Mid-term Adequacy Forecast Appendix 4

Definitions & Abbreviations
2020 Edition

entsoe

Definitions

Capacity Calculation Region (CCR)
The geographic area in which the coordinated capacity calculation is applied.

Capacity Mechanism (CM)
A temporary non-market measure to ensure the achievement of the necessary level of resource adequacy by remunerating resources for their availability, excluding measures relating to ancillary services or congestion management.

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 and Contingency (CNEC)
Critical network element associated with a contingency used in the the capacity calculation methodology expected to apply for the considered target year.

Demand-Side Response (DSR)
The change of electricity load by final customers from their normal or current consumption patterns in response to market signals.

Energy Not Served (ENS) [GWh/year]
For a single node, the energy which is not supplied during a single Monte Carlo sample/ simulation year due to the demand in the node exceeding the combination of available resource capacity and electricity imports. For a geographical area with multiple nodes, ENS is the total energy not surved of all its nodes. A null ENS suggests that there are no adequacy concerns.

Expected Energy Not Served (EENS) [GWh/year]
For a given geography, the mathematical average of the ENS calculated over the total number of Monte Carlo sample/simulation years.

Explicitly Modelled Systems
Electric systems which are modelled in detail, i. e. electric systems which are an integral part of the European power system and for which System Operations Guideline (SO GL) article 81 or article 106 is applicable. These systems shall be modelled by considering each element of the probabilistic model set in this methodology. Inverse of non-explicitly modelled systems.

Flow-Based (FB) approach/ model
A capacity calculation method in which energy exchanges between bidding zones are limited by power transfer distribution factors and available margins on a critical network element.

Flow-Based Market Coupling (FBMC)
A 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 resource capacity when it is unavailable in the power system and the outage was not planned in advance. These outages include breakdowns and any other unforeseen unavailabilities. Inverse of planned outage.

Frequency Containment Reserves (FCR) (also primary reserves)
The active power reserves available to contain system frequency after the occurrence of an imbalance.

Frequency Restoration Reserves (FRR) (also secondary reserves)
The active power reserves available to restore system frequency to the nominal frequency and, for a synchronous area consisting of more than one load-frequency control area, to restore power balance to the scheduled value. They can either be triggered automatically following a TSO's signal (aFRR) or manually (mFRR).

I-SEM
stands for Integrated Single Electricity Market, a wholesale electricity market where electricity is traded in bulk across the island of Ireland.

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] — For a given geography, the mathematical average of the Loss of Load Durations over the total number of Monte Carlo sample/simulation years.

National Trends Scenario — A scenario considering projected demand and supply forecasts, including best estimates on likelihood of retirement, mothballing, new-build of generation assets and measures to reach energy efficiency, and considering the state of the grid in line with the Ten-Year Network Development Plan (TYNDP) and most recent national development plans.

Net Transmission/ Transfer Capacity (NTC) approach/model — A coordinated capacity calculation method based on the principle of assessing and defining ex ante a maximum energy exchange between adjacent bidding zones. In contrast to the FB approach, capacity allocation takes place entirely ex ante the market clearing.

Non explicitly Modelled Systems (also implicitly modelled systems) — Electric systems which are not modelled except for their import/export time series with explicitly modelled systems.

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 resource capacity when it is not available in the power system and the outage was planned in advance. In contrast to forced or unplanned outage. These outages include maintenance, mothballing and any other unavailabilities that were planned in advance.

Renewable Energy Sources (RES) (also energy from renewable sources or renewable energy) — Energy from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass, landfill gas, and biogas.

Replacement Reserves (also tertiary reserves) — Active power reserves available to restore or support the required level of FRR to be prepared for additional system imbalances, including generation reserves.

Reserve Capacity — The frequency containment reserves, frequency restoration reserves or replacement reserves that need to be available to the transmission system operator.

Target Year (TY) — A specific year analysed in MAF constituting a dependency of resource capacities, grid capacities and demand levels.

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.

Unit Commitment and Economic Dispatch (UCED) — A mathematical optimisation problem which determines the commitment schedule of generation units and their level of generation in order to meet demand for every time step of the modelling horizon. The objective of the problem is to minimize operational cost while satisfying the operational constraints of the power system.

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.

Abbreviations

AD	Annual Demand		**LOLE**	Loss of Load Expectation
AHC	Advanced Hybrid Coupling		**LOLP**	Loss of Load Probability
AYD	Average Yearly Demand		**LT**	Long-Term
CCR	Capacity Calculation Region		**MAF**	Mid-Term Adequacy Forecast
CEE	Central-East Europe		**MC**	Monte Carlo
CEP	Clean Energy Package		**MILP**	Mixed Integer Linear Programming
CHP	Combined Heat and Power		**MPD**	Maximum Peak Demand
CM	Capacity Mechanism		**NGC**	Net Generating Capacity
CNEC	Critical Network Element and Contingency		**NTC**	Net Transfer Capacity
			OM	Outage Minutes
CONE	Cost of New Entry		**P2G**	Power-to-Gas
CWE	Central- Westernt Europe		**P2H**	Power-to-Hydrogen
DSR	Demand-Side Response		**P2X**	Power-to-X
EENS	Expected Energy Not Served		**P50**	50th Percentile
EF	External Flow		**P95**	95th Percentile
ENS	Energy Not Served		**PECD**	Pan-European Climate Database
EENS	Expected Energy Not Served		**PEMMDB**	Pan-European Market Modelling Database
ENTSO-E	European Network for Transmission System Operators for Electricity		**PRIMES**	Price-Induced Market Equilibrium System
ERAA	European Resource Adequacy Assessment		**PST**	Phase Shifting Transformer
			PTDF	Power Transfer Distribution Factor
ETRI	Energy Technology Reference Indicator		**PV**	Photovoltaics
EUE	Expected Unserved Energy		**RAM**	Remaining Available Margin
EUPHEMIA	Pan-European Hybrid Electricity Market Integration Algorithm		**RES**	Renewable Energy Source
			SAI	System Adequacy Indicator
EVA	Economic Viability Assessment		**SHC**	Standard Hybrid Coupling
FB	Flow-Based		**SVD**	Singular Value Decomposition
FBMC	Flow-Based Market Coupling		**TFEU**	Treaty on the Functioning of the European Union
FO&M	Facilities, Operation and Management			
FCR	Frequency Containment Reserve		**TSO**	Transmission System Operator
FRR	Frequency Restoration Reserve		**TY**	Target Year
GSK	Generation Shift Key		**TYNDP**	Ten-Year Network Development Plan
HVAC	High-Voltage Alternating Current		**UCED**	Unit Commitment and Economic Dispatch
HVDC	High-Voltage Direct Current			
IEA	International Energy Agency		**VoLL**	Value of Lost Load
I-SEM	Integrated Single Electricity Market		**WACC**	Weighted Average Cost of Capital
LDC	Load Duration Curve			
LLD	Loss of Load Duration			