

The Deutschlandnetz:

Basic principles of the call for tenders for 1,000 locations with high-power charging points based on the Fast Charging Act



Berlin, 2 June 2021

Foreword:

With the 2050 Climate Action Plan, the Federal Government has committed itself to reducing, by 2030, Germany's greenhouse gas emissions by 55 to 56% against 1990 levels. Greenhouse gas emissions from the transport sector are to be reduced by 40 to 42% by 2030. The draft amendment to the Climate Change Act adopted by the Cabinet goes so far as to require a reduction in emissions by 48% against 1990 levels. To achieve these objectives, it is imperative to electrify road transport in particular. A reliable, needs-oriented and nationwide high-power charging network for medium- and long-distance journeys is a fundamental prerequisite for ramping up electric mobility in Germany. To complement the charging infrastructure set up purely by the private sector, the Federal Government will put to tender a nationwide network comprising more than 1,000 locations with high-power charging points, the *Deutschlandnetz*. The aim is to significantly improve services on medium- and long-distance journeys by setting-up more charging points and by better distributing them.

This document of the Federal Ministry of Transport and Digital infrastructure (BMVI) sets out the basic principles of the procedure and the formation of lots. The decisive factor here is to take into account the interests of the existing market, prevent monopolistic positions and enable small and medium-sized enterprises to participate in the calls for tenders. It explains how the locations and search areas as well as the respective number of charging points with a power output of at least 150 kW are defined by means of transport planning methods and taking into account the existing charging infrastructure. Finally, the strategy specifies the minimum requirements for the locations and the respective charging infrastructure in terms of user-friendliness, performance, technology, grid connection and environmental compatibility.

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1 Background

With the Cabinet decision of 12 May 2021 to recast the Climate Change Act, the Federal Government has undertaken to reduce, by 2030, Germany's greenhouse gas emissions by 48% against 1990 levels. With the 2030 Climate Change Programme and the 2019 Charging Infrastructure Masterplan, the Federal Government has underlined that a rapid ramp-up of electric mobility on the roads is essential if the climate targets in the transport sector are to be met. If large parts of the population are to make the required transition to electric vehicles, the charging infrastructure must not only meet the current demand at any given time, but must surpass it 'proactively' in the current ramp-up phase. Moreover, in order to meet users' requirements, an overall charging infrastructure system that is geared to their needs is necessary. This includes a nationwide, reliable and needs-oriented high-power charging network to serve medium- and long-distance journeys.

While the number of vehicles that are capable of handling high charging powers greater than 150 kW is rising fast, it is currently rather low. Therefore, many locations with high-power charging points are currently not economically viable and will not be in the near future either. For this reason, the Federal Government is ensuring through the Fast Charging Act¹ that a basic supply network of locations with high-power charging points – the *Deutschlandnetz* – will be established in good time.

The establishment of the *Deutschlandnetz* includes the following goals:

1. **Nationwide network:** Users should be able to travel on all routes nationwide without making substantial detours².
2. **Meeting needs:** Users should not have to wait unreasonably long for a free point at the high-power charging locations. Therefore, a sufficient number of charging points is to be made available³.
3. **Key criteria for the provision of services by contractors**⁴: Accessibility, performance, reliability, user-friendliness and environmental compatibility of infrastructure services.

Funding is the Federation's instrument of choice to ensure that the project is implemented effectively. The installation and operation of approximately 1,000 locations with high-power charging points with a capacity of at least 150 kW per point will be publicly tendered in two calls. The strategy envisions one call for locations along federal motorways and one for regional lots. The Federation itself is not to operate the charging locations of the *Deutschlandnetz*. Rather, the infrastructure is to be deployed through long-term contracts with private-sector operators. The Fast Charging Act provides the legal basis for this. Section 3(8) of the Fast Charging Act requires the Federal Ministry of

¹ Gesetz zur Bereitstellung flächendeckender Schnellladeinfrastruktur für reine Batterieelektrische Fahrzeuge (Act on the Provision of Fast Charging Infrastructure for All-Battery Electric Vehicles)

² Nationwide network as defined by section 2(8) of the Fast Charging Act

³ Meeting needs as defined by section 2(9) of the Fast Charging Act

⁴ As defined by section 3(3) of the Fast Charging Act

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Transport and Digital Infrastructure (BMVI) to submit for approval to the German Bundestag Transport Committee a strategy of the planned call for tenders and the underlying methodology for achieving nationwide coverage that meets the needs of users.

2 Integration in the Federal Government's overall strategy

The Federal Government's overall strategy for enhancing all charging use cases covers a total of seven cases (see Figure 1): Private charging infrastructure at the place of residence (1 and 2) or work (3) as well as public charging infrastructure at high-power charging hubs in cities or outside built-up areas (4 and 5), at customer car parks (6) or along the roadsides (7). All use cases are addressed through various support programmes at federal and regional levels.

The characteristics of battery-electric vehicles, in particular longer charging times to achieve maximum range, require specific attention to the quality and quantity of public charging infrastructure. Tendering and funding the *Deutschlandnetz* will make charging for medium- and long-distance journeys possible on a large scale and set standards.



Figure 1: Funding landscape

High demands are placed on the *Deutschlandnetz* locations when it comes to the charging experience. The guiding principle here is the position paper on easy charging⁵. In

⁵ 'Easy charging' position paper by the National Coordination Centre for Charging Infrastructure [https://nationale-leitstelle.de/wp-content/uploads/2020/12/Thesenpapier_UserJourney_en-4.pdf]

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order to ensure high quality and permanent availability, the technical, structural and other requirements for the high-power charging points are standardised.

The study ‘Charging infrastructure after 2025/2030: Scenarios for market ramp-up’⁶ identified a need for 440,000 to 843,000 public charging points by 2030. The National Coordination Centre for Charging Infrastructure has developed the StandortTOOL planning instrument, which forecasts local demand using transport planning methods and a multitude of data. This ensures that the *Deutschlandnetz* hubs are not built too close to one another and that sufficient charging points are available at each location to avoid long waiting times for users as they make their journey.

The combination of high quality and sufficient high-power charging points at the locations needed to establish a nationwide network prevents obstacles to the market ramp-up of battery-electric mobility in road transport and implements the Federal Government’s strategy for the overall charging infrastructure system in Germany.

The calls for tenders are complemented by the Federal Government’s existing and future funding programmes in order to support rapid deployment of a user-friendly overall charging infrastructure system.

3 Main features of the procedure

3.1 Two contract award procedures

Contracts for the establishment and operation of a network with 1,000 high-power charging locations are to be awarded in two separate procedures. In addition to approx. 200 locations at unserviced rest areas along federal motorways, another 900 locations are to be constructed off the motorways. In contrast to the call for tenders along motorways, this call for tenders does not stipulate locations, instead identifying search areas, which define a specific area, for example around a transport hub. The exact location within the search area must be found, determined and proposed by the bidder.

The first procedure concerns the installation and operation along federal motorways. Here, four lots with a total of approx. 200 locations will be put out for tender. These are unserviced rest areas owned by the Federation. The tendering process will be carried out by Autobahn GmbH, which is responsible for managing the unserviced rest areas, in close coordination with the Federal Ministry of Transport and Digital Infrastructure and the National Coordination Centre for Charging Infrastructure. As far as possible, the same requirements are imposed for both charging points and locations. The call for tenders is to be announced as soon as possible, probably no later than six months from now.

⁶ ‘Charging infrastructure after 2025/2030: Scenarios for market ramp-up’ study by the National Coordination Centre for Charging Infrastructure [https://nationale-leitstelle.de/wp-content/uploads/2021/02/NLL_Factsheet_en.pdf]

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The second procedure with regional lots addresses installation and operation of locations away from federal motorways in rural, urban and suburban areas. In this procedure, the territory of the Federal Republic of Germany will presumably be divided into six areas across federal state boundaries with three to four lots each. A total of at least 18 regional lots will be available. No specific location will be defined in these lots, but rather a total of 900 search areas will be specified. The Federal Ministry of Transport and Digital Infrastructure will carry out this call for tenders itself, with technical support provided by the National Coordination Centre for Charging Infrastructure. The call for tenders is to be announced as soon as possible, probably in June 2021.

The two calls for tenders are intended to be more compatible with the business models of different participants. Each procedure targets different bidder groups. The regional lots suit the business models of more regional companies, while the second call for tenders along federal motorways is particularly attractive to companies operating throughout Germany and Europe.

The two award procedures will define a total of 1,100 locations or search areas, within which the winning bidder will establish and operate the high-power charging infrastructure. This is to ensure that the Federal Government achieves its goal of 1,000 locations even if it later becomes apparent that infrastructure cannot be built at individual locations or in individual search areas.

3.2 Composition of lots

The following diagram illustrates how the regional lots complement the lots along the federal motorways. The aim is to prevent the formation of local monopolies.

The total number of locations from both calls for tenders will make a key contribution to nationwide coverage. The overlap of lots ensures that no company will become dominant in a region.

Accordingly, each lot contains a mixture of commercially attractive and less attractive search areas or locations. The economic attractiveness of a location depends to a large extent on the number of charging operations and their consistent daily and annual average distribution. For example, a location in a very rural region that is, however, popular with tourists will be less attractive in economic terms, because the number of charging operations will only be high during a few months of the year. Nevertheless, these locations are essential for the overall network. In each region, one small lot of around 20 locations and two to three more lots each with around 50 to 70 locations will be advertised, each of which is of particular interest to small and medium-sized enterprises.

In addition, the planned allotment is intended to prevent very few bidders being awarded contracts, which would enable them to build up a dominant position in the market to operate high-power charging points. For this reason, the procedure is designed to prevent any one bidder winning more than one lot along federal motorways plus three regional lots (limited lots) in both calls for tenders. As a result, at least four different operators will be selected in the first and at least six different operators will be selected in the second call for tenders.

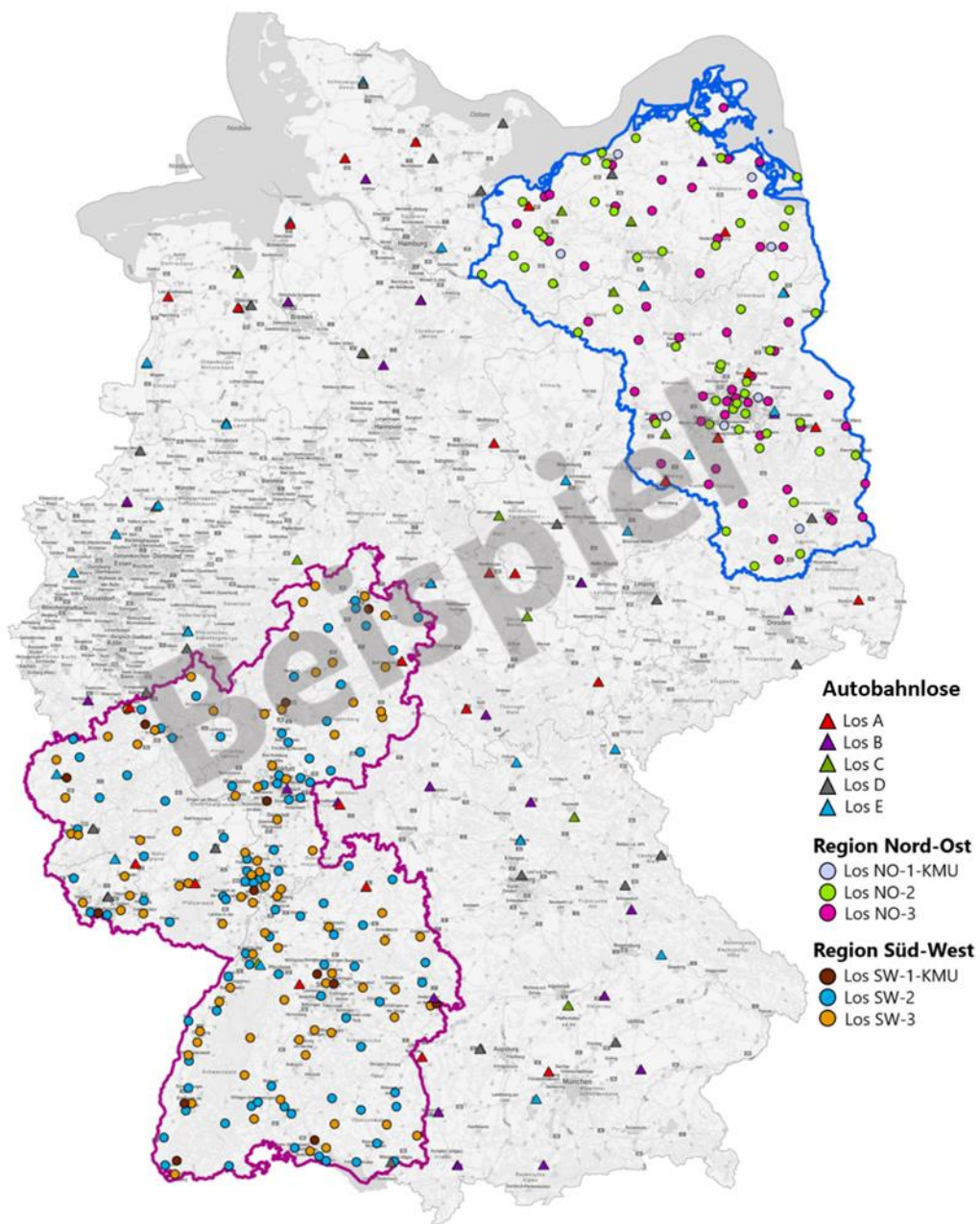


Figure 2: Sample illustration of lot composition

3.3 Steps of the negotiated procedure

Both calls for tenders are to be conducted in a negotiated procedure after initial competitive tendering.

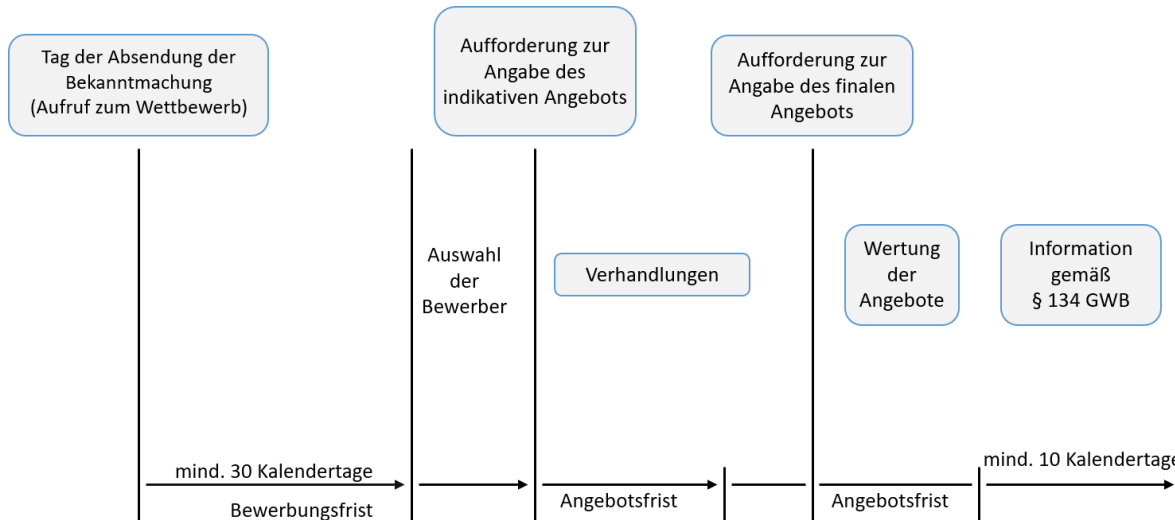


Figure 3: Steps of the negotiated procedure with competitive tendering

The respective calls for tenders are published in the online version of the supplement to the Official Journal of the European Union (TED – Tenders Electronic Daily). After publication, interested parties, i.e. individual companies as well as groups of undertakings in the form of a consortium or involving subcontractors, may apply to participate within a period of at least 30 calendar days. Applications can be submitted for all lots in both calls for tenders. The aforementioned limitation of lots only refers to awarding contracts at the end of the procedure.

During the competitive tendering, applicants' suitability is checked, in particular on the basis of their commercial, financial and technical/professional capacity. If there are more than 8 applicants in a regional lot, 8 applicants will be selected, so that only 8 applicants will be invited to submit a tender for the following negotiated procedure. The selection will be made primarily on the basis of appropriate references, in particular with regard to experience in the operation of public high-power charging infrastructure. The call for tenders along the federal motorways will be based on the same criteria.

As regards the call for tenders with regional lots, the participation of as many bidders as possible is also to be facilitated by the fact that specific locations within the designated search areas do not have to be identified at the start of the procedure. This prevents availability of suitable plots of land to bidders becoming a major criterion in choosing bidders.

Applicants selected in this way are then invited to submit indicative tenders, which they must draw up on the basis of the documents provided. Based on the indicative tenders,

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negotiations will then be held on contract and service contents that are yet to be defined as well as on the specific configurations of the high-power charging points. At the end of the negotiations, bidders will be invited to submit a final tender on the basis of which the contract will be awarded for each lot in accordance with the agreed appraisal methodology.

The contract will be awarded to the most cost-effective offer in the respective lot (best price-performance ratio), taking into account the limitation of lots.

For the regional lots, the installation and operator charges to be calculated by each bidder on a flat-rate basis (differentiated by location size) are relevant when assessing the tender prices. In contrast, the grid connection costs are not relevant for the appraisal because they are not part of the competitive procedure. In addition, each bidder must also take into account in their calculation that an overwhelming part of the profit from the charging operations is passed on to the Federation.

While the appraisal of tender prices will be incorporated to a greater extent into the overall appraisal, the bidders' functional concepts for location development and the user-friendly charging infrastructure will also be of major importance. The calls for tenders are also intended to inspire a competition for new customer-friendly location ideas.

For example, a bidder's ability to provide information on specific locations for many search areas in their final bid could have a positive impact on their assessment.

The call for tenders along the federal motorways will be based on this principle and, if possible, on the same award criteria.

4 Methodology and criteria for establishing a needs-based nationwide network

The *Deutschlandnetz* implements a key component of the Federal Ministry of Transport and Digital Infrastructure's guarantee function as defined in section 3(1) of the Fast Charging Act (SchnellLG). The most important goal of the *Deutschlandnetz* is to fill the blank areas in order to move one step closer to establishing a nationwide network that meets the needs of users.

This is accompanied by extensive monitoring of the high-power charging points by the National Coordination Centre for Charging Infrastructure. The results of the analyses are fed into future planning related to the establishment of a needs-based nationwide network.

The overarching objective is that, in the future, a high-power charging point can be reached within 10 minutes anywhere in Germany. The distance in kilometres depends on whether users are travelling in the city, on roads outside built-up areas or motorways.

4.1 Choice of locations along federal motorways (unserved rest areas)

High-power charging points along federal motorways are to be built at unserved rest areas. About 200 locations of this kind are to be established.

They represent a necessary addition to the charging infrastructure that has already been established or is to be established at serviced rest areas or truck stops.

The contribution of unserved rest areas to the intended nationwide coverage will be achieved by means of a large number of high-power charging points in close proximity (cf. Figure 4). At the same time, this is to ensure efficient overall charging time even across several charging stops during a trip, in order to make the system more user-friendly. Technically, charging at relatively low battery levels can reduce the total number of charging stops on long-distance journeys. The reason is that a higher charging capacity can be maintained over a longer period of time. As a result, the overall charging time can be minimised on a journey with several charging stops.

Here, too, the aim is to enable users to reach the next high-power charging point along federal motorways in about ten minutes' time in the future. The target of ten minutes was developed in line with the report on a nationwide charging infrastructure by Working Group 5 of the National Platform on the Future of Mobility in October 2020. The report recommends a maximum distance of 15 to 30 km between high-power charging points along federal motorways, which, depending on the speed of the vehicle, corresponds to about ten minutes' travelling time.

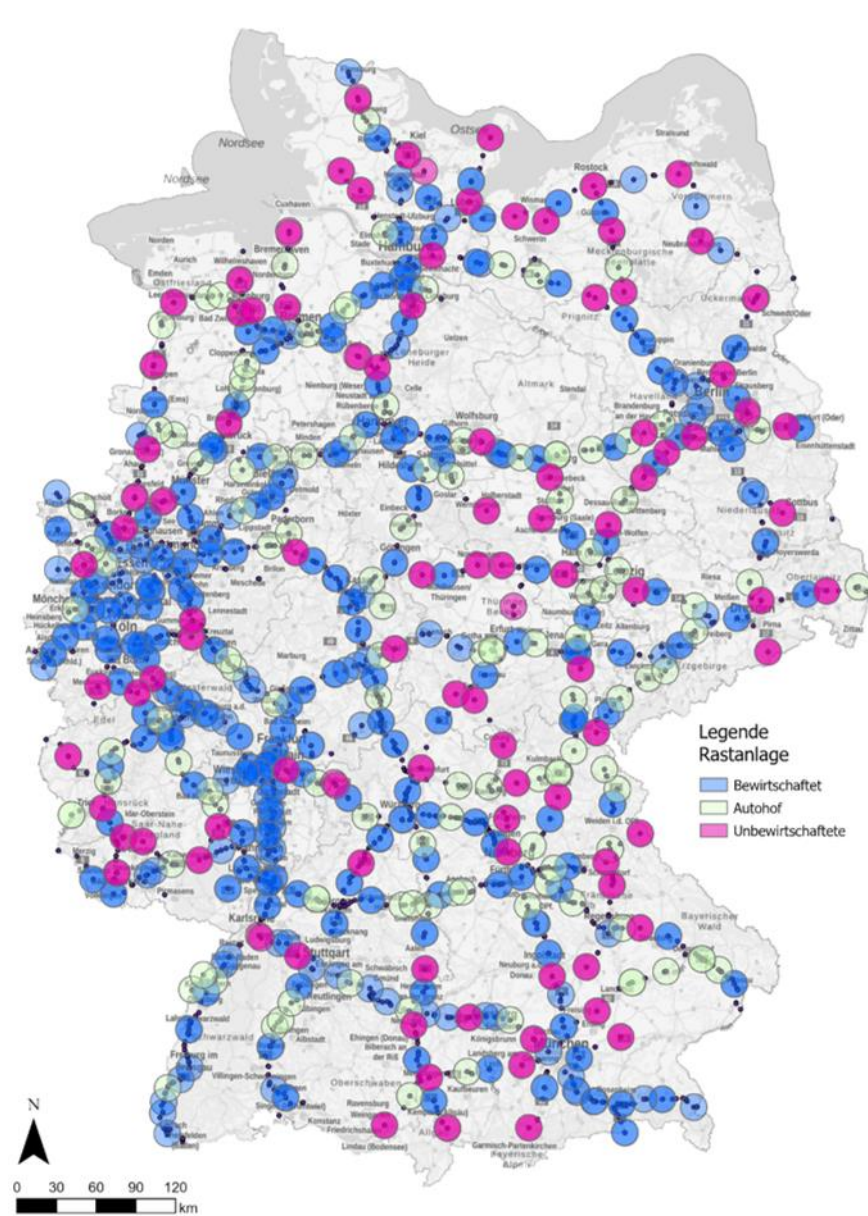


Figure 4: Contribution of selected unserved rest areas to the establishment of a needs-based nationwide network

The locations are selected taking into account the existing infrastructure with a maximum distance between locations of ten minutes or approx. 15 to 30 km. Unlike the search areas in residential areas described in the following, specific locations for unserved rest areas are defined in the call for tenders. In order to identify suitable rest areas, a preliminary assessment of site availability is carried out and taken into account when selecting the location.

4.2 Localisation of the search areas in the settlement area

The 900 locations in residential areas will be established in suitable search areas near transport hubs. The coverage in rural residential areas will be taken into account during planning; about half of the search areas are in rural areas.

In order to achieve uniform coverage across Germany, the search areas were determined according to the spatial typology of the Federal Ministry of Transport and Digital Infrastructure based on regional statistics (RegioStar17). The number of search areas in a given region will be defined in RegioStar17, depending on the respective spatial typology of the residential area. This means that the role of the residential area or its function in terms of the provision of goods and services defines the number of search areas. The more relevant the function in terms of the provision of goods and services for the surrounding region, the more high-power charging points are planned. There are deviations from this approach in individual cases to guarantee coverage, defining additional search areas according to the objective of nationwide coverage.

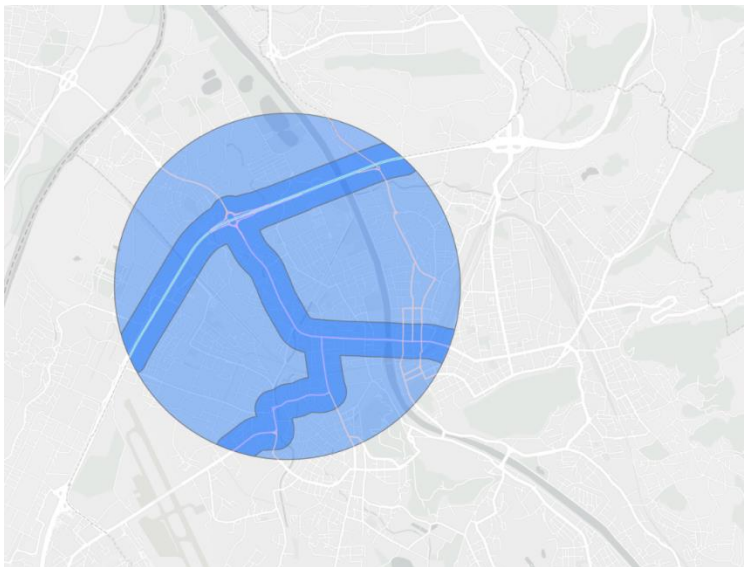


Figure 5: Illustration of a search area including relevant transport arteries

In addition to identifying the search areas and their distribution in the geographical region, a centre has been defined for each search area. The definition is based on medium- and long-distance journeys, i.e. on roads into and out of a city centre, traffic counts, the refuelling network and the settlement pattern outside purely residential areas. Each search area contains a primary and a secondary search area. The primary search area extends over a radius of two kilometres around the defined centre. If no installation site can be acquired in the primary search area, a secondary search area can be used as an alternative, stating the reasons.

4.3 Meeting needs at high-power charging locations

In order to meet the needs set out in section 2(9) of the Fast Charging Act, sufficient charging points must be available at each location for the predicted number of electric vehicles with fast charging capabilities. The needs of each location are determined on the basis of corresponding traffic volume models. For the call for tenders, location sizes S, M, L and XL are defined with a corresponding number of charging points (see Table 1). Each search area and each location is assigned a location size. In general, upgrading locations with additional charging points should be considered both from a conceptual and structural point of view. This scalability will not be feasible for all locations in the call for tenders, but will be assessed positively in the tender procedure – if it is possible at all. Scalable locations, which can be gradually upgraded to include additional charging points, will ensure that the *Deutschlandnetz* also meets growing needs.

Location size	Number of charging points
S	4
M	8
L	12
XL	16

Table 1: Location categories and corresponding number of high-power charging points

The number of charging points needed for each location put to tender is calculated using the StandortTOOL. The StandortTOOL is the planning instrument developed by the National Coordination Centre for Charging Infrastructure on behalf of the Federal Ministry of Transport and Digital Infrastructure. It is used to determine a Germany-wide strategy for upgrading the charging infrastructure. Based on the number of e-vehicle journeys, the StandortTOOL models the demand for charging operations which can be expected nationwide per spatial unit by 2030. The functionality of the StandortTOOL is provided to the federal states, with each state getting its own access credentials. In addition, it is envisaged that municipalities will be able to use the StandortTOOL to draw up their own plans, which go beyond the current functions on the www.standorttool.de website.

It will then be possible in the medium to long term to ensure that all relevant actors follow the same vision in terms of methodology with their plans.

4.4 Taking into account the existing high-power charging infrastructure

The aim of the call for tenders is to supplement the existing charging infrastructure in a meaningful manner. To the extent possible, new locations should not be built in direct proximity to existing charging infrastructure.

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In order to protect the existing infrastructure and to avoid economic interference, a minimum distance from existing charging infrastructure was therefore included in the calculation of needs and the determination of locations and search areas. Charging infrastructure with a charging capacity of 150 kW was considered in this process. The charging infrastructure to be installed with at least 150 kW charging capacity primarily competes with the same use cases, namely fast charging for medium- and long-distance journeys. The database of the Federal Network Agency, which is updated monthly, is used to determine the stock⁷. The current stock of charging points is set in relation to the calculated need in terms of charging points at the respective location for 2025. To consider the stock in an optimum manner, it is assumed that the number of charging points at the existing locations will be doubled and further upgraded. If this assumption results in at least 50% of the charging point requirements calculated for 2025 being met, no acute need for expansion is identified in this call for tenders.

Along federal motorways, a minimum distance of ten kilometres was set along the axes around serviced rest areas and high-power charging infrastructure.

4.5 Price model

Charging rates at public charging points currently vary considerably. Furthermore, ad-hoc charging and contract-based charging are subject to different conditions in terms of usability and pricing. This results in a significant lack of transparency and thus in uncertainty for users. As it is a fundamental obstacle to the ramp-up of electric mobility, the lack of price transparency should be addressed in the *Deutschlandnetz*. Contrary to current practice, it is envisaged that each supplier of electricity for charging will receive the same non-discriminatory B2B price for electricity in the future. Also, prices for ad-hoc charging should not be artificially increased compared to contract-based charging.

It should be stressed that the Federal Ministry of Transport and Digital Infrastructure does not aim to bring about price regulation for the entire high-power charging infrastructure in Germany. The high-power charging points set up under the call for tenders must therefore be carefully integrated into the existing, dynamic market. On the one hand, it is important to avoid giving operators of the *Deutschlandnetz* preferential treatment over operators outside the call for tenders. On the other hand, excessive prices must be avoided in order not to discourage users from switching to electric cars. To achieve this, a price model is part of the call for tenders. The price model defines a basic amount to cover the electricity costs, a share in revenues that is to be returned to the Federation and a flexible upper limit. As the Federation assumes a large part of the operating risk, a part of the revenue is to be returned to it. Operators will have a degree of discretion in setting prices, albeit a lower one than other, non-funded operators.

⁷https://www.bundesnetzagentur.de/DE/Sachgebiete/ElektrizitaetundGas/Unternehmen_Institutionen/E-Mobilitaet/start.html (German only)

4.6 Minimum requirements for high-power charging points

In accordance with section 3(3) of the Fast Charging Act, the call for tenders lays down a number of minimum requirements for the high-power charging points of the future *Deutschlandnetz*, a selection of which is described below. This will be further specified in the call for tenders, including the requirements described in this document.

4.6.1 User-friendliness

In order to accelerate the widespread switch to electric mobility, the services must be user-friendly. For the charging infrastructure, this means that users' requirements for the entire charging experience must be taken into account as well as possible. The National Coordination Centre for Charging Infrastructure's position paper on easy charging describes this charging experience in nine steps and serves as a guiding framework for designing the requirements for the *Deutschlandnetz*.

The high-power charging infrastructure to be installed must be easy to find digitally and physically. This includes, among other things, communicating the availability status to a superordinate digital back-end and enabling access to this data via conventional internet applications. It also entails clearly visible signs and proper lighting of locations. Moreover, the payment and invoicing process must be as customer-friendly and flexible as possible. User-friendliness is also decisive as part of the technical and structural requirements.

Particularly with regard to user-friendliness, the call for tenders should also incentivise innovative solutions, such as the option of booking a charging point ahead of time via the internet.

4.6.2 Minimum technical requirements

As a critical performance requirement, each charging point that is to be installed must have a nominal power output (charging capacity at 400 V) of at least 150 kW.

The charging post must, among other things, have a display that is easy to read in any conditions and shows all important information, such as the charging price and the energy already transferred, in German and English.

In order to ensure reliability and accessibility, operators must guarantee availability around the clock, seven days a week (24/7 – 365).

4.6.3 Minimum requirements for grid connection and provision of services

In order to ensure that the location has sufficient capacity, the grid connection is to be dimensioned, using a buffer storage if necessary, in such a way as to allow for a simultaneity factor of at least 1 in relation to the nominal power output (charging capacity at 400 V) of all charging points. For example, if the stated nominal power output of the charging points is 150 kW, all charging points at a given location must be able to supply 150 kW each at the same time. In order to be able to increase the performance of the

grid connection or charging points at a later stage, reasonable structural and technical precautions must be taken, such as pre-wiring or the laying of conduits.

4.6.4 Minimum construction requirements

Charging bays, access routes and passages must be dimensioned and designed in such a way that at least M1- and N1-category vehicles can use them without restrictions. The charging equipment, including the control elements and procedures, must be designed to be accessible to people with disabilities.

Charging points and associated charging bays should be fitted with a roof, unless this is precluded for legal or structural reasons. They must be designed to be pleasant places to spend time. Where possible, locations should provide access to a toilet or bathroom. Proximity to restaurants is also viewed positively.

4.6.5 Environmental compatibility

The electricity used to operate the location and the charging equipment comes from renewable sources. The installed charging systems should be as energy-efficient as possible, including minimising power consumption in standby. Moreover, appropriate measures are to be taken to reduce negative environmental impacts, such as minimising sealing of the soil surface.