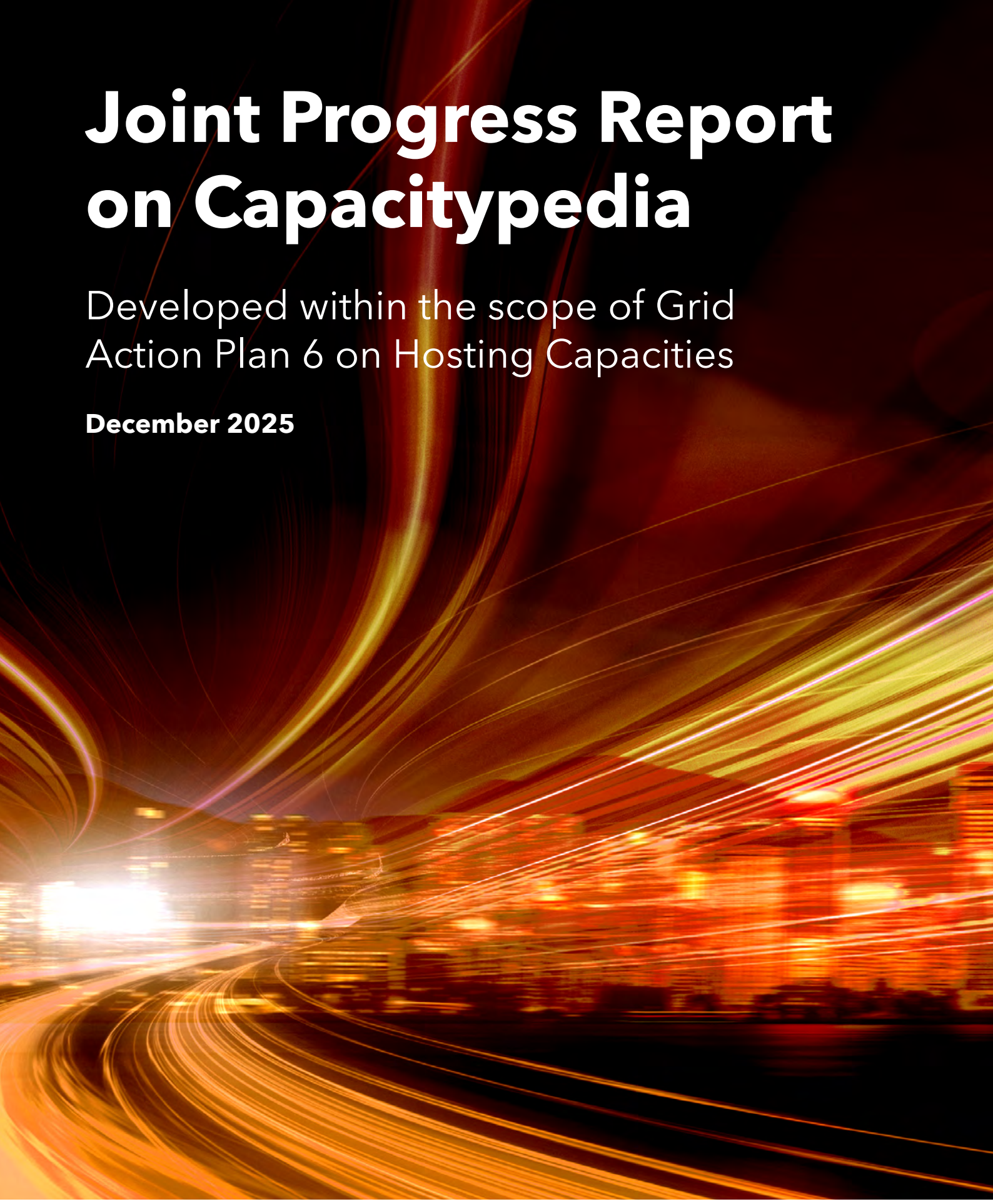
Joint Progress Report on Capacitypedia

Developed within the scope of Grid Action Plan 6 on Hosting Capacities

December 2025



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Contents

1 Introduction and Disclaimer

The power grids are under growing pressure due to the rapid deployment of renewable energy sources (RES) and electrification of the power system, call for massive investments in power grids. Yet, the availability of grid hosting capacity and connection queues have become challenges to enable project developers to plan and deliver their investments. In response, the European Commission introduced new transparency requirements and launched the Grid Action Plan (GAP), including Action 6, which aims to provide a pan-EU-overview of grid hosting capacity.

Purpose and Disclaimers

This report provides preliminary information on hosting capacity (HC) across various DSOs and TSOs in the EU. Until the official portal is launched, the data presented here serves as an interim source of insight.

GOALS

- **Visibility:** Offer stakeholders enhanced visibility and provide more comprehensive insights into the existing grid hosting capacity information from system operators (SOs) across Europe.
- **Comparability:** Present information in a structured format that allows comparison between different countries and different DSOs and TSOs.
- **Clarity:** Give stakeholders a clearer view of available hosting capacity information.

IMPORTANT DISCLAIMERS

- The information in this report is based on data received from individual participating DSOs and TSOs. It does **not** represent a complete picture and/or an exhaustive list of all existing EU SOs and their respective information on available grid hosting capacity.
- This progress report includes only **data reviewed and confirmed by the respective SOs, up to a defined cut-off date** prior to publication. The joint DSO Entity and ENTSO-E hosting capacity portal will incorporate additional contributions from further system operators and reflect a broader and/or potential slightly adjusted scope than presented here, as discussions and developments of the structure are still ongoing.
- Each DSO/TSO is solely responsible for the content of their respective subsection. Information included in this report can be accessed in its most accurate and up-to-date form via the official websites of the respective SOs.
- In addition to data collected at the pan-EU level in line with Grid Action Plan Action 6, this report also includes supplementary information at the transmission level provided by non-EU ENTSO-E members.

2 Overview

Publication Status and Links – Distribution and Transmission-level

Country	System Operator	Voltage Scope	Publication Status	Links
Austria	APG	Transmission	Published	Link
	Wiener Netze GmbH	Distribution	Published	Link 1, Link 2
Belgium	Elia	Transmission	Published	Link
	Fluvius	Distribution	Published	Link
Cyprus		Transmission & Distribution	Published	Link
Czech Republic	ČEPS	Transmission	Published	Link
	ČEZ Distribuce, a. s.	Distribution	Published	Link 1, Link 2, Link 3
Denmark		Transmission & Distribution	Published	Link
Estonia	Elering	Transmission	Published	Link
	Elektrilevi	Distribution	Published	Link
Finland	Fingrid	Transmission	Published	Link
France	Enedis	Distribution	Planning to publish	–
Germany	Amprion	Transmission	Published	Link
	TenneT	Transmission	Published	Link
	50 Hertz	Transmission	Published	Link
	Netze BW GmbH	Distribution	Published	Link
Hungary	MVM and E.ON	Distribution	Planning to publish	–
Ireland	ESB Networks	Distribution	Published	Link
Italy	Areti	Distribution	Planning to publish	–
Latvia	Sadales Tikls	Distribution	Published	Link

Country	System Operator	Voltage Scope	Publication Status	Links
Lithuania	Litgrid	Transmission	Published	Link
	Energijos skirstymo operatorius, AB (ESO)	Distribution	Published	Link 1, Link 2
Malta	Enemalta	Distribution	Published	Link
Montenegro	CGES	Transmission	Published	Link
Netherlands	Stedin	Distribution	Published	Link
North Macedonia	MEPSO	Transmission	Planning to publish	–
Poland	PGE Dystrybucja	Distribution	Published	Link
	Energa Operator S.A.	Distribution	Published	Link
	Enea Operator	Distribution	Published	Link 1, Link 2
	TAURON Dystrybucja S.A.	Distribution	Published	Link
	STOEN Operator	Distribution	Published	Link
Portugal	REN	Transmission	Published	Link
	E-REDES	Distribution	Published	Link 1, Link 2
Slovakia	SEPS	Transmission	Published	Link
Slovenia	ELES	Transmission	Published	Link 1, Link 2
Spain	Red Eléctrica-RE	Transmission	Published	Link
	E-distribucion	Distribution	Published	Link
	i-DE	Distribution	Published	Link 1, Link 2
Sweden	Svenska kraftnät	Distribution	Planning to publish	–
Switzerland	Swissgrid	Transmission	Planning to publish	Link

3 Country-Specific Information

3.1 Austria

EXECUTIVE SUMMARY

Austria provides a comprehensive overview of hosting capacity through regularly updated publications by the Austrian TSO (APG) and the Austrian DSOs.

At the TSO level, hosting capacity is calculated and published monthly on the APG website in accordance with legal requirements. The published information reflects the available capacity across the entire APG transmission grid and is detailed at the substation level. Additionally, APG publishes the cumulative power of open connection requests, broken down by federal region (Bundesland), and indicates whether a substation offers a flexible connection possibility.

In both datasets, a distinction is made between generation and consumption. A hosting capacity of 0 MW indicates that for at least one hour of the year no power can be injected or consumed without (possible) congestion-related constraints imposed by the TSO. The calculation is based on grid simulations aligned with the Ten-Year Network Development Plan (TYNDP) and uses market simulations based on indicative market prices for the year 2030 (status 2025). The published hosting capacity is independent of switching bay availability and dynamic aspects like short-circuit currents.

At the DSO level, the capacity map is designed to provide grid users, project developers, etc., with an indicative (although not legally binding) overview of available and reserved grid hosting capacities on the busbar of the medium voltage (MV) level of each primary substation. The calculation is made by DSOs based on a uniform methodology defined in a regulation by the national regulatory authority (NRA).

3.1.1 TSO: APG

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	APG
Accessibility	Open
Regional scope	Country
Spatial granularity	Per substation
Operator voltage level scope	110 kV, 220 kV, 380 kV
Timeline for which HC is provided	2030
Information format	Table
Categories of grid users considered	Producers, consumers
Type of grid connection capacity information	Firm and flexible connections
Availability of API	No
Update cycle	Monthly
Available language	German
Additional information	The published hosting capacity values are for informational purposes only and do not constitute a binding commitment by APG. They do not imply any guarantee of actual grid availability, nor do they entitle any party to reserve capacity or claim priority for grid connection. All connection requests remain subject to individual technical assessments and regulatory procedures.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm and flexible

Description of the methodology leading to firm capacity results, explaining what firm capacity means
Firm capacity refers to a grid connection that can be utilised at 100 % of its rated power throughout the entire year without any congestion-related restrictions.

Description of the methodology leading to flexible capacity results, explaining what flexible capacity means
A flexible connection allows APG to temporarily limit grid usage during periods of congestion that could affect grid stability.

Description for the criteria and methodologies used that lead to the published information
APG calculates hosting capacities using a power transfer distribution factor (PTDF)-based methodology, which evaluates the impact of additional injections or withdrawals on critical grid elements. The analysis is based on the most recent TYNDP data available for the current year.

A substation is assigned a hosting capacity of 0 MW (for either generation or consumption) if there is at least one hour in the year where an additional connection would exacerbate an existing congestion or create a new congestion under N-0 or N-1 security conditions.

The methodology applies uniformly across the generation, demand, and storage categories.

The analysis is static in nature, focusing on steady-state power flow impacts rather than dynamic or short-circuit behaviour.

Hosting capacities are published per substation and reflect the firm connection potential, i.e. capacity that can be used without restriction throughout the year.

The approach is independent of the grid user profile. The only distinction is between firm connection and flexible connection.

Main assumptions/disclaimers behind calculations

The published hosting capacities reflect the amount of additional power that can be either injected into or drawn from the grid without causing congestion or negatively impacting grid stability.

If a firm connection is not feasible – meaning that even for a single hour in the year, an additional connection would compromise grid performance – flexible connection options may still be available. In such cases, APG retains the right to temporarily limit the connection's power during critical periods to ensure grid security.

According to Article 50(4a) of Regulation (EU) 2019/943 on the internal electricity market, as amended by Regulation (EU) 2024/1747, transmission system operators are required to publish information on available grid connection capacities and update this information monthly.

The published table provides information on available and requested grid connection capacities, as well as on the possibility of flexible connections to APG's transmission network.

The published values were determined in accordance with the grid compatibility assessment procedure as outlined in our General Grid Conditions. At present, no unrestricted grid connection capacities are available in APG's transmission network.

Depending on the specific connection situation, an unrestricted grid connection may be granted – as an exception and subject to a positive grid compatibility assessment – for non-interruptible end consumers who pay grid usage fees in accordance with § 5 para. 1 items 1–7 of the SNE-V 2018.

The column "Flexible Connection Possibility" indicates whether a limited (flexible) grid connection may be requested. Such a connection may be granted subject to a positive grid compatibility assessment.

According to § 44 para. 1 of the ElWOG, the right to connect to the grid within a distribution network area generally lies with the DSOs.

A direct connection to APG's transmission network is possible only if the relevant distribution system operator waives this right.

Exceptions apply to grid users who supply electricity or are to be supplied with electricity at a nominal voltage above 110 kV. In this case, a minimum capacity of 200 megawatts (MW) is required, as stipulated in § 55 para. 7 item 5 of the ElWOG.

The published hosting capacity values are indicative only and do not constitute a binding commitment for grid connection. They are based on model-based analyses using the most recent available data and reflect the current state of the transmission system under standard assumptions.

Key limitations include:

- Values are updated monthly and may change due to evolving grid conditions, new connection requests, or infrastructure developments.
- The analysis is based on static grid models and does not account for all real-time operational constraints or dynamic behaviours.
- A positive hosting capacity value does not guarantee a firm or flexible connection. Each request is subject to a detailed, case-specific grid compatibility assessment.
- The values refer to the transmission grid only and do not consider potential limitations in the underlying distribution networks.

CONNECTION PROCEDURE

Connection request procedure
Link

Available options for investors if the map shows "no capacity available" in their interested area
If the hosting capacity table indicates that no capacity is currently available at a specific substation, investors have several options:

- Some substations may offer a flexible connection option. This allows for grid connection under certain operational conditions, such as curtailment during congestion periods. These options are typically indicated in the published data.

Depending on the specific connection situation, an unrestricted grid connection may be granted – as an exception and subject to a positive grid compatibility assessment – for non-interruptible end consumers who pay grid usage fees in accordance with § 5 para. 1 items 1–7 of the SNE-V 2018.

Connection request rules	Application window
Information published for volumes of connection requests/ waiting lines	Yes
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Regional, no technological distinction (only generation versus consumption)
Additional information	APG - Assets Department

SUMMARY OF LINKS

Calculation, disclaimers, and boundaries

Connection request process

Auxiliary documents

Contact point for hosting capacity information

Contact point for connection requests

3.1.2 DSO: Wiener Netze GmbH

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Capacity map for Austria, based on DSOs' calculations Capacity information in tabular form, e.g. Wiener Netze
Accessibility	Open
Regional scope	DSOs with primary substations in their supply areas calculate capacities; results are published on DSO websites (list of primary substations) and via the Austrian capacity map (additionally list of primary substations per DSO) on the website of the Austrian Electricity Association: Österreichs Energie. Regional scope: Country/federal states/DSO grid area/individual primary substation
Spatial granularity	Nodal (substation)
Operator voltage level scope	Showing the available capacity and the already booked capacity per primary substation (110 kV to medium voltage) on the busbar of the medium voltage level; medium voltage in AT is typically 10, 20 and 30 kV.
Timeline for which HC is provided	Snapshot
Information format	Map and table
Categories of grid users considered	The available and reserved capacity for generation (no differentiation between technology)
Type of grid connection capacity information	Available and reserved capacity
Availability of API	Openly available
Grid hosting capacity downloadable	From DSO websites in PDF format
Update cycle	Quarterly
Available language	German
Further development of the map/ information planned	The upcoming reform of the Electricity Law (ElWG) is expected to extend capacity calculation to the secondary substation level (medium to low voltage)

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible)
Firm. Currently DSOs are not allowed to offer flexible connection agreements; this is expected to change with the upcoming reform of the electricity law.

Description of firm capacity
The customer can use the contracted capacity without restrictions

Description of the methodology leading to firm capacity results
The calculation is made by each DSO based on the methodology defined in a specific regulation by the NRA. Available in PDF format (link)

The aim of the standardised calculation method is to provide a simple and transparent overview of the available feed-in capacities. The available grid capacities are determined at the MV busbar of the primary substation (high voltage (HV) to MV). Potential limitations of the MV and LV networks are not considered for this assessment. This also applies to voltage regulation in the MV grid, as

almost all transformers from HV to MV are equipped with voltage control. The methodology consists of the following steps:

- Step 1 – Determine whether there are limitations in the overlaying grid (high and highest voltage), which can be assigned directly to specific primary substations
- Step 2 – Determine the permissible load of the transformers
- Step 3 – Determine the actual load of the transformers (measured 1/4 load profiles of the last year under "normal" conditions)
- Step 4 – Determine the already reserved capacities
- Step 5 – Determine the available capacities by considering the N-1 criteria

Description of flexible capacity
Flexible grid connection agreements (FCAs) are currently not foreseen in the legal framework; the upcoming electricity law reform will enable DSOs to offer FCAs for generators.

Description of the methodology leading to flexible capacity results
FCAs are currently not available (see above).

Description of the criteria and methodologies used that lead to the published information
See description of the calculation methodology above.

Main assumptions/disclaimers behind calculations
See description of the calculation methodology above.

CONNECTION PROCEDURE

Available options for the investors if the map shows "no capacity available" in their interested area
The Austrian capacity map is designed to provide grid users/project developers etc., with an indicative overview of available and reserved grid hosting capacities.

For a binding grid connection offer, it is always necessary to contact the responsible DSO for a detailed connection analysis. This analysis takes into account factors such as spatial constraints, short-circuit current limitations, and other technical considerations and requires comprehensive information from the customer.

Even in cases where the map indicates "no capacity available", it is recommended to reach out to the relevant DSO to explore alternative options.

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	No, not foreseen in electricity law
Additional Information	Connection request procedure - Partly

SUMMARY OF LINKS

Calculation method, disclaimers, and boundaries

Legal references

Contact point for connection requests
DSO

3.2 Belgium

EXECUTIVE SUMMARY

At the TSO level, Elia publishes a map on hosting capacity. This map gives a:

- geo-overview (per substation or per zone impacted by a substation),
- for a given target year,
- for a given type of grid user (load, generation, storage),
- for a given flexibility level. This refers to the maximum percentage of yearly energy curtailment allowed, relative to the yearly total generated or consumed energy, and
- for a set of underlying assumptions (planned infrastructure, evolution of other grid users (and already reserved/allocated grid capacity), market coupling, connection criteria, etc.)

of how many additional MW consumption or production, at one location at a time, respecting planning and operational criteria, could be hosted without additional grid investments, and without taking into account specific constraints such as short-circuit currents, voltage and spatial constraints.

At the DSO level, with the capacity map, Fluvius aims to provide professional customers (production and offtake, technology neutral) with transparent insight into the connectivity and residual capacity of Fluvius' HV distribution network (abbreviated to "HV distribution network", also known as the MV network). In addition to all cables and cubicles, the map provides clear information about the connectivity of additional capacity for each known plot. This allows customers to estimate the available capacity at each location.

3.2.1 TSO: Elia

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Elia
Accessibility	Open
Regional scope	Country
Spatial granularity	Nodal (substation)
Operator voltage level scope	TSO voltage levels only, ≥ 30 kV
Timeline for which HC is provided	Y+2, Y+6 (currently)
Information format	Map and table
Categories of grid users considered	Generation demand and storage
Type of grid connection capacity information	Available; reserved; allocated; pre-reserved *
Availability of API	Not provided
Update cycle	Monthly **
Available language	National language(s) and others, including English

* Reserved, allocated and pre-reserved capacities are considered to determine available capacities

** Two levels of update frequency: 1) Yearly: full reference grid and reference context (load & production market hypotheses) are updated each year, 2) Monthly: reserved/allocated capacities (considered present by the map) are updated each month. The time of the latest update is mentioned on the website.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity

Firm and flexible

Description of "firm capacity" and the methodology leading to firm capacity results

The firm capacity represents the maximum installed capacity that, when multiplied by the considered injection/offtake profile(s), is available for all 100 reference situations.

Description of "flexible capacity" and the methodology leading to flexible capacity results

Capacities for firm and flexible connections are published, for:

- 0 % flexibility (firm connection)
- ≤ 5 % flexibility
- ≤ 10 % flexibility
- ≤ 20 % flexibility

This flexibility represents the forced curtailment of the new grid user, that would be necessary to mitigate violations of steady-state and 15-min thermal grid element ratings, only for violations that are significantly worsened by the grid user. The percentage refers to the average annual percentage of curtailed energy, with respect to the selected profile.

Description of the criteria and methodologies used that lead to the published information

The computation evaluates the impact of new grid user connections on the following static criteria:

- Steady-state (> 15 min) grid element loading in N and N-1 states
- Short-term (< 15 min) grid element loading in N-1 state

The evaluation is performed for 100 reference situations that are representative of an average climate year. Dynamic criteria, as well as voltage and short-circuit constraints, are evaluated at the connection request.

Main assumptions/disclaimers behind calculations

The methodology remains the same per technology, but distinct hypotheses are applied. The hypotheses differ in terms of the evaluated profile, as well as the considered pre-reservations (assumed present to anticipate the future energy mix and evolutions that do not follow the classical procedures for reserving capacities):

- Classical production: A flat injection profile (1 p.u.) is evaluated. All pre-reserved capacities are considered.
- Classical offtake: A flat offtake profile (1 p.u.) is evaluated. All pre-reserved capacities, except those representing non-residential classical offtake, are considered.
- Onshore wind: A market injection profile (0–1 p.u.) is evaluated. All pre-reserved capacities, except those representing onshore wind, are considered.
- Solar photovoltaic (PV): A market injection profile (0–1 p.u.) is evaluated. All pre-reserved capacities, except those representing non-residential solar PV, are considered.
- Battery: Both a flat injection profile and a flat offtake profile are evaluated. The worst-case result is shown in the map. All pre-reserved capacities, except those representing batteries, are considered.

Disclaimers:

- Legal validity of information: The published information is legally non-binding. A formal connection request must be filed to reserve or acquire connection capacity.
- Technical scope:
  - Approximation of the remaining available connection capacity for nominal capacities < 300 MW.
  - Higher capacities cannot be estimated without a location-specific analysis carried out in the context of the formal connection request process.
  - The connections on LV grids (< 1 kV) are not impacted by the published information.
- Hypotheses:
  - Grid evolution: in line with the infrastructure portfolio known at the time of computation.
  - Grid users' evolution: In line with the reservations & allocations known at the time of computation
  - Market conditions: In line with the global (federal) reference context (result from a market study) used as a basis for the computation. Market conditions are not re-evaluated during computation.
  - Technical connection criteria: Specific constraints resulting from short-circuit currents and voltages are not taken into account.
  - Socioeconomic aspects: Spatial, permitting, and connection bay constraints are not taken into account.
  - Interdependence of hosting capacities: The published capacities are valid for one location at a time.

Additional information
By involving multiple time horizons in the computations, the following evolutions are considered:

- Grid infrastructure, according to the infrastructure portfolio known at the time of computation
- Known grid users (installed/reserved/allocated capacities), according to a best-estimate timing of changes to their contractually available capacity.
- Unknown grid users (pre-reserved capacities), according to a best-estimate timing of global (federal) evolutions in the energy consumption and the energy mix.

CONNECTION PROCEDURE

Connection request procedure
Link

Available options for the investors if the map shows "no capacity available" in their interested area
The map offers an indication. The possibility and conditions of a connection are an outcome of the formal grid connection procedure.

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	Yes
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	An aggregated total of reserved/allocated/pre-reserved capacities for Belgium, per technology, as well as a visual showing the regional distribution of this total.

SUMMARY OF LINKS

Calculation, disclaimers, and boundaries

Connection request process (Same as above)

Auxiliary documents (Same as above)

Legal references

Contact point for hosting capacity information

Contact point for connection requests

3.2.2 DSO: Fluvius

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Fluvius
Accessibility	Open
Regional scope	Flanders DSO - MV level
Spatial granularity	Regional
Operator voltage level scope	HV distribution network of the DSO (MV 30-15-10-6 kV)
Timeline for which HC is provided	Snapshot
Information format	Map and table
Type of grid connection capacity information	Available capacity offtake and production
Availability of API	Openly available
Grid hosting capacity downloadable	Open datasets, API, V1:V2;0/V2.1 (OAS3)
Available language	National language(s) only
Further development of the map/ information planned	Further development planned in line with regulatory development.
Additional information	Please note that the available data is only a snapshot. The map does not replace a detailed study. Therefore, the residual capacity for formal connection applications may differ from the data on this map. The map represents an as-is situation of the MV network. Reserved projects are not included in this map. The map may indicate that residual capacity is still available, when in fact it has already been reserved by a previously requested project that has not yet been realised. Additional information: Indication of indicative connection lead time and connection cost for requested capacity

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible)
Firm

Description of firm capacity
Firm capacity in normal operating conditions of the grid taking into account the N-1 principle

Description of flexible capacity
Not included

Description of the methodology leading to flexible capacity results
Calculation of available as-is offtake/injection capacity based on snapshot, excluding pending request or planned investments, and taking into account the N-1 availability of TSP/DSO connections.

CONNECTION PROCEDURE

Connection request procedure
https://www.fluvius.be/nl

Available options for the investors if the map shows "no capacity available" in their interested area
Provide connection request

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	Not applicable
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Not applicable

SUMMARY OF LINKS

Calculation method, disclaimers, and boundaries

Connection request process

Auxiliary documents

Legal references

Contact point for hosting capacity information

Contact point for connection requests

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Grid hosting capacity available for new connections (any other relevant e. g. reserved)
Calculation of available As-Is offtake / injection capacity based on snap shot Without taking into account pending request or planned investments taking into account N-1 availability of the TSP/ DSO connections

Regulatory framework in the process of translation/ implementation in regional legislation

In anticipation of this, we will use market-based flexibility (market flex), fallback flex, and technical flexibility (T-flex).

- Flexibility Service Provider | Fluvius
- Fallback Flex | Fluvius

3.3 Cyprus

EXECUTIVE SUMMARY

The Electricity Authority of Cyprus (EAC), which is responsible for the transmission and distribution of electricity in Cyprus, publishes RES-E hosting capacity information as part of its efforts to facilitate the integration of RES into the national grid. This information is presented through the hosting capacity map, which is a key tool for understanding the potential for RES integration at the substation level.

RES-E hosting capacity is the maximum RES capacity that can be installed at the transmission substation level. It is presented in the hosting capacity map that has been created by both DSO and TSO of Cyprus (TSOC) as part of the Cyprus Transmission and Distribution System Redesign Study for 2021–2030, prepared as per the Cyprus Regulatory Authority Decision 02/2019. It aims to provide useful information to concerned parties on the RES-E integration capability of the Cyprus power system.

The hosting capacity map is essentially a tool that geographically illustrates RES-E hosting capacity per transmission substation. It also presents the RES-E available hosting capacity, i.e. the remaining available RES-E integration capability, which results by subtracting the already installed RES-E systems from the overall hosting capacity. It should be noted that systems that have already signed the preliminary connection terms are considered as installed.

Caution should be exercised, as all information presented in the hosting capacity map is indicative and non-binding for connection approval by the DSO or TSOC. Each connection request is assessed individually, and several other factors are taken into consideration. In particular, hosting capacity in this framework is evaluated based only on technical criteria; therefore, other factors, such as land availability, are not taken into consideration. Finally, it should be noted that RES-E connection at a substation with high available hosting capacity does not necessarily guarantee a faster connection implementation.

Both SOs make their active grids available to all current and potential electricity market participants, with full transparency and equal treatment in support of a successful energy transition.

3.3.1 DSO-TSO: EAC

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	EAC
Accessibility	Open
Regional scope	Country
Spatial granularity	Nodal (substation)
Operator voltage level scope	Hosting capacity map is common for DSO and TSO. The information provided is mainly for RES connections at the MV side of the transmission substation.
Timeline for which HC is provided	Yearly
Information format	Map and table
Categories of grid users considered	Solar
Type of grid connection capacity information	Available and reserved
Availability of API	No
Grid hosting capacity downloadable	No

Update cycle	Quarterly
Available language	National language(s) only
Further development of the map/ information planned	Planned to add BESS capacity and MV feeders HC in 5 years

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible
Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible)
Firm

Description of firm capacity
No restrictions on active power generation

Description of the methodology leading to firm capacity results
N-1 transmission substation criterion and minimum historical net load

Description of flexible capacity
Capacity with restrictions either on time or/and power injection to the grid

Description of the criteria and methodologies used that lead to the published information
N-1 transmission substation criterion and minimum historical net load

CONNECTION PROCEDURE

Available options for investors if the map shows "no capacity available" in their interested area

Pay for reinforcement

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	Not applicable

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Grid hosting capacity available for new connections (any other relevant e.g. reserved)
Available RES install capacity that can be connected to the grid without any restrictions and without violating any technical operational limits of the system (voltage, congestion)

Capacity under connection request (e.g. waiting list)
RES installed capacity that can be connected when the grid capacity is reinforced or under flexible connection terms

Flexible connection (any other relevant i.e. firm connection etc.)
Connection of new RES systems to a congested part of the network with restrictions (time or export limits)

3.4 Czech Republic

EXECUTIVE SUMMARY

In the Czech Republic, hosting capacity information is published by the TSO and DSOs. At the TSO level, the Czech TSO (ČEPS) publishes the hosting capacity map on the ČEPS website. This map provides a nodal representation of the Czech transmission grid, using three status indicators for investors: available capacity, conditionally available capacity, and unavailable capacity.

Only firm capacity is shown on the map. The methodology for determining firm capacity is based on the following criteria: the results of static load-flow analyses, short-circuit analyses, the availability of bays in substations or the possibility of extending existing substations, and the quality of electricity at the given location.

The potential to connect synchronous or asynchronous generation depends on the local quality of electricity. Similarly, the feasibility of connecting generation or load is determined by the results of static load-flow and short-circuit analyses.

The minimum connection size to the transmission grid is 250 MW (400 kV grid). Capacities above 1,000 MW cannot be estimated without a location-specific analysis carried out as part of the formal connection request process.

Legal validity: The information provided in the hosting capacity map is non-binding. To reserve or acquire connection capacity, a formal connection request must be submitted.

For DSOs, under Act No. 469/2023 Coll., distributors are required to publish and update once a month on their website data on the number of accepted and rejected requests for connection to the distribution system and an interactive map containing the following information for all areas defined by the license. This provides transparency and helps stakeholders better understand capacity availability at various stages of the distribution network.

The interactive map is published on the websites of the three regional DSOs (EG.D, ČEZ, and PRE) and displays the following information:

- For each area of operation: information on the available capacity of the distribution system at the HV/MV level
- For the LV: information at the transformer level, anonymised data on accepted and rejected requests (including the number of agreements on alternative connection) aggregated for substations, and anonymised connection requests based on accepted and rejected applications

3.4.1 TSO: ČEPS

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Čeps
Accessibility	Open
Regional Scope	Country
Spatial granularity	Nodal (substation)
Operator voltage level scope	TSO ≥ 220 kV
Timeline for which HC is provided	Y+5, Y+10
Information format	Map and table *
Categories of grid users considered	Generation, demand and storage **
Type of grid connection capacity information	Available and requested
Availability of API	Not provided
Update cycle	Monthly

Available language	National language(s) only
Additional information	The hosting capacity map is accompanied by a disclaimer.

* The table shall display the capacities requested in connection applications ** Synchronous generation, asynchronous generation, demand and storage

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible Firm

Description of "firm capacity" and the methodology leading to firm capacity results
Firm capacity: Connection granted with full capacity, without curtailment

Description of "flexible capacity" and the methodology leading to flexible capacity results
Flexible capacity: Connection granted with the possibility of curtailment to maintain grid security

Description of the criteria and methodologies used that lead to the published information
The firm capacity methodology is determined based on the following criteria:

- Results of static load-flow analyses
- Short-circuit analyses
- Availability of a bay in the substation or the possibility of extending the existing substation
- Quality of electricity at the given location

The feasibility of connecting synchronous or asynchronous generation depends on the local quality of electricity. Likewise, the possibility of connecting either load or generation is assessed using static load-flow and short-circuit analyses.

Main assumptions/disclaimers behind calculations
Legal validity of information: The published information is legally non-binding. To reserve or acquire connection capacity, a formal connection request must be submitted.
Minimum connection limit: The minimum size for connection to the transmission grid is 250 MW (400 kV grid).

High-capacity connections: Available capacities above 1,000 MW cannot be estimated without a location-specific analysis conducted within the formal connection request process.
Grid evolution: Assessed in line with the infrastructure portfolio known at the time of computation.
Grid users' evolution: Based on reservations and allocations known at the time of computation.
Market conditions: Reflecting the latest adequacy and flexibility study available at the time of computation.
Interdependence of hosting capacities: The published capacities are valid for one location at a time only.

CONNECTION PROCEDURE

Connection request procedure
Detailed information is provided on the ČEPS website

Available options for the investors if the map shows "no capacity available" in their interested area
The Hosting Capacity Map is legally non-binding and serves for information purposes only. Investors are advised to consult the TSO representative, as future connection may be possible.

Connection request rules	First come, first served
Information published for volumes of connection requests/ waiting lines	Yes
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Per technology per node

SUMMARY OF LINKS

Connection request process

Legal references

Auxiliary documents, Contact point for hosting capacity information & Contact point for connection requests (see connection request process)

3.4.2 DSO: ČEZ Distribuce

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Link 1 Link 2 Link 3
Accessibility	Open
Regional scope	Operational area of ČEZ Distribuce
Spatial granularity	TSO and DSO level
Operator voltage level scope	MV/HV, LV partially
Timeline for which HC is provided	Monthly update
Information format	Map
Type of grid connection capacity information	The interface displays information on the unavailability of the given capacity/ limited capacity/availability of capacity.
Availability of API	Not provided
Grid hosting capacity downloadable	PDF format
Update cycle	Monthly
Available language	National language(s) only
Further development of the map/ information planned	Greater granularity and frequency of publication (aiming for online availability)

Consideration of firm or flexible capacity Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible) Firm

Description of firm capacity
Fully available network capacity (8,760 hours/year)

Description of the methodology leading to firm capacity results
The methodology for assessing connection feasibility is based on the Distribution System Operation Rules (PPDS), Annex No. 4.

The basic technical parameters for assessing connection feasibility include:

- Limit of connectable capacity to the Czech power system (ES), known as the balance limit
- Limits of node areas (UO)
- Transformation capacity in the distribution system (HV/MV, MV/LV)
- Transmission capacity of lines (HV, MV, LV)

Impact on power quality parameters – primarily voltage change (ΔU) for normal and backup supply conditions caused by the generating unit being connected, including all connected and approved generating units on the same feeder.

Description of flexible capacity
Flexible (non-guaranteed) capacity refers to a customer connection with a mutually agreed-upon contractual option for curtailment by the DSO, where connection to the distribution system is not guaranteed 100 % of the time. This is to ensure the reliability of the distribution system.

Description of the methodology leading to flexible capacity results
The calculation methodology is based on the maximum possible use of the equipment's transmission capability throughout the year and limits power output to 5 % of the annual generated energy.

Description of the criteria and methodologies used that lead to the published information
Normal operating state (configuration) of the distribution system and the usability of the 110 kV/MV transformation transmission capacity.

CONNECTION PROCEDURE

Connection request procedure
Link

Available options for the investors if the map shows "no capacity available" in their interested area
Address the Distribution System Operator regarding the "anticipated availability of capacity"

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	No
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	No

SUMMARY OF LINKS

Connection request process

Auxiliary documents: (Energy Act No. 458/2000 Coll., Connection Guideline No. 16/2016, Distribution System Operation Rules (DSO Rules)
EZ = Energy Act, Vyhláška = Guideline, PPDS = Rules for the Operation of the Distribution System.

Contact point for hosting capacity information
Link 1

Contact point for connection requests

Additional information

3.5 Denmark

EXECUTIVE SUMMARY

Kapacitetskort.dk is a home page hosted by Energinet that shows the available capacity for TSO and DSOs in Denmark. The capacity map is the same map for TSO and all DSOs in Denmark. This tool provides an indicative overview of the available capacity in the 50–60 kV distribution grid and the 132–150 kV transmission grid for the connection and integration of new electricity production, based on the capacity available at the time of the map's most recent update.

The data for the TSO is updated every month, and the DSO data is updated every quarter. Currently, the map only shows available capacity for production. However, by Q1 2026, it is expected to also show capacity for consumption.

There are four separate capacity maps on the website:

- DSO capacity
- DSO capacity including DSO/TSO transformers
- TSO capacity (existing grid)
- TSO capacity (reinforced grid)

Note: The capacity map must under no circumstances be interpreted as a commitment or guarantee from either the grid companies or Energinet. Prior to any connection of new production, the grid company and/or Energinet must carry out calculations for the specific connection. The capacity map provides a snapshot of the current situation. The day after the calculations, an agreement for a new connection may have been made, which means that the available capacity shown on the map may no longer be available in the relevant area.

3.5.1 TSO: Energinet

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	www.kapacitetskort.dk
Accessibility	Open
Regional Scope	TSO and all DSOs are covered
Spatial granularity	Nodal (substation)
Operator voltage level scope	TSO – 132 and 150 kV nodes, DSO 60 kV
Timeline for which HC is provided	No specific time horizon *
Information format	Map and data site
Categories of grid users considered	Generators only *
Type of grid connection capacity information	Available
Availability of API	Openly available
Update cycle	TSO – monthly, DSO – quarterly
Available language	–
Additional information	The vacant switch bays will be a part of the solution from Q1 to Q2 2026

* No specific time horizon is given. The calculations are made based on existing and approved grid reinforcements. The time horizon often depends more on the physical possibility of being connected to the grid than on the available capacity in the grid.

** By the end of the year, demand will also be included

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm and flexible

Description of "firm capacity" and the methodology leading to firm capacity results
Firm connection capacity: Available capacity for new production units in each node of the TSO and DSO grid, determined in cooperation with DSOs. The values are indicative, and a specific assessment is carried out for each project that applies for grid connection.

Description of "flexible capacity" and the methodology leading to flexible capacity results
Flexible connection capacity: The map includes what share of a new production unit of 100 MW and 300 MW, respectively, can be integrated into each node of the TSO grid. This is determined for solar and wind separately. There is also a simpler data point for the same at the DSO level.

Main assumptions/disclaimers behind calculations
The website explicitly says that the data is not legally binding. The data is based on reported projects.

Additional information
1. The map includes what share of a new production unit of 100 MW and 300 MW respectively, can be integrated into each node of the TSO grid. This is determined for solar and wind separately. There is also a simpler data point for the same, at the DSO level.

2. All projects in the pipeline from third parties that have been registered are included in the calculations.

3. The reported projects from the DSO level are included in the calculations.

CONNECTION PROCEDURE

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	No
Additional information	First, they must contact the relevant DSO. If the project is too big for the DSO level, then it is relevant to contact netkundecenteret in Energinet.

SUMMARY OF LINKS

Calculation, disclaimers, and boundaries
Link 1, Link 2

Contact point for hosting capacity information

Contact point for connection requests

Additional information

3.5.2 DSO: Cerius A/S

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	www.kapacitetskort.dk
Accessibility	Open
Regional scope	TSO and all DSOs are covered
Spatial granularity	Nodal (substation) – only 50/10 kV substations and up
Operator voltage level scope	50 kV and up
Timeline for which HC is provided	Available capacity for full access and non-firm connections, as well as future available capacity, taking into account network expansions
Information format	Map and table
Categories of grid users considered	Solar – production
Type of grid connection capacity information	Available
Availability of API	Openly available
Grid hosting capacity downloadable	Excel format
Update cycle	Quarterly
Available language	National language(s) only
Further development of the map/ information planned	Capacity available for consumption to be included

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm and flexible

Types of Capacity Information displayed (e.g. Firm and/or Flexible)
Firm and flexible

Description of firm capacity
Full access to the required capacity

Description of the methodology leading to firm capacity results
Grid calculation that provides free capacity for production in MW

Description of flexible capacity
Customers can always be cut off by the DSO/TSO when there are grid limitations

Description of the methodology leading to flexible capacity results
Grid calculation that provide flexible free capacity for production in MW

Main assumptions/disclaimers behind calculations
The available capacity is determined based on current knowledge of the power system, but does not take into account the physical space for connection in and around existing substations.

Other significant factors, such as access to land for the placement of new facilities, have also not been considered.

CONNECTION PROCEDURE

Available options for the investors if the map shows "no capacity available" in their interested area

The investor can request access from the specific location and wait for capacity to be build and provided

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	No
Additional information	Connection request procedure – partly

SUMMARY OF LINKS

Auxiliary documents

Contact point for hosting capacity information

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Grid hosting capacity available for new connections (any other relevant e.g. reserved)

Grid hosting capacity refers to the maximum amount of new electricity generation (or demand) (e.g. from renewables, electric vehicle (EV) chargers, data centres) that can be connected to the grid without violating operational limits or requiring significant grid reinforcements.

Flexible connection (any other relevant i.e. firm connection etc.)

A flexible connection agreement is a grid connection arrangement that allows electricity producers or consumers to connect to the grid under non-firm conditions. This means:

- The grid operator can limit or curtail the electricity injected into or withdrawn from the grid.
- The connection is subject to grid availability, and may not guarantee full access at all times.

3.6 Estonia

EXECUTIVE SUMMARY

At the TSO level, available hosting capacities in Estonia are published via a map, which shows grid connection prices for generation units based on their production capacity. There is no option for capacity unavailability, as Elering has moved to fixed prices and grid pre-development. If, by the time a generation unit is ready to inject power into the grid, the grid itself is not ready, the production will be curtailed, and the client will be compensated for the curtailment.

At distribution level, Elektrilevi is the largest DSO, serving about 95 % of the distribution grid. Two other DSOs – Viru Elektrivõrgud and Imatra Elekter AS – service about 4 % of distribution grid. Elektrilevi is the only DSO that has a capacity map for open use. It is important to note that the map has quite a few restrictions. The map only shows the free capacity of MV lines for producers. The calculation does not consider substation limitations and TSO connection point limitations. In addition, it is limited to specific grid parts in the map, as information is not available for all lines. There are no planned developments for the map, though this may be possible at a later stage. Currently, the free hosting capacity (in the map) is calculated using voltage levels.

Flexibility is a topic actively under development, though it remains at an early stage. Currently, information on fixed capacity is available, but the flexibility needs assessment will provide a more complete picture on flexibility. In LV, clients can connect to grid by ampere-based price (up to 63 A). In MV and some other exceptions, the connection fee is cost-based. If a grid reinforcement is not planned in the network development plan, then the client must pay for it.

3.6.1 TSO: Elering

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Elering
Accessibility	Open
Regional scope	TSO area
Spatial granularity	Nodal (substation) *
Operator voltage level scope	TSO 110 kV and 330 kV
Timeline for which HC is provided	Snapshot with all certain grid investments in the next five years. When a specific investment object is clicked, the map shows the year from which it became available for grid connection
Information format	Map
Categories of grid users considered	Generators and demand
Type of grid connection capacity information	Connection capacity in e-grid map calculation is limited by 200 MVA for 110 kV and 1,200 MVA for 330 kV. Larger amounts can be calculated by clients using “hinnakiri”. Note: Usually, this amount require a special approach, and we recommend making contact.
Availability of API	Not provided
Update cycle	When needed
Available language	National language(s) and others including English
Additional information	Shows only estimated cost, topology is simplified

* Pre-development: This includes fixed price per MVA for 110 kV (€65,000) and 330 kV (€12,000) connections.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Description of "firm capacity" and the methodology leading to firm capacity results
Firm capacity means that the TSO guarantees the use of the requested network capacity at all times for the client, while taking the N-1 criteria into account.

Description of "flexible capacity" and the methodology leading to flexible capacity results
The TSO's methodology does not define flexible capacity. The TSO guarantees the connection capacity as "firm capacity". In order to guarantee grid capacity, the TSO pre-develops the grid by considering the project perspective. If curtailments are required, the client will be compensated for the set limitations.

Description of the criteria and methodologies used that lead to the published information
In order to pre-develop the grid to provide firm capacity, the TSO plans grid investments accordingly, using static analyses and considering NDPs. Based on the NDP, different scenarios are developed, taking into consideration time horizons where different RES plans are in operation. In addition to scenarios, different regimes are also considered, for example, production location, which generation module is producing, etc. The regimes help identify problems in the grid, such as voltage issues. The base data also includes statistics about locations where RES production is possible. We also publish information about existing substations, whether they are expandable for the new connections, and new planned substations.

Main assumptions/disclaimers behind calculations
Published connection possibilities are available in our interactive map, with the indicated connection costs. The grid reinforcement cost, as specified in the TSO price list, will be paid based on the requested capacity.

CONNECTION PROCEDURE

Connection request procedure
Detailed information can be found here.

Available options for the investors if the map shows "no capacity available" in their interested area
Available capacity does not affect connection costs. Investors may request further information regarding connection possibilities and prices from the TSO.

Connection request rules	First come, first served *
Information published for volumes of connection requests/ waiting lines	Yes
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Per technology, capacity and location of the connection point (TSO substation).

* With fixed prices, this now applies to availability for new connection points in existing substations.

SUMMARY OF LINKS

Calculation method, disclaimers, and boundaries

Connection request process

Auxiliary documents

Legal references

3.6.2 DSO: Elektrilevi

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	https://vla.elering.ee/ https://elektrilevi.ee/en/liitumised/vabad-voimsused
Accessibility	Open
Regional scope	No additional filters are available to view specific regions; only feeders across the entire Elektrilevi grid can be displayed.
Spatial granularity	Distribution lines. The TSO map includes substation nodes.
Operator voltage level scope	The DSO is responsible for network up to 35 kV.
Timeline for which HC is provided	This is not applicable, as it depends on the grid's current situation and needed grid reinforcements.
Information format	Map
Categories of grid users considered	Wind, solar and other production
Type of grid connection capacity information	Available
Availability of API	Openly available
Grid hosting capacity downloadable	No
Update cycle	Monthly update
Available language	National language(s) only + others, including English
Further development of the map/ information planned	No

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible) Firm

Description of firm capacity
Offered capacity is available all the time

Description of the methodology leading to firm capacity results
The formula calculates available hosting capacity in the MV grid, considering only feeders supplied from 110 kV or higher voltage transformers, which is why the whole grid is not visible. The calculation is based on the maximum permitted output of existing and soon-to-be connected producers.

The hosting capacity is derived using the active resistance (R) of the MV network (including transformer resistances), with cos(φ) = 1, i.e, reactive power is not considered. The starting voltage is taken from our guideline, and the permissible voltage increase is calculated as a percentage. Consumption is assumed to be zero, meaning only maximum generation is considered.

The total transferable generation capacity (W) is calculated using:

- ΔU = relative voltage rise (%)
- U = starting voltage
- R = total active resistance of the MV network including transformer impedances

The available capacity is then obtained by subtracting the already installed generation capacity from this result. Additionally, the maximum permissible transfer capacity of the supplying MV line is taken as a boundary condition.

Final available hosting capacity is calculated by:

- Imax = maximum transfer capacity of the upstream line (W),
- Pallowed = calculated hosting capacity limit (W),
- Pinstalled = currently installed generation capacity (W).

Description of flexible capacity
This is not directly applicable. However, in our grid, flexibility should initially be applied against reserved capacity. In other words, flexibility is not intended to replace or cover the main required capacity. It represents a form of "virtual" capacity that can be allocated to clients or used by grid planners as if it were real capacity, without the need to build or secure additional physical capacity. Reserved capacity is needed to provide the grid service mandated in grid service quality standards (outage hours).

Description of the criteria and methodologies used that lead to the published information
Same as above

Main assumptions/disclaimers behind calculations
- Maximum production all at once
- Consumption doesn't help available capacity. Consumption = 0
- Primary substation is not a limit
- TSO connection point capacity is not a limit

CONNECTION PROCEDURE

Connection request procedure
Link 1, Link 2

Available options for the investors if the map shows "no capacity available" in their interested area
Option to pay for the grid reinforcements. Elektrilevi has a cost-based connection fee. Depending on the size of the client, they can also ask for a connection from the TSO. In some cases, Elektrilevi offers longer outage hours for clients, making it possible to avoid reinforcements that provide reserved capacity. This is a form of flexible connection that gives the client the option of paying less, although it may have longer outages. This is only meant for producers and depends on the grid situation.

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	No
Additional Information	The connection request process begins with submitting an application, including technical parameters and necessary documentation. Elektrilevi evaluates the request based on network capacity, development plans, and legal requirements, issuing a connection offer within 30 days. The connection fee is calculated using a methodology that considers actual or forecasted costs, regional development, and available capacity. For producers (especially over 15 kW), additional guarantees and technical compliance are required, indirectly supporting grid stability and energy transition goals.

SUMMARY OF LINKS

Calculation method, disclaimers, and boundaries

Connection request process
Link1, Link 2

3.7 Finland

EXECUTIVE SUMMARY

At the TSO level, Fingrid publishes hosting capacity information. The hosting capacities are shown by year for the next ~10 years on the substation and power line levels for Fingrid's 110–400 kV network. The grid scope does not provide information on DSOs' network capacities. The hosting capacities are calculated for firm capacities, and the values are only for demand and production. Calculations take into account the thermal, dynamic, and voltage limitations set by the grid for each given year. The values presented in the grid scope are rough estimates, and are not legally binding. Fingrid does not guarantee that the values in the grid scope are comprehensive and error-free. The capacity is provided on a first-come, first-served basis.

3.7.1 TSO: Fingrid

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Fingrid
Accessibility	Open
Regional scope	Mainland Finland
Spatial granularity	Nodal (substation)
Operator voltage level scope	Fingrid's 110 – 400 kV grid
Timeline for which HC is provided	~10 years into the future
Information format	Map
Categories of grid users considered	Generators and demand
Type of grid connection capacity information	Rough estimation about available capacity
Update cycle	When needed
Available language	Finnish and English
Additional information	Granularity: for 400 kV and 220 kV per node, for 110 kV per line and per node Operator voltage scope: DSOs publish their own data separately Type of grid connection capacity information: Values provided are not guaranteed. Connections may affect connection capacities on other lines and stations.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Description of "firm capacity" and the methodology leading to firm capacity results
Firm capacity refers to capacity that does not exceed the grid's thermal or voltage limits and does not require curtailment, even in a non-intact grid. As the grid operator with system responsibility, Fingrid retains the right to curtail demand and/or production to maintain the system security of the grid.

Description of "flexible capacity" and the methodology leading to flexible capacity results
Currently, flexible connections are used only as a temporary solution, as specified in the connection agreement.

Description of the criteria and methodologies used that lead to the published information
Capacities are calculated so as not exceed the thermal, dynamic, or voltage limitations of the grid, whether in an intact system or when a fault is present. Values provided are rough estimates.

Main assumptions/disclaimers behind calculations
The capacities published in the grid scope map are legally non-binding. Most of the values are estimations, and any project implementations may affect the connection capacity of other stations and/or power lines. The grid scope map currently only shows local capacity and does not consider the capacity at a regional level. Fingrid is currently working to add this information to the grid scope map.

Published values are rough estimates. Fingrid does not guarantee that information in the grid scope map is comprehensive and error-free.

CONNECTION PROCEDURE

Connection request procedure
Connection requests can be made on Fingrid's website.

Available options for the investors if the map shows "no capacity available" in their interested area
Investors may contact customer managers to inquire further

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	Yes
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Mainland Finland
Additional information	When the customer has all the required environmental and building permits, they may sign the connection agreement.

SUMMARY OF LINKS

Connection request process

Auxiliary documents

Contact point for hosting capacity information

Contact point for connection requests

3.8 France

EXECUTIVE SUMMARY

France's electricity system is managed by a single TSO – Réseau de Transport d'Électricité (RTE) – and multiple DSOs, with Enedis being the largest, along with other regional DSOs.

At the distribution level, Enedis is planning to publish its hosting capacity map in Q1 2026. The map will identify favourable areas for connecting new producers (in addition to those currently in the queue) and areas that are congested or discouraged. It offers a substation-level overview to help producers identify suitable zones for renewable energy projects and support future siting decisions. However, it does not replace a formal connection request, as detailed electrical studies are still required to confirm network capacity.

3.8.1 DSO: Enedis

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Aiming for publication in Q1 2026
Link to website	Not applicable
Accessibility	Open
Regional scope	All regions of France served by Enedis (representing 95 % of the territory)
Spatial granularity	TSO and DSO levels. RTE (French TSO) is participating in the project.
Operator voltage level scope	Hosting capacity is displayed by substation (20 kV)
Timeline for which HC is provided	Hosting capacity is provided for Y+3 with integration of the queue
Information format	Map
Categories of grid users considered	All renewable producers, mainly solar and wind
Type of grid connection capacity information	For each substation: status if the substation can host new renewable project (for + or −15 MW), can host with long delay or is congested.
Availability of API	Not provided
Grid hosting capacity downloadable	No
Update cycle	Three times a year
Available language	National language(s) only

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible)
Firm

Description of firm capacity
Producers can connect to the available hosting capacity.

Description of the methodology leading to firm capacity results
Firm capacity is obtained by calculating the technical capacity of the primary substations, then subtracting the capacity already used by connected producers and those in the queue. The map displays hosting capacities that take TSO congestion into account.

Description of the criteria and methodologies used that lead to the published information
The map shows four colors:

- Red: Congested area = The area will be congested for at least 5 years.
- Orange: Discouraged area = The area will be congested for 3 to 5 years.
- Light green: Favourable area = The area is not constrained and could host projects between 0 and 15 MW.
- Dark green: Very favourable area = The area is not constrained and could host projects of more than 15 MW.

The map displays hosting capacities that take TSO congestion into account

Main assumptions/disclaimers behind calculations
This map offers a substation-level overview to help producers identify suitable zones for renewable energy projects and support future siting decisions. However, it does not replace a formal connection request, as detailed electrical studies are still required to confirm network capacity.

CONNECTION PROCEDURE

Connection request procedure
Link

Available options for the investors if the map shows "no capacity available" in their interested area
Investors can either wait for the works to bring additional capacity or change their project location. In some cases, they may benefit from an alternative connection offer with non-compensated curtailment.

Connection request rules/principles	First come, first served. Once a customer submits a complete application for connection requests, the requested capacity is reserved until they exit the queue, either upon commissioning or upon declining the connection offer.
Information published for volumes of connection requests/ waiting lines	No. The hosting capacity map integrate the waiting lines but the volume of connection request is not available.
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	The map corresponds to the network area operated by Enedis, and capacities are displayed by primary substation.

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Grid hosting capacity available for new connections (any other relevant e.g. reserved)
Capacity available to host new producers (in addition to those already in the queue)

Capacity under connection request (e.g. waiting list)
Capacity in development, reserved for projects currently in the queue.

Flexible connection (any other relevant i.e. firm connection etc.)
Connection where producers may have curtailment.

3.9 Germany

EXECUTIVE SUMMARY

Germany has four balancing responsible TSOs and more than 800 DSOs. Hence, the publication of hosting capacity information is dependent on the SO responsible for the specific area of the grid.

At the TSO level, 50Hertz publishes a table indicating the amount of additional feed-in and additional load that can be hosted at the existing substations within its control zone. In addition, an assessment of switchgear bay availability is provided, based on already occupied and requested bays.

Amprion publishes the availability of switchgear bays in its control zone. Substations with free switchgear bays and potentially expansions for additional switchgear bays are indicated, as well as an initial assessment of expected commissioning years.

TenneT TSO provides a map of its control zone that shows grid-friendly locations for hydrogen power plants, electrolysers, and large-scale battery storage, based on grid congestion assessments. The map also shows the availability of switchgear bays. Due to several limitations, the information should be considered as indicative. The aggregated volumes of queued connection requests for each substation are also provided.

TransnetBW provides a map indicating substations with general or limited suitability for new grid connections in its control zone.[1]

At the DSO level, information on available connection capacity is provided by a number of regional DSOs, and within the scope of this report, an example from the participating company Netze BW GmbH is presented. "Mittelspannungsauskunft" is an internet-based self-assessment tool for those wishing to feed in electricity about available connection capacities in the MV grid. The hosting capacity system calculates the capacity based online loading, transformer loading, absolute voltage, and voltage increase. In the future, there may be an information service for supply and storage systems.

3.9.1 TSO: Amprion GmbH[2]

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Availability of switchgear bays is published
Link to website	Amprion
Accessibility	Open
Regional scope	Amprion control zone
Spatial granularity	Nodal (substation)
Operator voltage level scope	380 kV/220 kV/(partially) 110 kV (no publication for 110 kV)
Timeline for which HC is provided	Currently no capacity published
Information format	Table and map with availability of switchgear bays
Categories of grid users considered	Generation, demand and storage
Type of grid connection capacity information	Currently not published
Available language	National language(s) only

1 TransnetBW's connection capacity map was published after the editorial deadline of the report.

2 Please note that Amprion is currently reviewing the processes and that adjustments may be made in the coming months. The table has been completed according to the current status at Amprion (12/2025).

Additional information	Amprion currently publishes the availability of switchgear bays.
Update cycle	Three times a year
Available language	National language(s) only

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
NA

Description of "firm capacity" and the methodology leading to firm capacity results
Connection request has a fixed capacity, the implementation of which is being examined.

Description of "flexible capacity" and the methodology leading to flexible capacity results
Considered: In case of bottlenecks, flexible solutions are being examined.

Description of the criteria and methodologies used that lead to the published information
Currently not published

Main assumptions/disclaimers behind calculations
Currently not published

CONNECTION PROCEDURE

Connection request procedure
The process is published on the website.

Available options for the investors if the map shows "no capacity available" in their interested area
Contact TSO (netzanschluss@amprion.net)

Connection request rules	First come, first served
Information published for volumes of connection requests/ waiting lines	No
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Currently not published
Additional information	Connection requests are received centrally via the e-mail address: netzanschluss@amprion.net

SUMMARY OF LINKS

Connection request process

Contact point for hosting capacity information

Contact point for connection requests

3.9.2 TSO: TenneT TSO GmbH[3]

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Tennet
Accessibility	Open
Regional scope	Control zone (extra HV, only 380 kV nodes)
Spatial granularity	Nodal (substation) *
Operator voltage level scope	220 kV, 380 kV
Timeline for which HC is provided	2027/2028
Information format	Map
Categories of grid users considered	Generators and demand **
Type of grid connection capacity information	Availability (yes/no), requested
Availability of API	Not provided
Update cycle	Other ***
Available language	National language (German)
Additional information	"Grid-friendly" locations for hydrogen power plants, electrolysers and large-scale battery storage are indicated, based on dedicated studies. As an additional service, the regional discount factors for the contribution towards network cost ("Baukosten-zuschuss") are also displayed. For each substation, relevant network expansion projects and the connected distribution grid operator are provided.

* Substations that are not suitable for new units (e.g, because of planned deconstruction) are not shown.
** (Hydrogen) power plants, (market driven) electrolysers and large-scale battery storage units
*** Grid topology: yearly; connection request queue: monthly

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Currently binary information for connection availability (yes or no), capacity assessment under development

Description of "firm capacity" and the methodology leading to firm capacity results
Under development

Description of "flexible capacity" and the methodology leading to flexible capacity results
Not provided

Description of the criteria and methodologies used that lead to the published information
Congestion oriented studies: Market simulation and power flow calculations for one scenario year, considering a 500 MW unit that has been connected to different substations. The effect on grid congestion (amount of required/avoided redispatch) is used as an indicator for grid friendliness.

Further, the already connected units have been considered to check for potential violations of the maximum load and generation that can be connected to a busbar ("3 GW criterion"). If less than 150 MW are available, the substation is not suited for additional load or generation, respectively.

3 Please note that TenneT TSO GmbH is currently reviewing the processes and that adjustments may be made in the coming months. The report has been completed according to the current status at TenneT TSO GmbH.

Prominent short-circuit related restrictions have been considered as well.

A congestion management (redispatch) simulation has been performed. If the available free capacity on the lines connected to the substation is too low, the substation is not suited for additional load or generation, respectively.

Main assumptions/disclaimers behind calculations
The simulation results are indicative and not legally binding. Only one single unit in one scenario is considered, i.e. as soon as one unit is located it may affect the available grid capacity for subsequent units. Recent developments can change the availability and suitability of locations. Further in-depth studies are required during the grid connection process, e.g. regarding short-circuit capacity.

CONNECTION PROCEDURE

Connection request procedure
Yes, as explained on our website

Available options for investors if the map shows "no capacity available" in their interested area

Subject to project specific studies, longer lead times (several years) are likely. Please contact netzanschlussanfragen@tennet.eu

Connection request rules/principles	First come, first served (2025), currently under review
Information published for volumes of connection requests/ waiting lines	Yes
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Nodal (substation)

SUMMARY OF LINKS

Calculation, disclaimers, and boundaries

Connection request process

Auxiliary documents
Study on locations for electrolysers (in German)
Study on hydrogen power plant locations (in German)
Study on large-scale battery storage locations

Legal references
Please refer to the references listed on our website.

Contact point for hosting capacity information

Contact point for connection requests

3.9.3 TSO: 50Hertz Transmission GmbH

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	50Hertz Transmission GmbH
Accessibility	Open
Regional scope	50Hertz grid control area in Germany
Spatial granularity	Nodal (substation)
Operator voltage level scope	380 kV
Timeline for which HC is provided	Snapshot
Information format	Table
Categories of grid users considered	Generators and demand
Type of grid connection capacity information	The hosting capacity is categorised into classes: less than 500 MW, 500–1,000 MW, 1,000–1,500 MW, 1,500–2,000 MW, and greater than 2,000 MW. The available capacity for each class is shown. In addition, reserved substations are marked and substations with an oversubscription of requests are also indicated. More information will be displayed shortly.
Availability of API	Not provided
Update cycle	When needed
Available language	National language(s) only
Additional information	Link

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Description of "firm capacity" and the methodology leading to firm capacity results
Check for potential violations of the "3 GW criterion" considering customers (DSOs and directly connected units) that are already connected or have a reservation .

For substations with four or fewer transmission lines, the maximum transmission line capacity must be considered.

Description of the criteria and methodologies used that lead to the published information
For substations where a connection is possible the firm capacity is displayed

Main assumptions/disclaimers behind calculations
The published information is based on snapshots of grid development and reserved customer connections and should be considered as indicative. Recent developments can change the availability and suitability of locations.

CONNECTION PROCEDURE

Connection request procedure
Link 1, Link 2,

Available options for the investors if the map shows "no capacity available" in their interested area
Wait for an update with available capacity, or contact the TSO for further information.

Connection request rules	First come, first served
Information published for volumes of connection requests/waiting lines	Yes
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	The waiting list for the grid area is published using project numbers, which are assigned to requests once the minimum requirements are met.

SUMMARY OF LINKS

Connection request process

Contact point for hosting capacity information

Auxiliary documents

Contact point for connection requests

3.9.4 DSO: Netze BW GmbH

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Link
Accessibility	Open
Regional scope	In Germany, there are around 830 DSOs. The Netze BW grid is located in southwest Germany
Spatial granularity	Regional
Operator voltage level scope	The map refers only to the MV grid of Netze BW. No data from the TSO is integrated.
Timeline for which HC is provided	Current grid
Information format	Map
Categories of grid users considered	Generators only
Type of grid connection capacity information	The available grid connection capacity is specified.
Availability of API	Not provided.
Grid hosting capacity downloadable	No
Update cycle	Weekly
Available language	National language(s) only

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible)
Firm

Description of firm capacity/Description of the methodology leading to firm capacity results
Firm capacity means that no grid expansion measures are taken; instead, the capacity of the existing grid is provided. This allows customers to see where connections can be made without any time delay.

CONNECTION PROCEDURE

Available options for investors if the map shows "no capacity available" in their interested area
Investors can submit an official request.

Connection request rules/principles	First come, first served (2025), currently under review
Additional information	If a customer has made further progress with its planning of the feed-in system, register in the customer portal and easily submit the binding request online.

SUMMARY OF LINKS

Contact point for hosting capacity information

3.10 Hungary

EXECUTIVE SUMMARY

In Hungary, the publication of hosting capacity by DSOs, such as MVM, is currently in a developing phase. While advanced smart metering and real-time grid monitoring are being gradually introduced, the existing practice relies on manual data processing and periodic publication. Hosting capacity information is made available in Excel format, typically upon request or when relevant grid developments occur. These datasets provide insights into available connection capacity at specific substations or network segments, helping stakeholders assess the feasibility of new distributed energy resource (DER) connections. Due to limited automation and digital infrastructure, capacity maps and interactive tools are not yet in use. The methodology behind these publications is aligned with EU regulatory requirements, focusing on transparency and non-discriminatory access. As digitalisation progresses, Hungary's DSOs aim to enhance hosting capacity visibility through smarter systems and more frequent updates, supporting renewable integration and grid modernisation.

3.10.1 DSOs: MVM and E.ON

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Planning to publish
Link to website	–
Accessibility	Internal, sent out by NRA to stakeholders
Regional scope	All 6 DSOs in Hungary
Spatial granularity	Nodal (substation) - HV/MV
Operator voltage level scope	HV (132 kV), HV/MV (132/35 kV, 132/22 kV, 132/11 kV)
Timeline for which HC is provided	Y+2 (2028Q1), Y+5 (2031Q1)
Information format:	Table
Categories of grid users considered	Production: wind, solar, energy storage, hydro, gas, heat pumps
Type of grid connection capacity information	Available, requested
Availability of API	Not applicable
Grid hosting capacity downloadable	Only internal (as per above explanation), Excel format
Update cycle	When needed
Available language	National language(s) only
Further development of the map/ information planned	More precise table, map to be developed later

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible) Firm

Description of firm capacity
HV/MV transformer capacity based on the supply/ demand power that can be delivered on the MV network

Description of the methodology leading to firm capacity results
Way of defining free capacity on the meshed HV network

Description of flexible capacity
Flexible capacity refers to the ability of electricity consumers, producers, and storage systems to adjust their power usage or generation in real time to support grid stability. MVM uses this concept to manage voltage fluctuations, integrate RES, and avoid costly infrastructure upgrades. It includes smart grid technologies, flexible generation (like gas turbines), and market-based mechanisms where participants offer flexibility services to the grid.

Main assumptions/disclaimers behind calculations
The calculations assume technological neutrality, using standardised metrics like capacity, energy, and duration. They rely on scenario-based modelling from EU and national adequacy assessments, with seasonal time series data for demand and generation. Forecast errors, grid constraints, and operational limits are factored in. All inputs are based on validated data from TSOs and DSOs, and confidentiality is maintained throughout the process.

CONNECTION PROCEDURE

Connection request procedure
Link

Available options for the investors if the map shows "no capacity available" in their interested area
Mandatory need for network development/investment

Connection request rules/principles	Applicable window
Information published for volumes of connection requests/waiting lines	No

SUMMARY OF LINKS

Connection request process

Legal references:
13/2025. (VII. 31.) MEKH rendelet a villamos energia csatlakozási díjak alkalmazási szabályairól - Hatályos Jogszabályok Gyűjteménye – MEKH Decree on framework rules for determining electricity system usage fee, connection fees and special fees for the price regulation cycle Link 1, Link 2

Contact point for hosting capacity information

Contact point for connection requests

Additional information: TSOs and DSOs must publish detailed information on available grid capacity for new connections, especially in areas where capacity is limited or unavailable. This includes spatially granular updates, typically monthly, to inform applicants and support transparency. If a connection request is neither granted nor rejected, the operator must regularly update the applicant on the status and potential for flexible connection. This includes quarterly updates and guidance on alternative options like flexible agreements.

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Flexible connection (any other relevant i.e. firm connection etc.)
A flexible connection agreement allows grid access under conditions that limit or control electricity injection or withdrawal. It is offered where firm connections are not feasible due to grid constraints. These agreements can later be converted to firm connections if the grid is reinforced.

3.11 Ireland

EXECUTIVE SUMMARY

ESB Networks is the only DSO in Ireland and produces the capacity heatmap for the entire country. The capacity heatmap contains capacity information on all three-phase LV, MV, and HV DSO substations. It provides an interface that enables the easy identification of potential transformer capacity in the vicinity of a site. An Excel file is available to download from the download section on this page.

The availability capacity heatmap provides an indication of available transformer capacity at the substation level and all voltage levels for new demand and generation customers. It is a user-friendly and interactive map that shows how much demand or generation can be added to a substation without reinforcement. It empowers potential customers and gives them a better understanding of where connection is possible.

In the map, HV substations are classified into three categories corresponding to the connection voltage, i.e. 110 kV, 38 kV, or MV.

The map also gives the location and available demand capacity for all three-phase MV/LV substations. LV data capacity is in the range of customers looking to connect demand less than 500 kVA, typically small businesses, farms, and small community projects. If the indicated capacity meets customer' needs, then it can be reasonably assumed no new substation development is required. However, site-specific details, such as proximity and physical access, could still be an overarching limiting factor.

3.11.1 DSO: ESB Networks

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	ESB Networks
Accessibility	Open
Regional scope	All of Ireland
Spatial granularity	Nodal (substation) - Map covers HV/MV substations and MV/LV substations
Operator voltage level scope	DSO maps cover capacity on distribution networks from 110 kV down to 38 kV, 20 kV, 10 kV, and LV. The TSO in Ireland does not publish capacity heatmaps.
Timeline for which HC is provided	Capacity is presented as a snapshot of capacity available at the time of publication.
Information format	Map and table
Categories of grid users considered	Customers, both demand and generation.
Type of grid connection capacity information	Available capacity
Availability of API	Openly available
Grid hosting capacity downloadable	In Excel
Update cycle	Target is for quarterly releases
Available language	National language and English
Further development of the map/ information planned	Further development work is in progress but no specifics are available at this time.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible)
Firm

Description of firm capacity/Description of the methodology leading to firm capacity results
Firm Capacity at a HV substation is the demand load that a station can supply on a long-term cyclic basis following an N-1 event on a station transformer. For example in a typical 2 × 10 MVA 38 kV/MV substation after an N-1(fault or maintenance outage) on a transformer a single 10 MVA transformer will remain in service. This transformer can be overloaded to 150 % (15 MVA) based on a long term daily cyclic load profile. The Firm capacity of this 2 × 10 MA station is 15 MVA.

Description of flexible capacity
Flexible capacity is not currently indicated on heatmaps.

Description of the methodology leading to flexible capacity results
Flexible capacity results are not displayed

Main assumptions/disclaimers behind calculations
This availability capacity heatmap provides an indication of the available transformer capacity at substations. The map indicates transformer capacity only. It does not guarantee that the same capacity is available in the upstream networks. The heatmap is a snapshot, representing a moment in time of a continually changing network system. It cannot be relied on in isolation to assess the viability of a connection to a location. While reasonable efforts are made to ensure that the capacity map and related information is accurate, we do not warrant, and do not accept any responsibility or liability for, the accuracy or completeness of the content or for any consequence or loss which may arise from reliance on the capacity heatmap or related information. The data provided must be considered in conjunction with explanations in the "Important details about the heatmap" section. The available capacity figures will be periodically updated, and the latest versions will be posted on the website. The legal disclaimer terms and conditions for use of our website apply to the availability capacity heatmap and related information.

CONNECTION PROCEDURE

Connection request procedure
Link.

Available options for the investors if the map shows "no capacity available" in their interested area
All customers are advised to make a formal application to DSO so that a study can be completed to determine what reinforcements may be required. Flexible connection agreement products are at pilot stage and are under development for the future.

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	No
Additional information	Link

SUMMARY OF LINKS

Connection request process

Auxiliary documents

Contact point for hosting capacity information

Contact point for connection requests

Additional information

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Grid hosting capacity available for new connections (any other relevant e.g. reserved)

Grid hosting capacity refers to the remaining available firm capacity at a substation. This is also referred to as headroom capacity, which is the capacity at the local distribution station. Available capacity in the transmission system is not considered, as it is managed separately by the TSO.

Flexible connection (any other relevant i.e. firm connection etc.)

Flexibility or flexible demand refers to the ability to adjust or shift electricity usage in response to changes in supply or demand. It gives customers more control over when they use or store electricity, depending on local RES generation and electrical network conditions.

A dynamic flexible connection is where a customer is connected to the electricity grid with specific terms or conditions, typically related to the customer's peak electricity demand. Under this arrangement, the customer agrees to reduce its maximum demand under certain conditions in exchange for increased Maximum Import Capacity (MIC in an area of constraint.

3.12 Italy

EXECUTIVE SUMMARY

Italy's electricity system is managed by a single TSO, Terna S.p.A, and more than 100 DSOs, with e-distribuzione, Unareti, Areti, and Irete being among the largest, along with other regional DSOs.

At the DSO level, public information on grid hosting capacity is partial and not uniform in format type. For example, e-distribuzione publishes an interactive map showing grid saturation level, critical points, and the areas most suitable for connection (link). Other DSOs also provide information on grid hosting capacity (e.g. Ireti, Edyna, Inrete).

Based on the information received from the DSO Areti, information in a map format on grid hosting capacity is planned to be published in future covering the country area for both consumption and production. The information will cover available and forecasting of availability for both hosting and load capacity.

3.13 Latvia

EXECUTIVE SUMMARY

At the distribution level, the hosting capacity map of Sadales Tikls, a Latvian DSO covering the vast majority of the country's territory, provides available firm connection capacity at the primary substation (nodal) level.

Hosting capacity covers both the generation and demand sides. On the generation side, available hosting capacity is calculated as the difference between the largest 110 kV transformer capacity and the sum of installed and reserved generation capacity. Information on the technology and capacity of each generation that has reserved capacity for each primary substation is publicly available. For substations with no available demand-side hosting capacity, the map shows <0.5 MW. For generation, it shows <0.011 MW (the maximum microgeneration installed power), encouraging new customers to submit an application so Sadales Tikls can examine potential line reconfigurations or other network operations to provide the desired capacity.

The map/website also encourages business customers to submit an application, allowing their requests to be examined under flexible connection agreements for both demand and generation. Energy storage is not considered in calculations, but rather follows the rules of non-firm capacity. In the future, we plan to add a preliminary curtailment assessment for all substations, giving customers a rough estimate of potential energy losses based on the required capacity and location.

3.12.1 DSO: Sadales Tikls

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Sadales Tikls
Accessibility	Open
Regional scope	Country
Spatial granularity	Nodal (substation)
Operator voltage level scope	Aiming at 6;10;20 kV network by showing the HC limits at the 6-10-20/110 kV substation
Timeline for which HC is provided	Snapshot
Information format	Map
Categories of grid users considered	Demand, generation (technology-agnostic)
Type of grid connection capacity information	– Available and reserved for generation – Available for demand
Availability of API	Not provided
Grid hosting capacity downloadable	No
Update cycle	Weekly
Available language	National language(s) only
Further development of the map/ information planned	Expected wind and solar curtailment against the requested capacity for each substation, so that customers have an idea of curtailment volume for new connections.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Types of capacity information displayed (e.g. firm and/or flexible)
Firm

Description of firm capacity
Required capacity available for customers 24/7

Description of the methodology leading to firm capacity results

- For Generation: Installed capacity + reserved capacity
- For Demand: Historical load + reserved capacity x probability of installation/commissioning
- **Main assumptions/disclaimers behind calculations**
- Generation: Using co-incidence factor of 1.0, regardless of technology
- Demand: Overbooking permitted, customers still encouraged to apply so that Sadales Tikls can examine non-firm connection options

CONNECTION PROCEDURE

Available options for investors if the map shows "no capacity available" in their interested area

Applications are encouraged in any case, but especially on the demand side. Applications are assessed individually, with Sadales Tikls examining line reconfigurations, N-1 operations, and non-firm connections.

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	Partly, available for generation
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Nodal (substations)

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Dynamic export/import limits
Applies to non-firm capacity, where customers' import/ export limits are set by the DSO depending on real-time grid conditions.

Fallback mechanism
Requires a common understanding of terminology for cases when the control of non-firm capacity (e.g. through SCADA) fails. For example, if the telco network goes down, this shows how the generation is limited for that period.

3.14 Lithuania

EXECUTIVE SUMMARY

Lithuania's electricity system is managed by a single TSO, Litgrid, and several DSOs, with Energijos Skirstymo Operatorius (ESO) being the largest, alongside other regional DSOs.

Litgrid provides transparent hosting capacity information through an openly accessible online map covering Lithuania at the nodal (substation) level. The published data reflects both available and reserved capacities across the 110 kV and 330 kV networks, while other TSO lines, such as 300 kV DC and 400 kV, are represented but not open for new connections. Hosting capacity is assessed over a 10-year (Y+10) horizon, incorporating only projects with signed construction agreements. Updates occur as soon as possible, but more impactful changes happen quarterly due to the auction-based nature of capacity reservations.

The methodology used by Litgrid distinguishes between firm and flexible capacity. Firm contracts are offered to consumers, while generation and storage operate under flexible conditions. Capacity is allocated separately to solar, wind, and storage, with curtailment rules applied to manage simultaneous generation. Calculations are based on static system assessments after faults. Investors without capacity in their preferred location can still request preliminary connection requirements, including details on necessary reinforcements or grid expansions.

A Lithuanian DSO, ESO, has five public hosting capacity maps. The first, designed for consumers, is simplified to make it easier for the general public to understand and shows only available capacity and already installed capacity. There are two maps for solar and storage at the 110 kV and 35 kV levels, and two maps for wind energy at the same voltage levels.

3.13.1 TSO: Litgrid

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Litgrid
Accessibility	Open
Regional scope	Country (Lithuania)
Spatial granularity	Nodal (substation) *
Operator voltage level scope	Connection is available to 110 kV and 330 kV. 300 kV DC, 400 kV and in the future 220 kV lines are represented but connecting to them is not allowed. Only the transmission grid is shown
Timeline for which HC is provided	Y+10 is provided. When calculating how grid expansion and reinforcements affect capacities, only projects with signed construction works agreements are considered. Projects that are in the planning phases are portrayed on the map, but connection to them is not yet allowed and they do not impact available capacities.
Information format	Map
Categories of grid users considered	Generation and storage
Type of grid connection capacity information	Available, reserved, temporarily reserved and connected
Availability of API	Openly available **
Update cycle	When needed ***
Available language	National language(s) only

* Available capacity is listed for each TSO substation and line. These capacities are linked into zones. A connection to a substation or line has a direct impact on the available capacity of other substations/lines in the same zone. Cross-zonal influence is also present and accounted for in published data.

** Openly available on the arcgis platform. *** Major changes occur quarterly but if, for example, a grid reservation is cancelled, it is published as soon as possible.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm and flexible[1]

Description of "firm capacity" and the methodology leading to firm capacity results
Firm capacity is offered to energy consumers only. A "firm contract" means that the grid operator cannot limit consumers' power, except for incidents that pose a blackout risk.

Description of "flexible capacity" and the methodology leading to flexible capacity results
Grid capacity is allocated to solar, wind, and BESS separately and independently, meaning that in theory, 3x grid capacity could be connected to the grid. For example, 70 MW of solar, 70 MW of wind, and 70 MW of BESS can be connected to a 70 MW line. Solar and wind generation are calculated as non-competing. During periods where both solar and wind generate simultaneously, all generation is curtailed according to a set step. BESS are not allowed to generate during peak generation and are curtailed if that occurs (unless it is due to participation in balancing markets).

Description of the criteria and methodologies used that lead to the published information
Static calculations of systems after a fault. Grid reservations for generation and storage are given quarterly, so they impact the calculations after these quarterly auctions. Grid reservations for demand are made after grid connection requirements are given (1 month after first asking the TSO). After each quarterly reservation cycle, the TSO and DSO together decide how much of the TSO's grid should be reserved for the DSO's upstream power flow. These reservations are made for solar, wind, and BESS separately.

Main assumptions/disclaimers behind calculations
Solar and wind power plants are calculated as non-competing due to different generation profiles.

CONNECTION PROCEDURE

Connection request procedure
Connection process is detailed on our website.

Available options for the investors if the map shows "no capacity available" in their interested area
If there is no capacity available in an area, an investor can still inquire about preliminary connection requirements, and the TSO will provide either a document with the required reconstructions/grid expansion or the preliminary connection requirements with the required grid expansion/reconstruction details.

Connection request rules/principles	Other (please specify)
Information published for volumes of connection requests/waiting lines	Yes
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Every separate grid reservation is published.

SUMMARY OF LINKS

Calculation, disclaimers, and boundaries

Connection request process

Auxiliary documents

Legal references
Link 1, Link 2, Link 3, Link 4

Contact point for hosting capacity information

Contact point for connection requests

1 All generation contracts after mid-2023 are non-firm. Currently, only firm contract for demand are in place. Storage contracts are non-firm.

3.13.2 DSO: Energijos skirstymo operatorius, AB (ESO)

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published – DSO and TSO maps are separate
Link to website	– Generation and BESS – Consumption
Accessibility	Open
Regional scope	The entire ESO grid, which covers the majority of the country. ESO manages about 99.99 % of Lithuania's DSO grid.
Spatial granularity	Nodal (substation)
Operator voltage level scope	35 kV and 110 kV primary substation level
Timeline for which HC is provided	As is situation, updated daily
Information format	Map and table
Categories of grid users considered	A separate map for consumers, showing information for both the 35 kV and 110 kV levels; a combined map for 35 kV solar and energy storage; a combined map for 110 kV solar and energy storage; a map for 35 kV wind; a map for 110 kV wind
Type of grid connection capacity information	Consumer maps display only the installed and reserved capacity at the primary substation. Generation maps provide details on connected, reserved, and available capacity for each type of generation source – solar, wind, and storage.
Availability of API	Not provided
Grid hosting capacity downloadable	No
Update cycle	Information updated daily
Available language	National language(s)
Further development of the map/ information planned	Capacity for flexible connections, planned for implementation by the end of 2026

HOSTING CAPACITY

Consideration of firm or flexible capacity
Firm: Capacity for flexible connections is planned for implementation by the end of 2026

Types of capacity information displayed (e.g. firm and/or flexible)
Firm

Description of firm capacity/ Description of the methodology leading to firm capacity results
There are two definitions for firm capacity, one for consumption and one for generation:

Permitted consumption capacity: The maximum capacity specified in the connection agreement for electrical installations concluded between the TSO or DSO and the network user, in the ownership boundary act and/or other documents related to the network user's electrical installations, which the network user may consume from the electricity networks at any time.

Permitted generation capacity: The maximum active power that may be supplied from the network user's electrical installations to the TSO's or DSO's electricity networks at the connection point, as specified in the connection agreement for electrical installations concluded between the TSO or DSO and the network user, in the ownership boundary act and/or other documents related to the network user's electrical installations. At present, the impact of consumers' capacity on the distribution electricity network is assessed using theoretical calculations, as regulated in the methodology for determining calculated electrical loads (link to methodology for Determining Consumers' Calculated Electrical Loads, in Lithuanian only). The distribution network is developed based on assumptions, taking

into account the diversity factors of certain consumer groups (apartments in multi-apartment buildings, homesteads, residential houses), determining the normative capacities of facilities, and considering the impact of heat pumps and EV charging stations on the distribution network.

Description of flexible capacity

Two terms for non-firm capacity are considered: flexible connection agreement and variable capacity.

Flexible capacity is understood in the context of flexible connection agreements as outlined in Directive (EU) 2024/1711. Flexible capacity is interpreted as capacity provided under special network use terms. These terms may vary and depend on whether the capacity is needed for consumption or generation, as well as on the user and the size and nature of the required capacity.

When referred to generation, flexible capacity is treated as the available network capability to accept generation during periods that do not coincide with the solar generation profile.

When referred to consumption capacity, two scenarios are distinguished:

- Available network capacity during periods that do not coincide with the peak consumption profile. Peak consumption is determined by the actual load of the substation and may differ depending on the substation to which the user is connected.
- If the user's needs require steady capacity in all periods (even if temporarily lower), then we treat flexible capacity as connecting the user in N-0 mode, with the connection agreement specifying conditions regarding possible restrictions and more frequent disconnections from the network during network maintenance. Such a user connection would be exclusively temporary until the end of the substation reconstruction, when it will be possible to switch the user to N-1 mode.

Variable capacity differs from flexible capacity in two main ways. First, it is not a temporary arrangement – the object always operates under this agreement. Second, there are no predefined capacity limits for specific time periods. Instead, the object must continuously adapt to the actual grid load, without exceeding its maximum permitted capacity. At present, these objects are directly connected to the transformer via fiber optic cables, enabling them to follow real-time data. This setup allows only one variable connection per transformer. In the long run, we plan to integrate DERMS solutions to connect multiple objects simultaneously.

Description of the methodology leading to flexible capacity results

For flexible connection agreement capacity, historical 15-minute net load data for substations and secondary substations are used.

Substation and secondary substation loads are checked across different seasons – for example, in winter when consumption is highest and in summer when generation is highest. From the analysis results, peak and off-peak periods are identified, and the actual load is assessed. In addition, expected loads are added for users that have been issued connection permission but are not yet connected. To manage the risks, a load margin is maintained.

For variable capacity, no fixed methodology exists, as the object must continuously adjust its consumption or generation in real time based on the grid load.

Description of the criteria and methodologies used that lead to the published information

As per the answer provided in the description of the methodology leading to firm capacity results, following is the link to the methodology for determining consumers' calculated electrical loads (in Lithuanian only).

Main assumptions/disclaimers behind calculations

Currently, the impact of consumers' capacity on the distribution electricity network is assessed using theoretical calculations, as regulated in the methodology for determining calculated electrical loads. The distribution network is developed based on assumptions, taking into account the diversity factors of certain consumer groups (apartments in multi-apartment buildings, homesteads, residential houses), determining the normative capacities of facilities, and considering the impact of heat pums and EV charging stations on the distribution network..

CONNECTION PROCEDURE

Available options for the investors if the map shows "no capacity available" in their interested area

Business customers can apply to ESO to request preliminary technical conditions, in which our specialists will calculate the preliminary cost of the necessary investments and specify the work required. If reconstruction is required from the TSO, ESO's employees will contact them directly to clarify the investment needs and their amount.

Prosumers wishing to connect to the network have several options: they may connect a solar power plant of up to 1 kW without additional technical conditions (the remaining generation must be consumed within the internal network). If this option is unsuitable for the customer, we can provide alternatives indicating how much the DSO or, if necessary, the TSO investments would cost.

For household consumers, fixed network connection fees are applied (a price per kW, which varies depending on the planned capacity of the facility to be connected – up to 500 kW or above 500 kW – and on the distance to the transformer station – up to 1,000 m or over 1,000 m). Therefore, even if there is insufficient capacity at the network location, the DSO takes care of the reconstruction, which is covered by the calculated fee. However, if there is a shortage of capacity in the network, the reconstruction process may take additional time.

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/waiting lines	No, only information about reserved capacity is published
Additional Information	Requested connection capacity in the grid is reserved after the connection contract is signed. These reserved capacities are displayed in capacity maps for wind, solar, and consumption capacity maps.

SUMMARY OF LINKS

Calculation method, disclaimers, and boundaries

Connection request process

Auxiliary documents

Legal references

- General rules for the installation of electrical equipment
- Law on electricity of the Republic of Lithuania
- Methodology for determining consumers' electricity loads
- Description of the procedure for connecting electricity producers' and consumers' electrical installations to the power grid
- Methodology for determining the charges for connecting electrical installations to the power grid

Contact point for hosting capacity information

- Map of available capacities of transformer substations for consumers contact point for connection requests
- Maps of available capacities in transformer substations for producers' connection
- If customers need more information, they can contact ESO via info mail or through the self-service portal.

Contact point for connection requests

Additional information

- Electricity connection and capacity increase calculator
- Verification of available generation capacity for prosumers
- Map of investment projects for planned electricity network management systems, substations and power lines

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Grid hosting capacity available for new connections (any other relevant e.g. reserved)

Available generation capacity at each transformer substation is calculated as the technical capacity of the transformer substation minus the capacities of the connected power plants and the capacities reserved for other network users developing projects. An explanation is provided on ESO's hosting capacity map website.

Capacity under connection request (e.g. waiting list)

There is no precise definition in the legislative documents. However, it is considered that capacity under a connection request applies only to cases where a connection agreement has already been signed. Not every submitted request is counted, since investors often file multiple requests for different locations simply to obtain price estimates and then select the most favourable option.

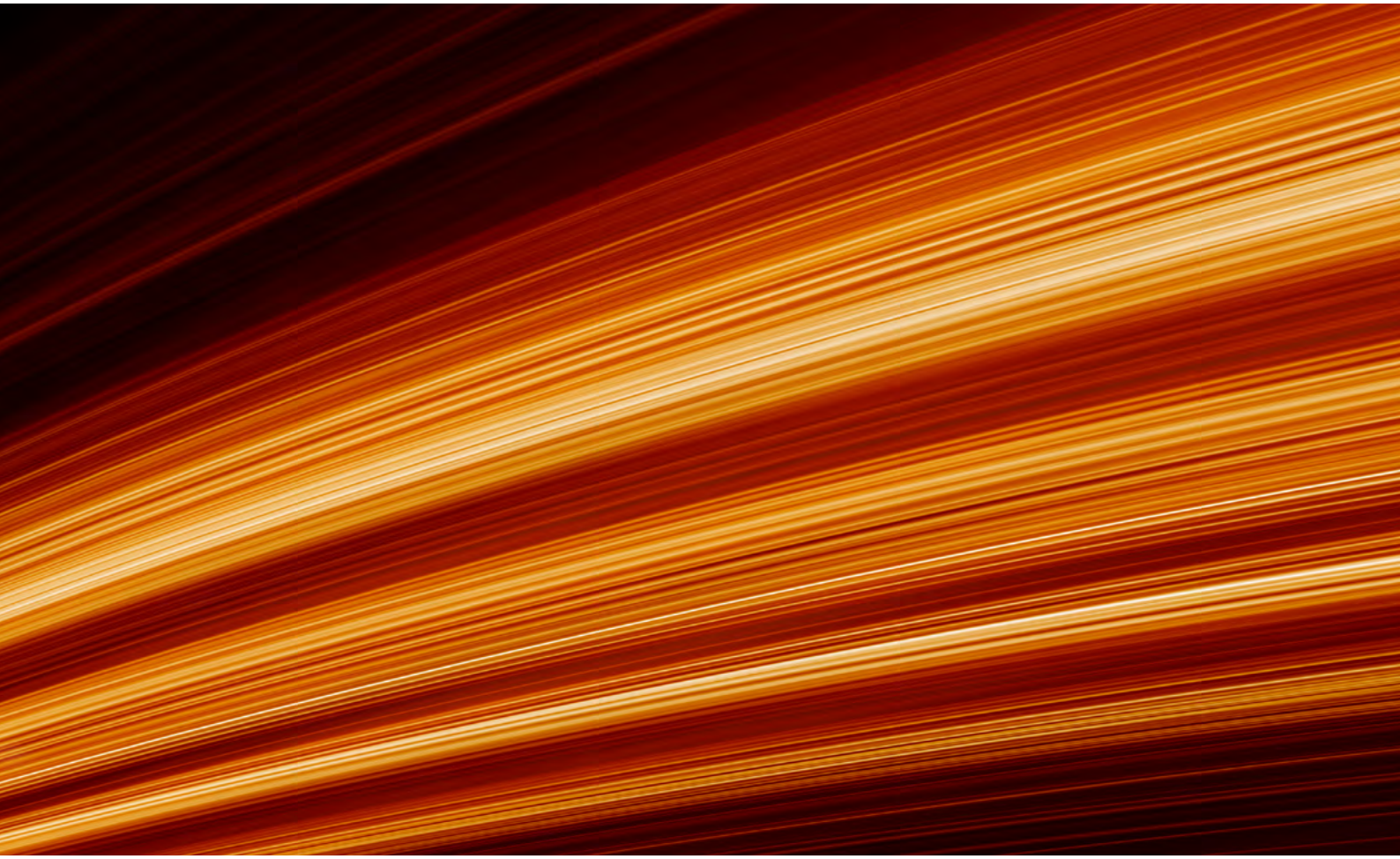
Flexible connection (any other relevant i.e. firm connection etc.)

The concept of a flexible connection agreement has not yet been incorporated into legislative acts. At present, it is considered as a temporary arrangement that allocates specific capacities across defined time periods.

For variable capacity, two definitions are considered:

Variable permitted generation capacity (hereinafter – "variable generation capacity"): Active power that may be supplied from the network user's electrical equipment to the electricity grid at the connection point, varying depending on the real-time reverse generation load of the transformer substation.

Variable permitted consumption capacity (hereinafter – "variable consumption capacity"): Active power that may be consumed by the network user's electrical equipment from the electricity grid at the connection point, varying depending on the real-time consumption load of the transformer substation.



3.14 Malta

EXECUTIVE SUMMARY

Enemalta is the only DSO for Malta, responsible for the distribution and management of electricity across Malta and Gozo. It operates, maintains, and develops the national electricity grid, ensures reliable power supply, supports renewable energy integration, and provides technical solutions for new connections and network reinforcement.

The capacity map for the Maltese Archipelago serves as a vital informational resource, published in accordance with national and European regulations. Its primary objective is to provide stakeholders—including prospective consumers, renewable energy developers, and policymakers—with transparent, up-to-date estimates of available capacity within the low voltage distribution network at each locality. By visualising spare transformer capacity (in kVA) and available RES capacity (in kWp) at the substation level, the map enables users to identify areas where new load or RES connections may be feasible under current network conditions.

The figures presented are calculated by considering the existing transformer ratings, maximum historical demand, installed RES capacity, and grid voltage stability criteria. However, it is essential to note that these figures are indicative and do not constitute a binding commitment by Enemalta. Any connection request is subject to a formal evaluation process, which may include a detailed grid study as stipulated by the Electricity Connection and Supply Regulations. The map does not account for ongoing grid reinforcement works, nor does it reflect potential constraints elsewhere in the network that could impact connection feasibility. Updated quarterly, the map is intended to guide decision-making while emphasising that actual connection capacity may vary and, in some cases, require network reinforcement. Users are therefore encouraged to treat the map as an initial reference point and to engage with Enemalta for detailed assessments and connection procedures.

3.14.1 DSO: Enemalta

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Enemalta
Accessibility	Open
Regional Scope	Maltese Archipelago
Spatial granularity	Nodal (substation)
Operator voltage level scope	11 kV substations are visible on the map
Timeline for which HC is provided	Snapshot of the system peak load – July 2023
Information format	Map
Type of grid connection capacity information	Maximum connectable load and RES capacity, based on the transformers rating only
Availability of API	Account required
Grid hosting capacity downloadable	No
Update cycle	Quarterly
Available language	National language(s) only
Further development of the map/ information planned	No planned updates to the map

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity Firm

Description of firm capacity
The currently available capacity at the substation transformer without considering constraints on the low voltage network.

Description of the methodology leading to firm capacity results
For three-phase demand connections exceeding 41.6 kVA, the hosting capacity is determined by taking 75 % of the transformer's rated capacity and subtracting the transformer's maximum load recorded during the system peak in July 2023. For RES connections exceeding 13.86 kVA, the hosting capacity is calculated by subtracting the total connected RES capacity (in kVA, based on kWp at unity power factor) from 25 % of the transformer's rated capacity. Loads less than 41.6 kVA 3-phase and generators less than 13.86 kVA 3-phase can connect to the existing infrastructure without any additional studies and reinforcements.

Description of flexible capacity
Not applicable for Malta

Description of the criteria and methodologies used that lead to the published information
Described in the methodology for firm capacity.

Main assumptions/disclaimer behind calculations
Figures shown on the map are for guidance only and not binding. Connection requests undergo formal evaluation, possibly including grid studies. The map excludes ongoing reinforcements and other network constraints that may affect feasibility.

Additional information
When calculating the available demand hosting capacity, a 75 % factor of the transformer rating is considered to allow for the natural load growth of the grid.

CONNECTION PROCEDURE

Connection request procedure
Link

Available options for the investors if the map shows "no capacity available" in their interested area
Demand connections require grid reinforcements, namely new secondary distribution substation(s) or low-voltage feeders.

Following grid studies, generator connections require grid reinforcements, mostly by either installing new substations, uprating existing transformers or installing new transformers with OLTC, or installing new cables to substations.

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/waiting lines	No
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Not published
Additional information	Connection requests follow the Electricity Connection and Supply Regulations that are referenced as Subsidiary Legislation (S.L. 545.41).

SUMMARY OF LINKS

Connection request process

Auxiliary documents

Legal references
Link 1, Link 2

Contact point for connection requests

3.15 Montenegro

EXECUTIVE SUMMARY

Crnogorski Elektroprenosni Sistem (CGES), the TSO of Montenegro, is committed to enhancing grid transparency, resilience, and RES integration in alignment with European energy transition goals. CGES is actively contributing to the harmonisation of methodologies and practices for assessing the capability of the transmission network to accommodate additional generation, particularly from RES.

This document outlines CGES's current practices, planned developments, and challenges in implementing comprehensive hosting capacity information reporting.

CGES is working to improve data processing, stakeholder access, and scenario-based analyses, while addressing technical and regulatory constraints. Collaboration with regional and EU partners remains vital to ensuring consistency and comparability of hosting capacity information outputs.

Through proactive engagement with ENTSO-E GAP6, CGES supports enhanced grid planning, investment decisions, and system flexibility – paving the way for a secure, decarbonised, and interoperable European power system.

3.15.1 TSO: CGES

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	CGES
Accessibility	Open
Regional scope	Country
Spatial granularity	Nodal (substation)
Operator voltage level scope	Only TSO level (110, 220 and 400 kV)
Timeline for which HC is provided	Actual grid model
Information format	Map
Categories of grid users considered	Generators only
Type of grid connection capacity information	Available
Availability of API	Openly available
Update cycle	Yearly
Available language	National language(s) only

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Description of "firm capacity" and the methodology leading to firm capacity results
The calculation utilises one actual representative model of the Montenegrin power system combined with other models of the synchronous area of continental Europe. A virtual power plant with a large installed capacity is modelled at the connection point. The plant's production starts at 10 MW, with the nearest Hydro Power Plant (HPP) output reduced by 10 MW. Power flow calculations and N-1 system safety analyses are conducted. If no system element overload occurs, the virtual plant's power increases by 10 MW, and the nearest HPP output is reduced by the same amount. This iterative process

continues until an overload is detected. ΔCG is defined as the virtual power plant's capacity in the penultimate iteration.

Description of the criteria and methodologies used that lead to the published information

The maximum theoretical connection power for generation (GTCG) and load (GTCL) is calculated as GTCG = BCG − BCL + ΔCG, where BCG is base case generation power and BCL is base case load power; ΔCG is calculated as explained above.

Remaining transmission capacity for generation (RTCG) is calculated as RTCG = GTCG − TRMG − AACGmax + AACLmin, where GTCG is the maximum available generation connection power, TRMG is the reliability margin for generation power flow calculations, AACGmax is the reserved connection power for generation, and AACLmin is the minimum recorded load at the connection point under normal conditions in the last 36 months. Only RTCG data are published.

Main assumptions/disclaimers behind calculations

The assumptions on the model level reflect the system's state on a working day in March–April of the previous year. It incorporates the usual topology and switching state of Montenegrin system elements. Initial engagement of Montenegrin HPPs enables the necessary adjustments for potential capacity increases (ΔC), as explained above.

Other constraints include the spatial and technical limitations of substations or line connections, availability and limitations of planning documentation, as well as social, environmental, and other relevant factors. These assumptions are usually not included.

CONNECTION PROCEDURE

Connection request procedure

Link

Available options for the investors if the map shows "no capacity available" in their interested area

The agreement defines the connection point as the connection infrastructure (from the connection point to the CGES network) that can be constructed by the investor or CGES. The internal installations of the power plant (from the point of connection to the power plant) are always constructed by the investor and represent his asset. Upon signing of the subject agreement, it is necessary to build the power plant, internal installations, and connection infrastructure over a several-year period. After the works are completed in accordance with the agreement, the investor shall inform CGES that the contractual obligations have been fulfilled, which is then followed by temporary and then permanent system connection.

The map is only indicative based on all of the above assumptions. In parallel, CGES is working on reinforcing the infrastructure to integrate large-scale RES.

Connection request rules/ principles	First come, first served
Information published for volumes of connection requests/waiting lines	No
Additional information	The connection procedure is simple and defined by the Energy Law and the Transmission Grid Code. The procedure begins with the submission of a request for connection (filled a completed form with addittionaladditional documents such as urbanistic conditions, single-line diagram, technical data, etc...). At the expense of the investor, CGES develops a connection study, in which power flows in the N and N-1 modes, voltage-reactive conditions, short-circuit currents, and dynamic analyses are checked. After thatThen, CGES and the investor should agree and sign an agreement on the construction of connection infrastructure and connection, with the payment of the connection fee (from € 1.17/kW for 400 kV to € 6.26/kW for the 110 kV voltage level).

SUMMARY OF LINKS

Connection request process

Auxiliary documents

Legal references

Contact point for hosting capacity information &
Contact point for connection requests
No contact point defined: development and investment sector in charge

3.16 Netherlands

EXECUTIVE SUMMARY

Grid hosting capacity is currently indirectly (roughly deducible) published publicly on bottleneck aggregation level for voltages ≥10 kV. The supplied overview and corresponding data do not replace a formal grid integration test and are intended solely as a high-level overview of grid status. No rights can be derived from the published information. The derivation method of the grid hosting capacity is complex, contains several assumptions, and is not publicly available. The method and assumptions do, however, adhere as closely as possible to the principles and rules set out in the national Dutch grid regulation laws defined by the "Netcode".

3.16.1 DSO: Stedin

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	https://data.partnersinenergie.nl/capaciteitskaart/totaal/afname
Accessibility	Open
Regional scope	Country
Spatial granularity	TSO and DSO-level
Operator voltage level scope	Below 150 kV is DSO, everything above is TSO
Timeline for which HC is provided	Current year until capacity bottleneck resolution year
Information format	Map and table
Categories of grid users considered	Wind, solar, energy storage, consumers
Type of grid connection capacity information	Available, requested, reserved, not connected
Availability of API	Not provided
Grid hosting capacity downloadable	CSV format
Update cycle	Monthly and ad-hoc
Available language	National language(s) only
Further development of the map/ information planned	– January 2026: Available/requested/reserved capacity for each year displayed in a graph up until the bottleneck resolution year – June 2026: Restructured map to make it more bottleneck oriented to properly inform on nested congestion; therefore, a complete restructuring.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm and flexible

Description of firm capacity
A fixed contracted capacity limit per energy direction which, when agreed upon by both parties, the consumer/producer can use or give back to the grid at any time

Description of the methodology leading to firm capacity results
Stedin does not distinguish between firm, non-firm, and flexible capacity when reporting available, requested, or reserved capacity, which provides the best indication of grid hosting capacity shown on the map.

Description of flexible capacity
A fixed or non-fixed contracted capacity limit per energy direction, which, when agreed upon by both parties, the consumer/producer can use or give back to the grid at certain fixed or variable times.

Current firm agreements can also be adjusted through flexibility contracts to become non-firm at certain times to shave the peak load off the load curve on a DSO/TSO asset.

Description of the methodology leading to flexile capacity results
No distinction is made between firm, non-firm, and flexible capacity when reporting on available, requested, or reserved capacity, which provides the best indication of grid hosting capacity shown on the map.

Description of the criteria and methodologies used that lead to the published information
A complex prognosis model is used to derive the reserved capacity on a certain aggregation level of the grid.

The available connection capacity is computed by electrotechnical experts.

The requested capacity is derived from a waiting list of customers who have applied for transport capacity.

CONNECTION PROCEDURE

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/waiting lines	Yes
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Per bottleneck/congestion area, DSO substation and TSO substation
Additional information	Request lands on a waiting list or, in case of no congestion, is granted after some checks.

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Grid hosting capacity available for new connections (any other relevant e.g. reserved)
Capacity that is still "not used", i.e. the difference between the projected loads and the available capacity at a point in time

In Dutch: De beschikbare transportcapaciteit

Capacity under connection request (e.g. waiting list)
In the event of a transport restriction where new large customers are no longer allowed to directly obtain firm capacity (i.e. congestion), a waiting list is established to handle requests made after congestion was announced.

In Dutch: Klantaanvraag op wachtlijst

3.17 North Macedonia

EXECUTIVE SUMMARY

The TSO of North Macedonia, MEPSO, is planning to publish hosting capacity information. The connection procedure for generation and storage is up to date. Every application for generation and storage connection is studied in a two-step procedure.

In the first step (preliminary analyses), MEPSO defines the hosting substation and evaluates hosting capacity based on the steady-state N-1 security rule. Modelling takes into account the existing generation fleet and new generation projects that are under construction or have consent for grid connection. The analyses determine the percentage of hosting capacity that would be used to evacuate the applicant's generation. Based on this, MEPSO issues a preliminary consent for connection to the applicant. The second step (study for connection) is carried out once the applicant has obtained a generation project permit issued by the line ministry. The study includes steady state, dynamic, and power quality analyses, along with a complete specification of all connection assets. The user is granted consent for connection, valid for 5 years.

The new Energy Law outlines an updated, straightforward procedure, in which the ministry plays a pivotal role. The basic document is an annual plan for the construction of generation capacities and storage, which shall be prepared each year. Part of this plan is an integral study for grid connection, which simultaneously analyses all applicants that have met the qualification criteria. Flexible connections are introduced. Once new projects are confirmed, each applicant proceeds with MEPSO to define a separate grid connection study, including all the technical details of the connection. Applicants are required to issue a bank guarantee at the beginning of the procedure.

For demand connections, applicants follow the standard procedure in accordance with the grid code, communicating only with MEPSO. The analyses include only steady-state calculations and are expanded to include dynamic and power quality calculations only for complex industrial customers.

3.17.1 TSO: MEPSO

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Planning to publish
Link to website	–

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm and flexible

Description of "firm capacity" and the methodology leading to firm capacity results
Up-to-date: Grid connections consider firm capacity. New Energy Law: Defines the possibility for connections with flexible capacity. Please see the Executive Summary for details.

Description of "flexible capacity" and the methodology leading to flexible capacity results
New Energy Law: Methodology for flexible capacity shall be developed in the next step.

SUMMARY OF LINKS

Connection request process

Auxiliary documents

Legal references

Contact point for hosting capacity information

Contact point for connection requests

3.18 Poland

EXECUTIVE SUMMARY

Currently, at the distribution level, DSOs publish available capacities in the power grid (voltage above 1 kV) - in accordance with Art. 7 item 8l sub-item 2) of the National Energy Law Act: 8l. An energy company involved in the transmission or distribution of electricity is required to prepare information on:

1. Entities applying for connection of energy sources to the power grid with a rated voltage higher than 1 kV, location of connections, connection capacity, type of installation, dates of issue of connection conditions, conclusion of grid connection agreements and commencement of electricity supply,

2. The total available connection capacity for energy sources, as well as planned changes to these values over the next 5 years from the date of their publication, for the entire network of the company with a rated voltage above 1 kV, divided into power stations or groups of power stations forming part of the network with a rated voltage of 110 kV and above. The total connection capacity is reduced by the capacity resulting from the issued and valid conditions for connecting sources to the power grid and by the amount necessary to ensure electricity generation from offshore wind farms corresponding to the capacity referenced in Article 14(1) and Article 29(3) of the Act of 17 December 2020 on the promotion of electricity generation in offshore wind farms, in compliance with the provisions on the protection of classified information or other legally protected information. The company shall update this information at least once a quarter, considering the expansion and modernisation of the network and the connections that have been and are being implemented, and shall publish it on its website.

ENEA Operator sp. z o.o. (hereinafter: ENEA Operator or the Company) prepares and publishes information concerning, among other things, the total available connection capacity for sources, as well as planned changes to these values over the next 5 years, for the entire ENEA Operator network with a rated voltage above 1 kV, divided into power stations or groups of power stations included in the network with a rated voltage of 110 kV and above.

The total available connection capacity volumes were determined for separate areas defined by HV/MV substations. The values obtained were reduced by the connection capacities of sources planned for connection, including sources for which:

- A contract for connection to the network has been concluded,
- Connection conditions have been issued and have not expired,
- The connection is being processed in accordance with the rules set out in Article 7(9) of the Energy Law,
- Proceedings have been initiated with the President of the Energy Regulatory Office (URE) regarding the refusal to conclude a connection agreement.

The network structure reflects the changes planned for implementation by 2030 on the basis of the Company's development plan agreed by the President of the Energy Regulatory Office in terms of meeting current and future electricity demand for the years 2023-2028.

The connection capacity values for sources provided in this information are estimates for each area and are not evenly distributed across individual points within the designated areas. The power distribution depends on the structure of the distribution network, the existing load, and the current and modified load capacity of the cables as a result of network modernisation. Regarding the expected situation in the final year of calculations, the connection power values and the distribution of this power also depend on the implementation of the currently planned development of the power system by both ENEA Operator and the TSO. The available connection capacities from the ENEA Operator's area, taking into account the connected capacities and the energy sources expected to be connected, are presented in tabular form (on the map).

This report involves the information on PGE Dystrybucja, Tauron Dystrybucja S.A., ENEA Operator Sp. z o.o, STOEN OPERATOR Sp. Z.o.o and Energa-Operator.

3.18.1 DSO: PGE Dystrybucja

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	PGE Dystrybucja
Accessibility	Open
Regional Sscope	DSO
Spatial granularity	Not applicable
Operator voltage level scope	Above 1 kV
Timeline for which HC is provided	Y+5
Information format	Table
Categories of grid users considered	Wind and solar
Type of grid connection capacity information	Available
Availability of API	Not applicable
Grid hosting capacity downloadable	No
Update cycle	Quarterly
Available language	National language(s) only
Further development of the map/ information planned	No

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity Firm

Description of firm capacity

- Available power on the date of preparation of the document
- Available power at the time of document processing

Description of the methodology leading to firm capacity results

Engineering calculations on a network model

Description of the criteria and methodologies used that lead to the published information

Technical parameters of existing networks and changes to these parameters as a result of planned investments.

Main assumptions/disclaimers behind calculations

Taking into account the power demand and the power resulting from the issued conditions for connection to the power grid, taking into account the existing and planned state of the grid.

CONNECTION PROCEDURE

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/ waiting lines	No

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Grid hosting capacity available for new connections (any other relevant e.g. reserved)
The capacity of the energy system to connect new sources/consumers of electricity, developed for the distribution network area.

Capacity under connection request (e.g. waiting list)
The technical capability of the power system to connect a new source/consumer of electricity, assessed individually for each entity submitting a connection application.

Flexible connection (any other relevant i.e. firm connection etc.)
This is a type of connection to the DSO network where access to full connection power may be limited under certain system operating conditions. The DSO can provide a faster and cheaper connection, but with the proviso that it may temporarily reduce power or change the conditions of access to the network if necessary.

3.18.2 DSO: Energa-Operator

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Energa Operator
Accessibility	Open
Regional scope	DSO
Spatial granularity	Not applicable
Operator voltage level scope	Above 1 kV
Timeline for which HC is provided	Y+5
Information format	Table
Categories of grid users considered	Available
Availability of API	Not applicable
Grid hosting capacity downloadable	No
Update cycle	Quarterly
Available language	National language(s) only
Further development of the map/ information planned	Additional supplementary information for individual regions may be developed.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity Firm

Description of firm capacity
Available power as of the time of development

Description of the methodology leading to firm capacity results
Engineering calculations on a grid's model

Description of the criteria and methodologies used that lead to the published information
Technical parameters of the existing power grid, and changes in these parameters as a result of planned investments.

Main assumptions/disclaimers behind calculations
Taking into account the demand for power and the power resulting from the issued connection conditions or concluded connection agreements, taking into account the existing and planned condition of the network.

CONNECTION PROCEDURE

Information published for volumes of connection requests/ waiting lines	No

3.18.3 DSO: ENEA Operator Sp. z o.o

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Enea (Connection information) Enea (Connected and available RES power)
Accessibility	Open
Regional Scope	DSO area
Spatial granularity	Regional
Operator voltage level scope	Above 1 kV
Timeline for which HC is provided	Y+5
Information format	Map and table
Categories of grid users considered	Energy sources (connected and planned) and consumers planned to be connected
Type of grid connection capacity information	Indicated on the map: Available, connected, reserved (planned), requested power
Availability of API	Not applicable
Grid hosting capacity downloadable	Excel format
Update cycle	Monthly
Available language	National language(s) only
Further development of the map/ information planned	No

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Types of capacity information displayed (e.g. firm and/or flexible)
Firm

Description of firm capacity
Available connection power for sources, as at the time of preparation, according to accepted data

Description of the methodology leading to firm capacity results
According to the power reserve criterion in the HV/MV node included in the criteria for assessing the connection of energy sources to the ENEA Operator MV power grid (engineering calculations for the MV network model – HV/MV nodes) (link)

Description of flexible capacity
Not applicable

Description of the methodology leading to flexible capacity results
Not applicable

Description of the criteria and methodologies used that lead to the published information
In order to determine the available connection capacity, the technical parameters of the grid and changes to these parameters as a result of planned investments, the load on HV/MV nodes, and planned consumers are taken into account and compared with the capacity of connected energy sources and those planned for connection (to ensure the operational safety of the grid).

Main assumptions/disclaimers behind calculations
Taking into account power demand, power from connected sources, and sources planned for connection, as well as the technical parameters of the network and changes to these parameters as a result of planned investments.

CONNECTION PROCEDURE

Available options for investors if the map shows "no capacity available" in their interested area

Not applicable

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/waiting lines	Yes
Granularity of published connection requests/ waiting lines (e.g. nodal, regional, per SO)	List of applications for issuing the conditions for connecting sources, OSDn (of a generation or generation-consumption nature), and energy storage facilities to the Enea Operator network, classified in connection group III, awaiting consideration – for the HV/MV node: and qualified for connection group II awaiting consideration The list contains the following information: planned connection location, town, municipality, entity (investor), type of facility, connection capacity of the facility, date of application, application number.

SUMMARY OF LINKS

Calculation method, disclaimers, and boundaries (In accordance with the document "Criteria for assessing the connection of energy sources to the MVpower grid")

Connection request process

Auxiliary documents
- Criteria for assessing the connection of energy sources to the MV power grid
- Energy Law
- Renewable Energy Sources Act

Legal references
- Energy Law
- Renewable Energy Sources Act

Contact point for hosting capacity information & Contact point for connection requests
Enea Operator Sp. z o.o. | 60-479 Poznań
ul. Strzeszyńska 58

3.18.4 DSO: TAURON Dystrybucja S.A

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Tauron Dystrybucja S.A.
Accessibility	Open
Regional scope	DSO
Spatial granularity	Not applicable
Operator voltage level scope	Above 1 kV
Timeline for which HC is provided	Y+5
Information format	Table
Categories of grid users considered	Wind and solar
Type of grid connection capacity information	Available connection power for energy sources
Availability of API	Not applicable, PDF table
Grid hosting capacity downloadable	No, PDF table
Update cycle	Quarterly
Available language	National language(s) only
Further development of the map/ information planned	No

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible)
Available power as of the date of the analysis

Description of the methodology leading to firm capacity results
Engineering calculations on a network model, taking into account the facilities planned for connection.

Description of the criteria and methodologies used that lead to the published information
The analysis of available capacity for energy sources took into account the technical parameters of existing networks and changes to these parameters as a result of planned investments.

Main assumptions/disclaimers behind calculations
The engineering calculations took into account the power demand and the power resulting from the issued connection conditions (consumers, sources, and storage facilities), considering the existing and planned state of the network.

CONNECTION PROCEDURE

Information published for volumes of connection requests/ waiting lines	No

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Grid hosting capacity available for new connections (any other relevant e.g. reserved)
Grid hosting capacity available for new connections energy sources at voltages above 1 kV

Capacity under connection request (e.g. waiting list)
Available connection capacity, i.e. reduced by the capacity reserved in the connection conditions issued

Flexible connection (any other relevant i.e. firm connection etc.)
A flexible connection agreement is understood to be conditional, i.e. in the event of a network limitation, the customer undertakes, for example, to limit power consumption or generation. Connection agreements may regulate the rules for power consumption or power generation in a graphical (profile) system, i.e. in relation to the time of day and season (e.g. agreements with a work schedule for biogas plants).

3.18.5 DSO: STOEN OPERATOR Sp. Z.o.o

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	STOEN OPERATOR
Accessibility	Discussion in progress
Regional scope	DSO
Spatial granularity	Not applicable
Operator voltage level scope	Voltage level above 1 kV
Timeline for which HC is provided	Y+5
Information format	Table, in the future map
Categories of grid users considered	Discussion in progress
Type of grid connection capacity information	Available as table on the DSO website
Availability of API	Not applicable
Grid hosting capacity downloadable	No
Update cycle	Discussion in progress
Available language	National language(s) only – discussion in progress
Further development of the map/ information planned	No – discussion in progress

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible)
Available power on the date of preparation of the document

Description of the methodology leading to firm capacity results
Engineering calculations on a grid model (PLANS programme)

Description of the methodology leading to flexible capacity results
Not applicable

Description of the criteria and methodologies used that lead to the published information
Technical parameters of existing grids and changes to these parameters as a result of planned investments

Main assumptions/disclaimers behind calculations
Taking into account the power demand and the power resulting from the issued connection terms, considering the existing and planned network status

CONNECTION PROCEDURE

Available options for investors if the map shows "no capacity available" in their interested area

Alternative options are being considered in neighbouring locations within the urban agglomeration, where the proximity between stations is high — with 90 power distribution points located within an area of 500 km².

Connection request rules/principles	First come, first served
Information published for volumes of connection requests/waiting lines	No
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	No

SUMMARY OF LINKS

Calculation method, disclaimers, and boundaries
Internal procedures + PLANS

Connection request process

Auxiliary documents

Legal references

Contact point for hosting capacity information

Contact point for connection requests

Grid hosting capacity available for new connections (any other relevant e.g. reserved)

Capacity under connection request (e.g. waiting list)
Link 1, Link 2, Link 3

3.19 Portugal

EXECUTIVE SUMMARY

On the transmission side, every year in March, the Portuguese TSO publishes a report on the generation and transmission system of the previous year, which includes the generation portfolio, the contribution of the different generation technologies to demand, interconnection exchanges, main network developments, network composition, network losses, and other information.

This report also includes, by transmission substation or groups of substations, the firm capacity (capacity available all the time, except in rare exceptional situations) available for the connection of new generation.

Because new generation in different substations can contribute to the same network constraints, capacity is published by geographical areas/substations rather than by individual substations.

The Portuguese TYNDP also presents new network firm capacity that will be available with new network reinforcements presented in the plan. This additional capacity only takes effect after approval of those specific reinforcements and putting them into service.

It should be noted that in some cases, power plants may be unable to produce not due to network constraints, but because of market conditions, such as excess generation compared to demand.

At the DSO level, E-REDES, as the main operator of the electricity distribution network in mainland Portugal for HV, MV, and LV networks, publishes information in both table and map format.

3.19.1 TSO: REN

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	REN Direção Geral de Energia e Geologia (DGEG)
Accessibility	Open
Regional scope	Country (Portugal)
Spatial granularity	Nodal (substation) *
Operator voltage level scope	150 kV, 220 kV and 400 kV
Timeline for which HC is provided	Short term (now) and long term (10 years)
Information format	Table
Categories of grid users considered	Generators **
Type of grid connection capacity information	Firm capacity (capacity available all the time except in rare exceptional situations)
Update cycle	Yearly by TSO and quarterly by government institution "General-Directorate of Energy and Geology"
Available language	National language (Portuguese)

* Capacities are published by areas (groups of substations with same capacity restrictions), so the total capacity assigned to all substations for each area cannot be higher than the published value. In the case of specific substation capacities restrictions, it is reported for each substation where it occurs.

** Publication for demand is also foreseen in the future.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm capacities

Description of "firm capacity" and the methodology leading to firm capacity results
"Firm capacity" means that it is available all the time except in rare exceptional situations. In some cases, power plants may be unable to produce not due to network constraints, but because of market conditions, such as excess generation compared to demand.

Description of "flexible capacity" and the methodology leading to flexible capacity results
For now, "flexible capacity" is not calculated/published.

Description of the criteria and methodologies used that lead to the published information
Capacities are estimated based on a set of scenarios concerning network operation conditions in different time horizons, considering the N, N-1, and N-2 criteria defined in the regulation.

Main assumptions/disclaimers behind calculations
Long-term capacity only takes effect after approval and entry into service of the specific reinforcements foreseen in the Portuguese TYNDP. The published capacities do not include information on substation bay availability.

Additional information
The attribution of capacity is managed by the Portuguese General-Directorate for Energy and Geology.

CONNECTION PROCEDURE

Connection request procedure
Producers Connection
Consumers connection

Available options for the investors if the map shows "no capacity available" in their interested area
"Operator Agreement" mentioned in Decreto-Lei nº 15/2022.

Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Information published for volumes of connection requests/ waiting lines only for generators

SUMMARY OF LINKS

Legal references

Contact point for connection requests

Additional information
The amount of power associated with connection requests that have been authorised but not yet in service are published every year in the "Caracterização da Rede Nacional de Transporte para Efeitos de Acesso à Rede" and in the Portuguese TYNDP every 2 years.

3.19.2 DSO: E-REDES

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	E-Redes (Available Hosting Capacity in the National Distribution Grid) E-Redes (Regulamento de Acesso às Redes e às Interligações do Setor Elétrico)
Accessibility	Open
Regional scope	DSO area
Spatial granularity	Nodal (substation)
Operator voltage level scope	HV (60 kV); MV (10 kV, 15 kV, 30 kV)
Timeline for which HC is provided	Every 3 months
Information format	Map and table
Categories of grid users considered	Injection
Type of grid connection capacity information	Available, reserved and connected
Availability of API	Not provided
Grid hosting capacity downloadable	PDF format (link)
Update cycle	Quarterly
Available language	National language(s) and others, including English
Further development of the map/ information planned	Yes – capacity with restriction

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible) Firm

Please explain what "firm capacity" means
Network capacity ignoring consumption and considering both connect and committed production

Please provide a description of the methodology leading to firm capacity results
Nominal capacity of infrastructures and respect to NP50160 (Portuguese version of EN50160)

Please explain what "flexible capacity" means
Capacity of the grid considering effects of consumption and variable capacity of lines

Please provide a description of the methodology leading to flexible capacity results
Based on synthetic load diagrams daily/seasonal and variable capacity of lines, flexible capacity is accessed

Description of the criteria and methodologies used that lead to the published information
Network capacity ignoring consumption and considering both connect and committed production, with respect to NP50160 (Portuguese version of EN50160). HV closed-loop grid capacity is limited to the instantaneous tripping current of the worst-case scenario.

Main assumptions/disclaimers behind calculations

1. The information provided by E-REDES constitutes an approximation of the values relating to substations and the MV network, as they are taken from the systems and have as a reference the moment at which the information is collected.

2. Given that the connection points, the electricity distribution network, and the consumption and generation values themselves are naturally very dynamic, the information made available may be subject to subsequent changes and updates, except for any omissions and/or occasional inaccuracies about the location that the information may contain.

3. The information provided by E-REDES is only an approximation of the available network capacity at any given time, and therefore does not constitute a contractual proposal, nor does it dispense with the consultation of E-REDES for the purposes of formulating the usual requests for network connection.

4. E-REDES safeguards that the information provided is non-binding and does not commit to a connection at any specific point or asset on the network, nor to any specific solution within the scope of potential network connection requests. E-REDES reserves the right to assess, on a case-by-case basis and in light of the respective requests, which technical solution is the most appropriate, in accordance with the principles to which it is legally bound.

5. E-REDES is not held accountable to third parties, namely partners, service providers, contractors, users, and customers, for damages that may arise as a result, directly or indirectly, of the use of this information, in particular when carrying out interventions, calculations and/or estimates, without confirming the accuracy and currency of the data. Therefore, it is duly noted that consulting this information does not prejudice the obligation to engage in direct consultation with E-REDES to obtain updated information.

6. The information available is, to all legal effects, the property of E-REDES, and must not be copied, reproduced, adapted, modified, changed, deleted, destroyed, broadcast, transmitted, disclosed, or in any way made available to a third party, without being expressly validated by E-REDES. The reproduction, commercialisation, or transfer to third parties, even if free of charge, outside the indicated assumptions or without express authorisation from E-REDES is prohibited under the applicable legal terms and may result in civil and criminal liability.

CONNECTION PROCEDURE

Connection request procedure
Link

Available options for the investors if the map shows "no capacity available" in their interested area
Capacity can also be accessed by agreement. If there is no available capacity, producers are allowed to fund their own grid investments to create capacity.

Connection request rules/principles	Under the general regime – first come, first served In the competitive procedure – auction
Information published for volumes of connection requests/ waiting lines	No

SUMMARY OF LINKS

Connection request process

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Grid hosting capacity available for new connections (any other relevant e.g. reserved)
Network capacity available at a specific point that ensures compliance with the regulatory voltage levels and nominal line currents, as defined by NP50160, considering the connected generation and existing commitments

Capacity under connection request (e.g. waiting list)
Production requests are accepted, limited, or rejected based on the availability of grid capacity. Under the general regime, there is no waiting list. There is a closed list of requests for agreement, in which promoters undertake the necessary reinforcement works to create capacity. Currently, the platform is not open for new requests. The only ongoing requests are related to the self-consumption and energy communities.

Flexible connection (any other relevant i.e. firm connection etc.)
Grid capacity, considering the effects of consumption and variable line capacity,based on synthetic daily/ seasonal load diagrams and the variable capacity of lines, allowing access to flexible capacity.

3.20 Slovakia

EXECUTIVE SUMMARY

In April 2021, SEPS and MAVIR, the TSOs for Slovakia and Hungary, commissioned three new 400 kV interconnectors. This restarted RES connecting to the Slovak power system.

An online platform was established to publish available network and flexibility capacity, as well as the rules for allocating this capacity to SOs at the distribution and transmission levels. These rules and calculation methodologies, approved by the NRA, have evolved into their current form.

SEPS currently calculates both capacities. Network capacity is allocated to TSO, SEPS, and three DSOs based on the results of a network study. The network study is updated at least once every 3 years. Flexibility capacity is calculated for the entire system, with rules defining how and when SOs can request additional flexibility capacity from the "pool". Flexibility capacity is reassessed every year.

The current system has its limitations. It is practically impossible to connect large-scale RES generation. All published capacity is reserved by smaller applications at the DSO level.

SEPS is preparing to roll out new network capacities designed to increase transparency and align with European standards. The new "hosting capacities" approach will replace the existing "network limit capacity" method.

3.20.1 TSO: SEPS

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	https://installedpower.sepsas.sk/
Accessibility	Open
Regional scope	Entire Slovak electricity system
Spatial granularity	Other (e.g. TSO and DSO-level)*
Operator voltage level scope	DSO ≤ 110 kV; TSO ≥ 110 kV
Timeline for which HC is provided	Short term
Information format	Table
Categories of grid users considered	Generators only
Type of grid connection capacity information	For each operator (TSO and DSOs) there is information about capacity allocated (from the total limit), depleted (reserved) and available (= allocated – depleted)
Availability of API	Not provided
Update cycle	Weekly
Available language	National language and English
Further development of the map/ information planned	There are 2 capacities published: – Network capacity, for any type of generator – Flexibility capacity, for PV and wind (also requires network capacity)

* Capacity is published for TSO and three regional DSOs separately.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity

SEPS calculates two types of capacities (firm and flexibility).

Description of "firm capacity" and the methodology leading to firm capacity results

The Network capacity calculation is based primarily on contingency analysis. Network capacity is split between three regional DSOs and the TSO due to the regional nature of this capacity.

The flexibility capacity calculation is based on available system flexibility to accommodate RES generation. Flexibility capacity is available to the whole system. Defined rules dictate how SOs request additional flexibility capacity.

Firm capacity is available to the user 24/7. However, depending on the requested reliability there may be limitations during maintenance or outages.

Description of the criteria and methodologies used that lead to the published information

- Consumption forecast
- Energy mix forecast
- Forecast of available flexibility sources
- Development of requested and approved capacity of various technology
- Other factors impacting network and flexibility capacity of the power system of the Slovak Republic.

Main assumptions/disclaimers behind calculations

Legal validity of information:

- The published information is legally binding and SOs cannot approve more power than available.
- To reserve/acquire a connection capacity, a formal connection request must be filed.
- Small sources and local sources, according to Section 2 (3) of the Act No. 309/2009 Coll. on the promotion of renewable energy sources and high-efficiency cogeneration, are excluded from the calculated capacities.

Technical scope:

- Even if the request can be accommodated by the available capacity, the application still may need to be assessed, including additional analysis of load flow, short circuit, power quality, static and dynamic stability, etc.
- Wind and PV require both network and flexibility capacity.
- Other generation technology requires only network capacity.

Hypotheses:

- Grid evolution: In line with the infrastructure portfolio known at the time of computation
- Grid users' evolution: In line with the reservations and allocations known at the time of computation
- Market conditions: In line with the latest published adequacy and flexibility study at the time of computation.

Interdependence of hosting capacities:

- The calculated capacities are of a contemporary nature.

CONNECTION PROCEDURE

Connection request procedure

Operational rules, Chapter 2:

Available options for the investors if the map shows "no capacity available" in their interested area

Must wait for another network/flexible capacity increase and to apply again.

Connection request rules	First come, first served
Information published for volumes of connection requests/ waiting lines	No

Additional information

The owner of existing or planned electrical consumption equipment or energy equipment may submit a connection request to the TSO using the form available on its website.

If required by the Energy Act, the application must be accompanied by a certificate from the Ministry of Economy of the Slovak Republic for the construction of energy equipment.

The TSO will assess the application in terms of its content and form. If the application is complete and its content does not indicate the need for the TSO to update or prepare a study on the impact of the equipment on the electricity system of the Slovak Republic, or to build or modify electrical equipment, the TSO will deliver a draft connection contract to the applicant and reserve the required connection capacity.

The draft connection contract shall include the commercial and technical conditions for connecting the electrical consumption equipment or energy equipment to the transmission system.

If the application indicates the need to update or prepare a study of the equipment's impact on the electricity system of the Slovak Republic, the TSO will deliver a draft contract for a future connection contract to the applicant. This contract will regulate the joint procedure for updating or preparing the study.

The purpose of an impact study is to identify and analyse the impact of the applicant's facility on the electricity system of the Slovak Republic and to propose measures to eliminate any negative impacts.

If the application indicates that new energy equipment must be built or existing equipment modified by the TSO, the TSO shall deliver a draft future connection contract to the applicant. This contract will regulate the joint procedure for constructing energy equipment and subsequent material, as well as temporal cooperation between the TSO and the applicant.

After evaluating the impact study and carrying out any necessary reinforcement of the transmission system, the TSO shall provide the applicant with a draft connection contract, including commercial and technical conditions.

The facility will be connected to the transmission system if the applicant meets the technical and commercial conditions specified in the connection agreement.

The procedure for concluding a connection contract, the application requirements, and deadlines are specified in the TSO's operational rules, which are available on the TSO's website.

SUMMARY OF LINKS

Calculation, disclaimers, and boundaries
Technical conditions, document S, chapter 4

Connection request process
Operational rules, Chapter 2

Legal references
Energy Act

Definition of small and local sources, Regulation No. 207/2023

Coll. of the Regulatory Office for Network Industries

Technical conditions, document A, chapter 4

Contact point for hosting capacity information
pripojeniedops@sepsas.sk

Contact point for connection requests
pripojeniedops@sepsas.sk

Additional information
Published capacity by the three regional DSOs – DSO links:
Západoslovenská distribučná, a.s.

Stredoslovenská distribučná, a.s.

Východoslovenská distribučná, a.s.

3.21 Slovenia

EXECUTIVE SUMMARY

The web application of the Slovenian grid hosting capacity information displays the possibilities for connecting larger generation facilities (above 50 kW) directly to the existing electricity distribution network. In this way, potential investors in larger generation facilities are guided towards locations or connection points where capacity is available in the electricity distribution network at the LV and MV levels. Indicative areas in the vicinity of individual connection points to the distribution network are shown, including the potential of building on rooftops and in degraded areas. The assessment of the suitability of each specific location for the installation of a generation facility lies within the responsibility of the investor. The display does not include the connection of generation facilities intended for individual self-supply of household consumers, as the capacity of such generation facilities is below 50 kW and the connection is made to the users' internal networks.

3.21.1 TSO: ELES

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	ELES ELES geo portal
Accessibility	Open
Regional scope	Country – TSO level (400, 220, 110 kV)
Spatial granularity	Nodal (substation)
Operator voltage level scope	Recently, we have combined the TSO and DSO maps into one. DSO data also includes LV.
Timeline for which HC is provided	Current horizon
Information format	Table
Categories of grid users considered	N/A
Type of grid connection capacity information	Available
Availability of API	Not provided
Update cycle	Quarterly
Available language	National language(s) only

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm and flexible

Description of "firm capacity" and the methodology leading to firm capacity results
Maximum output power in MW where there is still fulfilled security criteria

Description of "flexible capacity" and the methodology leading to flexible capacity results
Maximum (load/gen) power in MW where there is still fulfilled security criteria

Description of the criteria and methodologies used that lead to the published information
Hosting capacity for RES in MW

We publish information on possible areas and connection points where we think RES investors will have fewer problems acquiring a building permit. This is supplemented with information indicating locations where we expect that little to no grid reinforcement will be needed for connection. This is included for all voltage levels.

Main assumptions/disclaimers behind calculations
This public information provides only guidelines or recommendations, allowing investors to identify areas where they are likely to experience the fewest problems with spatial planning.

CONNECTION PROCEDURE

Connection request procedure
The client initiates the connection process by submitting a Connection Request to ELES (https://pisrs.si/pregled-Predpisa?id=NAVO1112) or info@eles.si

Available options for investors if the map shows "no capacity available" in their interested area
The provided information provides insights into where it is easier and quicker to install new generation or flexibility. However, if the value is 0 MW, this does not mean that the investor cannot build there, but rather that they will need to invest in grid reinforcements. The map provides a guideline for investors to choose locations offering high capacities without requiring costly grid investments.

Connection request rules	First come, first served
Information published for volumes of connection requests/ waiting lines	No

SUMMARY OF LINKS

Connection request process

Auxiliary documents

Legal references

Contact point for hosting capacity information
info@eles.si

Contact point for connection requests
info@eles.si

3.22 Spain

EXECUTIVE SUMMARY

The hosting capacity is calculated and published monthly on the TSO (Red Eléctrica) and DSO websites in accordance with legal requirements. The published information reflects the available capacity across the entire transmission and distribution grids, respectively, and is detailed at the substation level. Additionally, Red Eléctrica (RE) publishes the cumulative power of open connection requests. The calculation for the transmission network is based on grid simulations aligned with the National Development Plan. The published hosting capacity is independent of switching bay availability.

Legal validity: The information provided in the hosting capacity map is non-binding. To reserve or acquire connection capacity, a formal connection request must be submitted.

For further information regarding capacities, please contact customer managers or submit a formal connection inquiry. Additional details are available on RE's website.

Regarding the information for the DSO hosting capacity maps, the links for the main DSOs are the following:

e-distribución:
- Generation
- Demand

i-DE:
- Generation
- Demand

e-redes:
- Generation
- Demand

UfD:
- Generation
- Demand

3.22.1 TSO: Red Eléctrica-RE

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Red Eléctrica-RE
Accessibility	Open
Spatial granularity	Nodal (substation)
Operator voltage level scope	< 220 kV: DSO; ≥ 220 kV: TSO
Timeline for which HC is provided	Y+6 (NDP horizon)
Information format	Table
Categories of grid users considered	Generators only
Type of grid connection capacity information	Connected and reserved capacity
Update cycle	Monthly
Additional information	A monthly update is carried out to refresh the occupied capacity and requests in progress; however, computations for generation capacity are performed every time the NDP is updated, at least every 6 years or whenever the NDP is updated. The published hosting capacity values are for informational purposes only and do not constitute a binding commitment by RE. They do not imply any guarantee of actual grid availability, nor do they entitle any party to reserve capacity or claim priority for grid connection. All connection requests remain subject to individual technical assessments and regulatory procedures.

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity

Flexible for generators and storage. Firm for demand. New regulation for flexible access to demand is being developed.

Description of "firm capacity" and the methodology leading to firm capacity results

By early 2026, RE will publish capacity for firm demand, as long as the regulation is approved by the NRA. It is worth mentioning that the regulations governing the methodology for calculating access capacity for demand are not exhaustively or explicitly defined in the current regulations, and there are no clear definitions yet regarding firmness or flexibility demand access. The Spanish NRA has published a guidance document for public consultations. Intense conversations with the stakeholders are underway regarding the demand firm capacity calculation, and it is expected that this methodology will be approved in the coming months. Firm capacity is a grid connection available at full rated power year-round, without congestion limits.

Description of "flexible capacity" and the methodology leading to flexible capacity results

A flexible connection enables RE to temporarily restrict grid utilisation during times of congestion or non-fulfilment of network security criteria, thereby safeguarding grid stability. Generation and storage have flexible capacity, as their power can be managed by markets and control centres, depending on network status. Demand facilities have firm capacity. A new methodology for calculating and defining demand flexible capacity is being developed by RE, the DSOs, and the NRA, but it is not yet regulated.

Description of the criteria and methodologies used that lead to the published information

The criteria used to calculate generation capacity take into account the following:

- Static criterion: Aims to ensure that the transmission network can evacuate power from generation plants to the rest of the electrical system 95 % of the time (70 % of the time for injection from storage plants).
- Dynamic criterion: Aims to ensure that the power system will remain stable after transient stability events (mainly solid three-phase short-circuits to ground) within the system.
- Short-circuit power criterion: Aims to ensure that the power system will be strong enough for safe system operation and the rest of the power park modules (PPMs) generating. The weighted short-circuit ratio (WSCR) in each node/zone should be higher than 10 or 6 (depending on the technical capacities of existing generation in that node/zone).

The total capacity of a bus/zone corresponds to the minimum value of the three criteria. All the methodology used for the calculation is explicitly stated within the regulation, i.e. the Resolution of 27 June 2024, of the NRA, which establishes the detailed specifications for the determination of generation access capacity to the transmission and distribution grids.

Main assumptions/disclaimers behind calculations

NDP scenarios and time horizons are considered, as well as full network availability. The same methodology is used for storage plants (except for a different acceptance ratio within the static criterion). The calculation also takes into consideration the capacity reserved for access and connection auctions by the ministry.

Additional information

The TSO considers the generation/storage facilities with permissions issued by the DSOs in their grids. Permits granted on the distribution grid above a power threshold occupy access capacity on the transmission grid. In addition, the DSO must request acceptability from the TSO for certain installations that exceed a power threshold.

CONNECTION PROCEDURE

Connection request procedure
Link 1, Link 2

Available options for the investors if the map shows "no capacity available" in their interested area
If the hosting capacity table indicates that no capacity is currently available at a specific substation, investors cannot request connections in this specific substation, and capacity within other substations will be investigated. If a facility must be connected in a specific location, then investors shall participate in the public process prior to the next national NDP.

Connection request rules	First come, first served for general principle and auctions
Information published for volumes of connection requests/ waiting lines	Yes
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Per node and switch bay, per technology

Additional information
Additional information on connection request rules: The main principles of the access and connection request rules are the same for generation, demand, and storage – no distinction will be made. It is regulated by Royal Decree 1183/2020, of 29 December, on access and connection to electricity transmission and distribution grids.

Basically, there are two mechanisms for allocating access capacity, applicable to both generation and demand. As storage in Spain requires both generation and demand capacity, it must fulfil both generation and demand criteria (although some specificities apply in the calculation that lead to wider capacity values):

1. General procedure according to the order of application (first come, first served principle): The first complete access and connection application received has the right to obtain grid access capacity.

2. Auctions for access capacity: Held to allocate generation, storage, or demand connected to transmission network nodes where requests are high and/or capacity is scarce. These auctions are conducted when established by the ministry, with evaluation criteria potentially including commissioning deadlines, as well as technological, socioeconomic, and environmental factors. In the meantime, the capacity is reserved and cannot be allocated by the TSO. In addition, several other regulations apply to the access and connection procedure, including reserved capacity, specific auctions for fair transition substations (NTJ, substations where thermal generators were connected and subsequently shut down), and specific capacity for self-consumption generation.

SUMMARY OF LINKS

Calculation, disclaimers, and boundaries

Connection request process

Auxiliary documents

Legal references

Contact point for hosting capacity information
(upon registration)

Contact point for connection requests
(upon registration)

3.22.2 DSO: E-DISTRIBUCION

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	E-Distribucion
Accessibility	Open
Regional scope	Hosting capacity information is available for each DSO in Spain
Spatial granularity	Nodal (substation)
Operator voltage level scope	HV (1 kV and above)
Timeline for which HC is provided	Snapshot
Information format	Map and table
Categories of grid users considered	Two different maps: one for generation and one for consumption.
Type of grid connection capacity information	For every electrical distribution node, the information is provided for available/ requested/reserved/connected capacity and the electrical dependency from its transmission electrical node.
Availability of API	Not applicable
Grid hosting capacity downloadable	Information can be either visualised in a map or downloaded in PDF table format.
Update cycle	Monthly
Available language	National language(s) and others, including English
Further development of the map/ information planned	Not expected so far

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible) Firm

Please explain what "firm capacity" means
Regulatory definition: Firm or ordinary access capacity is the maximum active power that can be supplied with guaranteed service during all hours of the year.

Please provide a description of the methodology leading to firm capacity results
Regarding the methodology leading to firm capacity results, there is a regulatory body that enforces 1) the scenario for the assessment and 2) the range in voltage variations and maximum current per element.

Furthermore, there is a regulatory body that enforces the coordination between agents and the deadlines for communications.

Please explain what "flexible capacity" means
Regulatory definition: Flexible access capacity refers to the situation where the requirements associated with firm or standard capacity are not fully met because supply cannot be guaranteed during all hours of the year, as one or more specific criteria are not satisfied as a result of the capacity analysis.

Please provide a description of the methodology leading to flexible capacity results
The flexible capacity calculation is assessed in each HV node using the same market scenario as the one used in firm capacity calculation. The only difference arises from the fact that the network scenario in N-1 calculations allows up to 10 % of hours of unfulfillment (non-compliance).

Description of the criteria and methodologies used that lead to the published information

Every month, DSOs organise the received applications and evaluate, in aggregate, the plausibility of accommodating them in the distribution network. Based on this analysis, DSOs publish the available network capacity.

Main assumptions/disclaimer behind calculations Additional information

The main assumption/disclaimer is that the publicly available capacity information is useful for evaluating its evolution over the year, although it does not guarantee availability for any specific application.

CONNECTION PROCEDURE

Available options for the investors if the map shows "no capacity available" in their interested area

As previously mentioned, the capacity map is intended to provide general information indicating the likelihood of sufficient capacity. The only way to obtain the available capacity for a concrete project is by applying through the regulated web platform.

Connection request rules	First come, first served
Information published for volumes of connection requests/ waiting lines	Not applicable
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Nodal/provincial/region (Comunidad Autónoma)
Additional information	Connection requests are intrinsically linked to access requests, such that the fulfilment of both leads to the issuance of an access and connection permit.

SUMMARY OF LINKS

Calculation method, disclaimers, and boundaries

BOE-A-2020-17278 Real Decreto 1183/2020, de 29 de diciembre, de acceso y conexión a las redes de transporte y distribución de energía eléctrica.

Connection request process

BOE-A-2024-20760 Circular 1/2024, de 27 de septiembre, de la Comisión Nacional de los Mercados y la Competencia, por la que se establece la metodología y condiciones del acceso y de la conexión a las redes de transporte y distribución de las instalaciones de demanda de energía eléctrica.

BOE-A-2021-904 Circular 1/2021, de 20 de enero, de la Comisión Nacional de los Mercados y la Competencia, por la que se establece la metodología y condiciones del acceso y de la conexión a las redes de transporte y distribución de las instalaciones de producción de energía eléctrica.

Auxiliary documents

BOE-A-2024-13823 Resolución de 27 de junio de 2024, de la Comisión Nacional de los Mercados y la Competencia, por la que se establecen las especificaciones de detalle para la determinación de la capacidad de acceso de generación a la red de transporte y a las redes de distribución.

BOE-A-2024-13823 Resolución de 27 de junio de 2024, de la Comisión Nacional de los Mercados y la Competencia, por la que se establecen las especificaciones de detalle para la determinación de la capacidad de acceso de generación a la red de transporte y a las redes de distribución.

SUPPLEMENTARY DESCRIPTIVE INFORMATION

Grid hosting capacity available for new connections (any other relevant e.g. reserved)

Available grid hosting capacity refers to **the remaining capacity in a specific network area** of influence, taking into account **existing market conditions (loads, BESS, and generators)**.

Capacity under connection request (e.g. waiting list)

Grid hosting capacity under connection request is the capacity under evaluation by the DSO.

Flexible connection (any other relevant i.e. firm connection etc.)

Flexible connection agreements are not yet implemented in Spain.

3.22.2 DSO: i-DE

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Published
Link to website	Generation Capacity Map Consumption Capacity Map
Accessibility	Open
Regional scope	DSO (each DSO produces the capacity map for its distribution area)
Spatial granularity	Nodal (substation)
Operator voltage level scope	HV (1 kV and above at the distribution level)
Timeline for which HC is provided	Snapshot
Information format	Map and table
Categories of grid users considered	Two different maps: one for generation and one for consumption.
Type of grid connection capacity information	Information on the available/requested/reserved/connected capacity at the node level.
Availability of API	Not applicable
Grid hosting capacity downloadable	The information is also available in documents that can be downloaded from the website in PDF/CSV/XLSX formats
Update cycle	Monthly
Available language	National language(s) only

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm

Types of Capacity Information Displayed (e.g. Firm and/or Flexible)
Firm

Please explain what "firm capacity" means
Regulatory definition: Firm or ordinary access capacity is the maximum active power that can be supplied with guaranteed service during all hours of the year (Circular 1/2024 de 27 de septiembre de la Comisión Nacional de los Mercados y la Competencia)

Please provide a description of the methodology leading to firm capacity results
The methodology is developed according to Resolución de 27 de junio de 2024 de la CNMC for generation and Resolución de 8 de junio de 2025 de la CNMC for demand.

Please explain what "flexible capacity" means
Regulatory definition: Flexible access capacity refers to the situation where the requirements associated with firm or standard capacity are not fully met, because supply cannot be guaranteed during all hours of the year, as one or more specific criteria are not satisfied as a result of the capacity analysis (Circular 1/2024).

Please provide a description of the methodology leading to flexible capacity results
Circular 1/2024 establishes the general framework for applying the criteria.

3.23 Sweden

EXECUTIVE SUMMARY

The Swedish TSO, Svenska kraftnät, currently does not publish any grid hosting capacity information. An initial version is expected to be published in early 2026.

The TSO website publishes the following information:

- Applied power (per price area and type of connection)
- Long-term regional grid development plans, providing guidance on suitable areas for connecting production, consumption, or need for flexibility

Instead of publishing grid hosting capacity, the TSO offers a service called "indication of available capacity", which DSOs can apply for. Applications can be submitted for a specific connection point in the transmission grid, but cannot exceed 300 MW.

The indication includes the following information:

- Whether there is available capacity
- The period during which capacity is available
- The connection cost (if any reinforcements are required)

At the DSO level, the Swedish DSO, Vattenfall Distribution, is planning to publish grid hosting capacity information in 2026.

3.23.1 TSO: Svenska kraftnät

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Planning to publish
Link to website	–

CONNECTION PROCEDURE

Connection request procedure
Link

Connection request rules	First come, first served
Information published for volumes of connection requests/waiting lines	Yes
Granularity of published connection requests/ waiting lines (e.g. nodal, regional, per SO)	Per price area and type of production and consumption
Additional information	The following requirements must be fulfilled before the request is accepted: – Technical information – An energy analysis estimating the input/output to/from the transmission grid – A timetable

SUMMARY OF LINKS

Connection request process

Auxiliary documents

Legal references
General terms and conditions
Technical terms and conditions

Contact point for connection requests
anslutningar@svk.se

3.24 Switzerland

EXECUTIVE SUMMARY

The Swiss TSO, Swissgrid, is preparing to publish information on the hosting capacity of the high-voltage grid (380/220 kV) in the near future. This will include an interactive map indicating which substations currently have available capacity for either load or generation.

The upcoming website will also provide detailed information on the requirements and application procedures for connecting to Swissgrid's transmission network.

Please note that the published data serves as an initial indication only and does not constitute a guarantee of grid connection. Each connection request is assessed individually, and applicants will receive a tailored response regarding the availability of the requested capacity.

For hosting capacities at lower voltage levels, inquiries must be addressed to the DSO responsible for the respective region.

3.24.1 TSO: Swissgrid

PUBLICATION OF HOSTING CAPACITY INFORMATION

Status of publication	Planning to publish
Link to website	–
Accessibility	Open
Regional scope	Country
Spatial granularity	Nodal (substation)
Operator voltage level scope	Only information for TSO level will be published (380/220 kV)
Information format:	Map
Categories of grid users considered	Generators and demand
Availability of API	Not provided
Update cycle	When needed
Available language	National language(s) and others, including English

HOSTING CAPACITY INFORMATION

Consideration of firm or flexible capacity
Firm[2]

Description of "firm capacity" and the methodology leading to firm capacity results
Firm capacity guarantees an availability of the capacity of more than 95 % of the time, with a complete grid respecting the N-1 criterion.[3]

Description of the criteria and methodologies used that lead to the published information
Capacity calculation based on the actual and planned grid. The capacity is calculated based on planned flows and respecting the N-1 criterion on a complete grid (no outages) over a complete year. No topological changes are considered, and no phase shifting transformer (PST) optimisation is performed.

2 In the future, probably also flexible.

3 This criterion is still in evaluation and subject to change.

Main assumptions/disclaimers behind calculations
All grid connection requests greater than 250 MW for 220 kV, 400 MW for 380 kV, or capacities greater than 80 % of the available power require a detailed analysis of available capacity. In addition, all grid connection requests near the border must be assessed in detail. The map only provides raw estimations, but offers no guarantees.[4]

CONNECTION PROCEDURE

Connection request procedure
Link

Available options for the investors if the map shows "no capacity available" in their interested area
The investor can contact the TSO, which will define the required reinforcement and provide estimates for the associated costs and implementation time.

Connection request rules	First come, first served
Information published for volumes of connection requests/waiting lines	Partly
Granularity of published connection requests/waiting lines (e.g. nodal, regional, per SO)	Nodal

LINKS

Calculation, disclaimers, and boundaries
To be decided

Connection request process

Auxiliary documents

Legal references

Contact point for hosting capacity information

Contact point for connection requests

Additional information
https://www.swissgrid.ch/en/home.html

4 Main assumptions are subject to change

Appendix

Blank template used for data collection from TSOs

PUBLICATION INFORMATION

Field	Input options
Executive Summary	[free text] The aim of this section is to provide an overview of hosting capacity calculation and publication within your operating area. Relevant points could be whether hosting capacity information is published/planning to publish/not published; in case it is not published, whether there any specific reasons why it is not published (e.g. data protection laws); if hosting capacity information is dependent on switch bay availability or similar constraints; hosting capacity calculation methods; differentiation between generation, demand, and storage; connection request overview; future developments related to hosting capacity publication etc.
Status of publication	Drop-down list: Published/Planning to publish/not published
Link to website	[link]
Accessibility	Drop-down list: Open/Log-in required/Geo-fencing/Others (Please specify)/NA
Regional Scope	[free text]
Spatial granularity	Drop-down list: Nodal (Substation)/Regional/Other (please specify)/NA
Operator voltage level scope	[free text]
Timeline for which HC is provided	[free text]
Information format	Drop-down list: Map/Table/Map and table/NA
Categories of grid users considered	Drop-down list: Generators only/Generators and demand/Generators and storage/Generators, demand, and storage/Others (please specify)/NA
Type of grid connection capacity information	[free text]
Availability of API	Drop-down list: Not provided/Account required/Openly available/Other (please specify)
Update cycle	Drop-down list: Weekly/Monthly/Quarterly/Yearly/When needed/Other (please specify)/NA
Available language	Drop-down list: National language(s) only/National + others including English/National + others excluding English
Additional information	[free text]

HOSTING CAPACITY INFORMATION

Field	Input options
Consideration of firm or flexible capacity	Drop-down list: Firm/Flexible/Firm and Flexible/NA
Description of 'firm capacity' and the methodology leading to firm capacity results	[free text]
Description of 'flexible capacity' and the methodology leading to flexible capacity results	[free text]
Description of the criteria and methodologies used that lead to the published information	[free text]
Main assumptions/disclaimers behind calculations	[free text]
Additional information	[free text]

CONNECTION PROCEDURE

Field	Input options
Connection request procedure	[free text]
Available options for the investors if the map shows "no capacity available" in their interested area	[free text]
Connection request rules	Drop-down list: First come, first served/First-ready-first-serve/Application Window/Others (Please specify)
Information published for volumes of connection requests/waiting lines	Drop-down list: Yes/Partly/No/NA
Granularity of published connection requests/ waiting lines (e.g. nodal, regional, per SO)	[free text]
Additional information	[free text]

RELEVANT LINKS

Field	Input options
Calculation, disclaimers, and boundaries	[hyperlink / document]
Connection request process	[hyperlink / document]
Auxiliary documents	[hyperlink / document]
Legal references	[hyperlink / document/free text]
Contact point for hosting capacity information	[free text]
Contact point for connection requests	[free text]

Blank template used for data collection from DSOs

PUBLICATION INFORMATION

Field	Input options
Executive Summary	[free text] The aim of this section is to provide an overview of hosting capacity calculation and publication within your operating area. Relevant points could be whether hosting capacity information is published/planning to publish/not published; in case it is not published, whether there any specific reasons why it is not published (e.g. data protection laws); if hosting capacity information is dependent on switch bay availability or similar constraints; hosting capacity calculation methods; differentiation between generation, demand, and storage; connection request overview; future developments related to hosting capacity publication etc.
Status of publication	Drop-down list: Published/Planning to publish/not published
Link to website	[link]
Accessibility	Drop-down list: Open/Log-in required/Geo-fencing/Others (Please specify)/NA
Regional scope	[free text]
Spatial granularity	Drop-down list: Nodal (substation), Regional, Other, NA
Operator voltage level scope	[free text]
Timeline for which HC is provided	[free text]
Information format	Drop-down list: Map/Table/Map and table/NA
Categories of grid users considered	Drop-down list: Wind, Solar, Energy storage, consumers, Others, NA
Type of grid connection capacity information	[free text]
Availability of API	Drop-down list: Not provided/Account required/Openly available/Other (please specify)
Grid hosting information downloadable and format	[free text]
Update cycle	Drop-down list: Weekly/Monthly/Quarterly/Yearly/When needed/Other (please specify)/NA
Available language	Drop-down list: National language(s) only/National + others, including English/National + others excluding English
Further development	[free text]
Additional information	[free text]

HOSTING CAPACITY INFORMATION

Field	Input options
Consideration of firm or flexible capacity	Drop-down list: Firm/Flexible/Firm and Flexible/NA
Consideration of firm or flexible capacity and/or several options of flexible capacity	[free text]
Description of "firm capacity" and description of the methodology leading to firm capacity results	[free text]
Description of "flexible capacity"	[free text]
Description of the methodology leading to flexible capacity results	[free text]
Description of the criteria and methodologies used that lead to the published information	[free text]
Main assumptions/disclaimers behind calculations	[free text]
Additional information	[free text]

CONNECTION PROCEDURE

Field	Input options
Connection request procedure	[free text]
Available options for the investors if the map shows "no capacity available" in their interested area	[free text]
Connection request rules	Drop-down list: First come, first served/First-ready-first-serve/Application Window/Others (Please specify)
Information published for volumes of connection requests/waiting lines	Drop-down list: Yes/Partly/No/NA
Granularity of published connection requests/ waiting lines (e.g. nodal, regional, per SO)	[free text]
Additional information	[free text]

RELEVANT LINKS

Field	Input options
Calculation, disclaimers, and boundaries	[hyperlink / document]
Connection request process	[hyperlink / document]
Auxiliary documents	[hyperlink / document]
Legal references	[hyperlink / document/free text]
Contact point for hosting capacity information	[free text]
Contact point for connection requests	[free text]

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