/Guidelines-for-the-realization-of-charging-plazas.pdf).

Bottleneck 3: no clear evaluation standards or assessment criteria

- During the permit-granting process for the deployment of recharging infrastructure, public authorities are encouraged to establish clean communication channels with CPOs, to exchange comprehensive and transparent information regarding all requirements and evaluation criteria, including complaint mechanisms.
- Whenever possible, local authorities should adopt evaluation checklists so that private companies and CPOs can better understand the criteria behind the assessment of a permitting authorisation procedure, thus giving predictability and a streamlined process.

Good practice example

The 'Lad i Oslo' (Charge in Oslo) EV recharging deployment programme, part of the Agency for Urban Environment of **Oslo** City Council, identifies possible locations based on EV drivers' suggestions and where gaps in recharging infrastructure are apparent. The agency's civil works and electrical contractors are responsible for installing the chargers. To make the installation review process more efficient, the 'Lad i Oslo' programme developed a checklist to ensure the agency has the information needed to be able to approve or reject the construction. According to data from 2020, a recharging station composed of 12 AC 7 kW chargers is expected to cost approximately NOK 560 000 (EUR 51 100), or about EUR 4 200 per charger, with soft costs accounting for about half of the total cost.

Bottleneck 4: cumbersomeness of the administrative procedure

- To simplify the procedure and replace the usage of paper, completely digital permit-granting processes and e-communication should be prioritised. Online access to pertinent data, such as application forms for environmental, building and other permits, along with details on associated fees, should be made easily available. This could save a significant amount of time spent searching for information about requirements and the process.
- Member States should set up a contact point tasked with regularly monitoring the main bottlenecks in the permitting procedures, and tasked with addressing the issues encountered by public authorities and CPOs during the deployment of recharging infrastructure.

Good practice example

In the **Netherlands**, the application process is entirely online via a single portal. CPOs request the environmental permit via '*omgevingsloket*' using a standard form. The request will automatically be sent to the right authority/municipality. Regular public recharging infrastructure up to 3 × 80 A is largely rolled out via concessions organised by regions/provinces, municipalities can also participate. In the case of a concession, the CPO receives exclusivity to install recharging stations and to exploit the recharging infrastructure during an agreed operating period. Recharging stations are rolled out proactively based on data and predictions or based on a request from a citizen with an EV. A concession is always put out to European tender, and the award is made based on quality and price. Municipalities that do not participate in a concession often use the 'open market model', which means that all CPOs that meet the conditions of the relevant municipality can conclude a contract and can install recharging stations within the guidelines of that municipality.

More information available at: https://www.omgevingsloket.nl/Zakelijk/zakelijk/home/wat-is-omgevingsloket?init=true.

Good practice example

London's EV charge point installation guidance provides information to support the installation of recharging infrastructure. Local authorities benefit from 'permitted development rights' in relation to the installation of EV charge points. 'Permitted development rights' allow certain changes to be made without the need to apply for planning permission. They derive from a general planning permission granted not by the local authority but by the government.

All planning applications being submitted for a charge point will require:

- a location plan (1:1250);
- existing and proposed site plans (to scale);
- justification for installing the recharger in the proposed location;
- elevation drawings of the recharger and feeder pillar;
- foundation drawings.

More information available at: https://lruc.content.tfl.gov.uk/london-electric-vehicle-charge-point-installation-guidance-december-2019.pdf.

Bottleneck 5: lack of transparency on costs

- Permitting fees should be harmonised as much as possible, in particular in neighbouring jurisdictions, but should nevertheless respect the autonomy of local authorities in the establishment of these fees. These should also be made clear from the beginning of the permit procedure.

Good practice example

The city of **London** developed a mixed planning- and business-oriented approach with multiple operators. The mayor of London took this approach in 2018 when he created the EV Infrastructure Taskforce. This coalition aimed to establish long-term business models, a recharging station installation roadmap, a permitting and inspection checklist, and an installation guideline for applicants. The taskforce also published an EV Infrastructure Delivery Plan, which provides recommendations at the greater-London level regarding recharging infrastructure deployment and partnerships. At city-owned locations, Transport for London conducts upstream work, and private companies operate the stations. The whole process lasts between 6 and 12 months and costs EUR 3 300 for a lamppost charger (3 kW–7 kW), and lasts 12 months on average and costs EUR 8 900 for a free-standing charger (7 kW).

Additional information available at:

https://tfl.gov.uk/modes/driving/electric-vehicles-and-rapid-charging?cid=ev-charging-plan.

Other recommendations

- To promote the adoption of innovative technologies and solutions, including for the accessibility of the recharging infrastructure by vulnerable groups and people with disabilities, public authorities should allow the technological and physical specifications of their recharging infrastructure to be updated in the interim between the permit application and the deployment. This will ensure that the recharging infrastructure is deployed in a future-proof way.

Good practice example

In **Belgium**, Fireforum took an initiative to draw up a rule of good craftsmanship together with all parties involved, containing a coherent set of fire safety regulations for EVs in parking buildings. Intense consultations with stakeholders and extensive and iterative editorial work has led to the publication of the *Rules of Good Workmanship Fire Safety – Electric vehicles in car parks*, which can be found here: https://www.fireforum.be/voorschriften/rgv-elektrische-voertuigen-in-parkings.

6.2. Recommendations for a streamlined grid connection process

Bottleneck 1: lengthy procedures

- DSOs should apply a transparent and digital procedure for grid connection applications to speed up the process. The creation of digital portals by DSOs, together with automated data exchange from DSOs towards local and regional authorities and CPOs, will also contribute to reducing the grid connection timelines, and therefore decrease costs.
- National authorities, on the basis of guidelines issued at the EU level, should define harmonised rules for the grid connection procedures with a focus on defining clear and strict deadlines, where DSOs should provide minimum connection times for applicants and ensure that these are fulfilled. According to a recent set of recommendations from ChargeUp Europe, these timelines should not be longer than 12 weeks for power requests below 100 kW, should be up to 6 months for power requests between 100 kW and 350 kW, and up to 8 months for power requests above 350 kW.

Good practice example

In **Germany**, the latest amendment to the Low Voltage Connection Ordinance (*Niederspannungsanschlussverordnung*) has paved the way for a higher degree of digitalisation and standardisation for low voltage grid connections. This is intended in particular to accelerate the deployment of private recharging infrastructure in the mass market. However, as fast recharging points are generally connected at higher voltage levels, simplifications must also be assessed with regard to medium voltage – in particular with regard to digitalisation and harmonisation.

More information available at: https://nationale-leitstelle.de/wp-content/uploads/2023/01/Masterplan-Ladeinfrastruktur-II-der-Bundesregierung_Englisch_DIN_A4_barrierefrei.pdf.

Bottleneck 2: cumbersomeness of the grid connection procedure

- Public authorities should coordinate with CPOs and DSOs to define clear roles and responsibilities, and should cooperate during the implementation of any applicable rules and procedures for the grid connections. Besides this coordination, the existence of standardised procedures, together with the digitalisation of the grid connection procedures, would reduce the administrative burden of the process.
- Local authorities and DSOs should be encouraged to communicate, to adjust other network construction needs to the connection of recharging stations to facilitate the permitting and connection process. This would also bring predictability to the grid connection procedures.
- For grid connections, when no significant adverse environmental or social impact is anticipated, as is the case with recharging infrastructure, both public authorities and DSOs should design streamlined procedures and follow a simple-notification procedure.

Good practice example

In **Spain**, to facilitate the user experience and avoid any issues, the DSO of Iberdrola Group, I-DE, provides on its website a description of the whole procedure from the connection request to its completion, including technical requirements and other information.

More information available at: https://www.i-de.es/socdis/gc/prod/es_ES/contenidos/docs/Guia_Detallada_Vehiculo_Electrico.pdf.

Good practice example

To be able to keep pace with the growth of electric driving and install sufficient recharging points, **Amsterdam** is constantly in discussions with various stakeholders to ensure the installation process is carried out as efficiently as possible. Before new recharging locations are decided on, the parties involved exchange important information, for instance on available network capacity in combination with data of existing recharging stations and the locations of underground cables.

Another example is the new agreements that the council has made with DNO Liander with regard to connecting recharging locations to the electricity grid. It was decided that the construction company can take care of the connection, which means a recharging location can be installed and ready for use within 4 hours. Previously, because of difficulties in aligning the planning of several different parties, it could sometimes take weeks before a recharging point was ready for use and all the rubble was cleared. An additional advantage is that there are now less disturbances for local residents, such as roadblocks, traffic diversions, vans parked in the road and confusing traffic situations. Increased experience and an improved process have resulted in progressively fewer delays during the implementation stage. As a result, multiple recharging locations can be installed in a single day in Amsterdam.

Good practice example

The city of **Stockholm** has developed an integrated approach to planning and installation: preparation with groundworks and cabling is done ahead of charge point installation. In Stockholm, under this planning-oriented approach, the city identifies all potential recharging station locations and, in collaboration with the DSOs, publishes a map displaying these locations and the estimated cost of connecting them to the grid, with an average end-to-end installation time of 7 months. While this requires an upfront time investment, it accelerates CPO planning and feasibility assessments. The recharging station operator contacts the grid operator, and together they prepare the area (wiring, foundation and any other civil work). It also speeds up approval processes since both the DSOs and the city perform high-level feasibility screenings before publishing potential recharging point locations. Stockholm's approval time is around 3 months.

More information available at: https://tillstand.stockholm/tillstand-regler-och-tillsyn/parkering/ansok-om-att-etablera-nya-laddplatser-for-elbil/anmal-intresse-for-att-satta-upp-nya-laddare/#step-1.

Bottleneck 3: lack of adequate information on grid planning

- National, regional and municipal authorities should coordinate with DSOs to implement long-term grid planning (integrated with mobility and parking policies) and stimulate investment (consistent with the planned expansion of recharging infrastructure), considering the current and future requirements in the roll-out of alternative fuels infrastructure. This should be aligned with cities' sustainable urban mobility plans. This will enable forward-looking network planning and construction over the short, medium and long terms.
- DSOs should provide public information on grid capacities, such as hosting capacity maps for optimal locations. This would facilitate the grid connection process since it would reduce the number of requests that might not be feasible, grid-wise.

Good practice example

The city of **Paris** has adopted a city-led planning-oriented business model for the development of their public AC regular recharging network. The city is responsible for finding the right location for the recharging station and then outsourcing the implementation of the recharging point to an operator. In order to spur EV uptake in the entire city, Paris has opted to select recharging station locations based on providing even coverage across the city as opposed to driver demand.

The city leads the initial discussions with the grid operator (Enedis), the underground utilities and the historic preservation architects to find a suitable location. Once the location is found, the chosen recharging station operator is responsible for all communications with the different stakeholders. This includes asking the urban planning and the mobility teams for a civil work authorisation, requesting a grid connection and commissioning, and coordinating with the controls office for the final inspection.

As utility companies' response time tends to lengthen the process, Paris requires the electric connection to be independent from the charger to allow for easy maintenance or the charger to be changed without modifying the grid connection. The whole process takes approximately 4 months, and the total cost of installing an AC regular charger ranges between EUR 8 000 and EUR 10 000, two-thirds being the installation costs.

Good practice example

In the **United Kingdom**, UK Power Networks provides detailed maps of the grid capacity for recharging points (50 kW, 100 kW, 150 kW). This initiative reveals cost-optimal locations that need the least public support. The platform is aimed at helping everyone from local authorities to CPOs, renewable energy generators, flexibility providers and anyone with an interest in low-carbon technology. This helps both private users and public authorities to make better decisions.

More information and mapping tool available at: https://dgmap.ukpowernetworks.co.uk/site/?q=ev_ext.

Good practice example

In general, municipalities in the **Netherlands** require the same information/reports. This makes it easier to anticipate questions and requests for information. There is also a network development map and a recharging station management portal supporting the recharging point installation procedure. In addition, agreements have recently been made between regional governments (NAL regions) and DSOs about recharging infrastructure for the purpose of grid impact; based on the agreements of the Dutch Climate Agreement and the NAL, municipalities make plans (recharging visions and installation policies) for recharging infrastructure in their region/municipality. ElaadNL has made forecasts for this, which the NAL regions can use (https://www.elaad.nl/projects/elaadnl-outlooks/), and the DSOs have developed a national grid capacity map (https://capaciteitskaart.netbeheernederland.nl/). Three NAL regions (the western part of the Netherlands, including the four largest cities) have also made their own regional prognosis that they use for planning (https://experience.arcgis.com/experience/298ce66c9694478c906a929cc4a64032/page/Uitleg/).

Good practice example

In **Germany**, under Section 14d of the Energy Industry Act (*Energiewirtschaftsgesetz*), distribution grid operators are obliged to draw up grid maps of the high and medium voltage levels as part of the plans to upgrade the grid. By the second quarter of 2023, the Federal Ministry for Economic Affairs and Climate Action will present reliable measures for establishing a uniform digital format (e.g. geographic information system data format). Efforts will be made to ensure that these maps are made available at a central location, such as the joint internet platform provided for in Section 14e of the Energy Industry Act. Among other things, they can then be used to take decisions on where to locate recharging infrastructure, or the National Centre for Charging Infrastructure can use them to improve the instruments with which it determines future demand.

More information available at: https://nationale-leitstelle.de/wp-content/uploads/2023/01/Masterplan-Ladeinfrastruktur-II-der-Bundesregierung_Englisch_DIN_A4_barrierefrei.pdf.

Good practice example

In **Denmark**, the DSO Radius Elnet makes grid capacity available from over 7 000 grid stations as open data. The data shows average and peak consumption over the past 24 months and provides insight into available grid capacity.

More information available at: https://radiuselnet.dk/om-radius/dit-elnet/.

Good practice example

Most regions in the **Netherlands**, including MRA-E, have adopted a procedure where all locations reserved for EV public recharging will be planned and prepared 3 or more years ahead. Thousands of locations are selected by a multidisciplinary team of experts using uniform location criteria and numerous map layers. Once data-monitoring or EV-driver requests require a specific new installation, the CPO can immediately continue with the request at the DSO for the grid connection.

More information on the practice (Netherlands):
information sheet for local authorities,
planned locations,
prognosis recharging demand.

Bottleneck 4: lack of transparency on grid costs and contingencies

- DSOs should provide information on grid contingencies and bottlenecks in advance, to ensure that CPOs' and public authorities' strategies for the deployment of recharging infrastructure are aligned with DSOs' capacity to provide adequate connections without the need of costly interventions. Additionally, they should also allow recharging infrastructure to be connected ahead of upgrades by making the offering of flexible capacity arrangements as a short-term solution mandatory.

Good practice example

In the city of **Barcelona**, grid connections up to 100 kW in urban areas have a regulated (by law) low flat tax. Network growth must be paid by the DSO. Other cases need to be evaluated by the DSO.

Good practice example

The city of **Sacramento** informs applicants upfront on how to design projects in a way that avoids having a negative impact on vulnerable locations, like heritage sites, to facilitate the reviewing process. This type of guidance can be provided to applicants on a city or county permitting website, using permitting checklists and factsheets, and can be reiterated at pre-application meetings, which are often recommended for larger projects. Sacramento also clearly communicates that building recharging stations in existing parking lots will not lead to any onerous requirements that could make the project infeasible – effectively eliminating uncertainty for a recharging point developer.

Good practice example

Poland developed an e-tariff scheme charged by the DSO to the CPO, shifting from high-standing charges (capacity-based) to consumption-based charges. This ensures that CPOs are not paying for 'available capacity' that is not actually being used by recharging stations with low utilisation.

More information available at: https://www.kg-legal.eu/info/it-new-technologies-media-and-communication-technology-law/important-information-for-e-mobility-market-in-poland/.

Good practice example

In the Municipality of **Cork**, the pricing method is publicly available in an official document published by ESB Networks, the Irish electricity provider.

7. References

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- Bernard, M. R. and Hall, D. (2021), 'Efficient planning and implementation of public chargers: Lessons learned from European cities', *Working Paper 2021-05*, ICCT, https://theicct.org/sites/default/files/publications/European-cities-charging-infra-feb2021.pdf.
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Annex 1
Questionnaire for public authorities

Questionnaire for public authorities

Best practices guide for permitting and grid connection procedures

Introduction

The European Commission is supporting the development by the Sustainable Transport Forum's 'public authorities' sub-group of a best practices guide for permitting and grid connection procedures.

The objective of the guide will be to, firstly, identify and assess problems encountered in the EU by project developers in the administrative process of applying for a building or operating (environmental) permit, or in the process of applying to the local DSO or TSO for a grid connection for that same infrastructure, including costs encountered in that process. Once these problems have been mapped, the guide will look at different solutions to address these problems, based on best practices in the Member States and beyond.

The aim of this questionnaire is **to gather in a structured way information**, legislation, regulations, documents, plans, etc. **that provide an overview and a description of:**

(i) the administrative procedure for granting a building/operating permit for recharging infrastructure
(ii) the procedure for connecting recharging infrastructure to the grid

With the results of this exercise, we will **identify:**

(i) **Main bottlenecks and factors hindering the permitting of recharging stations and their connection to the grid in the EU**
(ii) **Best practices and lessons learnt from most successful permitting and grid connection processes applied across the EU**

For the avoidance of doubt, the scope of the survey concerns:

- Publicly accessible recharging infrastructure (both on-street and off-street)
- Passenger vehicles and Light Duty Vehicles (LDV) (NB: specific procedures for High Duty Vehicles (HDV) recharging infrastructure or public transport infrastructure are not covered)

Please note that you can upload supporting documents (applicable local regulations, legislation, information for applicants, etc.) at the end of the questionnaire. Please attach any relevant link and/or document that could help with the further assessment of the information provided, including existing permitting procedures (**in any EU language**). **Please note that unless if you explicitly indicate otherwise, your submission of any documents in response to this questionnaire will be considered as tacit agreement for quoting from these documents, or making them public in their entirety, in the process or Best Practices Guide that will result from this questionnaire.**

RESPONDENT INFORMATION

1. Please state the full name of the public authority on whose behalf you are responding to this questionnaire.
2. Please provide your full contact details (name, surname, title, telephone, email).
3. Please state the Member State where your public authority is located. For authorities located in a non-EU country, please select 'Other' and specify.

() Austria
() Belgium
() Bulgaria
() Croatia
() Cyprus
() Czech Republic
() Denmark
() Estonia
() Finland
() France
() Germany
() Greece
() Hungary
() Ireland
() Italy
() Latvia
() Lithuania
() Luxembourg
() Malta
() Netherlands
() Poland
() Portugal
() Romania
() Slovakia
() Slovenia
() Spain
() Sweden
() Other: please specify

4. Please specify whether you represent:

☐ A national public authority (transport ministries, agencies)
☐ A regional public authority (a federal or regional state entity, province, department etc.)

- ☐ A local public authority (city, municipality, etc.)
- ☐ A non-governmental body entrusted with a public task or service of general economic interest
- ☐ Other

If other: Please specify

PERMITTING PROCEDURES

1 In your Member State/region/municipality, do you have specific administrative procedures for applying for the following type of permits (multiple answers possible):

- ☐ Yes, for building/construction permits
- ☐ Yes, for operating/environmental permits
- ☐ Yes, one procedure for the above combined
- ☐ Yes, other
- ☐ No

Please explain

[Following questions (from 1.1 to 1.4) should only pop up if respondent ticked any 'yes' answer in response to question 1]

1.1 In your Member State/region/municipality, do you have (a) specific administrative procedure(s) for applying for permits for recharging points (multiple answers possible):

- ☐ Yes, (for) building permits for recharging points
- ☐ Yes, (for) operating permits for recharging points
- ☐ Yes, (for) a combined building and operating permit for recharging points
- ☐ Yes, (for) another type of permit (Other)
- ☐ No, we apply general permitting procedures (applying to any type of building/construction) to recharging points
- ☐ No, recharging points are exempted from permitting requirements

If 'Yes, for another type of permit (Other)': Please specify

[Following questions (from 1.1.1 to 1.1.4) should only pop up if respondent ticked any 'yes' answer in response to question 1.1]

1.1.1 Please indicate whether different permitting procedure are applied to different types of recharging infrastructure:

- ☐ Yes, depending on the power output of the recharging points
- ☐ Yes, depending on whether the recharging points will be deployed on- or off-street
- ☐ Yes, depending on the capacity (kVA) of the required grid connection
- ☐ Yes, other
- ☐ No

[If respondent ticked 'Yes, other'] Please specify

1.1.2 Is your authority involved in the permitting procedure(s) for recharging stations (multiple answers possible)?

- ☐ Yes, we are the permit granting authority
- ☐ Yes, we are the permit granting authority upon appeal
- ☐ Yes, we are consulted and our advice is binding
- ☐ Yes, we are consulted but our advice is non-binding
- ☐ No we are not involved
- ☐ Other

[If other]: please specify

[If respondent ticks multiple answers]: please clarify your role in the different permitting procedures. Please clearly differentiate between the type of permit procedure and the type of infrastructure, where applicable.

1.1.3 Please describe which other actors are involved in permitting procedures for (publicly accessible) recharging stations? Please clearly differentiate between the type of permit procedure and the type of infrastructure, where applicable.

1.1.4 Please shortly describe the different steps in (each of) the applicable permitting procedure(s) for (each type of) recharging points. In particular, please briefly describe what documents the applicant has to provide, whether there is a predetermined timeline for the different steps of the procedure, whether there is an overall (binding/indicative) deadline to process the application, etc. Please also indicate the duration of the permit after approval and if there is a possibility to renew this and under which conditions.

1.2 Do you provide specific support or information to potential applicants of a building/operating permit for recharging points?

- ☐ Yes, we have a tailored information brochure
- ☐ Yes, we have a dedicated permit application desk (officer)
- ☐ Yes, other
- ☐ No

If other: Please specify

1.3 In your view, what could be improved in your Member State/region/municipality to facilitate the process of applying for a (building/operating permit) for recharging points, if anything?

1.4 Please upload (a link to) any relevant supporting documents: applicable local regulations, legislation, information for applicants, etc.

GRID CONNECTION PROCEDURES

2 In your Member State/region/municipality, is there a specific procedure to connect recharging points to the grid (multiple answers possible):

- ☐ Yes, there is a specific procedure to connect recharging points (any type, size) to the grid
- ☐ Yes, there are different procedures depending on the power output of the connected recharging points

- ☐ Yes, there are different procedures depending on the capabilities of the recharging point (smart recharging, V2G, etc.)
- ☐ Yes, other
- ☐ No, the applicable grid connection procedure is dependent on the size of the grid connection itself (kVA), irrespective of the equipment behind the meter
- ☐ No, other
- ☐ I don't know

[If respondent ticked 'No other'] Please explain

[Following questions (from 2.1 to 2.4) should only pop up if respondent ticked any 'yes' answer in response to question 2]

2.1 Please describe the applicable procedure(s) in detail. Shortly describe the different steps for (each of) the applicable permitting procedure(s) for (each type of) recharging points. Please also briefly describe what documents the applicant has to provide, whether there is a predetermined timeline for the different steps of the procedure, whether there is an overall (binding/indicative) deadline to process the application, specific agreements, etc.

2.2 In your Member State/region/municipality, is the ability of the applicant to obtain a grid connection for his/her recharging points (firm offer by Distribution System Operator (DSO)/Transmission System Operator (TSO)) a precondition for granting a building/operating permit?

- ☐ Yes, a firm grid connection offer is a precondition for the granting of a building permit
- ☐ No, but the procedures are linked (e.g., DSO/TSO provides advice in building permit procedure)
- ☐ No, these are two entirely distinct procedures
- ☐ No, there is no requirement to obtain a building permit for recharging points in my Member State/region/municipality
- ☐ Other

Any previous reply: Please specify

2.3 In your Member State/region/municipality, does the DSO/TSO offer any of the following services to facilitate the grid connection procedure (multiple answers possible)?

- ☐ Publicly available maps (or other publicly available documents, online or under request) indicate the location of transmission and distributionlines, substations, hosting, and line capacity.
- ☐ Publicly available maps (or other publicly available documents, online or under request) indicate zones where grid capacity is sufficient, including the available capacity, to connect recharging points.
- ☐ The DSO/TSO publishes clear action plans with planned grid reinforcements, providing specific timeframes for their completion.
- ☐ There is a DSO/TSO dedicated team to evaluate and triage electric recharging infrastructure grid connection applications.
- ☐ There is a DSO/TSO single point of contact, i.e., standard local planning areas & account managers.
- ☐ Pre-Application meetings are possible, establishing available power on a connection or nearby transformer to understand type and size of project.

- ☐ Other
- ☐ I don't know

In case of an answer other than 'I don't know': please specify

2.4 In your view, what could be improved in your Member State/region/municipality to facilitate the process of applying for a grid connection permit) for recharging points, if anything?

2.5 In your Member State/region/municipality, which of the following is correct in relation to the pricing of grid connections/upgrades (multiple answers possible):

- ☐ Prices for grid connections are publicly available and depend on different factors (e.g. size of the requested grid connection, location of the requested grid connection, etc.)
- ☐ Prices for grid connections are publicly available and fixed (same for all)
- ☐ Prices for grid connections are not publicly available, but calculated by the competent DSO/TSO on a case-by-case basis
- ☐ One time connection costs are not publicly available, but recurrent capacity fees are (depending on the size of the grid connection)
- ☐ Other

For any answer above: Please specify

Annex 2
Questionnaire to market players

Questionnaire for market participants

Best practices guide for permitting and grid connection procedures

Introduction

The European Commission is supporting the development by the Sustainable Transport Forum's 'public authorities' sub-group of a best practices guide for permitting and grid connection procedures.

The objective of the guide will be to, firstly, identify and assess problems encountered in the EU by project developers in the administrative process of applying for a building or operating (environmental) permit, or in the process of applying to the local DSO or TSO for a grid connection for that same infrastructure, including costs encountered in that process. Once these problems have been mapped, the guide will look at different solutions to address these problems, based on best practices in the Member States and beyond.

The aim of this questionnaire is **to gather in a structured way information**, legislation, regulations, documents, plans, etc. **that provide an overview and a description of:**

(i) the administrative procedure for granting a building/operating permit for recharging infrastructure
(ii) the procedure for connecting electric recharging infrastructure to the grid

With the results of this exercise, we will **identify:**

(i) **Main bottlenecks and factors hindering the permitting of recharging stations and their connection to the grid in the EU**
(ii) **Best practices and lessons learnt from most successful permitting and grid connection processes applied across the EU**

This questionnaire will focus on the key problem areas a pre-consultation has identified.

For the avoidance of doubt, the scope of the survey concerns:

- Publicly accessible recharging infrastructure (both on-street or off-street)
- Passenger vehicles and Light Duty Vehicles (LDV) (NB: specific procedures for High Duty vehicles (HDV) recharging infrastructure or public transport infrastructure are not covered)

Please note that you can upload supporting documents (applicable local regulations, legislation, information for applicants, etc.) at the end of the questionnaire. Please attach any relevant link and/or document that could help with the further assessment of the information provided, including exist-

ing permitting procedures (**in any EU language**). **Please note that unless if you explicitly indicate otherwise, your submission of any documents in response to this questionnaire will be considered as tacit agreement for quoting from these documents, or making them public in their entirety, in the process or Best Practices Guide that will result from this questionnaire.**

RESPONDENT INFORMATION

1. Please state the full name of the company/organization on whose behalf you are responding to this questionnaire and where the main office is officially based.
2. Please provide your full contact details (name, surname, title, telephone, email).
3. Which of the following is applicable to your organization:

- ☐ Public organization
- ☐ Private organization

[If respondent ticked 'Private organization'] Indicate if your company is:

- ☐ Small and Medium sized Enterprise
- ☐ Other

4. Which of the following best describes your organization (multiple answers possible):

- ☐ Vehicle or equipment manufacturer/supplier
- ☐ Energy distribution or supply company
- ☐ Fuel producer or retailer*
- ☐ Fuel station operator (infrastructure developer or operator)*
- ☐ Fuel station manufacturer*
- ☐ Charge point operator (infrastructure developer or operator)
- ☐ Charge point manufacturer*
- ☐ E- mobility Roaming platform (e-roaming) – enabling platform for accessing different service providers networks
- ☐ Private fleet operator
- ☐ R & D&I and academia
- ☐ Interest group*
- ☐ Other*

[If respondent ticked answers with *] please specify:

5. Please briefly provide more details on the main activities of your company/organization in relation to the deployment of electric recharging infrastructure (e.g., operations, management, services provided, consultancy/guidance, type of recharging poles installed/required, etc.)
6. Please state in which Member States your company/organization is active (multiple answers are possible).

- () Austria
- () Belgium
- () Bulgaria
- () Croatia
- () Cyprus

() Czech Republic
() Denmark
() Estonia
() Finland
() France
() Germany
() Greece
() Hungary
() Ireland
() Italy
() Latvia
() Lithuania
() Luxembourg
() Malta
() Netherlands
() Poland
() Portugal
() Romania
() Slovakia
() Slovenia
() Spain
() Sweden
() Other non-EU: please specify

7. Please briefly describe your company/organization's experience when requesting permits to develop/operate (publicly accessible) electric recharging stations (e.g., years active, your own internal organization/procedures to prepare/follow these requests, dedicated staff, etc.).
8. Please briefly describe your company/organization's experience in relation to grid connection procedures for developing/operating (publicly accessible) electric recharging stations (e.g., years active, your own internal organization/procedures to prepare/follow these requests, etc.)

PERMITTING PROCEDURES FOR RECHARGING INFRASTRUCTURE

1. Please rank the following alleged problems, bottlenecks, and limitations in relation to the permit application procedure in order of importance:

☐ Lack of clarity regarding the applicable procedure and/or competent authorities assessing the permit application
☐ Cumbersomeness/heaviness of the administrative procedure
☐ Absence of a clear assessment framework/evaluation criteria
☐ Lack of transparency on timing
☐ Lack of transparency on costs
☐ Other: please specify
☐ None of the above

For questions 2-14 please provide more details according to the ranked problems/limitations in question one you are more familiar with and have concrete examples.

For those organisations/companies active in more than one Member State Please also indicate in your answers if any of the problems encountered is related to a specific country(ies).

2. Did you ever experience any lack of clarity regarding the applicable permit application procedure and/or was it ever unclear to you who were the competent authorities to process your permit application request? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
3. By contrast, do you want to highlight any particularly clear permit application procedure(s) as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.
4. Did you ever encounter any permit application procedure(s) (administrative procedure) that you consider as too cumbersome/heavy? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
5. By contrast, do you want to highlight any particularly straightforward/easy permit application procedure(s) as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.
6. Did you ever experience uncertainty regarding the outcome of a permit application due to the perceived absence of a clear assessment framework (evaluation criteria) for your permit application? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
7. By contrast, do you want to highlight any permit application procedure(s), on the basis of (its) (their) clear evaluation criteria for decision-making, as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.
8. Did you ever experience a lack of clarity regarding the timeline of any permit application procedure(s) (e.g. absence of clear, intermediate deadlines for decision taking)? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
9. By contrast, do you want to highlight any permit application procedure(s), on the basis of (its) (their) clear timeline(s) for decision-making, as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.
10. Did you ever experience a lack of clarity regarding the costs of any permit application procedure(s) (e.g. absence of clear, intermediate deadlines for decision taking)? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
11. By contrast, do you want to highlight any permit application procedure(s), on the basis of (its) (their) clear cost setting, as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.
12. Do you want to mention any permit application procedure(s) for any specific other problems, bottlenecks or limitations you have encountered? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
13. By contrast, do you want to highlight any permit application procedure(s), for any reason other than the above, as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.
14. Are you aware of, and/or did you ever receive specific support for applying for a permit for recharging points? Are you aware of any guidelines, agreements, or other tools/mechanisms to facilitate the permitting process? Where possible, please provide a link to the applicable legislative framework or information documents.

GRID CONNECTION PROCEDURES

1. Please briefly describe the different procedures that your company encounters with when applying for a grid connecting for recharging points: Which actors are involved? What is their respective role?
2. Which type of requirements/specifications are set for the grid connection above described? Which information needs to be provided? Are there differences according to: e.g., the capabilities of the recharging point (smart recharging, V2G, etc.), the size of the gird connection itself (KVA), the power of the output, etc.?
3. Please rank the following alleged problems, bottlenecks, and limitations in relation to the grid connection procedure in order of importance:

   - ☐ Lack of clarity regarding the applicable procedure and/or competent authorities assessing the permit application
   - ☐ Cumbersomeness/heaviness of the administrative procedure
   - ☐ Absence of a clear assessment framework/evaluation criteria
   - ☐ Lack of transparency on timing
   - ☐ Lack of transparency on costs
   - ☐ Other: please specify
   - ☐ None of the above

For questions 4-16 please provide more details according to the ranked problems/limitations in question three you are more familiar with and have concrete examples.

For those organisations/companies active in more than one Member State Please also indicate in your answers if any of the problems encountered is related to a specific country(ies).

4. Did you ever experience any lack of clarity regarding the grid connection procedure and/or was it ever unclear to you who were the competent authorities to process your grid connection request? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
5. By contrast, do you want to highlight any particularly clear grid connection procedure(s) as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.
6. Did you ever encounter any grid connection procedure(s) (administrative procedure) that you consider as too cumbersome/heavy? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
7. By contrast, do you want to highlight any particularly straightforward/easy grid connection procedure(s) as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.
8. Did you ever experience uncertainty regarding the outcome of a grid connection request due to the perceived absence of a clear assessment framework (evaluation criteria) for your grid connection request? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
9. By contrast, do you want to highlight any grid connection procedure(s), on the basis of (its)(their) clear evaluation criteria for decision-making, as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.

10. Did you ever experience a lack of clarity regarding the timeline of any grid connection procedure(s) (e.g. absence of clear, intermediate deadlines for decision taking)? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
11. By contrast, do you want to highlight any grid connection procedure(s), on the basis of (its)(their) clear timeline(s) for decision-making, as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.
12. Did you ever experience a lack of clarity regarding the costs of any grid connection procedure(s) (e.g. absence of clear, intermediate deadlines for decision taking)? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
13. By contrast, do you want to highlight any grid connection procedure(s), on the basis of (its)(their) clear cost setting, as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.
14. Do you want to mention any grid connection procedure(s) for any specific other problems, bottlenecks or limitations you have encountered? Please provide specific examples and, where possible and relevant, link to the applicable legislative framework.
15. By contrast, do you want to highlight any grid connection procedure(s), for any reason other than the above, as (a) good practice example(s) for the recommendations? Where possible, please provide a link to the applicable legislative framework.
16. Are you aware of, and/or did you ever receive specific support for applying for a grid connection for recharging points? Are you aware of any guidelines, agreements, or other tools/mechanisms to facilitate the grid connection procedure? Where possible, please provide a link to the applicable legislative framework or information documents.
17. Are you aware of DSOs/TSOs offering any of the following services to facilitate the grid connection procedure (multiple answers are possible):

- ☐ Publicly available maps (or other publicly available documents, online or under request) indicate the location of transmission and distributionlines, substations, hosting and line capacity.
- ☐ Publicly available maps (or other publicly available documents, online or under request) indicate zones where grid capacity is sufficient, including the available capacity, to connect recharging points.
- ☐ The DSO/TSO publishes clear action plans with planned grid reinforcement, providing specific timeframes for their completion.
- ☐ There is a DSO/TSO dedicated team to evaluate and triage electric recharging infrastructure grid connection applications.
- ☐ There is a DSO/TSO single point of contact, i.e., standard local planning areas & account managers.
- ☐ Pre-Application meetings are possible, establishing available power on a connection or nearby transformer to understand type and size of project.
- ☐ Other

Please explain

Annex 3
Overview of authors, coordinators and core review team

Role	Organisation	Persons involved	Description of the role and organisation
Author	POLIS	Pedro Gomes Manon Coyne Gabriela Barrera	POLIS (www.polisnetwork.eu) represents more than 100 cities, regions and transport operators from all over Europe. POLIS' objective is to support European cities and regions to improve the quality of life of their citizens through innovative measures for sustainable urban transport. The Network facilitates access to European initiatives and research programmes for its members, looking into solutions for urban and regional mobility, in the field of health and environment, traffic management and intelligent transport systems, road safety, and social and economic aspects of transport.
Coordinator	DG MOVE, European Commission	Alexander Verduyn	
Core reviewer	ElaadNL	Rob Cillessen	ElaadNL is a Dutch consortium of 5 DSOs set up to foster the deployment of electromobility in the Netherlands. ElaadNL assists public authorities in their roll-out of large-scale recharging infrastructure by means of tenders. To this end, ElaadNL has drawn up a 'program of requirements' which is used in various tendering procedures by Dutch public authorities. Contact info@elaad.nl, more information available here: https://www.elaad.nl/
Core reviewer	MRA-E	Pieter Looiestijn	MRA-Electric (https://www.mra-e.nl/) is a cooperation of 70+ local and 4 regional governments in the three provinces to the north-west of the Netherlands, with the aim to foster electromobility. MRA-Electric was founded by, amongst others, the city of Amsterdam. An important part of MRA-E's work is to develop a network of public recharging stations through joint procurement, piloting, network management, monitoring, etc. On behalf of the provinces of North-Holland, Flevoland and Utrecht, MRA-E launched and successfully concluded the biggest tender for publicly accessible recharging infrastructure thus far in the EU (20,000 recharging points).

Role	Organisation	Persons involved	Description of the role and organisation
Core reviewer	Regulatory Assistance Project	Jaap Burger	The Regulatory Assistance Project (RAP) is an independent, nonpartisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future. It's expertise lies in particular in all aspects related to the power sector. More information available here: https://www.raponline.org/

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