SCC – Present and future

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SoS, SG for Electricity
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PART 1 – SCC

- Brief company history
- Services
- Application and Specialized Tools
- Future development
Region of SEE was not covered by existing RSC(I)s (TSCNET, CORESO).

Following the form defined by ENTSO-E’s Policy Paper “Core strategy for TSO Coordination” and European NC/GL, SEE TSOs recognized the need for regional cooperation.

April 2015: EMS, CGES and NOSBiH established SCC as the first RSC(I) in SEE, based in Belgrade.

1st of August 2015: SCC started operational activities.
Services and main activities:

1. Validation of DACF and IDCF Continental Europe (CE) IGMs/creation and delivery of CE CGMs
2. N-1 security analysis for TSOs founders of SCC
3. Test Run of daily NTC Calculations for TSOs founders of SCC
4. Contribution to SEE Maintenance Group through model creation and N-1 security analysis
5. Participation in ENTSO-E projects SMTA & OPC
Additional services

- SCC is open to provide additional services to TSO members as well as to other parties like ENTSO-E.
- The example of such a service is analysis of loop flow indicators for Continental Europe based on PTDF data for 2015, on an hourly resolution (for bidding zone and country levels) done for ENTSO-E upon their request.
Application and Specialized Tools

- TNA (Transmission Network Analyzer)

- QAS Portal (Quality Assessment Service)
Future development

- SCC plans to develop the following services:
  - Upgrade of software tools for IGM validation and CGM merging process according to latest ENTSO-E EMF (European Merging Function) requirements.
  - Extension of Security analysis with Remedial actions functionality,
  - Coordinated Capacity Calculations,
  - Outage Planning,
  - System Adequacy Assessment.
Upgrade of SW for IGM validation and CGM creation according to EMF

- All RSCs have to upgrade their software according to ENTSO-E EMF requirements
  - Core functions required for IGM and CGM validation and merging already supported by TNA tool
  - CGMES compliant tool (import and merge supported)
  - Upgrade of validation according to ENTSO-E QoD for CGMES in progress
  - Non-functional EMF requirements will be implemented within the project that is scheduled to start in the beginning of 2017
  - Additional requirements will be also implemented within same project

12/13/2016
Security analysis including Remedial Actions

- Actual practice in SEE: Remedial Actions are agreed upon on bilateral agreement between TSOs.
- Different models of security analysis that include RA are being used in Coreso and TSCNET.
- ENTSO-E activities towards defining of Pan-European Remedial Action coordination process.
- Necessary close cooperation among all RSCs and especially between neighboring RSCs.

12/13/2016
**OPC – From SEE to Pan-European concept**

**Concept before 2016**
- Based on expert's experiences
- Security analysis:
  - during preparation of Annual Maintenance Plan
  - if some important changes happen (in relation to Annual Plan)

**Concept in 2016**
- Based on expert's experiences
- Security analysis:
  - during preparation of Annual Maintenance Plan
  - Regular N-1 security analysis performed by SCC

**Future Concept**
- SEE OPC based on uniform Pan-European OPC concept and common SW

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**SEE TSOs**
- IGMs
- CGMs
- SEE TSOs

**SEE TSOs**
- All TSOs
- All RSCs

**SEE RSCs**
- SEE TSOs
Deterministic approach

- Remaining capacity RC
- Net Transfer Capacity NTC

Control area can:

- Import energy
- Export energy
- Be a transit area

All transactions are limited by NTC values.

SMTA Winter Dry Run Report 2015-2016

High Level Business Process document

12/13/2016
PART 2 - COORDINATING CAPACITY CALCULATION

- EC Regulations
- Regions for Coordinating Capacity Calculation (CCC)
- Methods of Capacity Calculation
- CCC in SEE region
- CCC in SCC
- CCC– SCC possibilities and next steps
- Conclusion
EC Regulations

EC Regulations

- Capacity Allocation and Congestion Management (CACM)
  
  **Subject matter and scope**
  
  This Regulation lays down detailed guidelines on cross-zonal capacity allocation and congestion management in the day-ahead and intraday markets, including the requirements for the establishment of common methodologies for determining the volumes of capacity simultaneously available between bidding zones, criteria to assess efficiency and a review process for defining bidding zones.

- Forward Capacity Allocation (FCA)
  
  **Subject matter and scope**
  
  This Regulation lays down detailed rules on cross-zonal capacity allocation in the forward markets, on the establishment of a common methodology to determine long-term cross-zonal capacity, on the establishment of a single allocation platform at European level offering long-term transmission rights, and on the possibility to return long-term transmission rights for subsequent forward capacity allocation or transfer long-term transmission rights between market participants.
ENTSO-E’s has submitted the proposal for Capacity Calculation Regions (CCRs) in Europe to ACER

ACER has defined CCRs (November 17, 2016), following should be pointed out:
• CCR 3: Core (merging of CWE and CEE CCRs into one CCR)
• CCRs shall include a bidding zone border between Germany/Luxembourg and Austria in defining the bidding zone borders
Specificity of SEE:

- EU TSOs (mandatory implementation of CACM and FCA)
- NON-EU TSOs ("early implementation" of CACM and FCA?)

SEE Coordinated Capacity Calculation methodology and business process - to be defined and developed.

Cooperation between SEE RSCs is necessary.

Coreso and TSCNET future common Coordinated Capacity Calculations for Core CCR (based on MoU of CWE and CEE TSOs) could be an example for SEE.

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Methods of Capacity Calculation

- NTC(ATC)-based calculation and allocation is widely applied across Europe (in SEE at all borders)

- Flow-based approach is the main future option for strongly meshed grids (as Continental Europe is, including SEE)

- Flow-based calculation and FB-Market Coupling applied in Central West Europe since May 2015

- Further spreading FB approach is expected
Methods of Capacity Calculation

NTC, i.e. ATC-based:
single program constraint per border for commercial transactions

Flow-based (PTDF/MF):
set of physical constraints MF per network elements, and sensitivity factors (PTDF)
Test run process on NTC capacity calculation is being performed every Monday on D2CF models of SEE region for Wednesday.

Results of NTC calculation is delivered to TSOs.

Aim is gaining of experience for this process.
SCC has application software for NTC (Y/M) and NTC for day-ahead allocation, tailored to D-2 calculation process (automated calculation for 24 hours)

SCC is testing 24 hours automatic NTC calculation, for all borders of SCC TSOs

SCC has application software for Flow-based capacity calculation solution
SCC – 24h automatic NTC calculation

### SCC 24h NTC Calculation

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### Scenario: 20161116_NTC_Model: 20161116_1030_F03_0300

### Calculated parameters

- **NTC**: 112.0 [MW]
- **NTF**: -287.99 [MW]
- **BCE**: -288.0 [MW]
- **DMmax**: 500.0 [MW]
- **PTDFmax**: 99.99688 [%]

### Export methods:

- Proportional To Reserve (6pG)
- Proportional To Engagement (6pG)
- Proportional To K
- Generation Shift Lists

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In cooperation with its TSOs, SCC is developing application software for automatic deployment of Remedial Actions into contingency analyses and NTC calculation

SCC is prepared and ready to start providing its services as Capacity Calculation Calculator when requested by potential users

Especially, time-demanding 24xNTC processes is suitable to be transferred to RSC

SCC is ready to cooperate with other RSC(I)s on regional as well as on pan-European level

SCC has skilled personnel constantly in cooperation with TSO experts

Next steps – awaiting TSOs decisions and requests

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Conclusion

- SCC has developed procedures and tools, and trained engineers to perform capacity calculations for TSOs both:
  - NTC-based (as currently applied in SEE)
  - and Flow-based (as obvious target model)

- SEE Coordinated Capacity Calculation methodology and business process have to be defined and developed.

- There is need for close cooperation between SEE TSOs and RSCs.

- TSOs, ENTSO-E, EnCS, SEE CAO and RSC(s) can jointly facilitate further development and coordination of Capacity Calculation and Allocation procedures in SEE
Thank you for your attention!

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