

Inclusion of projects in TYNDP 2016

Technical criteria and data

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Technical requirements and data

**Legal
requirements**

**Legal
documents**

**Technical
requirements**

Technical data

Technical requirements and data



1. **Technical requirements** – minimum technical limits expected from the submitted projects
2. **Technical data** are necessary to model the infrastructure in the market network studies
 - **Are composed of:**
 - generic technical data
 - network technical data
 - **Depends of the project status:**
 - Under consideration
 - Under design&permitting, planning, construction

1. Technical requirements regarding transmission projects

- the main equipment is a **high-voltage overhead transmission line** designed for a voltage of **220 kV or more**, or an underground and submarine **transmission cable** designed for a voltage of **150 kV or more**, at least partially located in one of the 34 countries represented within ENTSO-E; **and**
- the project **increases the Grid Transfer Capability (GTC) at a network boundary** within the ENTSO-E interconnected network ; **and**
- **The GTC (expressed in MW)** meets at least one of the following **minimums**:
 - **at least 500 MW of additional NTC**, with the exception of cross-border projects where no additional NTC threshold is imposed; **or**
 - **connecting or securing output of at least 1 GW/1000 km² of generation**; **or**
 - **securing load growth for 10 years for an area representing consumption greater than 3 TWh/year.**

1. Technical requirements regarding storage projects

- The project shall be an **electricity storage facility used for storing electricity on a permanent or temporary basis** in above-ground or underground infrastructure or geological sites, at least partially located in one of the 34 countries represented within ENTSO-E, and directly **connected to the high-voltage transmission lines designed for a voltage of 110 kV or more**
- The project shall provide at **least 225 MW installed capacity** and has a storage capacity that allows a net annual **electricity generation of 250 GWh/year**

Technical data for the transmission projects –part I

a brief technical description of the projects:

- technology (AC/DC) and voltage level of main equipment; end-substations, km of route

the motivation for the project

- including a qualitative description of the investment need that the project addresses and the project's role in supporting at least one of the 3 pillars of EU energy policy (market integration, sustainability, secure system operation);

an assessment of the increase in the Grid Transfer Capability

- which the project will enable, expressed in MW

project status

- indicating whether the project is in the consideration phase (prefeasibility/feasibility studies), design & permitting phase or under construction

the expected commissioning date

- and a timeline of the implementation plan including pre-feasibility and feasibility studies, engineering design, exemption and permitting procedures, manufacturing, construction and commissioning

the cost of the project

indicate the location of the project on the ENTSO-E map

any additional information considered relevant by the project promoter

Technical data for the transmission projects –part II

For an alternating current (AC) infrastructure

- connection points (substations name), nominal voltage,
- type of conductor, nr/phases, resistance (R), reactance (X), conductance (B), thermal limit (I_{max}),
- km of the whole route (for a line/cable),
- km of the route to each border, if the infrastructure is a tie-line.

For a direct current (DC) infrastructure

- connection points (substations name), nominal voltage, type of conductor, type of converters (VSC/LCC),
- capacity, km to each border if the infrastructure is a tie- line, thermal limit (I_{max}),
- Mvar capability range at terminals, bus-bar to bus-bar losses profile over MW range

- expected yearly unavailability, differentiating between planned and forced
- outages, and the maximum single failure according to the design
- main environmental impacts

Technical data for the storage projects – part I

Brief technical description of the storage project

- type of storage (hydro, pure pumping or including natural inflow; battery, type of technology used; etc.),
- Installed electric generating capacity, including maximum active power (MW) and reactive power (Mvar), and minimum values different from zero.
- total storage capacity, and installed electric storing capacity including maximum active power (MW) and reactive power (Mvar), and minimum values different from zero.
- the connection point to the transmission infrastructure, the voltage at the connection point ($\geq 110\text{kV}$) and the features of the required infrastructure to connect the storage plant to the connection point (lines, step-up transformers, etc.)

the motivation for the project

- including a qualitative description of the investment need that the project addresses and the project's role in supporting at least one of the 3 pillars of EU energy policy (market integration, sustainability, secure system operation);

the project status

the expected commissioning date

the expected lifetime of the storage unit

the total cost of the project

indication of the project's location on the ENTSO-E map

main environmental impacts

Technical data for the storage projects – part II



Other technical parameters:

- efficiency, specifying round trip efficiency (full cycle) and pump/turbine or charge/discharge
- expected yearly unavailability, differentiating between planned and forced outages
- depth of discharge or ramp-up/down average and maximum. If relevant, provide a chart of charge/discharge capabilities versus time to show typical operation cycles
- estimated net annual electricity generation , envisaged operation scheme (seasonal, monthly, daily, hourly), and equivalent full power hours (EFPH)

any additional information that is considered relevant by the project promoter



Questions?