



REPORT

CONFIDENTIAL

APPROVED

VERSION 1.0

INTERCONNECTION GRID CODE FOR THE PAN ARAB ELECTRICITY MARKET

GLOSSARY AND DEFINITIONS

Arab Fund Grant Number 06/2018

Partial reproduction of this document is permitted only with the written permission from the Arab Fund or the League of Arab States.

N. of pages 23

N. of pages annexed -

Issue date 22/05/2020

Prepared Fabio Riva, Stefano Mandelli, Flemming Christensen, Antonio Carrano, Carlo Sabelli

Verified Daniele Canever

Approved Bruno Cova

CESI

Shaping a Better Energy Future

KEMA Labs
IPH
EGE
ISMES
ISTEDIL
EnerNEX

Table of Contents

GD 1	TERMS AND DEFINITIONS	3
GD 2	SYMBOLS AND UNITS OF MEASUREMENT	22
GD 3	STRUCTURE OF THE CODE AND HIERARCHY OF HEADINGS	23



GD 1 TERMS AND DEFINITIONS

Term	Acronym	Definition
Activation of Primary Control		Deadband across the nominal frequency outside which the Primary Control is activated
Actual Energy Transfer		means the real Energy Transfer of a PAEM Participant in a Dispatch Period from the Transmission System of a Member State (measured in MWh, with the accuracy of measurement up to 2 decimal places).
Actual Metering Point		means, the physical location at which the electricity is metered.
Adequacy		means the design of the Electricity System to meet the electrical Demand and energy requirements of consumers at all times, taking in consideration of Planned Outages and/or Forced Outages.
Adequacy Assessments		it has the meaning given to it in Section OC 2.7 of the Operation Code.
Aggregated Netted External TSO Schedule		means a schedule representing the netted aggregation of all External TSO Schedules between two Scheduling Areas or between a Scheduling Area and a group of other Scheduling Areas.
Agreement Process		means the process where the requesting TSO and the providing one confirm the values of External TSO Schedules for a given direction and for all time intervals in each time frame.
Alert Procedure		means a procedure to be applied whenever operation data predict unsecure situations involving interconnected Electricity Systems.
Alert State		it has the meaning given to it in Article OC 3.3.4 of the Operation Code.
Allocation Process		means the process described in Chapter SDC 3 related to the allocation of the Transfer Capacity available at the border of each Member State, net of the Reserved Transfer Capacity.
Allocation Rules		means the rules for Forward Capacity Allocation applied by Regional Market Facilitator
Already Allocated Capacity	AAC	means the total amount [MW] of allocated transmission rights, whether they are capacity or exchange programs depending on the allocation methods.
Alternating Current	AC	means electric current that is a periodic function of time with a zero direct component or, by extension, a negligible direct component
Annual Maintenance Period	AMP	means the period during which it is more convenient to allocate the maintenance activities because the Demand is lower, energy flows are lower, and the adequacy is guaranteed with adequate margins.
Annual Operation Report		means the yearly report released in year Y on the facts and figures of the operation of the year Y-1.
Arab Grid Code or Arab Interconnection Grid Code	Code	means the technical procedures for the planning and operation of the PAEM. The terms "Arab Grid Code" and "Arab Interconnection Grid Code" are equivalent.
Arab TSOs Committee		means the entity that is responsible for coordination and cooperation among the national TSOs, the National Market Facilitators, the Regional TSOs / Market Facilitators and the Regional Market Facilitator, and other responsibilities as outlined in Section 3.5 of the General Agreement.
Synchronous Area Adequacy Coordinator		Elected TSO for each Synchronous Area acting as Area Coordinator of Planning of a Synchronous Area.
ACE Average Zero Crossing Period		Average time interval between two consecutive zero crossing of ACE of a Control Area.
Area Control Error	ACE	The sum of the power control error (' ΔP '), that is the real-time difference between the measured actual real-time power interchange value ('P') and the control program ('P0') of a specific LFC area or LFC block and the frequency control error (' $K \cdot \Delta f$ '), that is the product of the K-factor and the frequency deviation of that specific LFC area or LFC block, where the area control error equals $\Delta P + K \cdot \Delta f$.
Area Coordinator of Planning	ACOP	Elected TSO members for each Synchronous Area acting as coordinator of the planning in the related Synchronous Area.
Area Group	AG	Group under coordination of the WG4, tasked to perform market studies and other activities inherent a Synchronous Area.

Asynchronous Area		means a portion of the PAEM Electricity System covered by asynchronously or not interconnected national TSOs.
Auction		means the process by which long-term cross-zonal capacity is offered and allocated to PAEM Participants who submit bids.
Auction Specifications		means a list of specific characteristics of an Auction, including the nature of offered products and relevant dates.
Auction Tool		means the ICT system used by the Regional Market Facilitator to perform Auctions and to facilitate other procedures described in the Allocation Rules.
Automatic Generation Control	AGC	means a system for adjusting the power output of multiple Power-Generating Modules at different Power-Generating Facilities, in response to changes in the Demand.
Automatic Voltage Regulator'	AVR	means the continuously acting automatic equipment controlling the terminal voltage of a Synchronous Power-Generating Module by comparing the actual terminal voltage with a reference value and controlling the output of an Excitation Control System.
Available Transfer Capacity	ATC	means the part of NTC [MW], that remains available after each phase of the Allocation Process for further commercial activity.
Average Network Power Frequency Characteristic		Network Power Frequency Characteristic calculated in average over a given validity period.
Balancing		means the act of maintaining a balance between electricity Demand and supply on a moment-to-moment basis.
Bank Guarantee		means an unconditional and irrevocable standby letter of credit or letter of guarantee issued by a bank.
Base Case		means set of data, common for all Member States, used for Grid analysis and needed to simulate cross-border exchange. The set of data includes, for a certain point in time, the expected Operating Conditions of the whole Electricity System, with the Grid Model and input data describing load and Generation patterns forecast and Grid topology at the study time frame (yearly, monthly and daily).
Base Case Exchange	BCE	means the initial transaction value under the Base Case.
Best Effort		means, for any action required to be made, attempted or taken by a Party, all necessary efforts that a prudent person would or ought to undertake to protect its own interests, including commercial interests, taking into account the conditions affecting such action, including the amount of notice to act, recognition of the need to act, the duration and type of the action, the competitive environment in which such action occurs, and the projected benefit, cost and risk to the Party required to take such action; provided, however, Best Efforts shall always be interpreted to take into consideration the rights and obligations of the Parties under this Code, the General Agreement, and the PAEM Agreement.
Bid		means a pair of Bid Quantity and Bid Price offered by a Registered Participant participating in an Auction.
Bid Price		means the price which a Registered Participant is willing to pay for one (1) MW and hour of Long-Term Transmission Rights.
Bid Quantity		means the amount of Long-Term Transmission Rights in MW requested by a Registered Participant.
Bidding Period		means the time period within which the Registered Participants wishing to participate in an Auction may submit their Bids.
Bidding Zone		means a case of Trading Zone in case of regulated market regimes, where competitive energy and Ancillary Service markets are regulated by Auctions.
Bilateral Contract		means an agreement between two PAEM Participants to trade a specified quantity of Transfer Capacity, energy or System Service at prices determined by the Parties to the agreement.
Bilateral Data Exchange		Data Exchange between two Parties only.
Blackout State		it has the meaning given to it in Article OC 3.3.4 of the Operation Code.
Black Start Capability		means the capability of a Power-Generating Facility to start without an outside electrical supply to be used to energize a defined portion of the Grid.
Block Coordinator		it has the meaning given to it in Paragraph SDC 4.1.1.8 of the Scheduling & Dispatching Code.

Bottom-up		means the strategy for reenergizing one or more Electricity Systems in black-out status by managing the process with internal resources from black start and counting on the regulating capabilities of the internal resources.
Business Account		means a dedicated deposit account opened by the Regional Market Facilitator at the financial institution selected by the Regional Market Facilitator in the name of the Regional Market Facilitator, which may not be used for payments by the Registered Participant.
Buyer		means a PAEM Participant that purchases capacity, energy or a System Service under a Bilateral Contract or a Multilateral Contract.
Capacity Agreement Identification	CAI	means unique code assigned to each Physical Transmission Right by Auction Tool during the Auction. The identification code is used also when the use of the Physical Transmission Right is nominated to TSOs.
Capacity Obligation		means the requirement of this General Agreement that each Member State maintains a level of generating capacity over and above its annual peak electricity demand.
Central Database		it has the meaning given to it in Section PC 3.1 of the Planning Code.
Check Meter		means a Meter used for validation and estimation for settlement purposes in accordance with the VEE Process.
Clusters		means a group of investments to be considered to reach a given goal. Clustering is recommended when: <ol style="list-style-type: none"> 1. Investments are in the same area or along the same transmission corridor; 2. They can achieve a common measurable goal; 3. They belong to a general plan for that area or corridor.
Code		means each single portion of codes of the Arab Grid Code.
Codes of Practice		means a document that complements laws and regulations and provide detailed practical guidance on how to comply with legal obligations and should be followed unless another solution with the same or better solution is in place. Commonly developed and agreed Codes of Practice are advised to be derived and supported across the PAEM member states.
Cold Standby Reserve		means the Reserve from Power-Generating Modules or equivalent power resources made available after their connection to the Transmission System and full operation.
Comitology		means the process put in place to gather the maximum of consensus in decisions of interest in common.
Common Grid Model		Merger of Individual Grid Models in a way that flows on the tie lines are consistent with the cross-border Energy Transfers.
Common Database		means a repository of Common Information functional to the planning process.
Common Information		Data set resulting from merging or aggregating shared Individual Information and all derived data.
Compensation Program		means the compensation of inadvertent deviations from a schedule. It is performed by exporting to/ importing from the interconnected Electricity System during the compensation period by means of schedules of constant power within the same tariff periods as when they occurred.
Compensation Program Schedule		means a schedule representing the exchange of electricity of TSOs related to a Compensation Program.
Compliance Monitoring Process	CMP	means an inter TSO process, inspired to the quality assurance process that ensures that an activity complies with the prescriptions of the Operation Code.
Confidentiality Agreement		it has the meaning given to it in Chapter GC 11 of the General Condition
Confidential Information or Confidential Data		means any Information acquired by a Member State related to the business, finances, assets or affairs of another Member State as more specifically defined in Chapter 10 of the General Agreement.
Congestion		means a situation that occurs on a Transmission System when flows on transmission lines and equipment exceed the Transfer Capacity.
Connection Agreement		means a detailed document, one for each cross-border International Interconnection, specifying agreements on the management of the International Interconnection itself.

Connection Code	CC	means the Code that aims at governing the technical conditions for the access of Power-Generating Facilities and HVDC Systems to the Grids of the Member States. The aim is to promote the correct functioning and safety of the PAEM Electricity System.
Connection Point		means the interface at which a Facility is connected to a Transmission System, offshore Network, Distribution System, including closed Distribution Systems, or HVDC System.
Contingency List		The list of contingencies (Outages) to be simulated in order to test the compliance with the SoO and assess the N-1 security. More specifically, it is the list of Elements of the Relevant Grid or Power-Generating Modules or Demand Facilities whose outage one at the time should not cause cascading effects if the countermeasures considered in the Remedial Actions are applied.
Contribution Factor	CF	Factor to determine the share of Primary Reserve to which a Control Area shall contribute respect to the total amount needed in the Synchronous Area where the Control Area belongs to. Is calculated as the ratio between the energy produced in a Control Area and the total energy produced in the Synchronous Area.
Control Program		means the matched set of all exchange program related to a defined area (e.g. Control Area, Control Block) and the program for the compensation of Unintentional Deviations.
Coordination Center Zone		means the composition of several LFC Blocks under the responsibility of the same Coordination Center Zone Operator.
Coordination Center Zone Operator		means the person designated by one or more Member States responsible for: <ul style="list-style-type: none"> a) The coordination of exchange programs between its related LFC Blocks and for the exchanges between its associated Coordination Center Zones. b) Ensuring that its LFC Blocks respect their obligations in respect to LFC. c) Calculating the time deviation in cooperation with the associated Coordination Center Zones. d) Carrying out the settlement and/or compensation between its LFC Blocks and against the other Coordination Center Zones.
Corrective Maintenance		means unplanned maintenance interventions needed to correct or improve the behavior of a piece of equipment, included interventions to repair after unexpected faults.
Credit Limit		means the amount of the collaterals which may be used to cover any Bid submission in subsequent Auctions and is not used for outstanding payment obligations.
Current Transformer	CT	means type of transformer that is used to reduce or multiply an AC. It produces a current in its secondary which is proportional to the current in its primary.
Data Collection System	DCS	means the process of extracting Metering Data from a Metering Equipment and transferring such Metering Data into a remote Metering Database.
Data Exchange		means delivery and reception of data between at least two Parties.
Data Exchange Code	DEC	means the Code that defines the principles and regulates the Data Exchange.
Data Logger		means a device designed to be capable of reading and holding data until that data is collected.
Defence Plan		Means the pre-set array of countermeasures planned to cope with Exceptional and Out of Range Contingencies and limit the negative impact on the Electricity System.
Defined Metering Point	DMP	means, the physical or virtual location at which overall accuracy compliance requirements as defined in the Metering Code are to be met. The DMP shall be defined in the relevant Connection Agreement. Each single circuit interconnection between TSOs will have two DMPs, one with each TSO.
Demand		means the rate at which electric energy is required to be delivered to a Facility or part of a Facility, generally expressed in kilowatts or

		megawatts, at a given instant or averaged over any designated interval of time.
Demand Facility or Load Facility		means a Facility which consumes electrical energy and is connected at one or more Connection Points to the Transmission System. A Distribution System and/or auxiliary supplies of a Power-Generating Module do not constitute a Demand Facility.
Demand Facility Owner		means a natural or legal entity owning a Demand Facility.
Demand Forecast		Activity in the framework of the Operational Planning Process for the evaluation of the expected values of Demand at Control Area level and for a certain future time horizon, associated to a given probability. Unless different specified, values are expressed on an hourly basis in MWh.
Demilitarized zone	DMZ	means a physical or logical subnet that separates an internal local area network from an external, or non-propriety, network. A DMZ serves as a front-line network that interacts directly with the external networks while logically separating it from the internal network. The external-facing servers, resources and services are in the DMZ, that are accessible from the internet, but the rest of the internal local area network remains unreachable.
Direct Current	DC	means electric current that is time-independent or, by extension, periodic current the direct component of which is of primary importance.
Disclosing Party		means a Party delivering data.
Dispatch Period		means a period of one (1) hour, commencing at the beginning of an hour, by reference to which Actual Energy Transfers and Scheduled Energy Transfers are determined.
Dispute		it has the meaning given to it in Chapter GC 8 of the General Condition.
Distributed Generation		means electric power Generation within a Distribution System or on the customer side of the Distribution System.
Distribution System		means a system that is directly connected to the Grid for distribution of electricity – that is the transport of electricity on high-voltage, medium-voltage and low-voltage Distribution Systems with a view to its delivery to customers, but does not include supply –, and includes any structures, equipment or other components used for that purpose.
Distribution System Operator	DSO	means the person designated by one or more Member States to perform operations on the Distribution System.
Dollar		means the lawful currency of the United States of America.
Dynamic Security Assessment	DSA	means a computer-based tools to simulate on-line and off-line the behavior of the Electricity System. It includes the angle, frequency and Voltage stability and the analysis of synchro phasor recordings.
Downward Reserve		means the capacity to decrease the Generation till the minimal technical output of the Power-Generating Facilities. The available reserve is the difference between the cumulated minimum technical output of Power-Generating Facilities and the Demand.
Earthing		means the application of a solid connection between a Facility, previously Isolated, and the ground to be operated, kept and cleared according to the Safety Precautions adopted in compliance with the Code in force at the involved TSO.
Elements		means lines, transformers, phase shifters, series capacitors, shunt compensators.
Energy Identification Code	EIC	means a character code used in the PAEM identifying the Parties in the cross-border trading system.
Electricity System		means the Integrated Power System and the Facilities connected to that system.
Emergency or Emergency State		means any abnormal system condition that requires Remedial Action to prevent or limit loss of a Transmission System or Generation supply that could adversely affect the reliability of the Electricity System.
Energy Management System	EMS	means the system of computer-aided tools used by national TSOs to monitor, control and optimize the performance of the Electricity System.
Energy Transfer		means a transfer of electricity between two Transmission Systems.
Euro		means the official currency of the European Union.

Evaluation Tools	ET	mean the computer-based products whose algorithms are agreed and qualified to perform simulations and computations in all the processes needed for the operation of the PAEM and described in the Arab Grid Code.
Exceptional Contingency		It has the meaning given to it in Paragraph OC 3.3.3.4 of the Operation Code.
Expected Energy Not Served	EENS	Yearly total energy not served due to faults in the Electricity System and/or lack of Generation capacity.
Expert Group	EG	means the group under coordination of the WG4, tasked to perform centralized market studies.
Explicit Allocation		The Allocation of cross zonal Transfer Capacity only, without the Energy Transfer.
Excitation Control System		means a feedback control system that includes the synchronous machine and its excitation system.
External Data Exchange		Data Exchange, involving a Non-TSO or a Non-PAEM TSO.
External TSO Schedule		a schedule representing the exchange of electricity of TSOs between different Scheduling Areas.
Facility		means a Power-Generating Facility, a Demand Facility, a Network, an HVDC System, or any other equipment that is a component or part of the PAEM Electricity System.
Facility Owner		means a natural or legal entity owning a Facility.
Fast Fault Current		means a current injected by an Inverter-based Power Generating Module or HVDC System during and after a voltage deviation caused by an electrical fault with the aim of identifying a fault by the protection systems of the Transmission System at the initial stage of the fault, supporting system voltage retention at a later stage of the fault and system voltage restoration after fault clearance.
Fault Locator		means a device to localize the distance of a short circuit from one end of a line of the Transmission System.
Fault-Ride-Through		means the capability of electrical devices to be able to remain connected to the Network and operate through periods of low voltage at the Connection Point caused by secured faults.
Final Notice of Dispute		it has the meaning given to it in Chapter GC 8 of the General Condition
Financial Transmission Right	FTR	A type of Long-Term Transmission Right and is either: <ol style="list-style-type: none"> 1. A right entitling its holder to receive or obliging its holder to pay a financial remuneration based on the market results between two Bidding Zones during a specified period in a specific direction. 2. A right entitling its holder to receive a financial remuneration based on the market results between two Bidding Zones during a specified period in a specific direction.
Flexible Alternating Current Transmission System	FACTS	means static power-electronic devices installed in AC Transmission Systems to increase power transfer capability, stability, and controllability of the Networks through series and/or shunt compensation.
Force Majeure Event		means, in relation to a person, any event or circumstance, or combination of events or circumstances, (i) that is beyond the reasonable control of the person; (ii) that adversely affects the performance by the person of its obligations under this General Agreement; and (iii) the adverse effects of which could not have been foreseen and prevented, overcome, remedied or mitigated in whole or in part by the person through the exercise of diligence and reasonable care and may include, but is not limited to, acts of war (whether declared or undeclared), invasion, armed conflict or act of a foreign enemy, blockade, embargo, revolution, riot, insurrection, civil disobedience or disturbances, vandalism or act of terrorism; strikes, lockouts, restrictive work practices or other labor disturbances; unlawful arrests or restraints by governments or governmental, administrative or regulatory agencies or authorities; orders, regulations or restrictions imposed by governments or

		governmental, administrative or regulatory agencies or authorities unless the result of a violation by the person of a permit, license or other authorization or of any applicable law; and extreme acts of nature including lightning, earthquake, fire, flood, landslide, unusually heavy or prolonged rain or lack of water arising from weather or environmental problems; provided however, for greater certainty, that the lack, insufficiency or non-availability of funds shall not constitute a Force Majeure Event.
Forced Outage		means a shutdown condition of a power station, transmission line or distribution line when the generating unit is unavailable to produce power due to unexpected breakdown.
Forward Capacity Allocation		The attribution of long-term cross-zonal capacity through an Auction before the day-ahead timeframe.
Frequency Leader		means the TSO in charge of the coordination for the frequency management within a Synchronous Area.
Frequency Response Deadband		means an interval used <i>intentionally</i> to make the frequency control unresponsive.
Frequency Response Insensitivity		means the feature of the control system specified as the smallest absolute magnitude of change in the frequency or input signal that can be detected by the measurement and then results in a change of output power or output signal. This interval is an inherent technological feature of the control system, and, contrary to the Frequency Response Deadband, it is <i>unintentional</i> .
Frequency Sensitive Mode	FSM	means the operating mode of a Power-Generating Module or HVDC System in which the active power output changes in response to a change in system frequency, in such a way that it assists with the recovery to target frequency.
GCC		means Gulf Cooperation Council countries being Saudi Arabia, Bahrain, Kuwait, Qatar, UAE and Oman.
GCCIA		means GCC Interconnection Authority.
General Agreement	GA	means the agreement between Member States that defines the objectives of the PAEM, the guiding principles for development of the market, the formation of, and roles and responsibilities of the PAEM Governing Institutions.
Generation		means the rate at which electric energy is produced and supplied to the Network by a Facility or part of a Facility, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time. The term Generation Fleet refers to all the Power-Generating Facilities installed and available on the territory of a Member State.
Good Utility Practice		means any of the practices, methods and acts engaged in or approved by a significant portion of the international electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted internationally.
Governing Institutions		means the Regional Market Facilitator, the national TSOs, the Arab TSOs Committee and the Pan-Arab ARC.
Grid		means a Transmission System with respect to which a national TSO or Regional TSO has authority to direct operations.
Grid Model		means a mathematical model describing the physical nodes and the connecting elements with associated voltages, angles injections at the nodes whose values are consistent with physical constraints of the Grid.
Grid Owner	GO	means the entity inside each TSO or separated, owner of the Grid or portion of them subject to public service obligations. The Grid Owner is responsible of the Long-Term Planning and development of the national Grids and the International Interconnections.
Grid User		means a natural or legal Person supplying to, or being supplied by, a Grid.

Gross Domestic Product	GDP	means the indicator, which quantifies the total value of goods produced and services provided in a country during one (1) year.
Human Machine Interface	HMI	means the user interface that connects a physical operator to the controller for an industrial system.
HVAC System	HVAC	means a transmission technology that transfers energy in the form of high-voltage alternating current (AC).
HVDC Converter Station		means part of an HVDC System which consists of one or more HVDC Converter Units installed in a single location together with buildings, reactors, filters, reactive power devices, control, monitoring, protective, measuring and auxiliary equipment
HVDC Converter Station Owner		means a natural or legal entity owning a HVDC Converter Station.
HVDC Converter Unit		means a unit comprising one or more converter bridges, together with one or more converter transformers, reactors, converter unit control equipment, essential protective and switching devices and auxiliaries, if any, used for the conversion.
HVDC Interface Point		means a point at which HVDC System equipment is connected to an AC Transmission System, at which technical specifications affecting the performance of the equipment can be prescribed.
HVDC Link		means the overhead line of the HVDC System.
HVDC System		means an electrical power system which transfers energy in the form of high-voltage direct current (DC) between two or more alternating current (AC) buses and comprises at least two HVDC Converter Stations with DC transmission lines or cables between the HVDC Converter Stations.
HVDC System Maximum Current		means the highest phase current, associated with an operating point inside the U-Q/Pmax-profile of the HVDC Converter Station at maximum continuous active power which an HVDC system can exchange with the Transmission System at each Connection Point as agreed between the relevant national TSO and the HVDC System Owner
HVDC System Owner		means a natural or legal entity owning a HVDC System.
Individual Grid Models		means a mathematical model of a Grid in load flow format, where the cross-border Energy Transfers are represented as equivalent Networks. Individual means limited to a Control Area.
Individual Information		means data belonging to one TSO.
Individual Database		means a repository of Individual Information functional to the planning process.
Information		the term includes, but is not limited to, technical, financial, commercial and Operational Data in whatever form (whether written, electronically or by any other means) related to one specific Operational TSO Business.
Information Communication Technology	ICT	means all the technology used to handle telecommunications, broadcast media, intelligent management systems, audiovisual processing and communication transmission systems, and network-based control and monitoring functions.
Instrument Transformer		means an electrical transformer in which the current or voltage being measured acts on the primary winding of the transformer the secondary (step-down) winding is connected to measuring instruments or protective relays.
Integrated Power System		means the Grid and the structures, equipment and other components that connect the Grid with Distribution Systems.
Intelligent Electronic Device	IED	means a device designed and built in numerical technology.
Interchange Point	IP	means a location where power flows from one Control Area to another Control Area.
Interconnected Member State		means a Member State that is connected directly or indirectly, or has a connection under construction, with another member of the PAEM.
Interconnection Capability		means the capability of an Electricity System to maximize the Energy Transfers. To this purpose contribute tie HVAC Systems, HVDC Systems, enhanced protection systems, processes.
International Interconnection		means a transmission line (and supporting transmission facilities) or HVDC System or other electrical Elements that traverses an international border to exchange electricity.

Inverter-based Power-Generating Modules		means a unit or set of installations which can generate electrical energy, which is either non-synchronously connected to the Network or connected through power electronics, and that also has a single Connection Point to a Transmission System, Distribution System including closed Distribution System or HVDC System.
Island		means the whole or part of a Grid that is disconnected from the interconnected PAEM Electricity System, having at least one Power-Generating Module or HVDC System supplying power to this disconnected Network and controlling the frequency and voltage. The terms "Islanded" and "Islanding" shall be construed accordingly.
Isolated Systems		means a Member State that is not connected directly or indirectly, or has a connection under construction, with another member of the PAEM at the time of signing of the General Agreement.
Isolation		means the disconnection of a Facility from the Transmission System, to be operated, kept and cleared according to the Safety Precautions adopted in compliance with the Code in force at the involved TSO.
K-Factor	K_i	means a factor used to calculate the frequency bias component of the ACE of a LFC Area or a LFC Block.
Key Performance Indicator	KPI	means an index conventionally assumed to measure a given performance.
League of Arab States	LAS	means the League of Arab States.
Limited Frequency Sensitive Mode – Overfrequency	LFSM-O	means a Power-Generating Module or HVDC System operating mode which will result in active power output reduction in response to a change in system frequency above a certain value.
Limited Frequency Sensitive Mode – Underfrequency	LFSM-U	means a Power-Generating Module or HVDC System operating mode which will result in active power output increase in response to a change in system frequency below a certain value.
Load Frequency Control	LFC	means the Secondary Control adopted in interconnected Electricity Systems to restore the system frequency to the nominal value and the cross-border Energy Transfers to the Scheduled values.
Load-Frequency Control Area or Control Area	LFC Area or CA	means a part of a Synchronous Area or an entire Synchronous Area of the PAEM Electricity System, physically demarcated by points of measurement of interconnectors to other LFC Areas, operated by one or more TSOs fulfilling the obligations of LFC, and shall include connected physical Demand Facility and/or Power-Generating Facility if any.
Load-Frequency Control Area Operator	LFC Area Operator	means the Person designated by one or more Member States responsible for: <ul style="list-style-type: none"> a) The coordination of exchange programs between its related Scheduling Areas and for the exchanges between its associated LFC Areas. b) The LFC for its own Control Area. c) The coordination of the correction of time deviations.
Load-Frequency Control Block or Control Block	LFC Block or CB	means a part of a Synchronous Area or an entire Synchronous Area, physically demarcated by points of measurement of interconnectors to other LFC Blocks, consisting of one or more LFC Areas, operated by one or more TSOs fulfilling the obligations of LFC.
Load-Frequency Control Block Operator	LFC Block Operator	means the person designated by one or more Member States responsible for: <ul style="list-style-type: none"> a) The LFC within its own Control Block and ensuring that its load-frequency Control Areas respect their obligations in respect to LFC and time deviation. b) The organization of the settlement and/or compensation between its LFC Areas.
Load-rejection		means the sequence of automatic maneuvering actions of Power-Generating Modules activated by the opening of the switch of a Module due to faults occurred on the external Transmission System. The logic of Load-rejection has the purpose of adjusting the speed of the group to values close to the nominal one and reduce, or eliminate, fuel supply to adjust the power produced to that of the

		auxiliary services of power plant (i.e. trip the Module to household) and thus allowing the rapid re-synchronization of the Module.
Load Shedding		means, in general term, the action to interrupt the electricity supply to a Demand Facility, and it includes the UfLS, UVLD and manual Load Shedding.
Long-Term Planning		means the planning activity in which the modification of the assets (added new or decommissioned old) to adapt an Electricity System to the future energy needs.
Long-Term Transmission Right		means a Physical Transmission Right or a Financial Transmission Right acquired in the Forward Capacity Allocation
Loss of Load Expectation	LOLE	means, for a given area under the control of a TSO, the number of days per year when the available source capacity is insufficient to serve the load.
Loss of Load Probability	LOLP	means, for a given area under the control of a TSO, the probability that hourly demand exceeds the resource capacity.
MAGHREB		means the Member States located in the western part of the Pan-Arab region: Morocco, Algeria, Libya, Tunisia and Mauritania.
Main Meter		means the Meter when is to be differentiated from the Check Meter.
Maintenance Plan		means the set of maintenance works aiming at given levels of reliability and preservation of the assets generating the Unavailability Plan.
Marginal Price		means the price determined at particular Auction to be paid by all the Registered Participants for each MW and hour of acquired Long-Term Transmission Right.
Market Monitoring Group		means the committee established by the Pan-Arab ARC within the Market Secretariat to monitor operation of the PAEM.
Market Secretariat		means the administrative body of that name established by Pan-Arab ARC to serve the PAEM, which shall be temporary within the LAS secretariat. The Pan-Arab ARC may, in the future, attach it to the Regional Market Facilitator or any suitable entity, while considering the importance of maintenance of technical and administrative independence of Market Monitoring Group defined in the GA, if decided to be merged with Regional Market facilitator or any other operating body.
MASHREQ		means the Member States located in the eastern part of the Pan-Arab region, located in Western Asia and eastern North Africa, namely: Egypt, Iraq, Jordan, Lebanon, Palestine, Syria.
Master Plan or Planning Statement	MP	It is the result of the planning process concerning the expansion plan for Generation and transmission, including reserve margins, in a horizon as the shortest available, but not less than 5 years, with 2-years rolling frequency.
Max Instantaneous Frequency Deviation		means the maximum expected absolute instantaneous frequency deviation after the occurrence of an imbalance equal or less than the Reference Incident, beyond which emergency measures are activated.
Max Steady State Frequency Deviation		means the maximum expected frequency deviation after the occurrence of an imbalance equal or less than the Reference Incident at which the System Frequency is designed to be stabilized.
Member States		means all Arab states that are signatories to the General Agreement and taking part in the PAEM.
Merchant Line		means an International Interconnection line financed by Party different from Member State/TSOs in which this infrastructure is installed and build up to increase the market competition. The use of this transmission capacity shall be made in accordance with current law.
Meter		means a device that measures, or in the case of Check Meter calculates, and records active energy, reactive energy or both and shall be deemed to include the Data Logger but to exclude the Instrument Transformers. The term Metering and its derivatives are defined accordingly.
Meter Information Register		means the detailed data records for the Metering Database under the responsibility of the TSO and to be shared and maintained with the Market Secretariat.

Metering Code	MC	means the Code that outlines common principles, and specifies minimum technical and design requirements, as well as establishing the basic rules around the data collection for the TSOs and other actors in the PAEM.
Metering Data		means electrical quantities measured and recorded by a Metering Equipment.
Metering Database		means an information system established and maintained by the national TSOs and the Regional Market Facilitator for the purpose of storing Metering Data.
Metering Equipment		means any apparatus used to measure electrical quantities and includes the communication system by which Metering Data are transferred to the relevant telecommunications network through which Metering Data are transferred to the communication interface of the Metering Database. It includes Meter, Current Transformer, Voltage Transformer, and installations.
Minimum Network Power Frequency Characteristic		means the minimum Network Power Frequency Characteristic of an area.
Ministerial Council or Arab Ministerial Council for Electricity		includes the Ministers responsible for electricity in the Arab countries which has ultimate approval authority over most aspects of the PAEM
Multilateral Data Exchange		means Data Exchange among more than two Parties.
Multilateral Contract		means an agreement between more than two PAEM Participants to trade a specified quantity of capacity, energy or System Service at prices determined by the Parties to the agreement.
National Annual Unavailability Plan	NAUP	means the Unavailability Plan at each TSO level.
National Control Center		Set of plants intended for the control and operation of a Grid or of a user of the Electricity System (other than a Power-Generating Facility).
National Development Plan	NDP	means the development plan of Grid expansion and Generation at national or TSO level.
National Grid Code		means the technical procedures for the planning and operation of each single Electricity System of the Member States.
National Market Facilitator		means the person designated by a Member State to perform national Electricity market operation and management duties.
National Regulator		means the person responsible in each Member State for regulating the power sector of that Member State; where there is a person vested with specific responsibilities for such regulation, and in all other cases means the governmental department in a Member State with administrative responsibility for the power sector.
Net Transfer Capacity	NTC	means the maximum exchange [MW] programmed between two Control Areas compatible with security standards applicable in both areas and considering the technical uncertainties on future conditions of the interconnected Electricity Systems. It is calculated as the Total Transfer Capacity minus the Transmission Reliability Margin.
Netted Area Position		The netted aggregation of all AC and DC external schedules of an area.
Network		means a connected plant and apparatus in order to transmit or distribute electricity. Based on international practice and IEC-EN standards ¹ , the following nominal voltage levels are defined for Networks: <ul style="list-style-type: none"> • Low-Voltage (LV): ≤ 1 kV • Medium-Voltage (MV): ≤ 35 kV • High-Voltage (HV): ≤ 230 kV • Extra-High-Voltage (EHV): ≤ 800 kV • Ultra-High-Voltage (UHV): ≥ 800 kV

¹ EN 50110-1 / EN 50160 / EN 60038 / IEC 60071-1 / EN 61936-1

Network Power Frequency Characteristic		means an imbalance in MW needed to cause a change of frequency of 1 Hz around the nominal frequency.
Network System for the Connection		it has the meaning given to it in Chapter CC 3 of the Connection Code
Nominal Power or Generation Capacity		means the maximum active power that a Power-Generating Module, Generation station or other electrical apparatus can supply, usually expressed in megawatt.
Nomination		means the data concerning a Bilateral Contract that a Seller or Buyer provides to the Regional Market Facilitator for purposes of dispatch and settlement, including the quantity of energy, in MWh, that a Seller is selling to a Buyer at a specified location and in a specified hour.
Nomination Rules		means the rules regarding the notification of use of long-term cross-zonal Transfer Capacity by a Physical Transmission Rights holder and their counterparty, or an authorized third party, to the respective TSOs.
Non-PAEM Data		means data belonging either to a Non-PAEM TSO or to a Non-TSO.
Non-PAEM TSO		means a TSO which is not a member of PAEM.
Non-TSO		means a legal entity not dealing with Operational TSO Business including: market players, DSOs, producers, power exchanges, traders, consumers, authorities, governments, regulators, Arab institutions, courts and tribunals.
Normal Contingency		It has the meaning given to it in Paragraph OC 3.3.3.3 of the Operation Code.
Normal State		means a situation in which the Electricity System is within operational security limits in the N-situation and after the occurrence of any contingency from the Contingency List, considering the effect of the available Remedial Actions.
Notice in Response		it has the meaning given to it in Chapter GC 8 of the General Condition
Notice of Dispute		it has the meaning given to it in Chapter GC 8 of the General Condition
Observability Area		means a TSO's own Grid and the relevant parts of Distribution Systems and neighboring TSOs' Grids, on which the TSO implements real-time monitoring and modelling to maintain operational security in its Control Area.
Operational TSO Business		means real-time, periodical and on request tasks performed for Grid Operational Planning, forecast, operation and analysis, that require exchange of data which, or a part of which, is necessary to carry out their work properly.
On-request Data Exchange		Data Exchange which is usually carried out to support a single analysis or report on operational or security aspects.
Operating Condition or System State		means the set of values of voltage, current, frequency and other parameters characterizing the quality of operation of any Facility connected to the Transmission System of the same Synchronous Area.
Operating Regulation Document		means a regulation agreed and signed between a Facility Owner and the relevant TSO in order to define the respective responsibilities in the context of the operation and control of the functional portions of the Relevant Grid.
Operational Limit		means the set of maximum and minimum values of voltage, current, frequency and other parameters characterizing the quality of Operation of any Facility connected to the Transmission System.
Operational Planning		Planning the matching of the Generation capacity with the forecast Demand, including Reserve margins and taking account the unavailability of Power-Generating Facilities and the Elements of the Grid across various time scales.
Operational Planning Process	OPP	Structured process for the coordination of the Operational Planning.
Operation Security Standard	OSS	means a set of security criteria that each TSO shall adopt to operate its Electricity System in normal condition and in case of contingencies.
Operation Code	OC	means the Code that aims at defining and governing the rules for supervisory and controlling the International Interconnections in the Pan Arab Region. It does not deal with the Physical Operation

		of the Electricity Systems (e.g. switching) and the administration of the assets. The term Functional Operation or simply Operation refers to the scope of the Operation Code. The term Operational is defined accordingly.
Operational Data		mean Snapshots, reference data sets, LFC data, frequency monitoring data, frequency measurement campaign data, data on power exchanges as well as real-time measurements.
Other Parties		Universities, research institutions, consultants, manufacturers, engineering offices, departments or companies of vertically integrated companies or groups not dealing with Operational TSO Business.
Outage		means the removal of equipment from service, unavailability for connection of equipment or temporary de-rating, restriction of use, or reduction in performance of equipment for any reason including, but not limited to, permitting the performance of inspections, tests or repairs on equipment, and will include a Planned Outage and a Forced Outage.
Out of Range Contingency		it has the meaning given to it in Paragraph OC 3.3.3.5 of the Operation Code.
Overall Network Power Frequency Characteristic or Regulating Energy		means the Network Power Frequency Characteristic including all contribution (Primary Control of all the Generation Fleet, self-regulation of Load).
Overall Primary Control Reserve		means minimum power for Primary control subjected to agreement according to the Reference Incident.
PAEM Data		Data used for the purposes of the Data Exchange, belonging either to a TSO or to a group of TSOs or to the PAEM.
PAEM Electricity System		means the integration of the Electricity Systems of the Member States.
PAEM Governing Institutions		means the Regional Market Facilitator, the Arab TSOs Committee and the Pan-Arab ARC.
PAEM Participant		means a Person who is duly authorized to participate in the PAEM
Pan-Arab Settlement Responsible Party		means the role played by the Coordination Center Zone Operator, the Control Block Operator or the Control Area Operator, who collects all the accounting point data and all relevant scheduling data and establishes the Pan Arab settlement report for the corresponding Pan Arab area
Pan-Arab Electricity Market	PAEM	means the regional electricity market regulated by the governance documents, as specified in the GA.
Pan-Arab Advisory and Regulatory Committee	Pan-Arab ARC	means the entity that is responsible for providing advisory and regulatory oversight of the PAEM.
Pan Arab Communication Network	PACN	Private network dedicated to Data Exchange between electricity sector TSOs and operates under the responsibility of the TSOs and the management of the relevant Coordination Center Zone.
Pan-Arab Electricity Market Agreement or PAEM Agreement		means the agreement governing the commercial aspects of the PAEM.
Participation Agreement		means the agreement, by which the Parties undertake to comply with the terms and conditions for allocation of the cross zonal Transfer Capacity as contained in these Allocation Rules.
Party / Parties		means the Regional Market Facilitator and/or a Registered Participant referred to individually as Party or collectively as Parties
Parties in Dispute		it has the meaning given to it in Chapter GC 8 of the General Conditions
Periodic Data Exchange		Data Exchange which is carried out on a periodic basis (e.g. hourly, daily, weekly, monthly, yearly or seasonally).
Person		includes any company, partnership, trust, joint venture, association, corporation or other private or public corporate body, any government agency and any other entity or body or class of entity or body designated by law as coming within the definition of the word "person".
Phasor Measurement Unit	PMU	means an IED used to estimate the magnitude and phase angle of an electrical phasor quantity (such as voltage or current) in a Network using a common time source for synchronization.

Physical Transmission Right		A right entitling its holder to physically transfer a certain volume of electricity in a certain period between two Bidding Zones in a specific direction.
Physical Operation		means such part of Operation attaining switching and maintenance performance, and all the activities requiring a closer contact with the assets.
Planned Outages		means an Outage that is planned and intentional.
Planning Code	PC	means the Code that aims at defining and regulating the process for the Long-Term Planning of the International Interconnections of the PAEM Electricity System
Planning Methodology		means a set of agreed rules for carrying out the planning activity in the Pan-Arab region area, whose final delivery is the Master Plan.
Planning Process Starting Date	PPSD	Date when the planning process formally starts.
Planning Statement		means a statement setting out the indicative expansion plan for Generation and transmission, including reserve margins.
Power Control Error		means, when referred to a Control Area/Control Block, the total power deviation of that area in interconnected operation, calculated as the difference between the total tie-line active power flow (sum of all related measurements) and the control program (sum of all related exchange schedules and the compensation programs).
Power-Generating Facility		means a facility that converts primary energy into electrical energy and which consists of one or more Power-Generating Modules connected to a Network at one or more Connection Points.
Power-Generating Facility Owner		means a natural or legal entity owning a Power-Generating Facility.
Power-Generating Module	Module	means either a Synchronous Power-Generating Module or an Inverter-based Power-Generating Module.
Power System Stabilizer	PSS	means an additional functionality of the AVR of a Synchronous Power-Generating Module whose purpose is to damp power oscillations.
Primary Control		means centralized automatic function to regulate the Generation based on Primary Reserves.
Primary control time	[sec]	means the time in which the resources available for Primary Control are completely supplied (in MW).
Primary Reserve or Frequency Containment Reserve		means the Reserve available to contain the frequency deviation after an unbalance in the Electricity System.
Product Period		means the time and date on which the right to use the Long-Term Transmission Right commences and the time and date on which the right to use the Long-Term Transmission Right ends.
Preventive Scheduled Maintenance		means the maintenance interventions for keeping adequate reliability levels. It includes mainly periodic maintenance according to the manufacturers' instructions and maintenance interventions prescribed by law that can be scheduled in advance.
Project		means a project for the development of one or more cross-border International Interconnections among Member States to increase the Energy Transfer and the SoS.
Publish		means, in respect of a document or Information, to place that document or Information on the website of the Market Secretariat, the Regional Market Facilitator or the Pan-Arab ARC, and publication shall be interpreted accordingly.
Real-Time Data Exchange		means Data Exchange which describes a current situation in the system, done also on request e.g. after a change of status or value.
Receiving Party		means a Party receiving data.
Record of Inter System Safety Precautions	RISSP	means written record of inter-system safety precautions to be compiled in accordance with the provisions of National Grid Codes.
Reduction Period		means a period of time, i.e. specific calendar days and/or hours, within the Product Period in which cross boarder Transfer Capacities with a reduced amount of MW are offered taking into account a foreseen specific network situation such as planned maintenance, long-term Outages, foreseen balancing problems.

Reference Incident		means the maximum stepwise power deviation between Generation and Demand in a Synchronous Area in both positive and negative direction.
Reference Value		Means a numerical information on the value to give to a parameter according to common or Best Utility Practices. For the purpose of the Arab Grid Code, Reference Values are not binding unless agreed among the TSOs of the same Synchronous Area or Region.
Region		the term "Region" has the meaning given to it in the GA and it is used from time to time to refer to a part of the PAEM. Derivatives, as "Regional" are defined accordingly.
Regional Grid Code		means the technical procedures for the planning and operation of a pool of Electricity Systems of the Member States.
Regional TSO / Market Facilitator		means the person designated by two or more owners of interconnection facilities to perform Transmission System operations, market management or any other functions (without prejudice to PAEM Governing Institutions roles and responsibilities) mandated by the relevant owners of these facilities, for a part of the Transmission System traversing two or more Member States.
Regional Annual Unavailability Plan	RAUP	means the Unavailability Plan at regional level based on all the available NAUPs of the Region.
Regional Coordination Entity	RCE	means an entity, agreed among a pool of TSO and tasked to coordinate the operation according to rules and practices adopted by the TSOs of the pool.. Regional TSO/ Market facilitator could play this role.
Regional Group		means a group of TSOs established temporarily or permanently to deal with the application of general technical matters to the Regional policies and practices.
Regional Market Facilitator, or PAEM Market Facilitator		means the entity formed to take on the market facilitation role performed by the National Market Facilitators for the entire PAEM. The decision and timing for formation of this entity will be approved by the Ministerial Council based on a recommendation filed by the Arab TSOs Committee and reviewed by the Pan-Arab ARC.
Registered Participant		means a market participant which has entered into a Participation Agreement with the Regional Market Facilitator
Regulation Report		means a report to be published periodically by the Pan-Arab ARC on matters arising in the PAEM where action may be required to resolve the matter.
Relevant Grid	RG	Is the part of the grid under the responsibility of a TSO, close to the border, affecting the SoS of the interconnection and influencing the values of the TTC.
Regional Seasonal Outlook		it has the meaning given to it in Article OC 2.10.6 of the Operation Code.
Remedial Actions		means operational actions needed to avoid cascading effects after the occurrence of a contingency of the Contingency List.
Remote Terminal Unit	RTU	means a microprocessor-based electronic device used in industrial control systems to connect various hardware to distributed control systems or supervisory control and data acquisition.
Reenergization		means the process of Restoration after a black-out.
Renewable Electricity Sources	RES	means the resources of production of electricity from on-going natural processes, such as sunshine, wind, flowing water, biological processes, and geothermal heat flows.
Reserves		means all active power resources, if procured ex ante or in real-time, or according to legal obligations, which are available to the TSOs for balancing purposes and maintaining the frequency.
Reserved Transfer Capacity		Interconnection transmission capacity that has been financed by a Member State on which is operating a Bilateral Contract concerning Energy Transfer. The Pan-Arab ARC, according the development of PAEM, shall define a time at which this transmission right will finish and will define the remuneration of the assets to the Facility Owner for the use in the market.
Restoration		The general process of restoring the normal functioning of an Electricity System after a blackout or emergency status.

Restoration Plan		means the structured sequence of actions to perform the Restoration.
Resynchronization Leader		means the TSO in charge of coordinating the Frequency Leaders during the resynchronization process of two adjacent TSOs and executing the resynchronization. The term Synchronization Leader is defined accordingly in case of first synchronization among two or more asynchronous Electricity system.
Rights Document		means a document containing the information of the maximum amount of allocated Physical Transmission Rights that can be nominated by a Registered Participant per Bidding Zone border per day per hour and per direction, taking into account the volume of Long-Term Transmission Rights initially acquired, the subsequent transfers and returns, and any possible curtailments which occurred before the issuance of the Rights Document.
Rolling Plan		means a plan with time horizon of 10 years, updated every 2 years.
Safety Precautions		means Earthing and Isolation.
Scenario		means an outlook of the future characterized by guiding indicators. A Scenario is not a prediction to which a probability is associated.
Scheduled Energy Transfer		means an Energy Transfer that has been scheduled to take place in accordance with the Arab Grid Code;
Scheduling & Dispatching Code	SDC	means the Code that defines and regulates the process for the joint determination of the Total Transfer Capacity (TTC) and the Net Transfer Capacity (NTC) on yearly, monthly and daily bases among the Member States.
Scheduling Area	SA	an area within which the TSOs obligations regarding scheduling apply due to operational or organizational needs.
Scheduling Area Exchange Document	SAX	means the data set representing the energy exchange agreed between two TSOs. The document is the input for the Verification Process. The following document of the exchange of Aggregated netted External TSO Schedule between two Scheduling Areas
Secondary Control		means a centralized automatic function to regulate the Generation based on Secondary Reserves.
Secondary Reserve or Frequency Restoration Reserve		means the Reserve to restore the frequency to the nominal value in an Electricity System after the Primary Control has stabilized the frequency deviations.
Security of Operation	SoO	means the attitude of a system to accomplish its task with adequate reliability that is to be able to withstand the stresses of the system due to faults and to other external events.
Security of Supply	SoS	means the capability of a system to cover the Demand in each period and for a given area.
Security Policies		means policies concerning the implementation of the rules directly and indirectly affecting the approach of the Operation Code to the SoO and the SoS.
Seller		means a PAEM Participant who is selling capacity, energy or a System Service under a Bilateral Contract or a Multilateral Contract.
Snapshot		means the set of data and Information at a given instant of each Electricity System in terms of grid topology, nodal Generation injections, nodal voltages in magnitude and phases and nodal loads
Socio Economic Welfare	SEW	means a parameter representing the potentiality of developing cross-border trading in a competitive manner for the benefits of the consumers.
Spinning Reserve		means the Reserve from Power-Generating Modules or equivalent power resources working already synchronously with the Transmission System. The term Spinning is defined accordingly.
Standard Frequency Range		means a defined interval symmetrically around the nominal frequency within which the system frequency of a Synchronous Area is supposed to be operated.
State Estimator		means a computer-based application to reconstruct plausible missing remote measures from the field.
Status of a Project		means a generic term to indicate what is the maturity of a Project to evaluate the distance to its implementation. That is: 1. under consideration;

		<ol style="list-style-type: none"> 2. planned, but not yet in permitting; 3. permitting; 4. under construction; 5. commissioned; 6. cancelled.
Substation Automation System	SAS	The secondary system installed in any substation providing automation, monitoring, remote and local control and protection of the substation.
Supervisory Control and Data Acquisition	SCADA	Computer based system to acquire measures and connections of the Electricity System for control purposes.
Short-Circuit Current or Short-Circuit Power		means the maximum current/power that a Network can supply to equipment with a fault in it. It is expressed either in MVA or in effective kA for a given service voltage.
Shortage		means any situations in which, for any reason, the Demand cannot be met with the standard characteristics of SoS.
Synchronous Area		means a portion of the PAEM Electricity System covered by synchronously interconnected national TSOs
Synchronous Power-Generating Module		means an indivisible set of installations which can generate electrical energy such that the frequency of the generated voltage, the generator speed and the frequency of Network voltage are in a constant ratio and thus in synchronism.
Synthetic Inertia		means the electronic facility provided by an Inverter-based Power-Generating Module or HVDC System to replace the effect of physical inertia of a Synchronous Power-Generating Module.
System Adequacy Forecast		means a sub process of the OPP aiming at predicting the SoS level in each time horizon. It includes the outlook for a given period on the coverage of the Demand of the Control Area – including the evaluation of risks of not satisfying it – and the amount of available Reserve margins.
System Service or Ancillary Service		means a service other than the production of energy and/or provision of capacity, which is used to maintain reliability including reserves, frequency control, voltage control and Black Start Capability.
Tertiary Control		means a centralized function to regulate the Generation based on Tertiary Reserves.
Tertiary Reserve or Replacement Reserve		means the Reserves to be made available to restore the adequate level of Secondary Reserve due to permanent causes of unbalances.
Testing Plan		means the plan set up by the TSOs to test and keep under control the compliance of the Grid Users with the requirements of the Operation Code.
Time to Recover Frequency		means, the maximum expected time after the occurrence of an imbalance (less than or equal to the Reference Incident) in which the system frequency returns to the Maximum Steady State Frequency Deviation.
Time to Restore Frequency		means the maximum expected time after the occurrence of an imbalance (less than or equal to the Reference Incident) in which the system frequency returns to the Standard Frequency Range.
Total Harmonic Distortion	THD	means ratio of the r.m.s. value of the harmonic content to the r.m.s. value of the fundamental component or the reference fundamental component of an alternating quantity.
Top-down		means the strategy for performing the Restoration consisting of reenergizing a given or more Electricity Systems in black-out status by means of an external source. In this Code, the external source is the Grid of an adjacent TSO.
Total Transfer Capacity	TTC	means the maximum exchange [MW] programmed between two Control Areas compatible with operational security standards applicable at each Electricity System if future Grid conditions, the Generation and Demand patterns are perfectly known in advance.
Trading Zone		It is a portion of an Electricity System, where any form of market is organized, and a cost of the energy is formed.
Transfer Capacity		means, in general term, an exchange [MW] programmed between two Control Areas.
Transferee		it has the meaning given to it in SDC 3.7.2
Transferor		it has the meaning given to it in SDC 3.7.2

Transmission Reliability Margin	TRM	means that amount of TTC necessary to ensure that the interconnected Transmission System is secure under a reasonable range of uncertainties in system conditions.
Transmission System		means a system consisting of interconnected transmission lines, substations and related facilities for the purpose of transporting bulk power and energy. A threshold value $U_{\text{threshold}}$ [V] shall be defined, harmonized and adopted by Member States as the minimum value of operating voltage above which the Network is considered as Transmission System.
Transmission System Operator	TSO	means the person designated by one or more Member States to perform Transmission System(s) operations, dispatch for the relevant Electricity Systems and the International Interconnection at any voltage level. Unless noted otherwise, the terms refer to a "national" TSO.
Unavailability Coordination or Outage Coordination		It is a sub process of the Operational Planning Process. It means a structured process of inter TSO coordination to synchronize the proposed unavailability and optimize time and duration of an unavailability.
Unavailability Plan		means an optimized schedule of unavailability of Elements of the Grid and Power-Generating Facilities.
Underfrequency Load Shedding	UfLS	means a practice adopted to shed loads by means of relays driven by frequency or its derivative.
Under Voltage Load Shedding	UVLS	means a safety measure to prevent widespread voltage collapse in the event of a severe deficit in local or system-wide area reactive power Reserves.
Unintentional Deviation		means, for each energy exchange that has taken place in a given time interval between a relevant area and its Synchronous Area or between a relevant area and another relevant area in a different Synchronous Area, the difference between the actual measured energy exchange, and the scheduled energy exchange and all intentional deviations from that schedule.
Union for the Coordination of the Transmission of Electricity	UCTE	means the Union for the Co-ordination of Transmission of Electricity, which coordinated the operation and development of the electricity Transmission System for the Continental European synchronously operated Transmission System, thus providing a reliable platform to all participants of the internal electricity market and beyond. It operated from 1951 to 2009, when all operational tasks were transferred to ENTSO-E.
Upward Reserve		means the capacity to increase the Generation till the maximum technical output of the Power-Generating Facilities. The available Reserve is the difference between the cumulated maximum technical output of Power-Generating Facilities and the Demand.
Use It or Sell It		means the principle according to which the underlying cross-zonal capacity of Physical Transmission Rights purchased and non-nominated is automatically made available for day-ahead capacity Allocation and according to which the holder of these Physical Transmission Rights receives remuneration from the TSOs.
Value of Lost Load	VOLL	Monetary value of the unmet Demand. In case no better evaluation exists, VOLL is the GDP / Total annual energy Demand of a Member State.
Variable Renewable Energy-unit	VRE-unit	means Power-Generating Modules that uses variable not-programmable RESs as primary energy sources.
VEE Process		means the process used to validate, estimate and edit raw Metering Data to produce final Metering Data or to replicate missing Metering Data.
Verification Process		means the verification of Aggregated Netted External TSO Schedules which must sum to zero within the Synchronous Area
Voltage Transformer	VT	means a parallel connected type of Instrument Transformer, used for metering and protection in high-voltage circuits or phasor phase shift isolation. They are designed to present negligible Load to the supply being measured and to have an accurate voltage ratio to enable accurate metering.
Warning System	WS	means synoptical pages of the displays showing synthetic information to be shared among TSOs of an area to make aware TSOs about the status of the Grids and warn about emergencies.

Wide Area Network	WAN	means a network that provides communication services to a geographic area larger than a single urban area.
Wide Area Measurement System	WAMS	means a technology to improve situational awareness and visibility within Electricity System of today's and future Grids. It uses real time synchro phasor data to measure the state of Grid that enables improvement in stability and reliability of power Grid.
Wide Area Protection System or Special Protection Schemes	WAPS	means a protection system adopted to protect an Electricity System from a partial or total blackout or brown-out in operational situations when no equipment is faulted or operated outside its limitations. This situation could appear after the clearance of a very severe disturbance in a stressed operation situation or after a period of extreme load growth.
Working Group		means a generic WG1 or WG2 or WG3 or WG4, or all of them. WGs in the OC and PC are not mandatory organizations but they aim at describing a homogenous working stream to efficiently run the International Interconnection.
WG1-Operational Planning Committee	WG1	means a Working group tasked to design, maintain and monitor processes of the Operational Planning. As per 3.4.2.4 of the GA, it reports to Arab TSO Committee as sub-committee.
WG2-Operation Committee	WG2	means a Working group tasked to design, maintain and monitor processes of the real-time Operation. As per 3.4.2.4 of the GA, it reports to Arab TSO Committee as sub-committee.
WG3-ICT Committee	WG3	means a Working group tasked to design, maintain and monitor processes and tools in matter of ICT. As per 3.4.2.4 of the GA, it reports to Arab TSO Committee as sub-committee.
WG4-Planning Committee	WG4	means a Working group tasked to draft the Pan Arab Master Plan. As per 3.4.2.4 of the GA, it reports to Arab TSO Committee.



GD 2 SYMBOLS AND UNITS OF MEASUREMENT

Symbol	Variable	Units of Measurement
Δf	Frequency deviation of the Transmission System	[Hz] and [p.u.]
ΔP	Variation of active power output of a Power-Generating Module	[MW]
$\Delta t_{LFSM_activation}$	Maximum Initial time delay for activating the power frequency response by a Power-Generating Module	[sec]
f	Frequency	[Hz] and [p.u.]
$f_{boundary}$	Frequency limits adopted to characterize the effects of environmental and operating conditions on the active power capability of Power-Generating Modules	
f_n	Nominal Frequency	[Hz] and [p.u.]
$F_{r_{low}}$	A frequency limit below the nominal frequency f needed to define the Frequency ranges in the Connection Code	[Hz] and [p.u.]
$F_{r_{high}}$	A frequency limit above the nominal frequency f needed to define the Frequency ranges in the Connection Code	[Hz] and [p.u.]
P	Nominal active power	[MW]
PF_{load}	Power factor import or export of active power threshold for Demand Facilities	
P_{it}	Long-term flicker severity	[-]
P_{MAX}	Maximum active power output of a Power-Generating Module	[MW]
P_{st}	Short-term flicker severity	[-]
$P_{threshold}$	Nominal active power threshold above which a Power-Generating Module shall be connected to the Transmission System.	[MW]
Q	Reactive Power	[Mvar]
s	Droop of a Synchronous Power-Generating Module or HVDC System	[%]
t_1	Maximum admissible initial delay of active power response capability	[s]
t_2	Full activation time of active power response capability	[s]
t_i	Time resolutions for the time intervals of the Electronic Data Exchange in the Scheduling & Dispatching Code	[min] and [h]
t_{rec}	Time series to build the Fault-Ride-Through capability curve for Power-Generating Modules and HVDC Systems	[ms]
U	Voltage	[V]
U_{low}	A voltage limit below the base voltage level needed to define the Voltage ranges in the Connection Code	[p.u.]
U_{high}	A voltage limit above the base voltage level needed to define the Voltage ranges in the Connection Code	[p.u.]
U_{ret}	Voltage series to build the Fault-Ride-Through capability curve for Power-Generating Modules and HVDC Systems	[p.u.]
U_{rec}		
$V_{threshold}$	Minimum value of operating voltage above which the Network is considered as Transmission System	[kV]

GD 3 STRUCTURE OF THE CODE AND HIERARCHY OF HEADINGS

The **Arab Grid Code** is structured in accordance with the structure and hierarchy of headings shown in Figure GD 1.

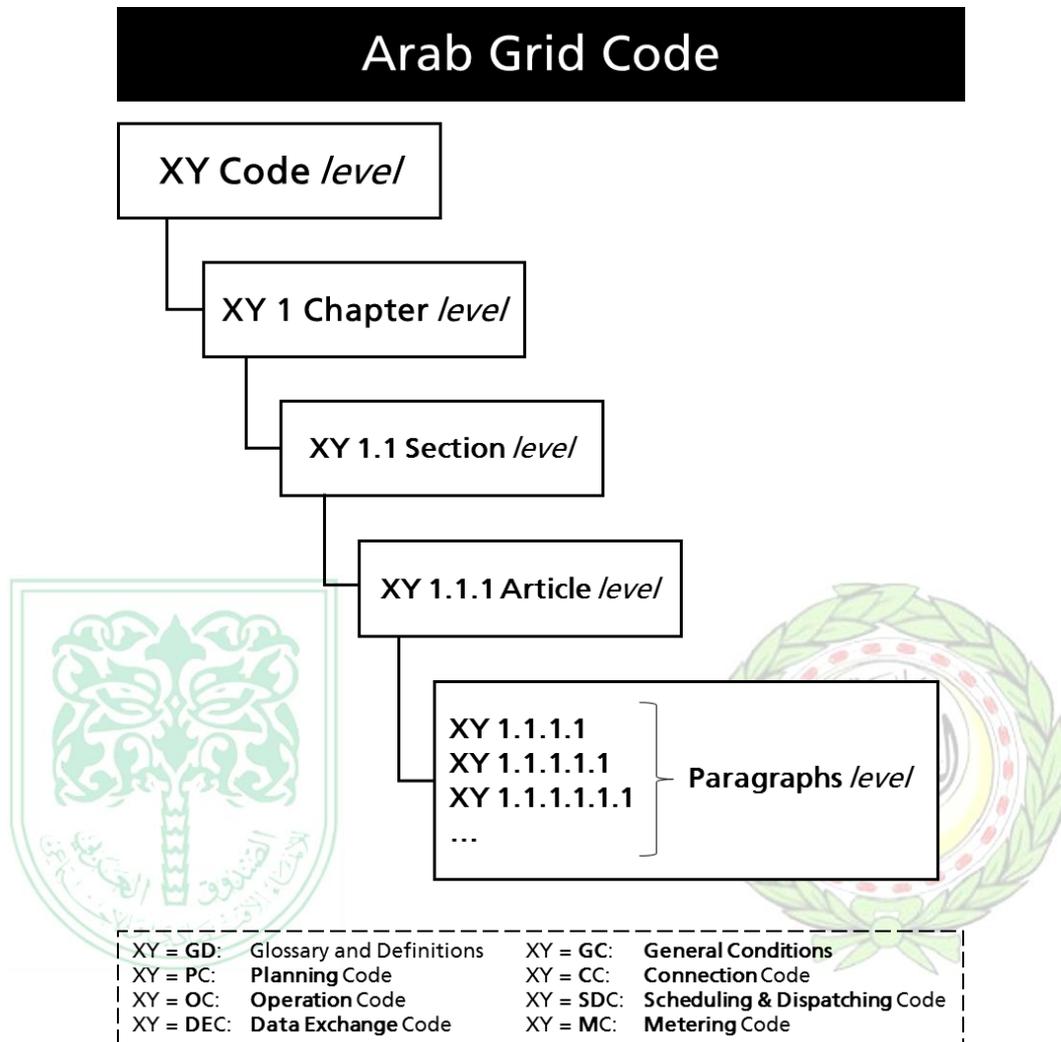


Figure GD 1 Structure of the code and hierarchy of headings