Unwrapping the Grids Package: Guidance on Grid Connection

DSO Entity's reaction to the EC's Guidance on efficient and timely grid connection (COM(2025) 8473 final.

Executive Summary

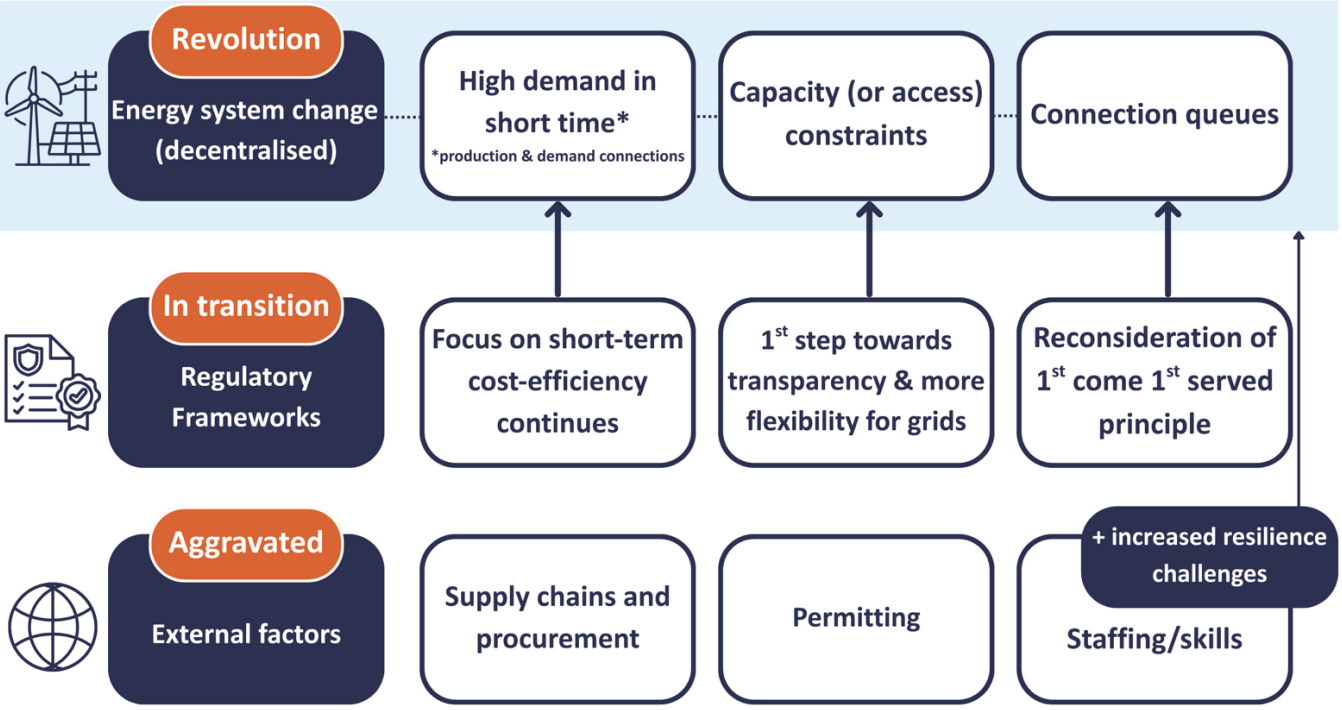
The EC's holistic approach to grid connections is generally welcomed, notably its recognition of anticipatory investments, long-term planning and external challenges (e.g. supply chains, permitting). While proposals to move beyond the 'first-come, first-served' principle are supported, clear national legal frameworks are needed to ensure legal certainty and practical implementation for grid operators. Also, any additional obligations imposed on DSOs regarding the management of the connection requests must be clearly embedded in the regulatory framework and adequately reflected in network tariffs to ensure full and transparent cost recovery. Some proposals on enhanced hosting capacity transparency risk going beyond existing EU legislation, may increase administrative burdens with limited added value and raise concerns regarding their technical feasibility. DSO Entity supports capacity-based and static time-of-use tariffs which can improve cost reflectivity and help smooth peak demand, whereas highly dynamic tariffs risk excessive complexity and limited effectiveness.

Relevance of the topic: DSO connect

DSO Entity welcomes the European Commission's Guidance on efficient and timely grid connections as an important contribution to addressing a growing challenge for Distribution System Operators (DSOs). As the last mile to consumers, **DSOs are at the forefront of the rapidly increasing demand for grid connections**, both on the consumption and generation side. Across the European Union, DSOs connect more than 250 million households including electric vehicle charging infrastructure and heat pumps, most industrial customers, more than 70% of renewables, and, in many cases, data centres.

Root cause for grid connection queues: Failure to adapt investment needs to changing energy system

The EC identifies inadequate grid planning, insufficient transparency and locational signals, and outdated connection procedures as the main drivers of growing connection queues. While overall agreeing with this holistic approach that also considers the need for anticipatory investments, (longer-term) planning and acknowledges external challenges for grids such as permitting, supply chain constraints and lack of skilled workforce, DSO Entity considers that one underlying root cause requires stronger emphasis: **the realization of investments in electricity networks is not progressing at the necessary pace**. The rapid and profound decentralisation of the energy system, driven by ambitious decarbonisation objectives and accelerated by Russia's war against Ukraine, has led to a sharp increase in renewable and demand-side connection requests. **However, investment in distribution networks has not always kept pace with the speed of the transformation**, due to factors such as permitting constraints and regulatory tariff pressure. Regulatory frameworks must therefore be stable and provide clear risk-return allocation, ensuring that DSO returns adequately reflect the risks they bear and enable access to competitive financing. Regulators should strike a balance between protecting consumers from high tariffs and ensuring timely grid connections and network capacity extensions. Without adequately tackling this core investment gap, transparency or procedural measures alone will not be sufficient to resolve the connection challenges.



Planning and Deployment

In an increasingly decentralised energy system, national network planning is more **bottom-up, inclusive and cooperative, with a stronger role for DSO-level forecasts** and close TSO–DSO coordination. The systematic integration of DSO assumptions and demand- and generation forecasts into TSO development plans, including both national TNDPs and the EU-level TYNDP, is essential to prevent bottlenecks that constrain connections at the distribution level, particularly for new loads and decentralised generation. This is crucial since distribution-level constraints may also originate from insufficient capacity or delays at the transmission level.

While the early involvement of system operators in planned developments (e.g. heating and cooling projects, industrial developments, and public transport reinforcement) is essential, any consideration of new ways of working should build on existing structures. Care should be taken to ensure complementarity with established processes, avoid duplication, and maintain efficient administrative arrangements for all stakeholders. In many Member States, Distribution Network Development Plan (DNDP) consultations and other stakeholder fora already provide structured opportunities for engagement. Against this background, **proportionality, consistency, procedural simplicity and equal access should guide the design of any additional coordination mechanisms**. At the same time, the effective use of flexibility is already being advanced through existing frameworks, including DNDPs, Flexibility Needs Assessments, and flexibility mechanisms (such as FCAs or market-based) which allow DSOs to systematically integrate available flexibility from grid users into network planning and operation.

Incentives for efficient grid connection and use

While DSO Entity support several of the EC's recommendations in this Guidance as well as its published Guidance on network charges[8], it is important to stress that network tariffs[9] mechanisms alone do not address all operational challenges of DSOs. **MS and NRAs must provide toolboxes – consisting of market rules, flexible connection agreements, flexibility products and/or tariffs - that can be used jointly to mitigate the operational challenges of grid operators**.

While use-of-system tariffs (UoS) will have a limited effect on the connection decisions they can have an important impact on the use of the grid and thus the capacity to connect. In this respect DSO Entity:

- shares the recommendation of the EC regarding the usage **of capacity components in UoS** which improve cost-reflectivity. The capacity used/demanded is and will continue to be the main driver of the investment needs in the grid. Therefore, by creating a direct link between this driver *(capacity used)* and tariffs, this capacity component increases the expected efficiency in the system by incentivising network users to smoothen their peak use of the grid. Furthermore, this tariff mechanism could have a bi-directional component as the directly used part of the grid can be used both for infeed and discharge.
- support the use of '**static' time-of-use tariffs (ToU)** in combination with capacity or energy components. For example, through predefined time windows with differentiated network charges, DSOs can incentivise consumers to shift consumption to periods of available capacity, thereby reducing peak demand and avoiding congestion. This support, however, comes with a caveat, as **time-of-use (ToU) tariffs with a high degree of granularity and frequent changes are viewed critically** (e.g. changing the day before with 15 minutes frequency or even intraday). These tariffs, commonly referred as dynamic tariffs, are only effective if users can respond to time signals, which is unlikely without widespread demand automation. As a result, they would currently generate a level of complexity that would not compensate for any improvement in network usage. Also, overly complex time-of-use tariffs undermine effectiveness by reducing customer understanding and risking exclusion of less knowledgeable or less well-equipped consumers.

In addition to considering the share of the **connection costs** that are socialised *(i.e. the share of the connection charges to be paid by the connecting user),* regulators should consider the structure of these charges which may have a strong impact on electrification. DSO Entity considers three points as relevant:

- The methodology for locationally differentiated connection charges should be **non-discriminatory** to ensure an efficient connection of the network user, but they need to evolve to reflect the changing nature of demand for connections going forward.

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5 European Commission (2025): Guidelines on future-proof network charges for reduced energy system costs published (COM(2025)4010).

6 Network charges are not only fees paid by network users that aim to recover the costs of building, maintaining and operating networks, but they can also be usedas tool to provideincentives to network users. To ensure fairness and efficiency network charges must be cost-reflective and non-discriminatory, simple predictable and transparent. Network charges include both connection charges andfeesfor the use of the grid(use-of-system charges (UoS).

- Locational components would only be effective when network users have the **capacity to choose between different locations**. This capacity will depend on whether the locational decision can be crucially influenced by the connection charges (e.g. a household or small business would not change location due these charges. Equally, a wind farm would only consider changing to other areas with sufficient wind power).
- **Non-shallow connection charges** are well suited to provide locational incentives for generators and some larger consumers at the moment of decision making. This is a one-time incentive for a one-time location decision.

Where full capacity is not available, **Flexible Connection Agreements (FCAs)** enable the connection of customers and DSOs to optimise network utilisation without delaying necessary reinforcements. In line with the existing regulatory framework, DSO Entity supports the wider use of FCAs as a potential means for faster connections, provided that they are implemented under appropriate operational and contractual conditions and allow DSOs to select and optimise solutions in accordance with their specific network structures, technical requirements, and operational needs, while maintaining the option to convert to firm connections as network conditions evolve.

Facilitating understanding of grid hosting capacity

The latest Electricity Market Design reform (2024)[10] has significantly strengthened the obligations for DSOs regarding requirements to ensure transparency on grid hosting capacities and handling of grid connection requests. DSO Entity acknowledges that national platforms for hosting capacity can improve user visibility and planning and today 22 Member States already publish some form of hosting capacity information on DSO-level as stated in the Guidance. This current approach preserves **flexibility for diverse national practices** while ensuring EU-level transparency through DSO Entity's and ENTSO-E's joint work under Grid Action Plan Action 6, which ensures a **European-wide overview** of available grid hosting information (see box on Capacitypedia).

Against this backdrop, several of the Commission's proposed measures on grid hosting capacity transparency go well beyond the just recently adopted regulatory framework. This includes calls for increased transparency at low-voltage level, higher data granularity, faster grid observability, a closer linkage between hosting capacity information and DNDPs and harmonized methodologies for assessing capacity on a national level. While remaining open to good practices and suggestions for improvements, some recommendations raise concerns about their technical feasibility, proportionality, and limited practical value:

- **Visibility into the low-voltage grid:** The usefulness of capacity map information depends on stakeholder needs, which differ significantly between small LV connections, large HV connections. Publishing hosting capacity at the low-voltage level is often impractical due to the high variability driven by local grid topology (e.g. radial vs. meshed), dynamic customer profiles, simultaneity effects, applied grid design, security criteria and GDPR-constraints.

[7] Electricity Market Directive(EU2024/1711)–Article31; Electricity Market Regulation(EU2024/1747) – Article50.

- **Linking DNDPs with grid hosting capacity:** Linking DNDPs with grid hosting capacity information conflates different purposes, timelines and data needs, making the proposal technically and practically unfeasible. DNDPs are strategic, biennial planning documents that do not provide asset-level information - at least at medium and low-voltage - whereas hosting capacity requires more frequent updates under a separate framework. Hosting capacity is therefore better addressed independent of DNDP cycles.
- **Real-time grid hosting capacity data:** Capacity is not static but depends on complex factors like grid topology, security criteria (N-1/N-x), interactions with other grids, and project timing. While monitoring the real-time available capacity of the grid is essential for safe and secure operation within technical limits, this does not directly translate into the hosting capacity available for new connections, i.e. the information has limited usefulness for planning purposes. In addition, hosting capacity information only provides an indicative snapshot of a constantly evolving network situation. Available hosting capacity information should be considered indicative as it provides a high-level approximation of complex and evolving network conditions.
- **One-size-fits all methodology at national level:** Hosting capacity assessments are highly network-specific and depend on local operational, security-of-supply and planning parameters that cannot be fully harmonised without risking oversimplification and potential impacts on reliability and safety. DSO Entity supports transparency through knowledge exchange and good practice sharing, notably via initiatives such as Capacitypedia.

On a more general note: considering recent developments, including targeted attacks on critical grid infrastructure throughout the EU, it has become increasingly important to strike an **appropriate balance between transparency and security aspects**.

Capacitypedia: an EU-Portal for Grid Hosting Capacities

The Grid Action Plan (COM(2023)757) assigned DSO Entity and ENTSO-E to develop a **Joint Portal on Grid Hosting Capacities**. The portal will help to increase transparency on an EU-scale and will included the following elements: (1) Create a **pan-EU overview by aggregating links** to national grid hosting capacity information, (2) provide **contextual information** to help stakeholders better understand the available information; (3) **increase visibility** for project developers of renewables, energy storage, emerging load such as EV charging stations and other developers.

This milestone represents a significant step towards clear and accessible hosting capacity information, ultimately accelerating the energy transition, however also requiring further steps to integrate this static information into a meaningful dialogue at relevant grid-level. More information in the dedicated Joint Progress Report[11].

(EU) monitoring of connection queues and benchmarks

Providing customer information on the state of its connection application is a basic element of DSO customer relationship and service transparency. Alongside digital platforms, many DSOs maintain

8 DSO Entity C ENTSO-E (December 2025) Joint Progress Report on Capacitypedia. Available online.

multichannel customer support including in-person and telephone options, usually following a Member State mandate. Though less efficient and costlier, traditional channels ensure inclusiveness for customers with limited digital skills or special needs, prioritising equitable access and trust over pure operational efficiency.

However, the recommendation to provide regular, ideally **real-time, information on the state of connection requests and their impact on grid hosting capacity** does not sufficiently reflect the technical and operational realities of distribution networks. Hosting capacity is not a static value and cannot be determined or updated in a synchronous manner with each new connection request (see part on transparency). Nevertheless, it should be noted that the work on Capacitypedia aims to clarify the availability of grid capacity, including the treatment of waiting lists, in a way that is consistent with existing regulatory obligations and practical for DSOs to implement.

Further, DSO Entity sees the proposal to introduce *'clear connection waiting time benchmarks, milestones and efficiency criteria for grid operators with penalties in case these are not met'* critical. Most bottlenecks in the connection process lie outside the direct control of DSOs when handling connection requests. They are primarily related to permitting procedures and supply-chain constraints . In addition, construction timeframes are largely non-compressible. Therefore, such **a punitive approach with progress on indicators for benchmarking connection times should be avoided but a positive approach taken** , i.e. DSOs would be able to faster develop their network if future system users commit to connection during scenario building. Member States should rather foster forums to gather scenarios of connections.

Supporting smartification and digitalization

It is positive that the importance of grid smartification is recognized in the Guidance. The use of specific technologies must remain business-case driven, reflecting the diverse local conditions under which DSOs operate and the absence of a one-size-fits-all solution. It is also positive that the necessity to set a supportive regulatory framework is emphasized to enable cost-effective investments, including in non-wire solutions and to secure the relevant level of observability as it is a pre-requirement for future grid´s management.

Improving grid connection procedures: overcoming the 1st come – 1st served principle

The clarification that the detailed design of connection rules falls within the competence of Member States, together with the practical proposals to move beyond the 'first-come, first-served' principle through the introduction of prioritisation frameworks, is generally welcomed. Clear and transparent national legal or regulatory frameworks will be essential to provide legal certainty and protect grid operators from challenges related to prioritisation decisions, which should leave little or no discretionary decision-making to DSOs.

To ensure smooth implementation and enable DSOs to fulfil their operational responsibilities, the following principles should be applied:

- the **inclusion of DSOs** in the design of prioritisation schemes during the consultation phase;
- the establishment of a clear and **unequivocal national framework** to avoid legal uncertainty;

- proportional and feasible implementation, **avoiding excessive administrative burden**; and
- **avoidance of overloading the connection process** with overly complex or one-size-fits-all solutions.

While clear transition periods and legal certainty are essential to avoid litigation against grid operators when applying new rules, it is reasonable for prioritisation schemes to also apply to existing connection requests. Otherwise, currently reserved capacity would remain blocked until the expiry of existing connection agreements. Similarly, the **reallocation of unused capacity**, as referenced in one of the recommendations, can contribute to a more efficient use[12] of the grid. While DSOs are responsible for monitoring and calculating network capacity utilisation, any concrete rules governing the reallocation of unused capacity back to the system must be defined by MS or NRAs. When implementing such rules, it is essential that they remain straightforward to apply and do not impose disproportionate administrative or computational burdens, considering the size and capabilities of the DSO.

Further, the proposals for better **queue management and maturity assessments** are deemed useful tools to improve transparency and predictability for all stakeholders. These mechanisms also help identify speculative or underprepared requests and allow DSOs to manage workload more effectively by focusing first on those applications that are ready for technical assessment. In this respect it is important to underline that any new obligations imposed on DSOs must be clearly embedded in the regulatory framework and **adequately reflected in network tariffs** to ensure full and transparent cost recover.

Further insights: Previous publications

- DSO Entity (January 2026) *Tariffs and incentives: a premier for the future*. Available online.
- DSO Entity (December 2025) *Joint Progress Report on Capacitypedia*. Available online.
- DSO Entity (Octobre 2025) *Digital solutions for handling connection requests*. Available online.
- DSO Entity (November 2023) *DSOs Fit for 55: Challenges, practices and lessons learnt on connecting renewables to the grid*. Available online.

[12] An'efficient' network is not one that maximisesasset utilisation at the expense of security andresilience; capacitymarginsand redundancies are essential, as anunreliablegrid ultimately becomes costly. Further, it should be noted that using the grid at full capacity for a longer timeincreases losses, which is not 'efficiency'and whichoverall might come ata greater cost.