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Consultation on Commission guidance on grid connections

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Introduction

The Commission is seeking input by stakeholders on its planned guidance on how to handle grid connections, in particular in situations with capacity constraints, and would like to give stakeholder the opportunity to present their views.
In addition to this questionnaire the Commission will hold a stakeholder workshop on 27 June, for which your organisation should have received an invitation.

The increase in decentralised renewable electricity installations and the electrification of end uses in transport, heating and cooling, and industry put strains on the grid. Already now grids are heavily congested in some areas leading to delays in grid connection and grid access for certain users. Long queues for grid connections are a major challenge.

The long-term solution to the challenge of the constraints on grid availability is the accelerated build out of the grids. Efficiency of the existing grids also needs to be improved. In the short-term, a transparent and adequate treatment of connection requests by grid operators, including the use of flexible connection agreements, is key for the energy transition.

In this context, in the ***Industrial Action Plan for the European automotive sector*** adopted on 5 March 2025 and in the ***European Steel and Metals Action Plan*** adopted on 19 March 2025 the Commission announced that it would issue guidance and recommendations on how to shorten waiting times for grid connections, how to better manage connection requests and how to handle connections in situation with grid capacity constraints.

The Commission is therefore launching this consultation of interested stakeholders to give them the possibility to provide their views and input on this topic. We kindly invite you to fill in the attached questionnaire by **25 July 2025**. Where relevant, please include references to

sources of information.

Questions

Efficient handling of grid connection requests

1. Treatment of speculative applications

The hoarding of grid connection capacity can be a significant issue when developers secure grid connection approvals but delay or never proceed with the project construction, thereby blocking access for other users who may be ready to build the projects in a foreseeable future.

* **Do you consider that there is a problem in the EU or certain Member States with speculative and immature requests?**

- & Yes
- & To a certain extent
- & No
- & No reply

In your view, what would be the best approach to avoid that speculative and immature application create a bottleneck for processing connection requests?

To address the issue of speculative and immature requests, Member States should implement a coordinated set of measures. The first and most important step is strengthening the grid connection queues management process. The process must be reinforced with safeguards to ensure only credible projects enter and remain in the queue.

- **Higher entry bar for projects such as** proof of land or facility rights or minimum permitting status should be mandatory at the time of application. This ensures that applicants have a real, physical basis for their project and are not simply securing speculative rights.
- **Financial proof of commitment** is also an important means of designing higher entry criteria. The developer could be required to pay a substantial reservation fee to enter the queue, which would be credited toward grid connection costs upon project realisation. Or projects could provide financial commitments e.g. bank guarantees upon the acceptance of grid connection offer. These guarantees could be structured to increase over time, be linked to milestone achievements, and be refundable or forfeited based on compliance with agreed conditions. Such measures would deter developers from holding capacity without intent to build, while protecting those genuinely committed to project delivery. Importantly, these financial requirements must strike a balance: high enough to deter opportunistic behaviour, but not so high as to exclude legitimate projects.
- **Validity of connection permits could be shortened**, which in some countries (e.g., Spain) can last up to five years. Long validity periods allow speculative projects to hold capacity without progressing, blocking access for more mature developments.

- **Project milestones and deadlines should be introduced** to track progress. If milestones are not met, the application should automatically expire, and the capacity should be released. This ensures that only active, progressing projects remain in the queue.

Apart from this however there are also other equally important measures to help avoid zombie projects clogging up the queue:

- **Grid planning**: Grid planning in the EU remains reactive and misaligned with the pace of climate and energy targets. National Network Development Plans (NDPs) often rely on outdated assumptions and lack cross-border coordination, leading to underinvestment or poorly located infrastructure. A more top-down EU approach is needed to guide and complement national efforts, ensuring infrastructure keeps pace with electrification and decarbonization.

  Planning must become more forward-looking, covering at least 10–12 years, and based on realistic projections of electricity demand and generation. NDPs should be reviewed every 2–5 years to stay relevant and aligned with permitting and construction timelines. Plans must be stable enough to avoid disrupting ongoing projects, yet flexible enough to adapt to changing needs.

  System operators should engage regularly with developers to ensure plans reflect real-world project pipelines. Offshore integration in particular is more complex and slower to connect. Member States should reserve grid capacity specifically for offshore wind to avoid bottlenecks and support timely deployment.

- **Transparency on grid access:** A lack of transparency in connection queues and available capacity encourages developers to submit multiple speculative applications. A harmonized digital platform that integrates data from both TSOs and DSOs can provide real-time or regularly updated information on connection requests, load forecasts, network development plans, and delays. GIS integration and machine-readable formats will enable geospatial analysis. Stakeholder involvement in platform design will ensure usability.

- **Balance of technology mix:** In countries like Spain and Greece, solar PV dominates the connection queues, often far exceeding what is needed to meet NECP targets. This oversubscription creates grid congestion and sidelines other technologies such as wind, storage, or flexible generation that may better align with system needs. connection offers should be balanced in line with national energy mix targets. This will help disincentivize speculative applications in oversubscribed technologies and promote a more diverse and resilient energy system.

- **Improve TSO-DSO coordination**: Efficient use and expansion of grid capacity require stronger coordination between transmission and distribution system operators. This includes enabling new switching positions at substations, releasing unused reserve capacity, and introducing agile planning processes with updates at least every six months for fast-track approval mechanisms This will allow the grid to respond more dynamically to evolving demand and project pipelines.

- **Anticipatory grid investments:** The structural shortage of grid connection capacity arises from years of underinvestment in both transmission and distribution networks.

As electrification and clean energy deployment accelerate, grid development must shift from a reactive to a proactive model, looking well beyond the typical 10–15-year infrastructure timeline. National Network Development Plans (NDPs) should translate climate, renewable, and electrification targets into concrete, time-bound grid projects, while also coordinating with the decommissioning or repurposing of gas infrastructure. Removing investment caps such as Spain's GDP-based limit on grid spending is critical to unlocking the scale of investment needed to meet NECP goals and reduce speculative behaviour in connection queues.

Can you provide a best practice from an EU Member State?

- **Denmark**: In Denmark grid capacity is only reserved once the full deep connection fee is paid. This prevents speculative or unserious projects from blocking capacity. However, to ensure fairness, the cost of new infrastructure (e.g. substations) should be distributed among all future users and not borne solely by the first project to connect.
- **United Kingdom (non-EU)**: UK's new grid connection framework introduces binding project milestones, with failure to meet them resulting in the loss of connection rights and financial guarantees. This approach helps ensure that only mature, deliverable projects remain in the queue.

2. Treatment of delayed and stalled projects

In certain situations, projects that already have the right to connect may not proceed as initially envisaged. Such projects which are not maturing may thus lock capacity.

* **Do you consider that there is a problem in the EU or certain Member States with non-maturing projects for which capacity is locked?**

- & Yes
- & To a certain extent
- & No
- & No reply

In your view, what would be the best approach to avoid projects which are not maturing lock capacity?

Member States should introduce a structured assessment of maturity of all projects holding or applying for grid capacity.

This assessment should require developers to provide detailed information on their project plans, capacity needs, permitting status, land agreements, financial readiness, and a clear milestone-based timeline. These milestones should be tied to concrete development steps such as securing permits, finalizing land ownership, or reaching financial close. The monitoring should be done by the relevant national authorities such as the NRA and not the System Operator.

If a project fails to meet its milestones within the defined timeframe, it should lose its grid

connection rights and any associated financial guarantees. However, this system must be designed with flexibility to account for delays outside the developer's control, such as permitting bottlenecks or supply chain disruptions. Without this nuance, legitimate projects could be unfairly penalized.

In addition to these preventive measures, Member States should consider corrective actions for projects that misuse grid capacity. This could include penalties for unjustified delays, particularly when no progress is made over extended periods (e.g. five years or more), and termination of connection contracts in extreme cases. However, any such measures must be applied with caution and based on clear evidence of misuse, to avoid legal disputes and ensure fairness.

While reform is necessary, changes to the connection framework must be carefully designed to avoid retroactive impacts on ongoing applications. A fair and transparent transition mechanism is essential to maintain trust and avoid unintended consequences for legitimate projects already in progress.

Can you provide a best practice from an EU Member State?

France:

- Distribution Grid (DSO – ENEDIS/ELD): Applicants must provide proof of having obtained the necessary authorizations before submitting a connection request. This requirement is considered relevant by French electricity system operators, as it helps ensure project maturity and credibility. The project shall fulfil the conditions listed in the DSO technical documentation to keep the projects in queue status. If not, the project is removed from the queue list.
- Transmission Grid (TSO – RTE): Recent measures introduced by RTE include: (1) Submission of proof of land ownership and (2) Payment of a non-refundable lump sum of approximately €42,000 to secure a place in the connection queue. Annually, the project shall fulfil the conditions listed in the TSO technical documentation to keep the projects in queue status. If not, the project is removed from the queue list.

UK: The UK launched a reform on connection queue process (TMO4+) in April 2025. The reform is in line with the Clean Power 2030 Action Plan, aimed at decarbonizing the British electricity grid. In line with such targets, the new reform paves the way to a rationalization of connections queue. In more detail, it designs a system based on gates. The logic behind it lies in the idea of prioritizing projects that have reached a certain degree of maturity. On the contrary, if the project fails to meet the required criteria, it loses positions in the queue process. By doing so, the reform will prevent that not mature projects might lock capacity. Even if it is too early to evaluate the results of this reform, the guiding principle goes in the right direction.

As a contrary example, **Italy**'s treatment of ongoing connection requests in an ongoing reform is inappropriate.

In Italy, the volume of connection requests for renewable energy projects has reached approximately 350 GW - more than five times the country's 2030 target for new installed capacity. This has created a backlog that the TSO, Terna, has found increasingly unmanageable due to limited grid capacity.

In response, the Italian Ministry of Energy is working on a reform that includes a new planning

model based on “microzones” and a digital platform to improve transparency and coordination. However, **a particularly impactful aspect of the reform is the proposal to invalidate all pending connection requests that have not yet received grid works approval - potentially eliminating up to 300 GW of applications**.

This approach, while aiming to streamline the system, carries significant risks for developers. It may still jeopardise the achievement of national RES targets if viable projects are removed from the pipeline. It introduces uncertainty into the regulatory environment, which could impact future investment.

The Italian case highlights the need for a balanced and transparent approach in the treatment of ongoing connection requests. While it is legitimate to “clean up” the queue, reforms should:

- Be forward-looking rather than retroactive wherever possible.
- Include clear, proportionate criteria for evaluating project maturity.
- Safeguard projects that have reached meaningful milestones (e.g. EIA approval).
- Provide transitional measures.

3. Modification of existing grid connections

In some Member States, the modification of an existing grid connection requires the grid users to submit a new connection request, even in situations where the is no or only a limited increase in the contracted grid capacity.

* **Do you encounter situations in which you are required to submit a new connection request for a limited modification of an existing connection?**
  - & Yes
  - & To a certain extent
  - & No
  - & No reply

* **Do you consider that the modification of an existing grid connection should be possible without having to fully re-apply?**
  - & Yes
  - & To a certain extent
  - & No
  - & No reply

Can you provide a best practice from an EU Member State?

Minor modifications to existing grid connections should not require a full re-application, especially when they do not affect the contracted capacity or grid stability. Reapplying for every technical change creates unnecessary delays and limits project flexibility. This remains an issue in some Member States like Belgium where for instance adding small PV systems to industrial sites can trigger a full re-application, even when the additional generation is negligible. This creates disproportionate administrative burdens and discourages investments in self-consumption and decarbonisation.

Member States should adopt simplified or fast-track procedures for non-substantial changes, with clear thresholds to ensure legal certainty. This approach should also apply to hybrid projects, which support system flexibility and should not be held back by rigid connection rules.

Here are some good examples from Member States:

- **Germany**: The system is highly digitalized, and technical changes that do not affect the connection profile can be quickly reported online without triggering a full new approval process.
- **Netherlands**: The grid operator (TenneT) uses a flexible system in which the procedure varies depending on the complexity and technical risk of the modification. This avoids treating minor changes and structural alterations in the same way.

- **Denmark**: Applies clear technical criteria to distinguish between “substantial” and “non-substantial” modifications, with automatic procedures in place for simpler cases.

Non-discriminatory access to the grid in situations with insufficient grid capacity

1. Measures in case of lacking capacity

Lack of capacity is a new but spreading reality for European DSOs. There are several measures which Member States are starting to use to improve the handling of grid connection requests in such situations. These can be auctions and application windows but also the use of flexible connection agreements in line with Article 6a of the Electricity Directive, cable pooling (hybridisation) and others.

Please describe the measures you would suggest as suitable for handling grid connection requests in situations with lacking capacity. Please specify why you chose this option / these options and explain the benefits (and potential disadvantages) of the respective options.

As explained in the first answer, it is imperative that the current ‘first-come-first-served’ model is replaced with a more strategic filtering process. The new approach should consider project maturity and alignment with national energy targets. Applying financial guarantees and binding progress milestones will help filter out speculative or underdeveloped projects, ensuring that limited capacity is allocated to those most likely to be realised. Efficient grid planning can already solve the problem of mismatch in grid capacity.

Once filtered, the projects can then be prioritised based on clear, proportionate criteria that reflect the contribution of each project to national and EU energy and climate targets as well as system needs. Capacity allocation to projects in queue should be guided aiming for a balanced technology mix. Locational signals can also play a role, encouraging development in areas with available capacity and lower grid upgrade costs, with a clear and transparent view on available grid capacity, while ensuring that they do not result in differentiated tariffs for users.

It is essential to focus grid capacity on projects with a high likelihood of completion. This requires clear, objective criteria tailored to each country’s context, prioritising projects based on their maturity and system impact. Repowering projects are a strong example. These projects typically already hold a grid connection agreement and as compared to greenfield developments often have a lower environmental and permitting impact. They are also more likely to proceed quickly, especially with the permitting simplifications introduced under RED III. In the case of wind, repowering can double installed capacity and triple energy output, delivering significant decarbonisation benefits in a shorter timeframe.

Member States should promote more efficient use of existing infrastructure. Measures such as colocation, cable pooling, and overplanting of connection points especially for technologies

like wind and solar that rarely peak simultaneously can significantly improve grid utilisation. The framework should support hybrid and multi-technology projects, which can enhance grid efficiency and system value. Developers should retain the flexibility to optimise their own grid access strategies, including hybridisation or storage, based on their business models. Such projects that bring about clear system wide benefits and significant contribution to national and EU energy and climate targets must be given priority among the filtered, viable projects in the grid connection queue.

Finally, flexible connection agreements can also provide temporary relief in constrained areas by allowing projects to connect under curtailment conditions. However, their use must be carefully regulated. Flexible connections should be voluntary, time-limited, and transparent, with clear curtailment conditions and compensation for affected grid users. They must not become a substitute for necessary grid reinforcements, and their deployment should be monitored by regulators to avoid distorting flexibility markets or delaying structural upgrades. While tools like flexible connections can help manage short-term constraints, they must be supported by a comprehensive cost-benefit analysis to avoid unintended consequences such as de facto rationing or reduced service quality.

Provided that it does not result in differentiated tariffs for users, for distribution networks a “traffic light system” can help guide project development by indicating grid availability at the local level. Areas would be classified as green, yellow, or red based on current and forecasted capacity. This system should be aligned with grid expansion plans and municipal land use strategies. In more constrained zones, longer connection timelines and higher cost contributions from developers would apply, creating a strong incentive to locate projects in less congested areas.

Please provide concrete example, if available, for the respective potential solutions.

The reform proposed by the Italian TSO, Terna offers a promising example of how grid connection bottlenecks can be addressed. By encouraging developers to target regions with fewer connection requests, the reform aims to steer investments toward areas with available capacity, improving overall grid efficiency and reducing congestion. It also challenges the traditional “first-come, first-served” principle, promoting fairer competition among operators.

This approach will benefit developers with flexible, scalable, or mobile projects who can adapt to alternative locations. However, it may disadvantage those with fixed site constraints or who have already invested heavily in a specific location. Therefore, a medium- to long-term strategic vision is essential to navigate this shift.

At the same time, it is crucial to ensure that grid development is not overly restricted by this efficiency-driven model. Renewable resources are often concentrated in specific regions, which tend to be the most congested. Limiting development in these areas could undermine the potential of high-yield renewable zones. Continuous monitoring and adjustment of the framework will be key to balancing efficiency with resource availability.

2. Requests from grid users below a certain size

* **In your view, should connection requests from projects below a certain size be treated differently?**
  - & Yes
  - & To a certain extent
  - & No
  - & No reply

3. Deviation from the first-come, first-served approach in favour of a system with objective criteria

Although many Member States apply a first-come, first-served approach to connection requests, this is not required specifically by EU legislation (see Article 6 of the Electricity Directive 2019/944 on third-party access).

Indeed, certain projects when connected to the grid can deliver benefits to the grid and the electricity system and alleviate congestion.

Some projects contribute to the energy and climate transition.

Other projects relate to services are of general interest to the society. Such as public transport, postal services, and healthcare. These services can be economic (e.g. postal services), non-economic (e.g. police and justice) and social.

* **Would you see any merit in setting up transparent criteria for treating connection requests based on their contribution to alleviating congestion in the electricity grid?**
  - & Yes
  - & To a certain extent
  - & No
  - & No reply

* **Would you see any merit in setting up transparent criteria for treating connection requests based on their potential contribution to the clean energy transition, or their contribution to services of general interest or any other?**
  - & Yes
  - & To a certain extent
  - & No
  - & No reply

Transparency on grid hosting capacity

Transparency on grid hosting capacity in respective areas together with applicable connection charges can steer investment decisions into locations with less congestion or with expected grid development. In this

context, the Grids Action Plan mandated the EU DSO entity and the ENTSO-E to come forward with harmonised definitions for available grid hosting capacity for system operators and to establish a pan-EU overview of grid hosting capacity maps and websites.

* **Do you consider existing actions on grid hosting capacity on a EU level sufficient?**

- & Yes
- & To a certain extent
- & No
- & No reply

On an EU level, Action 6 of EU Action Plan for Grids is crucial to prioritize. We understand that the System Operators are focussing on defining key terms, creating a unified access portal for national grid maps, and sharing best practices. This is a welcome step. However, the most critical priority remains establishing a harmonized methodology for calculating available grid capacity across Europe. Without this, even a common platform risks offering fragmented and non-comparable insights due to inconsistencies in national approaches.

The lack of visibility into current methodologies, some of which we fear may be overly conservative, raises concerns about their role in the growing backlog of renewable energy projects awaiting grid connection. While national grids have unique characteristics, a broadly consistent calculation framework is essential to ensure fair, accurate, and transparent capacity estimates. Clear guidance from ENTSO-E and the EU DSO Entity would be instrumental in driving this harmonization.

A hosting capacity map should feature high granularity and detail, be regularly updated (at least monthly), and be harmonized/standardised at EU level to make sure there is no market fragmentation and similar criteria for grid hosting capacity calculation apply across Europe. Such a tool would enable project developers to assess optimal connection locations and estimated timelines, helping to streamline the connection process and improve overall grid planning.

At country level there are some good examples.

In **Spain**, capacity maps for generation already exists and are updated monthly. By September 2025, capacity maps for demand will also be published and publicly available. In addition, the Spanish NRA will be collecting and reporting on several issues regarding capacity rejections and capacity allocations.

Another example is **Belgium** where more transparency is given to the market, and regular updates of the map are foreseen: https://www.elia.be/en/customers/connection/grid-hosting-capacity

Further comments

Do you have any other comments?

In a nutshell, the approach to connection queue management is two-fold. First step is transparent and pre-defined **filtering criteria** to remove those projects from the list that are speculative or that do not advance as expected in the permitting process. Second step is to **prioritise** grid capacity reservation for projects among the ones that have been labelled as mature or viable projects for instance because they fulfil better system integration criteria.

The first come first served principle has led to an unbalanced mix of technologies in certain areas and suboptimal use of the available grid capacity. Instead, they should apply:

- Smart and dynamic management of grid connection queues with adequately high entry criteria, filtering, and prioritisation practices.
- Filtering based on adequate maturity milestones and financial commitment to reserve grid capacity.
- Once speculative applications are filtered out, regulators should apply clear prioritization criteria to allocate limited capacity to projects that offer the greatest value to the energy system and society. These criteria could include:
    - Projects that contribute to system integration, such as hybridisation, co-location with storage, or advanced grid-support capabilities
    - Repowering projects that improve the use of existing grid infrastructure
    - Location in designated development zones or eligibility for public funding
    - Infrastructure with overriding public interest

These criteria must be defined and enforced by regulatory authorities, not System Operators, to ensure transparency, consistency, and fairness.

- Grid connection queues management process must include strategies to guarantee grid access for all strategic net-zero technologies in a balanced manner.
- The process should enable grid connection rules for co-located renewables with and without storage (hybridisation) and fit for purpose revenue stabilisation schemes.
- There must be a fair sharing of grid expansion and reinforcement costs between generators and System Operators. Also enabling frameworks for generators to develop the grid and hand it over to System Operators upon remuneration.

If you have any documents you would like to share, please upload it here: