

Connection of Offshore Wind Farm to the Transmission Grid: Regulation and Specifications



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Connection Process*

*Process steps described in detail in the Procedure for the Use of Electricity Grids by Power-Generation Companies by TSO (draft, approval by the Regulator expected in February 2023)



** Standard contract conditions provided <u>https://www.litgrid.eu/index.php/paslaugos/prijungimas-perkelimas-rekonstravimas/gamintojams/535</u>

Purpose of Preliminary Design Specifications

- 1. Issued by the TSO
- 2. Specifies mandatory requirements for connection of generators to the grid
- 3. Provides sufficient information for estimation of the extent of investments
- 4. Do not create binding obligations or rights for any of the two parties*
- 5. Validity term 6 months after the issuing date

*Grid capacity (1,4 GW total) is reserved by the Law on Renewable Energy



Content of Preliminary Design Specifications (1)

- I. GENERAL REQUIREMENTS FOR CONNECTION TO THE TRANSMISSION SYSTEM
- II. GENERAL REQUIREMENTS
 - 1. Producer's obligations for connection of generators to the transmission grid
 - 2. Requirements for the planned territory
 - 3. Contracts to be signed
 - 4. Requirements for project implementation timeline planning
- III. TECHNICAL REQUIREMENTS FOR THE PART OF THE TRANSMISSION GRID
 - 5. General requirements
 - 6. Requirements for project implementation order and stages
 - 7. Requirements for operational management and documentation
 - 8. Requirements for primary equipment and self-consumption
 - 9. Requirements for the construction part
 - 10. Requirements for relay protection and automation
 - 11. Requirements for management, signaling and measurements
 - 12. Requirements for teleinformation collection and transfer
 - 13. Requirements for electronic communications (telecommunication)
 - 14. Requirements for electricity metering and measurements
 - 15. Requirements for environmental protection, fire protection, work safety
 - 16. Requirements for security systems



Content of Preliminary Design Specifications (2)

III. TECHNICAL REQUIREMENTS FOR THE PRODUCER'S PART

- 17. General requirements
- 18. Requirements for overvoltage protection
- 19. Requirements for relay protection and automation
- 20. Requirements for electricity metering
- 21. Requirements for teleinformation collection and transfer
- 22. Requirements for telecommunication
- 23. Requirements for connection of the offshore wind turbines to the transmission grid
- Annex 1. Information tables of planned offshore wind turbines
- Annex 2. Requirements for studies
- Annex 3. Main testing requirements



Integration into the Onshore Transmission Grid (1)

Lithuanian onshore 330 kV Transmission Grid

- Darbėnai substation is ready by 2025.
- 330 kV Point of Connection (POC) at Darbėnai substation for the 1st OWF.
- Dashed lines to be developed.
- Internal transmission grid development depends on electrolysis development in Lithuania.



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Integration into the Onshore Transmission Grid (2)



Lithuanian offshore wind farms connection vision

POC:

- Darbėnai substation is ready by 2025.
- Litgrid ownership starts at 330 kV POC in Darbenai substation for the 1st OWF.



Connection Site Location



Connection scheme

Notes:

- Red line: elements that have which have to be installed for connection of the 1st stage OWF
- Blue dashed line: elements which are not required in the 1st stage of OWF. These elements will be required for connection of the 2nd stage of OWF







Site Layout



Thank You!

