ECOWAS REGIONAL ELECTRICITY MARKET PARTICIPANT APPLICATION FORM

OCTOBER 2018

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PARTIE A APPLICANT IDENTIFICATION

Name of Organization				
Address of Organization (street address)				
Mailing Address of Organization				
Organization Phone N°				
Contact Person Name:				
Title/Position of Contact Person:				
Contact Person Phone N°:				
Contact Person E-mail				
Transmission Using Participant (tick the corresponding box)	YES ☐		NO ☐	
Transmission Owner/Operator (tick the corresponding box)	YES ☐		NO ☐	
Business (tick the corresponding box)	Generator ☐	Distributor ☐	Trader ☐	Eligible Customer ☐
License				
Authorization/License of national Regulator		YES ☐	NO ☐	
Regional cross border trade License		YES ☐	NO ☐	

PARTIE B DATA FOR APPLICANT'S ELECTRIC SYSTEM

B.1 CHARACTERISTICS OF LINES AND CABLES

Sending-end substation	Receiving-end substation	Nomenclature	Voltage (kV)	Length (km)	Conductor Type	Section (mm2)	Positive sequence data			Max capacity for continuous operation (kA) or (MVA)	Max capacity during incident (kA) or (MVA)	Zero sequence data		
							Resistance (pu)	Reactance (pu)	Capacitance (pu)			Resistance (pu)	Reactance (pu)	Capacitance (pu)

B.2 CHARACTERISTICS OF CAPACITOR BANKS

Connection substation	**Nomenclature**	**Voltage (kV)**	**Total capacity (MVAr)**	**capacity per step (MVAr)**	**Number of steps**	**Activation criteria**

B.3 CHARACTERISTICS OF REACTORS

Connection substation	Nomenclature	Type of Reactors	Voltage (kV)	Total capacity (MVAr)	capacity per step (MVAr)	Number of steps	Activation criteria

B.4 CHARACTERISTICS OF TRANSFORMERS

Substation name	Nomenclature	Primary voltage (kV)	Secondary voltage (kV)	Tertiary voltage (kV)	Nominale rating 1-2 (MVA)	Nominale rating 1-3 (MVA)	Reactance			Resistance			Overload normal incident (%)	Voltage regulator						Vector group	Grounding
							X_{1-2}	X_{1-3}	X_{2-3}	R_{1-2}	R_{1-3}	R_{2-3}		on-load or off-load	Primary (P) or Secondary (S)	Number of taps	Tap Min	Tap Max	Nominal tap		

PARTIE C APPLICANT OPERATIONAL INFORMATION

C.1 FOR A NETWORK:

(i) a single-line diagram of the network

(ii) the overload percentages, including details on how long each overload rate can be supported by the lines and transformers etc ..;

Designation of lines and transformers	Rated power MVA-Rate A (thermal limit of the line)	Overload power MVA-(Rate B)	Maximum permissible duration of Rate B overload (Time in minutes)	emergency overload MVA – (Rate C)	Maximum permissible duration of Rate C emergency overload (Time in minutes)
L1:					
TR1:					
. . . Ln TRn					

(iii) information on security restrictions;

Description of Assets	**Nature of the security constraint**	**Power limit under the constraints (MVA)**	**Duration of Constraints : (H)**
L1:			
TR1:			
. . . Ln TRn			

Designation of the transformer	
Rated power MVA	
Rated voltage U_n	
Rated current I_n	
Short circuit current I_{cc}	
Short circuit voltage U_{cc}	
Iron losses $\%P_n$	
Coil losses as% of P_n	

C.2 FOR A GENERATOR:

(i) Data for thermal power stations

Power station name	Nomenclature	Voltage (kV)	Type	Installed capacity (MVA)	Maximal output net (MW)	Under frequency protection settings

(ii) Data for hydro power stations

Power station name	Nomenclature	Voltage (kV)	Type	Installed capacity (MVA)	Maximal output net (MW)

(iii) Description of generation equipment (thermal and hydro)

Static data	Units	Value	notes
Name of station			
Generator name			
Generator type (non-salient pole ; salient pole)			
Nominal rating	MVA		
Maximum power output	MW		
power factor	Cos(phi) =		
Maximum reactive at maximum active power output	MVAR		
Maximum reactive at minimum active power output	MVAR		
Minimum reactive at maximum active power output	MVAR		
Minimum reactive at minimum active power output	MVAR		
Minimum frequency	Hz		
Maximum frequency	Hz		

(iv) Dynamic data

Dynamic data	Units	Value	notes
Generator name			
UBm: Base voltage, machine side	KV		
SN: nominal rating	MVA		
PN: Generator output	MW		
N : Rotational speed	tr/min		
PD2 : Moment of Inertia	$t.m^2$		
T : Ramp rate, start up time	S		
H: inertia constant	MW.s/MVA.sec		
RA: stator resistance	p.u		
WL: stator leakage	p.u		
XD: D-axis synchronous reactance	p.u.		
XPD: D-axis transient synchronous reactance	p.u.		
XSD: D-axis sub-transient synchronous reactance	p.u		
TPD0: D-axis transient synchronous time constant	S		
TSD0: sub-transient synchronous time constant	S		
XQ: Q-axis synchronous reactance	p.u.		
XPQ: Q-axis transient synchronous reactance	p.u.		
XSQ: Q-axis sub-transient synchronous reactance	p.u.		
TPQ0:Q-axis transient synchronous time constant	S		
TSQ0: Q-axis sub-transient synchronous time constant	S		
XI : rnegative sequence reactance	p.u.		
RI : negative sequence resistance	p.u.		
XFO : zero sequence reactance	p.u.		
AKSAT : saturation coefficient	.		
ALSAT : saturation curve			

Peak Power Generated at Injection point (MW)……

N° Point injection/ Delivery point	Name of injection/Delivery point	P max (MW) Peak

Minimum power at injection point (MW)

N° Point injection/Delivery point	Name of injection/Delivery point	P mini (MW) Off peak

Average Energy exported per month MWh……..

Average Energy imported per month MWh……

Maximum power at off-take nodes (MW)……

N° offtake point	Name of the off take point	P max (MW) Peak

Minimum power at off-take nodes (MW)……

N° Off take Point	Name of the Off take point	P mini (MW) Off peak

Peak Generated Power on your delivery points (MW) .....

N° intake node	Name of in Take node	P max (MW) Peak

Minimum Generated power on your injection points (MW)

N° intake node	Name of the intake node	P mini (MW) off peak

Average Energy to export MWh per month .....

Average energy import MWh per month .....

Maximum power on your off take points (MW) .....

N° Point offtake	Name of the offtake point	P max (MW) Peak

Minimum power on your offtake node (MW) .....

N° Offtake Point	Name of the Offtake Point	P mini (MW) off peak

(v) Information on Generation unit

Designation of Generation Unit	
MW rated power	
Minimum allowed power at the point of connection of the Generator MW (charge the auxiliaries powered by the Generator)	
Net power available MW	
Overload power (if any) MW	
Minimum operating power limit MW	
Programmable minimum load MW	
Provide the curve of the specific consumption in Joules / Kwh or MBT / kWh	

C.3 METERING REQUIREMENTS

Metering Requirements	
– Location of the connection points	
– Type of connection point –Transmission or Distribution	
– Responsible Person for the connection point, including contact name, telephone number and email address	
– Expected commissioning date of the metering installations or connection points	
– Description and location of the agreed connection points	
– Connection point WAPPITS Node number as issued by the SMO	
– Detailed wiring diagram of metering installations	
– Single line schematic of connection points	
– Distribution or transmission network area drawing, showing connection point relativity	
– Estimated annual throughput of energy	
– Note that drawings and information must details the following for each metering installation:	
– Check metering (if required)	
– Bi-directionality of meter	
– Meter class accuracy	
– Meter make and type	
– CT class	
– VT class	
– CT ratio	
– VT ratio	
– CT (Burden rating) as per transformer specification	
VT (Burden rating) as per transformer specification	