Overview of currently applied methods for cross-border transmission capacity allocation in South-east Europe

SITUATION OCTOBER 2005

Report of November 2005
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Scope

This document provides an overview of currently applied methods for transmission capacity in South-east European (SEE) region, for 7th Athens Forum. It is the result of a questionnaire made among SEE TSOs gathered within SETSO TF\textsuperscript{1}, i.e. its NACMPF SG\textsuperscript{2}.

The document have the two following main objectives:

- Present an overview of the methods and processes currently in application in the South-east European interconnections for transfer capacity allocation and congestion management
- Provide the available information regarding the works (in progress or foreseen) for modifying or substituting the methods currently applied, especially those not complying with the Regulation 1228/2003 and/or its Guidelines to some extent.

Brief overview of an allocation methods has already been presented to the 6th Athens Forum, as an Annex 2 to the document “Coordinated auctions in SEE region - Activity report”. The new document is now updated to the situation in October 2005, and extended with more information regarding the web-site publishing of the allocation methods/results/capacities, regulatory approvals for the respective methods, typical number of market actors, etc.

The intention of NACMPF SG is to periodically update this Overview in order to monitor the progress in applying the capacity allocation methods in the region, towards implementing allocation procedures at different time horizons, and implementing the market-based methods (explicit and implicit auctions), complying with the EC Regulation 1228/2003 and Guidelines on Congestion Management.

In Chapter I a global overview of the situation in SEE region regarding transmission capacity calculation/allocation is given, where already achieved levels of coordination among SEE TSOs are described:

- using joint monthly network models for NTC calculation
- the calculation of composite (simultaneously feasible) binding NTC values
- bilateral harmonization of NTC values by the neighbouring TSOs

Also, besides installing the bilateral allocation methods in SEE, a parallel work on investigation/implementation of explicit flow-based coordinated auctions (CA) launched within SETSO/NACMPF has been briefly described, with announcing of the dry-run implementation of CA in SEE region.

In Chapter II the document presents a general overview of the methods currently in use in the SEE interconnections (in the forms of maps and comparative tables). The yearly, monthly and daily allocation procedures have been presented, and since monthly allocation procedures are generally the most developed, they are described in more detail. Only the “internal” SEE borders were presented here, and the borders of countries members of SETSO towards the rest of Europe and Asia are not presented. Additionally, in Chapter III Turkey presented the situation regarding its Asian connections.

In Chapter III the brief descriptions of allocation methods in respective countries (TSOs, ISOs), provided by the correspondent TSOs/ISOs were given.

In Chapter IV the description of currently applied allocation methods (priority list, pro-rata rationing, explicit and implicit auctions), based on ETSO document “An Overview of Current

\textsuperscript{1} SETSO TF: “South-east European Transmission Operators Task Force”
\textsuperscript{2} NACMPF SG: “Network Access, Congestion Management and Power Flows Sub working Group”
I. Overview

The TSOs of SEE gathered within SETSO TF/NACMPF SG, jointly work on introduction of capacity allocation/congestion management mechanisms in the region. This document gives a snapshot of the current situation related to the establishment of transmission capacity allocation method at the SEE borders.

The first overview of what is implemented across the SEE borders has been made in January 2004. Since then there have been many developments, i.e. new allocation methods of transmission capacity are established in the meantime. The brief snapshot of the current situation regarding the capacity allocation has been prepared for the 6th Athens Forum (June 2005). Summer 2005 was a period of introducing many new methods, so the necessity for an update of the overview appeared. Also in the meantime the Guidelines for Congestion Management were published with clear streamlines about what are and what are not market-based methods, which is necessary level of coordination etc, and therefore it was interesting to compare SEE allocation procedures from this point of view.

The new document is now updated to the situation in October 2005, and extended with more information regarding the website publishing of the allocation methods/results/capacities, regulatory approvals for the respective methods, typical number of market actors that participate at the allocation, etc.

1. Currently applied methods are explicit and implicit auctions, pro-rata rationing and priority list.

2. On the borders where there is a certain level of coordination among TSOs there is also an agreement of sharing the NTC value 50:50, and each of the neighboring TSOs allocate its half independently (generally, in both directions).

3. The exception from 2. is the border between Austria and Hungary, where 100% of NTC in both direction is allocated by the joint auctioning office.

Coordinated NTC calculation at monthly level

In order to obtain compatible and comparable results in monthly binding NTC calculation, in February 2005 SEE TSOs at the NACMPF SG meeting agreed on a regular procedure of making the monthly reference network model, which most of them use as a basis for the monthly NTC calculation. This procedure is constantly improved, and currently the typical time schedule for making the network model for 3rd Wednesday 10h30 of month M is:

- till 15th of month M-2: harmonization of table with Base Case Exchanges in base case model
- till 20th of month M-2: exchange of the network models with agreed totals + merging
- 20th - 30th of month M-2: NTC calculation for month M
- 30th (M-2) – 4th (M-1): harmonization of NTC values for month M

Since the network conditions is often different week by week (especially topology), many TSOs use the common merged model for 3rd Wednesday 10h30 of month M as a basis, and then make also the network models for e.g. 1st, 2nd, 4th Wednesday, and calculate different NTC values per each week.

The countries which models are exchanged and merged into a common regional model within this procedure are: Albania, BiH, Bulgaria, Croatia, Greece, Hungary, Austria, Macedonia, Romania, Slovenia, Serbia, Montenegro and Ukraine (last available model/information is used for UA).
Calculation of composite (simultaneously feasible) NTC values

The strong interdependence among the transmission capacities for certain SEE borders has been recognized long ago, and it was one of the reasons for the investigation of Coordinated flow-based Congestion Management as a possibility for SEE region. Since currently only bilateral allocation procedures exist in the region, the interdependence among these borders has been taken into account by calculating the composite, simultaneously feasible NTC values, which are then fractioned per individual borders, then again split 50:50 at each border and offered at the separate allocation procedures.

Thus, typically these borders are “coupled” into a composite NTC calculation (the list is not exhaustive):

- joint import of Serbia from Bulgaria+Romania
- joint export from Romania to Bulgaria+Serbia+Hungary
- joint import/export of Hungary with Serbia+Romania
- joint import of Greece from Bulgaria and Macedonia
- joint import of Greece, Macedonia and Albania from north
- joint import/export of BiH with Serbia+Montenegro, etc.…

Figure: Typical composite NTCs in SEE region

Dry-run of Coordinated explicit flow-based auctions in SEE

In parallel with introducing and/or operating the bilateral allocation procedures, SEE TSOs keep on with joint investigate the possibilities for implementing the coordinated flow-based explicit auctions.

The dry-run implementation of CA is launched through the preparation of necessary software tools, drafting the auction rules and the communication with SEE regulators. Also, the tender within KfW bank for the selection of the consultant for CA investigation/implementation is under way, so it is expected that the consultant will help SEE TSOs in finding the best way to introduce the flow-based CA in the region. The simulation of monthly CA procedure is expected to start by January 2006.

Note that in the compiled table with answers by the TSOs about currently applied methods and plans for improvements for the year 2006 CA are not mentioned, but this question is related to the improvement of the existing bilateral allocation methods, or installing some for the first time.
II. Currently implemented capacity allocation methods in SEE – October 2005

TABLE 1: ALLOCATION METHODS/TIME FRAMES/No. OF ACTORS/PLANS

*Table shown in two parts,*
*1st part: AL, AT, BA, BG, HR, GR, HU*
*2nd part: IT, MK, CG, RO, SR, SI, TR*

TABLE 2: ORGANIZATION/WEB/RULES/REGULATORY/CONTACT

*Table shown in two parts,*
*1st part: AL, AT, BA, BG, HR, GR, HU*
*2nd part: IT, MK, CG, RO, SR, SI, TR*
<table>
<thead>
<tr>
<th>Country (TSO or ISO)</th>
<th>Method</th>
<th>Agreed with neighbouring TSO (contract signed on capacity assessment/share, time frames...)</th>
<th>Joint method with other TSO?</th>
<th>Direction (export, import, both)</th>
<th>Since when the method has been applied? (date)</th>
<th>&quot;Use it, or loose it&quot; principle applied?</th>
<th>Possibility for re-selling of the capacity?</th>
<th>Time frames for the allocation</th>
<th>Typical number of market actors that participate at the allocation? (separately for each border, direction and time frame)</th>
<th>Plan for 2006: possible upgrade/introducing new allocation procedure?</th>
<th>Specify detailed time schedule!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece (TSO)</td>
<td>Priority list</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td>Sep ’05</td>
<td>Yes</td>
<td>No</td>
<td>M, 1 (export)</td>
<td>Monthly explicit auctions planned to be implemented in the beginning of 2006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montenegro</td>
<td>Split 50:50, pro rata (AL part)</td>
<td>Contract on monthly capacity assessment and share in preparation</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>Sep ’05</td>
<td>Yes</td>
<td>No</td>
<td>M, 2-4 (import)</td>
<td>Monthly explicit auctions planned to be implemented in the beginning of 2006</td>
<td></td>
</tr>
<tr>
<td>Serbia</td>
<td>Split 50:50, pro rata (AL part)</td>
<td>Contract on monthly capacity assessment and share in preparation</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>Oct ’05</td>
<td>Yes</td>
<td>No</td>
<td>M, 2-4 (import)</td>
<td>Monthly explicit auctions planned to be implemented in the beginning of 2006</td>
<td></td>
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<tr>
<td>Hungary (APG)</td>
<td>Common explicit auction</td>
<td>Yes</td>
<td>-</td>
<td>bilateral</td>
<td>Both</td>
<td>01/01/05</td>
<td>Yes</td>
<td>yes</td>
<td>Y, M, (D) 15</td>
<td>-</td>
<td></td>
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<tr>
<td>Italy</td>
<td>Split 50:50, explicit auction (A part)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>01/01/05</td>
<td>Yes</td>
<td>Yes</td>
<td>Y, M 5</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Slovenia</td>
<td>Split 50:50, explicit auction (A part)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>01/01/05</td>
<td>Yes</td>
<td>yes</td>
<td>Y, M, 20</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bosnia-Herzegovina (NOS BiH)</td>
<td>Split 50:50 Pro-rata</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>March ’05</td>
<td>No</td>
<td>Yes</td>
<td>M 15</td>
<td>NOS BiH is planning to start with monthly auction, during the first half of 2006, firstly as dry-run and then real implementation</td>
<td></td>
</tr>
<tr>
<td>Croatia</td>
<td>Split 50:50 Pro-rata</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>March ’05</td>
<td>No</td>
<td>Yes</td>
<td>M 15</td>
<td>NOS BiH is planning to start with monthly auction, during the first half of 2006, firstly as dry-run and then real implementation</td>
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<tr>
<td>Serbia</td>
<td>Split 50:50 Pro-rata</td>
<td>Yes</td>
<td>Yes</td>
<td>/</td>
<td>Both</td>
<td>March ’05</td>
<td>No</td>
<td>Yes</td>
<td>M 15</td>
<td>NOS BiH is planning to start with monthly auction, during the first half of 2006, firstly as dry-run and then real implementation</td>
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<tr>
<td>Greece (NEK)</td>
<td>In process of establishment</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>Export</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>Split 50:50, Pro rata</td>
<td>Yes, Memorandum signed for 2005</td>
<td>No</td>
<td>Both</td>
<td>01/01/05</td>
<td>No</td>
<td>No</td>
<td>M</td>
<td>15</td>
<td>/</td>
<td></td>
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<tr>
<td>Serbia</td>
<td>Split 50:50, Pro rata</td>
<td>In process of establishment</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>01/01/05</td>
<td>No</td>
<td>No</td>
<td>M</td>
<td>15</td>
<td>/</td>
</tr>
<tr>
<td>Macedonia</td>
<td>In process of establishment</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>No parallel operation</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td></td>
</tr>
<tr>
<td>Bosnia-Herzegovina</td>
<td>Split 50:50, Pro-rata monthly, Priority list daily (HR part)</td>
<td>Yes, monthly</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>January 2005</td>
<td>Yes</td>
<td>No</td>
<td>M, D 1-2(export), 4-5(import)</td>
<td>Explicit auctions 2006</td>
<td></td>
</tr>
<tr>
<td>Hungary (MAVIR)</td>
<td>Split 50:50, Pro-rata monthly, Priority list daily (HR part)</td>
<td>Yes, yearly and monthly</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>January 2004</td>
<td>Yes</td>
<td>No</td>
<td>M, D 1-3(export), 8-10(import)</td>
<td>Explicit auctions 2006</td>
<td></td>
</tr>
<tr>
<td>Serbia</td>
<td>Split 50:50, Pro-rata monthly, Priority list daily (HR part)</td>
<td>Yes, monthly</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>January 2005</td>
<td>Yes</td>
<td>No</td>
<td>M, D 1-2(export), 5-6(import)</td>
<td>Explicit auctions 2006</td>
<td></td>
</tr>
<tr>
<td>Slovenia</td>
<td>Split 50:50, Pro-rata monthly, Priority list daily (HR part)</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>January 2004</td>
<td>Yes</td>
<td>No</td>
<td>M, D 6-8(export), 1-2(import)</td>
<td>Explicit auctions 2006</td>
<td></td>
</tr>
<tr>
<td>Albania</td>
<td>AL_FYROM.BG-&gt;GR: explicit auctions (GR)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Import</td>
<td>Yes</td>
<td>Y</td>
<td>Around 10</td>
<td>Upgrade the allocation procedure during 2006</td>
<td></td>
<td></td>
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<td>Bulgaria</td>
<td>FYROM</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Italy</td>
<td>Split 50:50, explicit auction (GR part)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>both</td>
<td>Yes</td>
<td>M, D 2</td>
<td></td>
<td></td>
<td>daily auction</td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>common explicit auction</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Both</td>
<td>01/01/05</td>
<td>Yes</td>
<td>Yes</td>
<td>Y, M, 5-10</td>
<td>daily auction</td>
<td></td>
</tr>
<tr>
<td>Croatia</td>
<td>Split 50:50, explicit auction (HU part)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>01/05/05</td>
<td>Yes</td>
<td>Yes</td>
<td>Y, M, 5-10</td>
<td>daily auction</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>Split 50:50, explicit auction (HU part)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>01/05/03</td>
<td>Yes</td>
<td>Yes</td>
<td>Y, M, 5-10</td>
<td>daily auction</td>
<td></td>
</tr>
<tr>
<td>Serbia</td>
<td>Split 50:50, explicit auction (HU part)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Both</td>
<td>01/05/03</td>
<td>Yes</td>
<td>Yes</td>
<td>Y, M, 5-10</td>
<td>daily auction</td>
<td></td>
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</table>
## Currently applied allocation methods

**TABLE 1:**

<table>
<thead>
<tr>
<th>Country (TSO or ISO)</th>
<th>Involved interconnections (borders)</th>
<th>Method</th>
<th>Agreed with neighbouring TSO (contract signed on capacity assessment/share, time frames...)</th>
<th>Capacity split 50:50?</th>
<th>Joint method with other TSO?</th>
<th>Direction (export, import, both)</th>
<th>Since when the method has been applied? (date)</th>
<th>“Use it, or loose it” principle applied? (date)</th>
<th>Possibility for re-selling of the capacity?</th>
<th>Time frames for the allocation</th>
<th>Typical number of market actors that participate at the allocation? (separately for each border, direction and time frame)</th>
<th>Plan for 2006: possible upgrade/introducing new allocation procedure?</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Split 50:50, implicit auction (IT part)</td>
<td>Yes</td>
<td>Yes for FTRs (SEE COMMENT 1)</td>
<td>No</td>
<td>Both</td>
<td>2005</td>
<td>No</td>
<td>D (SEE COMMENT 2)</td>
<td>No</td>
<td>60</td>
<td>Yes</td>
<td>(1) Assigned Financial Transmission Rights (FTRs) to hedge the risk of volatility of different zonal prices</td>
<td></td>
</tr>
<tr>
<td>Slovenia</td>
<td>Split 50:50, implicit auction (IT part)</td>
<td>Yes</td>
<td>Yes for FTRs (SEE COMMENT 1)</td>
<td>No</td>
<td>Both</td>
<td>2005</td>
<td>No</td>
<td>D (SEE COMMENT 2)</td>
<td>No</td>
<td>190</td>
<td>Yes</td>
<td>(2) FTRs assigned on a yearly basis</td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>Split 50:50, implicit auction (IT part)</td>
<td>No need</td>
<td>Yes for FTRs (SEE COMMENT 1)</td>
<td>No</td>
<td>Both</td>
<td>2005</td>
<td>No</td>
<td>D (SEE COMMENT 2)</td>
<td>No</td>
<td>50</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy (TERNA)</td>
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<td></td>
</tr>
<tr>
<td>Bulgaria</td>
<td>Split 50:50, pro rata - in process of establishment</td>
<td>Contract in preparation</td>
<td>Yes for FTRs (SEE COMMENT 1)</td>
<td>No</td>
<td>Import</td>
<td>30/10/05</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>M</td>
<td>No experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serbia</td>
<td>Split 50:50, pro rata - in process of establishment</td>
<td>Trial period till December 2005: Contract on monthly capacity assessment in preparation</td>
<td>Yes for FTRs (SEE COMMENT 1)</td>
<td>No</td>
<td>Both</td>
<td>Sept '05</td>
<td>Yes</td>
<td>No</td>
<td>M</td>
<td>7</td>
<td>No experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montenegro (EPKO-TSO)</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Greece</td>
<td>Priority list</td>
<td>/</td>
<td>No for FTRs (SEE COMMENT 1)</td>
<td>No</td>
<td>Both</td>
<td>………</td>
<td>Yes</td>
<td>No</td>
<td>M</td>
<td>M</td>
<td>Export-4, import-3</td>
<td></td>
<td></td>
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<tr>
<td>Bulgaria</td>
<td>Split 50:50, pro rata - in process of establishment</td>
<td>Contract on monthly capacity assessment and share in preparation</td>
<td>Yes for FTRs (SEE COMMENT 1)</td>
<td>No</td>
<td>Both</td>
<td>Oct-05</td>
<td>Yes</td>
<td>No</td>
<td>M,D</td>
<td>2-3 (import &amp; export)</td>
<td>new allocation procedure</td>
<td></td>
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<tr>
<td>Bosnia-Herzegovina</td>
<td>Priority list</td>
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<tr>
<td>Serbia</td>
<td>Priority list</td>
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### TABLE 2: Currently applied allocation methods_SEE region_Oct'05

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<th>Web-address with allocation procedure description</th>
<th>Name of the document(s) with allocation rules</th>
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<th>Answers provided by (responsible person from each TSO, name and e-mail)</th>
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<td>Barbara Dekleva-Jančič, <a href="mailto:barbara.dekleva@eles.si">barbara.dekleva@eles.si</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serbia (EMS)</td>
<td>Serbian TSO EMS (under reconstruction)</td>
<td><a href="http://www.ems.co.yu/ste_en.htm">www.ems.co.yu/ste_en.htm</a></td>
<td>JP EMS System Operation Division: “Temporary rules for allocation of available transfer capacities on interconnections for the period from September 1st – December 31st, 2005” (available in Serbian and in English on EMS web site)</td>
<td>No, Regulatory agency is under establishment</td>
<td>Predrag Susic <a href="mailto:predrag.savic@ems.co.yu">predrag.savic@ems.co.yu</a>, <a href="mailto:aleksandar.kurcubic@ems.co.yu">aleksandar.kurcubic@ems.co.yu</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slovenia (ELES)</td>
<td>TSO, organisation part Market Operator BORZEN</td>
<td><a href="http://www.eles.upo.si">www.eles.upo.si</a></td>
<td>Regulations on the mode and conditions of cross-border transfer capacity allocation and conditions of their access</td>
<td>Yes</td>
<td>Barbara Dekleva-Jančič, <a href="mailto:barbara.dekleva@eles.si">barbara.dekleva@eles.si</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey (TEIAS)</td>
<td>Bulgaria</td>
<td><a href="http://www.eles.upo.si">www.eles.upo.si</a></td>
<td>Yes</td>
<td>Yes</td>
<td>H.Mehmet Kara, <a href="mailto:h.mehmet.kara@teias.gov.tr">h.mehmet.kara@teias.gov.tr</a></td>
<td></td>
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</tbody>
</table>
Allocation methods at yearly level

YEARNLY ALLOCATION in South-east Europe

Allocation methods:
PL - Priority list
PR - Pro rate
EA - Explicit auction
IA - Implicit auction
xx - no allocation (at observed time horizon)

Legend:
COLOUR OF ARROW CORRESPONDS TO THE COLOUR OF COUNTRY (TSO, ISO) WHICH APPLIES CERTAIN METHOD
parallel arrows = capacity split 50:50, each TSO allocate one half
serial arrows = separate, unilateral allocations
two-sided arrow = allocation in both directions
one-sided arrow = allocation in one direction
xx - no synchronous operation
Allocation methods at monthly level

**MONTHLY ALLOCATION in South-east Europe**

**Allocation methods:**
- PL - Priority list
- PR - Pro rata
- EA - Explicit auction
- IA - Implicit auction
- **xx** - no allocation (at observed time horizon)

**Legend:**
- Colour of arrow corresponds to the colour of country (TSO, ISO) which applies certain method
- Parallel arrows = capacity split 50:50, each TSO allocate one half
- Serial arrows = separate, unilateral allocations
- Two-sided arrow = allocation in both directions
- One-sided arrow = allocation in one direction
- No synchronous operation
Currently applied allocation methods

Allocation methods at daily level

DAILY ALLOCATION in South-east Europe

Allocation methods:
PL - Priority list
PR - Pro rata
EA - Explicit auction
IA - Implicit auction
xx - no allocation (at observed time horizon)

Legend:
COLOUR OF ARROW CORRESPONDS TO THE COLOUR OF COUNTRY (TSO, ISO) WHICH APPLIES CERTAIN METHOD
parallel arrows = capacity split 50:50, each TSO allocate one half
serial arrows = separate, unilateral allocations
two-sided arrow = allocation in both directions
one-sided arrow = allocation in one direction
no synchronous operation
Currently applied allocation methods - SEE region - Oct'05

Allocation data: Publishing of the allocation rules and transfer capacities

**DOCUMENT WITH ALLOCATION RULES AVAILABLE?**

<table>
<thead>
<tr>
<th>Country</th>
<th>AT</th>
<th>HU</th>
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<th>RO</th>
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<td>YES</td>
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<tr>
<td>YES (In Italian only)</td>
<td>SI YES</td>
<td>HR</td>
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</tbody>
</table>

**WEB-ADDRESS WITH PUBLISHED NTC (ATC) VALUES?**

<table>
<thead>
<tr>
<th>Country</th>
<th>AT</th>
<th>HU</th>
<th>SI</th>
<th>RO</th>
<th>TR</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.te.rema.it">www.te.rema.it</a></td>
<td><a href="http://www.eles.upo.si">www.eles.upo.si</a></td>
<td></td>
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<tr>
<td><a href="http://www.desmie.gr">www.desmie.gr</a> (NTCs published only for GR-IT connection)</td>
<td></td>
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</tbody>
</table>
Currently applied allocation methods
SEE region Oct'05

Typical number of market actors gaining the capacity at the allocation

Plans for upgrade the bilateral allocation procedures in 2006
(Time horizons for planned upgrades are not shown, complete information is given in table)
III. Description of allocation methods per each country

Albania (ATSO)

ATSO’s procedure for allocation of Cross Border Capacity Rights

For Interconnection line Fierza – Prizren since the end of July 2005 with Serbian Transmission System has been exchange the letters by both Sides and for both directions Albania – Serbia / Serbia - Albania, for Execute Capacity and Type of Allocation that must be used for the month August 2005 and this new temporary procedure for allocation of available transfer capacities on interconnections which will be used till December 31st, 2005.

For Interconnection line V.Dejes – Podgorica was agreed to allocate the same method as with Serbian Transmission System to exchange the letters by both Sides and for both directions Albania – Montenegro / Montenegro - Albania, for Execute Capacity and Type of Allocation that must be used the new temporary procedure for allocation of available transfer capacities on interconnections which will be used till December 31st, 2005.

The applied method is pro-rata rationing on monthly basis, based on published ATC values for each TSO border, for both directions. The available cross border transfer capacity (free capacity) for each border is divided evenly half-and-half (50%/50%) by ATSO and neighbouring TSO.

ATSO doesn’t allow transfer of capacity rights between market participants. This approach is necessary in order to disable reselling of cross border transfer capacity (CBTC) between market participants. When the information of allocation results are published, traders who will not be using their capacity or part of their capacity has possibility, in next 24 hours, to return their capacity or part of their capacity only on one border and only in one direction. This kind of approach was introducing on traders request.

For Interconnection line Zemblak – Kardia ATSO use Priority List to give opportunity the traders who will want to use the capacity of this lines for directions Albania – Greece, for Execute Capacity and Type of Allocation that must be used.

In close future ATSO plans to establish the monthly explicit auctions for its borders (at the beginning of 2006).

Austria (APG)

The current applied method at the Austrian borders is the explicit auction. Together with Hungary there is a common auction. In this case Austria is responsible for the import values and the auctions takes place on a yearly and monthly basis. Beginning with 2006 it is planned to start also with a daily auction.

At the borders with Italy and Slovenia the capacity is divided into equal parts (50:50). The part of APG is auctioned on a yearly, monthly and daily basis.

The information concerning the auctions rules and the results are published at the following web site: www.auction-office.at
Bosnia-Herzegovina (NOS BiH)

Independent system operator in Bosnia and Herzegovina (ISO BiH) is responsible for allocation of transmission capacity on borders with neighbouring systems. Borders are:
1. Bosnia and Herzegovina – Croatia
2. Bosnia and Herzegovina – Serbia
3. Bosnia and Herzegovina - Montenegro

Capacity on each border is divided 50:50% and pro-rata for ISO BiH capacity. Temporary monthly based allocation procedure is in preparation and will be in use from 01.01.2006. for three months. NTC values are published on temporary web-site www.nosbih.ba and procedure will be also published on this web site.

Bulgaria (NEK)

Bulgaria (Information provided by TSO: NEK EAD)

Involved interconnections:
• Bulgaria – Romania
• Bulgaria – Serbia
• Bulgaria - Macedonia
• Bulgaria – Greece
• Bulgaria –Turkey*

* No parallel operation. The lines are disconnected.

Description for each interconnection:
Bulgaria – Romania
• This direction is usually not congested.
• Capacity is evaluated and distributed monthly.
• Capacity is shared 50% in both directions.
• Pro rata method for allocation is applied for Bulgarian share.

Bulgaria – Serbia
• Capacity is evaluated and distributed monthly.
• Capacity is shared 50% in both directions.
• Pro rata method for allocation is applied for Bulgarian share.

Bulgaria – Macedonia
Principles and methods for capacity allocation are under negotiations.

Bulgaria –Greece
Principles and methods for capacity allocation are under negotiations.

Croatia (HEP-TSO)

Allocation of cross-border capacity on Croatian borders:

Cross-border capacity allocation procedure in Croatia is organized and managed by HEP – Operator prijenosnog sustava d.o.o. (HEP-TSO Ltd). The available cross border capacity for each border is divided half-and-half (50%/50%) between HEP-TSO and neighbouring TSOs. The allocation
Currently applied allocation methods _SEE region_Oct’05

method applied by HEP-TSO, for both directions, is pro-rata for each Croatian border, on monthly basis.
"Use it, or loose it" principle is applied, so there is a possibility of daily allocation of cross-border capacity based on priority list ("first come – first served"). Transfer of capacity rights ("reselling") between market participants is not allowed.
Final version of cross-border transmission capacity allocation rules is drafted and will be introduced in 2006 following approval by relevant authorities. According to the drafted rules, explicit auctioning method will be applied on monthly basis on all borders, in both directions.

Greece (HTSO)

Currently applied allocation methods in Greek borders (TSO-Greece)
At the moment HTSO performs explicit auction for the long term transmission rights in its north borders (70% of the total NTC value) while with Italy there is a 50:50 split with Italy and occasionally explicit auctions are performed for long term rights. Long term rights are yearly for the northern borders and monthly at the connection Greece-Italy.
The rest of the capacity (ATC) is allocated daily pro rata in priority to the suppliers having yearly rights.

Web site address is the www.htso.gr with published transfer capacities.

Document with new allocation rules is in preparation. HTSO is going to introduce new allocation procedure soon.

Hungary (MAVIR)

MAVIR has been using explicit auctioning for all borders since the first half of year 2003.
We have yearly and monthly capacity auctioning for all borders. Daily auctioning procedure is planned for the border to Austria in the near future.
Capacity allocation is organised by the Hungarian TSO (MAVIR) for all borders except for the relation to Austria. Here the capacity allocation is organised by the Austrian Auction Office.
Split 50:50 auctioning is provided for all borders except for the relation to Austria. Here joint capacity allocation method has been introduced at the beginning of year 2005.
The auctioning procedure, the offered network capacity and the results of the auctioning is published at the homepage of the TSO (www.mavir.hu). Only the information on the capacity auctioning on the Hungarian-Austrian border is provided at the homepage of the Austrian Auctioning Office (www.auction-office.at).
Italy (TERNA)

Rules for the allocation of import capacity defined for 2005
The Authority for Electricity and Gas has established power import rules for 2005, in accordance with a decree by the Minister of Productive Activities. The decisions can be viewed at www.autorita.energia.it.
The Authority has changed the existing procedures for allocating interconnection capacity (i.e. on a pro-quota basis among applicants) and introduced market mechanisms for relieving congestion on cross-border networks. The new system, which makes use of the Power Exchange's day-ahead market, is consistent with the need to import electricity on a least-cost basis and with the new European regulations on international trading that came into force on 1 July. The measures to protect Italian consumers from fluctuating congestion costs on the interconnection networks consist of the free allotment of Financial Transmission Rights (FTRs) to cover the difference between the foreign price and the price within the import zone.
Both the mechanism for easing congestion on the interconnection network and the procedures for assigning fixed transmission rights have been established by the Authority in light of a consultation with operators launched in August. These decisions will maximize the benefits for Italian import customers by ensuring that the least expensive power is imported into the country's electric system.
The new rules affect 50% of the total import capacity. The other 50% will be allocated under the rules established by the countries of export (France, Switzerland, Austria, Slovenia and Greece). With a total import capacity of about 7,250 MW, 2,000 MW is reserved to the long-term import contracts held by Enel S.p.A.
The capacity actually available for allocation on the basis of the Authority's decisions thus amounts to some 2,300 MW. Of that amount, the Single Buyer-responsible for supplying the captive market-is entitled to about 600 MW (26% of the interconnection capacity assignable on the Italian side) as hedging against price fluctuations. Financial Transmission Rights corresponding to the remaining import capacity are reserved to wholesalers and free market consumers.

Macedonia (MEPSO)

Information provided by Macedonian TSO MEPSO
Involved interconnections:
• Macedonia – Serbia
• Macedonia – Greece
• Macedonia – Bulgaria

Description for each interconnection:
Macedonia – Serbia
• This border is congested in direction SR->MK
• Capacity is evaluated and distributed monthly.
• Capacity is shared 50% in both directions.
• Pro rata method for allocation is in process of establishment. Trial period is till Dec’ 05.
• Contract with EMS is under preparation.

Macedonia – Greece
Currently applied allocation methods__SEE region__Oct'05

- This border is congested in direction MK->GR
- The allocation method is not applied jointly with HTSO
- From MEPSO side, priority list is applied unilaterally

Macedonia – Bulgaria
- Since 30th October 2005 the two 110 kV tie-lines with Bulgaria are in parallel operation.
- Principles and methods for capacity allocation are under negotiations.

Montenegro (EPCG-TSO)

Currently applied allocation methods on Montenegrion border (TSO-EPCG)

At this time, TSO-EPCG applies different methods of transmission capacity allocation. Temporary, on borders toward Serbia and Bosnia & Herzegovina capacities are being allocated by using “priority list” mechanism, and on Albanian border “pro-rata” mechanism has been introduced recently. All capacities are equally split with neighbours, and TSO-EPCG applies mentioned methods on its share.

Time frames for the allocation, number of actors, and basic rules are given in table. Web address www.tso-epcg.com with published transfer capacities and allocation procedure description is being redesigned (will be finished during the November 2005.).

Document with new allocation rules is in preparation, so TSO-EPCG is going to introduce new allocation procedure soon.

Romania (Transelectrica)

The cross-border capacity allocation is performed by the Romanian TSO TRANSELECTRICA with ATC based allocation methods.

a) Bilateral agreements for yearly & monthly calculation and harmonization of NTCs and allocation of ATCs with a 50:50 split both for export and import were concluded with Hungary, Serbia and Bulgaria.

Since January 2005, the allocation method on these borders on the Romanian side was monthly and yearly explicit auction, according to an operational procedure developed by TRANSELECTRICA and approved by the Romanian Energy Regulatory Authority ANRE in June 2005 (after a testing period). Long term contracts, approved by Government, have preemptive allocation. The “use it or lose it” principle applies; capacity rights can be transferred.

The allocation procedure, auction rules, NTC, AAC and ATC values, NTC calculation methodology and auction results are published on the web-site www.ope.ro.

b) The ATC on the border with the Bursthyn Island is allocated by operative agreement and priority list.
Serbia (EMS)

EMS’s procedure for allocation of Cross Border Capacity Rights

In order to reach transparency and non-discrimination approach in allocation procedure in relation to all electricity market participants, from September 1st, 2005 EMS has applied new temporary procedure for allocation of available transfer capacities on interconnections which will be used till December 31st, 2005.
The applied method is pro-rata rationing on monthly basis, based on published ATC values for each EMS border, for both directions. The available cross border transfer capacity (free capacity) for each border is divided evenly half-and-half (50%/50%) by EMS and neighbouring TSO.
EMS doesn’t allow transfer of capacity rights between market participants. This approach is necessary in order to disable reselling of cross border transfer capacity (CBTC) between market participants.
When the information of allocation results are published, traders who will not be using their capacity or part of their capacity has possibility, in next 24 hours, to return their capacity or part of their capacity only on one border and only in one direction. This kind of approach was introducing on traders request.
All information and rules about allocation procedure, values of ATC for next month and results of allocation procedure are published and can be found on EMS web site (www.ems.co.yu).
In close future EMS plans to establish the monthly explicit auctions for its borders (at the beginning of 2006).

Slovenia (ELES)

Allocation procedures on Slovenian borders

On the borders with Italy (export) and Austria (import) the pro-rata allocation method for the Slovenian part of the capacities (50%) is used. The capacities are allocated according to the pro-rata principle on yearly basis as the postponement of the fully implementation of EU Regulation No 1228/2003 in the Republic of Slovenia was approved until June 30, 2007.

On other directions and on the border with Croatia explicit auctions performed on daily basis.

Once the European regulation No 1228/2003 is fully implemented in Slovenia, beginning with July 1, 2007, ELES have to fulfil the requirements of the EU Regulation and its guidelines on congestion management.

Turkey (TEIAS)

INTERCONNECTIONS OF TURKEY

Since synchronous parallel operation with UCTE power system is a priority for TEIAS, TEIAS has no plan to establish a synchronous parallel operation with its neighbours other than Bulgaria and Greece. Interconnection with Greece is planned to finish in 2007.
SYNCHRONOUS PARALLEL CONNECTIONS: Turkey has no synchronous parallel operation at the moment. Synchronous Parallel Operation with UCTE system is planned to establish at the end of 2006.

NON SYNCHRONOUS PARALLEL CONNECTIONS:
Only one direction can be used at the same time. 3 methods are possible:

1. Unit Direction: Generation unit in Turkish power system is connected to neighbouring power system or Generation unit in neighbouring power system is connected to Turkish power system. TURKEY->NEIGHBOURING COUNTRY and NEIGHBOURING COUNTRY-> TURKEY directions are possible
2. Passive Island: Part of passive neighbouring power system is connected to Turkish power system. Only TURKEY->NEIGHBOURING COUNTRY direction is possible.
3. DC Connection: Establishing a DC back to back station

Starting from 2006, explicit auction will be used on all Turkish borders for non-synchronous operation.

ARMENIA: Non Synchronous Operation. The line is disconnected. Until installation of 220/154 kV transformer at border Turkish substation, any exchange is not possible.

AZERBAIJAN (Nahcivan): Non Synchronous Operation. Inter-governmental agreement exists for long term. Passive Island method is being used for TURKEY->AZERBAIJAN direction in 50 MW, 35-40 million kWh/month.

BULGARIA: Non Synchronous Operation. The lines are disconnected. Interconnection can be used until the synchronous parallel operation is realized. NTC for TURKEY->BULGARIA (unit direction method): 700 MW, NTC for BULGARIA->TURKEY (unit direction method): 550 MW. NTC values would change after connection to UCTE.

GEORGIA: Non Synchronous Operation. The line is disconnected. There are new applications for using the interconnection. Explicit Auction will be used starting from 2006. NTC for TURKEY-> GEORGIA (unit direction method): 150 MW. NTC for GEORGIA->TURKEY (unit direction method): 165 MW. There is a new proposal to build a 400 kV DC back to back station which will be connected to Ahalsike S/S (Georgia) and Borcka S/S (Turkey).

IRAN: Non Synchronous Operation. Long Term Contract exists. Passive Island method is being used for IRAN->TURKEY direction. There are new applications for using same interconnection. Explicit Auction will be used starting from 2006.

IRAQ: Non Synchronous Operation. Passive Island method is being used for TURKEY->IRAQ direction in 100 MW, 350-400 million kWh/year. Currently “First come first served” method is being used. There are new applications for using same interconnection. Explicit Auction will be used starting from 2006 for TURKEY->IRAQ direction. IRAQ-> TURKEY direction is not possible.

SYRIA: Non Synchronous Operation. The line is disconnected. There are new applications for using the interconnection. Explicit Auction will be used starting from 2006. NTC for SYRIA->TURKEY: 230 MW (unit direction method).
IV. Descriptions of applied allocation methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Analysis, Observations &amp; Financial Implications</th>
</tr>
</thead>
</table>
| Priority List (First-Come First-Served) | The marketer gets capacity in a priority order until the whole ATC is allocated. Examples of priority criteria are: chronological order, past use of capacity, etc. Transparency limited by confidentiality of trade | · Selection based on capacity used ratio and not on economic efficiency  
· Not market based  
· New entrants less favoured (discriminated) although it can also help to mitigate market power exercise if limitations (maximum purchase) are imposed  
· Absence of efficient cross-border economic signals for generation/transmission investment  
· No pan European incentive for social welfare maximisation and least-cost operation  
· Marketers capture congestion rent and pay capacity price (usually null or low)  
· Favours exporters (or importers) with a large portfolio of customers (suppliers)  
· Selection based on capacity used ratio and not on economic efficiency |
| Pro-rata Rationing | Capacity is allocated in proportion to requests if they exceed the announced ATC | · Non-discriminatory  
· Not market based  
· No economic signal  
· Transparent  
· Simple implementation when compared to other mechanisms  
· The capacity is arbitrarily priced by the Regulatory authorities at a level not equal to the efficient economic value (which is the 'opportunity cost' of trading between the countries)  
· No efficient cross-border economic signals for generation/transmission investment  
· No pan European incentive for social welfare maximisation and least-cost operation  
· Marketers capture congestion rent and pay capacity price (usually low)  
· Individual size of transmission right delivered inconsistent with standard trading products  
· Open to abuse by submission of excessive requests  
· Selection based in proportion to requests (if they exceed the announced ATC) and not on economic efficiency |
| Explicit Auctions (ATC based) | The seller (TSO) determines ex ante ATC considering security analysis, accepts bids from potential buyers and allocates the capacity to the ones that value it the most | · Economic signal  
· Non-discriminatory  
· Transparent  
· Often a joint co-ordinated mechanism between the concerned TSOs  
· Several significant implementation features: uniform clearing price vs. pay as bid  
· Different allocation products and frequencies (Y, M, D)  
· With perfect market assumption  
· Price reflects cost of using capacity to the social welfare  
· Internal and cross-border trade present the same profit opportunity for participants  
· Efficient signals to market players for the operation and the value of the network |
| Implicit auctions (ATC based) | The TSO/Power Exchange (typically in import area) (TSO) determines ex ante ATC considering security analysis, accepts energy bids from potential buyers outside the area and accepts offers with lowest price for the electricity. Capacity is implicitly allocated to successful bidders. | · Economic signal  
· Non-discriminatory  
· Transparent  
· Usually requires a Power Exchange in import area  
· Applicable for day-ahead and intra-day time horizons  
· Internal and cross-border trade present the same profit opportunity for participants  
· Efficient signals to market players for the operation and the value of the network  
· No separate trade with capacity and then with electricity |