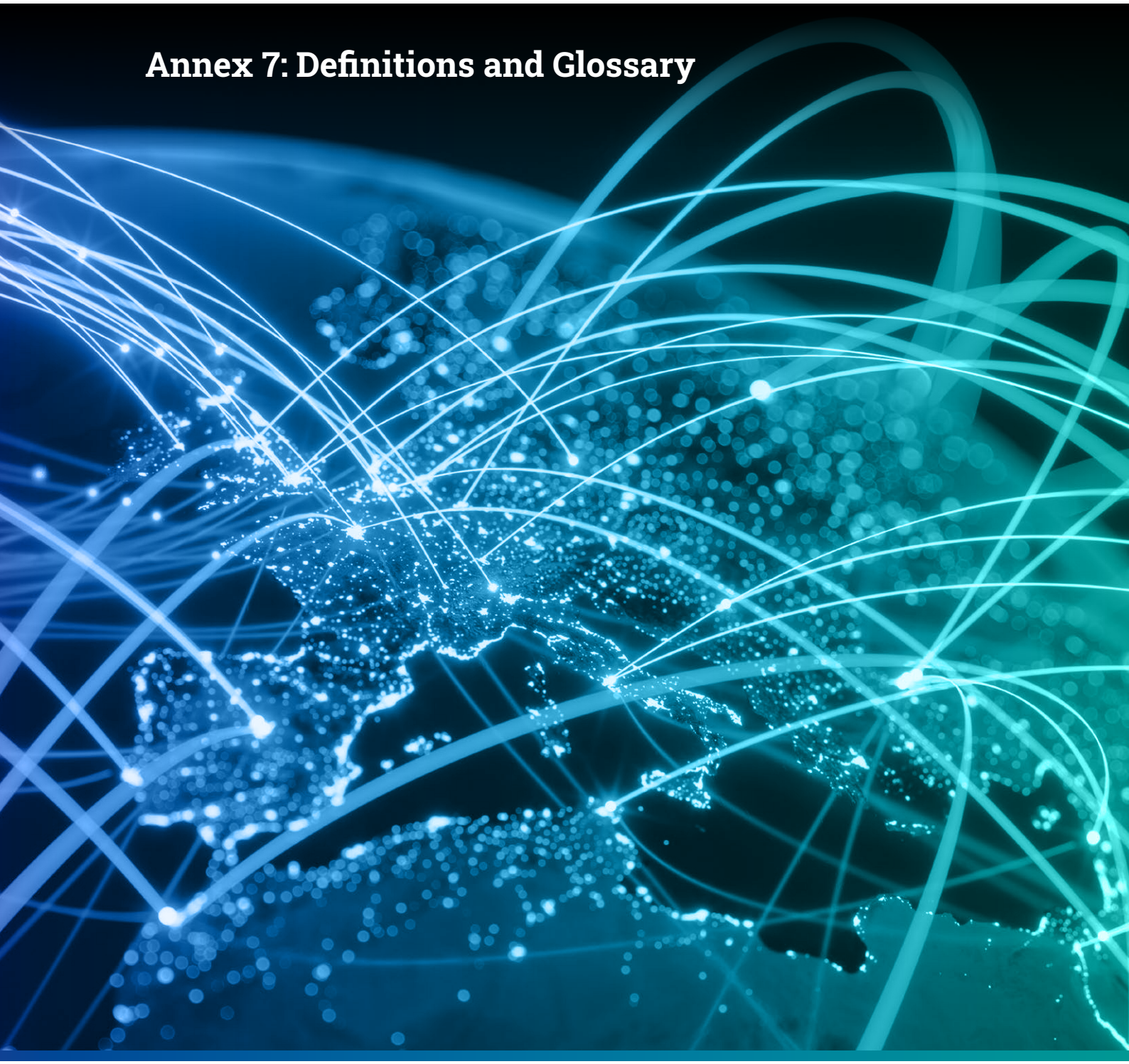
European Resource Adequacy Assessment

2021 Edition

Annex 7: Definitions and Glossary



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Definitions

Capacity Calculation Region (CCR)	The geographic area in which the coordinated capacity calculation is applied.
Capacity Mechanism (CM)	Capacity mechanism pursuant to Regulation (EU) 2019/943 of the European Parliament and Council of 5 June 2019 on the internal market for electricity (recast).
Capacity Resource	Any generation, storage or DSR asset which may bring resource adequacy benefit.
Capital Expenditures (CAPEX)	The investment required to develop, construct or refurbish a capacity resource without considering the financial costs (e.g. interest costs) or the structure of financing (equity versus debt), i.e. the investment required if the capacity resource were to be built overnight at the current prices.
Core Region (also Core Capacity Calculation Region)	Capacity calculation region as defined in ACER's Definition of the Capacity Calculation Regions in accordance with Article 15(1) of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a Guideline on Capacity Allocation and Congestion Management and which covers France, Germany, Belgium, the Netherlands, Luxembourg, Austria, Poland, the Czech Republic, Slovakia, Hungary, Romania, Slovenia and Croatia.
Critical Network Element associated with a Contingency (CNEC)	Critical network element associated with a contingency used in the CCM. For the purpose of the ERAA methodology, the term CNEC also covers the case where a critical network element is used in the CCM without a specified contingency.
Demand	Means the total instantaneous electricity consumption observed in the transmission system, including transmission network losses.
Demand Response (DSR)	Demand response pursuant to Regulation (EU) 2019/943 of the European Parliament and Council of 5 June 2019 on the internal market for electricity (recast). In addition, i. Explicit Demand-Side Response (explicit DSR) The change of electric demand pursuant to an accepted offer to sell demand reduction or increase in an organised market, either directly or through aggregation. Explicit DSR may consist of either foregone or time-shifted demand. ii. Implicit Demand-Side Response (implicit DSR) The change of demand by final customers from their normal or current consumption patterns, in response to time-variable electricity prices or incentive payments. Implicit DSR can either be self-directed or directed by an energy management service provider.
Economic dispatch (ED)	Mathematical optimisation model as described in Article 7 of the ERAA methodology.
Energy Not Served (ENS) [GWh/year]	For a given MTU and modelled zone, the energy which is not supplied due to insufficient capacity resources to meet the demand.

Expected Energy Not Served (EENS) [GWh/year]	In a given modelled zone and in a given time period, the expected ENS.
Explicitly Modelled Systems	Electric systems which are modelled in detail. These systems shall be modelled considering each element of the probabilistic model set in the ERAA methodology.
Flow-Based (FB)	The flow-based approach pursuant to Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management.
Flow-based Domain	Set of constraints that limit the flow-based cross-zonal capacity.
Flow-Based Market Coupling (FBMC)	Mechanism to couple different electricity markets, increasing the overall economic efficiency, while taking into account the available transmission capacity between different bidding zones using the FB approach/model.
Forced Outage (also Unplanned Outage)	State of a capacity resource when it is unavailable in the power system and the unavailability was not planned.
Frequency Containment Reserves (FCR) (also primary reserves)	Frequency containment reserves pursuant to Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation.
Frequency Restoration Reserves (FRR) (also secondary reserves)	Frequency restoration reserves pursuant to Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation.
Loss of Load Duration (LLD) [h/year]	For a single node, the number of hours during which the node experiences ENS during a single Monte Carlo sample/simulation year. For a geographical area with multiple nodes, LLD is the number of hours during which at least one node of the area experiences ENS during a single Monte Carlo sample/simulation year. A null LLD suggests that there are no adequacy concerns.
Loss of Load Expectation (LOLE) [h/year]	In a given modelled zone and in a given time period, the expected number of hours in which resources are insufficient to meet the demand.
MC	Monte Carlo (i.e. related to the Monte Carlo method);
Modelled zone	Either a bidding zone, a country or another geographic area that is explicitly modelled in the ED. A modelled zone cannot be larger than a bidding zone or a country.
MTU	Market time unit pursuant to Transparency Regulation;
NECP	Integrated national energy and climate plan pursuant to Regulation (EU) 2018/1999 of the European Parliament and of the Council on the Governance of the Energy Union and Climate Action.

Net Generating Capacity (NGC) of a generation unit	The maximum net active electrical power it can produce continuously throughout a long period of operation in normal conditions, where: i. "net" means the difference between, on the one hand, the gross generating capacity of the alternator(s) and, on the other hand, the auxiliary equipment load and the losses in the main transformers of the power station, ii. for thermal plants, "normal conditions" means average external conditions (climate etc.) and full availability of fuels; and iii. for hydro, solar and wind units, "normal conditions" means the nominal availability of primary energies (i. e. water, solar or wind conditions).
Net Transmission / Transfer Capacity (NTC) approach / model	The coordinated net transmission capacity approach pursuant to Commission Regulation (EU) 2015 / 1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management.
Non explicitly Modelled Systems (also implicitly modelled systems)	Electric systems which are not explicitly represented in the modelling framework in detail, and which are directly interconnected with an explicitly modelled system.
Non-renewable Energy Sources	Energy from non-renewable sources, namely oil, natural gas, coal, sewage treatment plant gas and nuclear energy. Inverse of renewable energy sources.
Planned outage	State of a capacity resource when it is not available in the power system and the outage was planned in advance. These outages include maintenance.
Renewable Energy Sources (RES)	Energy from renewable sources pursuant to Directive (EU) 2019 / 944 of the European Parliament and Council of 5 June 2019 on common rules for the internal market for electricity.
Replacement Reserves (RR) (also tertiary reserves)	replacement reserves pursuant to Commission Regulation (EU) 2017 / 1485 of 2 August 2017 establishing a guideline on electricity transmission system operation.
Reserve Capacity	The frequency containment reserves, frequency restoration reserves or replacement reserves that need to be available to the transmission system operator.
Revenue	Any income that a given capacity resource receives.
Target Year (TY)	A year simulated within the ERAA.
Thermal Generation	Production of electricity from thermal energy obtained from the conversion of primary energy sources, namely oil, natural gas, coal, nuclear energy, solar thermal, geothermal energy, biomass, landfill gas, sewage treatment plant gas, and biogas.
TYNDP	ENTSO-E's ten-year network development plan.
Unplanned Outage	See Forced Outage.
Value of Lost Load (VoLL) [€/MWh]	An estimation of the maximum electricity price that each end user type is willing to pay to avoid an outage.

Glossary

AC	Alternating Current
ACER	European Union Agency for the Cooperation of Energy Regulators
ADEME	Agence de l'Environnement et de la Maîtrise de l'Energie
aFRR	Automatic Frequency Restoration Reserve
AHC	Advanced Hybrid Coupling
BZ	Bidding Zone
C3S	Copernicus Climate Change Service
CAPEX	Capital Expenditure
CCGT	Combined Cycle Gas Turbine
CCM	Capacity Calculation Methodology
CCR	Capacity Calculation Region
CDF	Cumulative Distribution Function
CEP	Clean Energy Package
CEPA	Center for European Policy Analysis
CHP	Combined Heat and Power
CM	Capacity Mechanism
CNE	Critical Network Element
CNEC	Critical Network Element and Contingency
CONE	Cost of New Entry
CorRES	Correlations in Renewable Energy Sources
CRM	Capacity Remuneration Mechanism
CSP	Concentrated Solar Power
CWE	Central- Western Europe
CY	Climate Year
DA	Day-Ahead
DC	Direct Current
DCDF	Direct Current Power Flow Distribution Factors
DSR	Demand-Side Response
EENS	Expected Energy Not Served
ENS	Energy Not Served
ENTSO-E	European Network for Transmission System Operators for Electricity
EOM	Energy-Only Market
ERAA	European Resource Adequacy Assessment
EU	European Union
EUPHEMIA	Pan-European Hybrid Electricity Market Integration Algorithm
EV	Electric Vehicle
EVA	Economic Viability Assessment
FB	Flow-Based
FBMC	Flow-Based Market Coupling
FCR	Frequency Containment Reserve
FO	Forced Outage
FOM	Fix, Operation and Maintenance (costs)
FOR	Forced Outage Rate
FRR	Frequency Restoration Reserve
GCS	Generation Capacity Statement
GSK	Generation Shift Key
HVAC	High-Voltage Alternating Current
HVDC	High-Voltage Direct Current
IEA	International Energy Agency
JAO	Joint Allocation Office
LLD	Loss of Load Duration
LOL	Loss of Load

LOLE	Loss of Load Expectation
LOLP	Loss of Load Probability
MACZT	Margin Available for Cross-Zonal Trade
MAF	Mid-Term Adequacy Forecast
MC	Monte Carlo
mFRR	Manual Frequence Restoration Reserve
minRAM	Minimum Remaining Available Margin
MTU	Market Time Unit
NECP	National Energy and Climate Plan
NGC	Net Generating Capacity
NRA	National Regulatory Authority
NRAA	National Resource Adequacy Assessment
NTC	Net Transfer Capacity
O&M	Operations and Maintenance
OCGT	Open Cycle Gas Turbine
OWPP	Offshore Wind Power Plant
P2X	Power-to-X
P50	50th Percentile
P95	95th Percentile
p.u.	Per Unit
PD	Peak Demand
PDF	Probability Density Function
PECD	Pan-European Climate Database
PEMMDB	Pan-European Market Modelling Database
POC	Proof of Concept
PSDF	Phase Shifter Distribution Factors
PSP	Pumped Storage Plant
PST	Phase Shifting Transformer
PTDF	Power Transfer Distribution Factor
PV	Photovoltaics
RAM	Remaining Available Margin
RES	Renewable Energy Source
RoR	Run-of-River
RR	Replacement Reserve
RS	Reliability Standard
SDAC	Single Day-Ahead Coupling
SEM	Single Electricity Market
SR	Strategic Reserve
TES	Thermal Energy Storage
TRAPUNTA	Temperature Regression and loAd Projection with UNcertainty Analysis
TSO	Transmission System Operator
TY	Target Year
TYNDP	Ten-Year Network Development Plan
UCED	Unit Commitment and Economic Dispatch
VoLL	Value of Lost Load
WACC	Weighted Average Cost of Capital
WPP	Wind Power Plants
YD	Yearly Demand

European Network of
Transmission System Operators
for Electricity

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