

MEMORANDUM

For the period January 1st, 2015 - December 31st, 2015

Between
ELECTROENERGIEN SISTEMEN OPERATOR EAD

Gotce Delchev Str. No. 105
1404 Sofia, Bulgaria

(hereinafter "ESO")

and

JSC "Macedonian Transmission System Operator"

Maksim Gorki str. 4
1000 Skopje, Macedonia
(hereinafter MEPSO)

(both of which are hereinafter referred to as the "parties")

Whereas

- a. ESO in its role of Transmission System and Market Operator is responsible for the operation, ensuring of maintenance and development of the Bulgarian transmission system and its interconnections with other systems in order to guarantee the security of supply at the standard level.
- b. MEPSO is the Transmission System Operator responsible for the operation, ensuring of maintenance and development of the Macedonian transmission system and its interconnections with other systems in order to guarantee the security of supply at the standard level.
- c. ESO and MEPSO agree to apply the ENTSO-E rules and recommendations for cross-border power exchanges.
- d. ESO and MEPSO provide common evaluation of the available transfer capacity between the power systems of Bulgaria and Macedonia.
- e. ESO and MEPSO agree on a request by one of the system operators (MEPSO or ESO) to use the TRM in both directions in case the safety of supply is endangered during emergencies and bigger deviations in electricity consumption.

The parties to this Memorandum agree to the following:

1. The transfer capacity between the power systems of Bulgaria and Macedonia for commercial contracting for the period January 1st, 2015 (00:00 h CET) - December 31st, 2015 (24:00 h CET) shall be agreed at yearly and monthly level. Each month represents a period from the 1st day of the month (00:00 CET) to the last day of the month (24:00 CET).

The use of the same interconnection interface by two parties will be taken into consideration and the total NTC will be divided between them equally (50%/50%) in both directions.



2. Both Parties shall agree the yearly guaranteed NTC values for yearly allocation until November 15th of current year for the next year.
3. The monthly NTC values shall be calculated based on the actual operational conditions of the electrical power systems.

The monthly NTC values shall be evaluated by ESO and MEPSO and agreed between parties in written form until the 9th calendar day of the previous month and shall apply from the first calendar day of the month (00:00 h CET) till the last calendar day of the month (24:00 h CET). If the 9th calendar day is not a working day, then it will be the first working day after the 9th calendar day.

The following procedure for monthly NTC evaluation shall apply:

- 15 days before the deadline for monthly NTC evaluation forecast models of Macedonian, and Bulgarian electrical power systems are exchanged in ENTSO-E format, including active reserves for increasing/decreasing of the generation, exchange programs and data about maintenance programs for network elements, which influence the NTC (beginning and end) for the investigated period. Forecast models of other relevant or neighbouring countries are taken into account as well.
- not later than 3 days before the deadline (9th calendar day of the previous month) for monthly NTC evaluation, calculation of TTC and NTC is performed. Each Party calculates the TTC values checking the n-1 criterion at least in its power system.
- not later than 2 days before the deadline (9th calendar day of the previous month) for monthly NTC evaluation NTC values are exchanged by fax or Email (scanned copy) and after discussion are harmonised. If no agreement is reached about the NTC value - lower value is in force.
- The deadlines above can be changed by mutual agreement in case of holidays
- The TRM value at the border is agreed to be 100 MW in both directions.

The use of TRM within the defined values in both directions shall be implemented upon a written request of one of the two system operators and the other system operator's written approval by defining a new exchange program

ESO and MEPSO mutually agree that TRM cannot be used for commercial cross-border transactions.

The period of use of TRM shall be proposed by the System Operator which needs electricity in case of endangering the safety in electricity supply during emergencies and bigger deviations in electricity consumption in its own power system (reserve power).

ESO and MEPSO shall ensure the reserve power in compliance with their rules. ESO and MEPSO shall inform each other on the supplier/which supplies the reserve power.

In case the supply is affected during emergencies and bigger deviations in electricity consumption in its power system and upon a demand by MEPSO for delivery of reserve power, TRM will be used after the approval of ESO. After that an intra-day change in the exchange schedule on BG-MK border under the ENTSO-E RG CE OPERATION HANDBOOK, POLICY 2 Scheduling and Accounting, shall be effectuated.

4. In case of significant changes in the network topology, which cause transmission constraints, after consultation and by mutual agreement NTC values could be changed according to the results of weekly and daily operational planning. If no agreement is reached about the NTC value – lower value is in force.
5. Net Transfer Capacities (yearly, monthly and daily NTC value) from Macedonia to Bulgaria and from Bulgaria to Macedonia, from January 1st till December 31st 2015, shall be allocated evenly half-and-half (50%/50%) for this time period by ESO under consideration of the Bulgarian laws and rules and by MEPSO under consideration of the Macedonian laws and rules.

6. ESO and MEPSO will fully accept the result of the individual allocation procedures held by the other party provided these procedures are consistent with the allocation rules and will carry out the transmission services according to the respective allocation results in compliance with legal requirements of grid access, possible electricity import bans and applicable market rules.
7. ESO reserves the right to amend/or adapt the auction rules according to the Bulgarian laws and rules. The actual version of Bulgarian Rules for capacity allocation shall be published on the website of ESO - www.tso.bg
8. MEPSO reserves the right to amend/or adapt the auction rules according to the Macedonian laws and rules. The actual version of Macedonian Rules for capacity allocation shall be published on the website of MEPSO - www.mepso.com.mk
9. The parties are obliged to inform each other on the:
 - Allocated Cross Border Capacity Rights on a yearly basis for the next year - not later than December 20th of the current year;
 - Allocated Cross Border Capacity Rights on a monthly basis - not later than two (2) working days before the beginning of the next month;
 - Allocated Cross Border Capacity Rights on a weekly basis - not later than Friday before the beginning of the next week;
 - Allocated Cross Border Capacity Rights on a daily basis - not later than 11:00 a.m. on the schedule declaration day (day-ahead).

In either exchanged document, as per Appendix 2, the time basis (yearly, monthly, weekly and daily) of transmission allocation procedure shall be notified.

10. The parties agree to inform each other about the list of registered exclusive partners (reserved capacity use respecting the principle 1:1) at latest 3 working days not later than 15.00 CET prior the 1st day of the calendar month for which registration is valid (APPENDIX 3). The registration is performed only for the whole calendar month and partners, as Interconnection Trade Responsible, must be identified with published EIC codes.
11. Only contact persons listed below can sign the information exchange document (Appendix 2).
12. ESO and MEPSO will work out and harmonise auction methods during the year of 2015 in line with the European regulation No. 714/2009 and its guidelines.
13. Not later than on the second working day of the month following the relevant month (in which the exchange of electricity is accomplished), the parties exchange the meter readings on the tie line and agree and confirm in written form (or Email) the volumes of electricity losses for the relevant month. The parties agree the total volumes of electricity physically exchanged at the border not later than four working days after the end of the month. Electricity losses in the tie lines are calculated in accordance with the "Bilateral Accounting Agreement" between ESO and MEPSO.
14. The unavoidable difference between the monthly energy exchanged at the border and the sum of daily energy exchanged at the border shall be compensated between the parties after mutual agreement.
15. The contact persons and sites for the cross-border contracts are:

ESO	MEPSO
Mr. Marin Nikolov tel. +359 2 9213701 fax. +359 2 981 01 02 e-mail: mnikolov@ndc.bg	Mr. Nenad Jovanovski Tel: +389 3 149 814 Fax: +389 3 110 323 E-mail: nenadj@mepso.com.mk

Mr. Plamen Gerdgikov tel. +395 2 9213702 fax. +359 2 981 01 02 e-mail: pgerdgikov@ndc.bg	Mr. Borko Aleksoski Tel: +389 2 3149 820 Fax: +389 2 3228 533 E-mail: borko@mepso.com.mk
Mr. Boiko Chovikov tel. +395 2 9213703 fax. +359 2 981 01 02 e-mail: bchovikov@ndc.bg	Mr. Spase Pavlovski Tel: +389 2 3149 076 Fax: +389 23112 225 E-mail: spaski@mepso.com.mk
Operating (00:00 – 24.00 CET) Dispatching Centre Tel: +359 2 981 29 22, +359 2 986 24 72 Fax: +359 2 981 49 49 E-mail: cdubg@ndc.bg	Operating (00:00 – 24.00 CET) Dispatching Centre Tel. ++ 389 2 3111 101; +389 2 3149 086 Fax. ++ 389 2 3112 911 e-mail: ndc5@mepso.com.mk

16. The contact persons and sites for the transfer capability evaluation and data exchange are:

ESO	MEPSO
Mr. Nenko Gamov Tel:+359 2 92 13 728 fax. +359 2 981 01 02 e-mail: ngamov@ndc.bg	Mr. Darko Dokuzovski Tel: +389 2 3149 039 Fax: +389 3 112 225 E-mail: darkod@mepso.com.mk
Mr. Andrey Andreev Tel:+359 2 92 13 731 fax. +359 2 981 01 02 e-mail: aandreev@ndc.bg	Mr. Georgi Jarmov Tel: +389 2 3149 039 Fax: +389 3 112 225 E-mail: georgi.jarmov@mepso.com.mk

17. The parties agree to inform each other in advance on any changes in paragraph 14 and 15.
18. The cross-border exchanges between ESO and MEPSO will be summarized with regard to the comparison between them and total NTC value.
19. In case of unexpected transmission constraints (congestion in respect of the total NTC value) the parties agree to reduce the exchange programs in accordance with their respective laws and rules.
20. The parties agree to inform each other immediately on any disconnection of transmission-components in their own grid, provided that these disconnections have an essential impact on the grid (ref. "Maintenance Annual Program 2015 SEE region") of the other party (in case of an unplanned disconnection promptly and in case of the planned disconnection till the fifth working day of the previous month).
21. The organisational procedure between ESO and MEPSO related to the scheduling and accounting activities shall be in conformity with the Policy 2 "Scheduling and Accounting" of the ENTSO-E RG CE "Operational Handbook" in force (Appendix 2).

If the parties cannot agree the schedules until 15:45 CET day-ahead the lowest values will be in force.
22. The contact persons and parties for the scheduling and accounting are:

ESO	MEPSO
<p>Cross-border exchanges division Mr. Dimo Dobrev, Mr. Maryan Zlatkov,</p> <p>Mr. Yuliyen Dimitrov, Mr. Tsvetan Vazharov, Mr. Dobromir Todorov Mr. Georgi Naletov</p> <p>Tel: + 359 2 92 13 652 Fax: +359 2 981 0102 e-mail: tsoplan@ndc.bg</p> <p>Ms. Mila Nikolova – Head of Cross-border exchanges division Tel: + 359 2 921 3848 Fax: +359 2 981 0102 e-mail: mnikolova@ndc.bg</p>	<p>Mr. Zoran Ivanovski Mrs. Daniela Jovkowska Mr. Romeo Josifoski</p> <p>Mob: +389 75 258 246 Tel. + 389 2 3149 019 Tel. + 389 2 3149 027 Fax.+ 389 2 3112 911 e-mail: schedule@mepso.com.mk</p>

The provisions of this Memorandum could be amended by mutual agreement of the parties in order to follow any changes of their respective legislation.

For ESO:

IVAN YOTOV
CEO



For MEPSO:

SINISA SPASOV
GENERAL DIRECTOR



ESO/MEPSO MEMORANDUM
For the period January 1st, 2015 - December 31st, 2015

Table 1 - Transfer Capacities

	NTC (MW)
	Yearly
Periods	01.01.2015 - 31.12.2015
ESO → MEPSO	150
MEPSO → ESO	100

The Total Transfer Capacity (TTC) that is the maximum exchange programme between two areas compatible with operational security standards applicable at each system if future network conditions, generation and load patterns were perfectly known in advance.

The Transmission Reliability Margin (TRM) which is a security margin that copes with uncertainties on the computed TTC values arising from:

- a) Unintended deviations of physical flows during operation due to the physical functioning of load-frequency regulation
- b) Emergency exchanges between TSOs to cope with unexpected unbalanced situations in real time
- c) Inaccuracies, e. g. in data collection and measurements
- d) Uncertainties on the base case used for computation (this base case is a forecast of the power system state for a given time period in the future).

The Net Transfer Capacity (NTC) that is defined as:

$$\text{NTC} = \text{TTC} - \text{TRM}$$

NTC is the maximum exchange programme between two areas compatible with security standards applicable in both areas and taking into account the technical uncertainties on future network conditions.

The Already Allocated Capacity (AAC) that is the total amount of allocated transmission rights, whether they are capacity or exchange programmes depending on the allocation method.

The Available Transmission Capacity (ATC) that is the part of NTC that remains available, after each phase of the allocation procedure, for further commercial activity. ATC is given by the following equation:

$$\text{ATC} = \text{NTC} - \text{AAC}$$




APPENDIX 2

System Operation Division

FAX MESSAGE

Addressee:

Position:

Trade name:

Fax number:

Ref.No.:

ID.No.:

Sender:

Fax number:

Phone number:

Pages: 1

Date:

Subject: Cross Border Capacity Rights allocated by ESO

For

Dear Mr.,

According to the MEMORANDUM between our companies please be informed that the under mentioned Cross Border Capacities were allocated by Bulgarian Side and will be used for the month2014.

Direction: Macedonia- Bulgaria

No.	Name of the company	EIC	Execute capacity (MW)	Type of allocation	Capacity ID
1					
2					
...					
TOTAL					

Direction: Bulgaria - Macedonia

No.	Name of the company	EIC	Execute capacity (MW)	Type of allocation	Capacity ID
1					
2					
...					
TOTAL					

Sincerely Yours,

Name

Director




APPENDIX 3

Month 2015

List of "1:1" - System notification of the Macedonia – Bulgaria border

COMPANY	ESO	COMPANY	MEPSO	from	to

Date: _____

TSO: _____



APPENDIX 4

ESO/MEPSO MEMORANDUM
For the period January 1st, 2015 - December 31st, 2015

TIME SCHEDULE FOR THE DAILY DATA EXCHANGE RELATED TO CROSS-CHECKING OF CROSS-BORDER PROGRAMS

Communication between TSO's ESO –MEPSO

Type of data/information	Deadline	Processing, Consultation, Conclusion	Mode of Information exchange
Hourly cross-border exchange program detailed according to responsible balance circles	Previous workday 8:00 a.m. (CET)	Sending/receiving programs Cross-checking	CAS according to ENTSO-E ESS v2 R3 or CAS, CAX files in KISS E-mail Fax Telephone
Hourly capacity allocation according to responsible balance circles/traders	Previous workday 11:00 a.m. (CET)	Sending/receiving programs	direct data connection E-mail Fax Telephone
I/1. Hourly cross-border exchange program detailed according to responsible balance circles/traders, and in total for the day(s) concerned	Previous day till 2:45 p.m. (CET) According to ENTSO-E Policy 2	Sending/receiving programs	CAS according to ENTSO-E ESS v2 R3 or CAS, CAX files in KISS E-mail Fax Telephone
I/2. Identified deviations between programs	Previous day till 3:30 p.m. (CET) According to ENTSO-E Policy 2	Identification of balance circles/traders making mistake(s) Modification and re-sending of programs Repeated cross-checking	CAS according to ENTSO-E ESS v2 R3 or CAS, CAX files in KISS E-mail Fax Telephone
I/3. Confirmation of agreed program(s)	Previous day till 3:30 p.m. (CET) According to ENTSO-E Policy 2	Sending/receiving confirmation of the agreed program(s) Finalization of accepted cross-border exchange program(s) for the day(s) concerned	CAS according to ENTSO-E ESS v2 R3 or CAS, CAX files in KISS E-mail Fax Telephone
II/1. Request for intra-day modification of cross-border exchange program*	Actual day 60 minutes before start of modified hour	Sending/receiving new program with reason for the change and identification of the balance circle/trader concerned	Telephone and e-mail or fax
II/2. Confirmation of modified program	Actual day 45 minutes before start of modified hour	Sending/receiving confirmation of the agreed new program(s) Finalization of accepted changes of cross-border exchange program(s) for the day(s) concerned	CAS according to ENTSO-E ESS v2 R3 or CAS, CAX files in KISS E-mail Fax Telephone

* Intra-day modification of cross-border exchange programs must always be managed by the dispatchers of the two TSO, and they should be handled according to the relevant ENTSO-E rules.