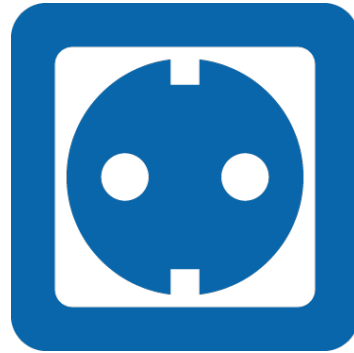




ACER-ECRB Workshop: 70% Minimum Capacity

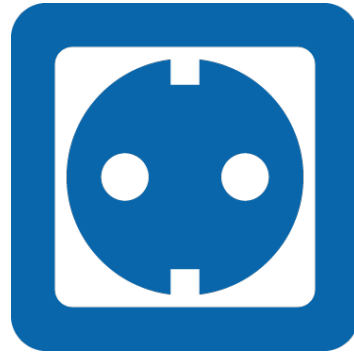


Regulation 2019/943

Relevant Provisions of Regulation 2019/943

Sets 70% as minimum capacity to be made available for cross-zonal trad. Applicable from 1 January 2020.

- Entered into force 4 July 2019
- Provisions applicable from 1 January 2020
- Distinguishes between
 - **Coordinated net transfer capacity (CNTC)** cross-zonal capacity calculation (Article 16(8)(a)), and;
 - **Flow-based** cross-zonal capacity calculation (Article 16(8)(b))
- Requires that at least 70% are offered
 - Maximisation principle still applies → 70% are not a ceiling – but a floor!
- Up to 30% can be used for reliability margins, loop flows and internal flows.
 - These flow types are not defined further.



ACER Recommendation 01/2019

ACER Recommendation No 01/2019 – Basic Principles

Describes monitoring of capacity made available for cross-zonal trade. F_{max} serves as reference.



- Issued on 8 August 2019
- Regardless of whether flow-based or CNTC cross-zonal capacity calculation, monitoring should focus on critical network elements (CNEs) under contingency (CNECs) used in capacity calculation
 - CNECs hold information on operational security limits (F_{max}), which serve as the reference for 70%
- Motivation: CACM GL requires both flow-based and CNTC to be based on CNECs (Article 29)
- Focuses on data available once capacity calculation methodologies (CCMs) pursuant to CACM GL are implemented
 - Core Day-Ahead and Intraday CCM serves as a role model
- Not addressed:
 - Methodology for monitoring capacity made available before CCMs are implemented and data is available (e.g. bilateral NTC calculation not based on CNECs)
 - Allocation constraints (e.g. ramping constraints on HVDC interconnectors)

ACER Recommendation No 01/2019 – Some Detail

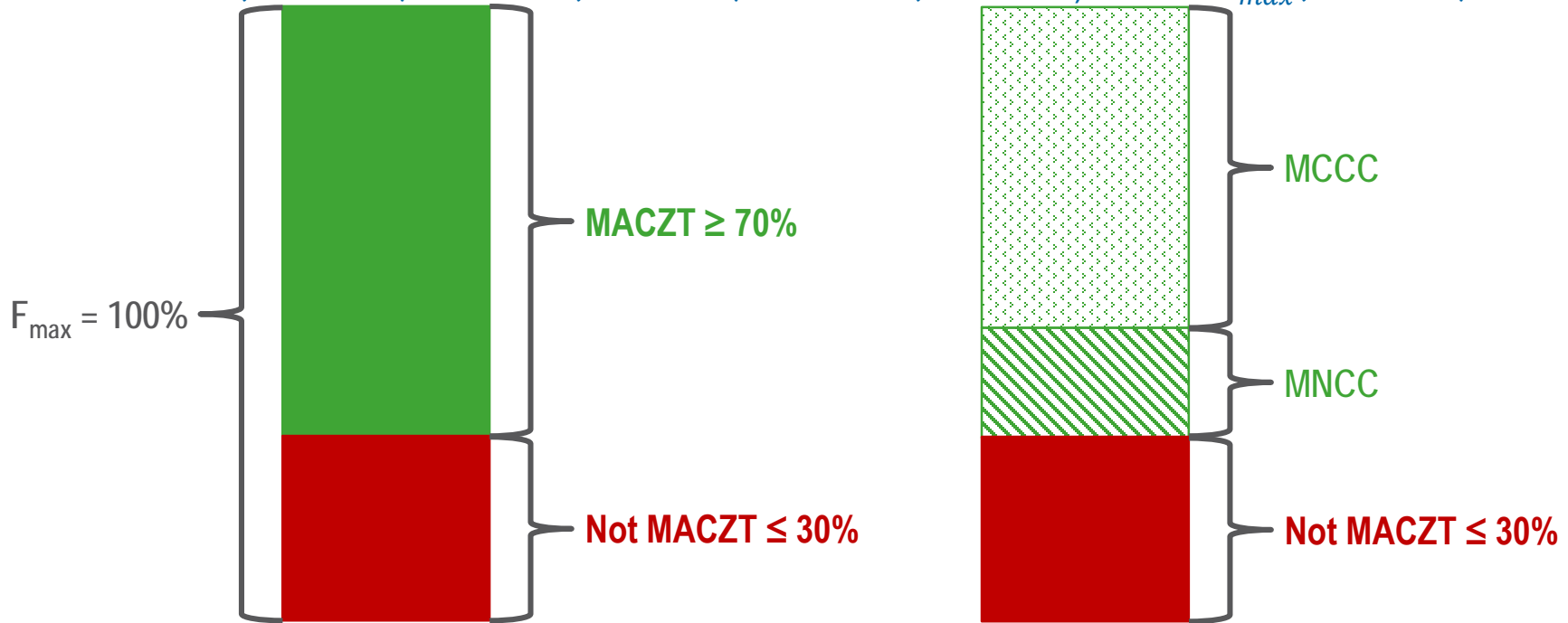
Two components make up the margin considered for assessing 70%.

- The aim is to determine the “margin available for cross-zonal trade” (**MACZT**)
- **MACZT** is made up of two components:
 - “margin from coordinated capacity calculation” (**MCCC**), and;
 - “margin from non-coordinated capacity calculation” (**MNCC**)
- “**Coordination areas**” are sets of bidding zone borders, for which cross-zonal capacity calculation is performed in a **coordinated manner** (such as CWE, Italy North, or bilateral NTC)
- **MCCC** and **MNCC** are calculated for
 - every CNEC, and;
 - every market time unit (MTU)
 - in all coordination areas
- $MACZT(CC\ MTU) = MCCC(CC\ MTU) + MNCC(CC\ MTU) \geq 70\% F_{max}(CC\ MTU)$

ACER Recommendation No 01/2019 – Illustration

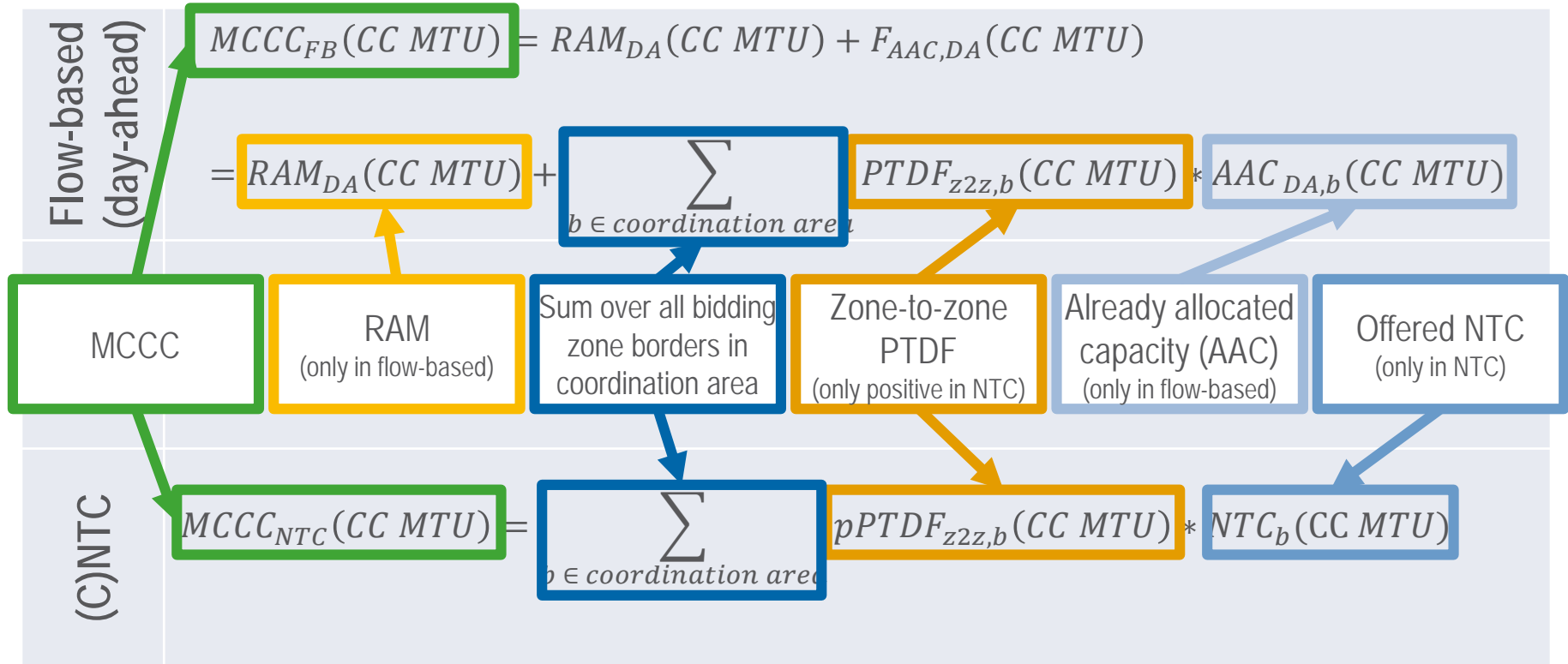
MACZT is comprised of two parts: MCCC and MNCC.

- $MACZT(CC\ MTU) = MCCC(CC\ MTU) + MNCC(CC\ MTU) \geq 70\% F_{max}(CC\ MTU)$



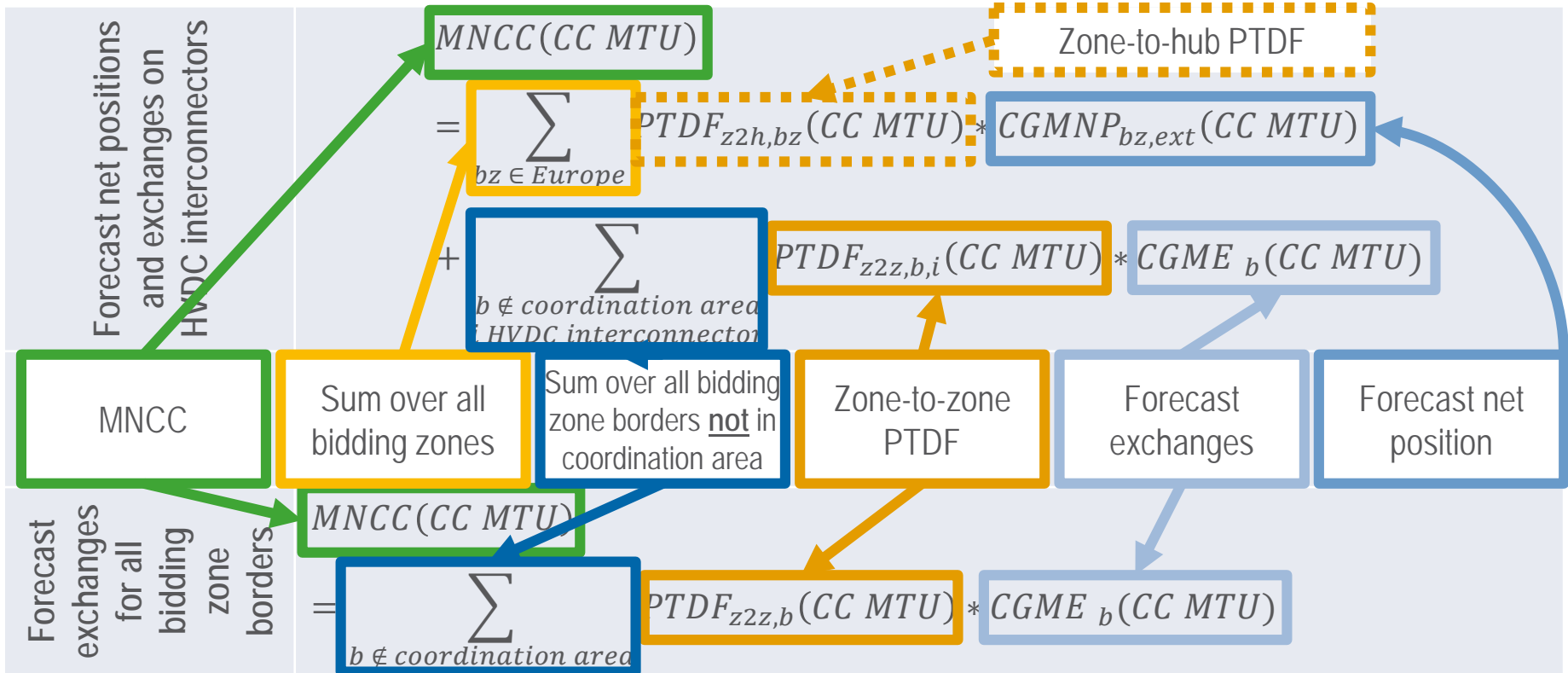
ACER Recommendation No 01/2019 – MCCC

Computation per CNEC and Market Time Unit (MTU). Already allocated capacity considered.



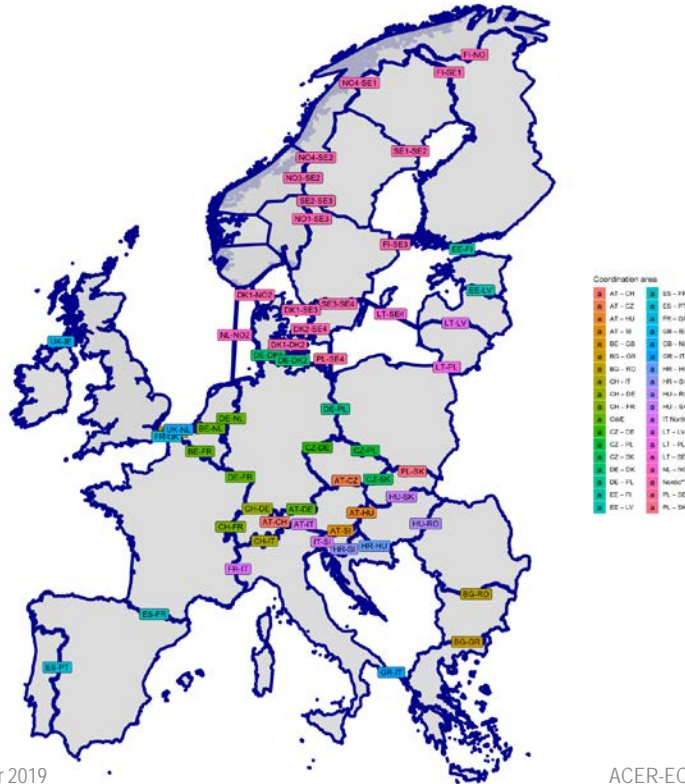
ACER Recommendation No 01/2019 – MNCC

Computation per CNEC and Market Time Unit (MTU). Forecast exchanges not readily available.

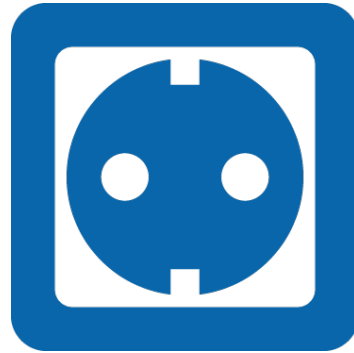


ACER Recommendation No 01/2019 – Coordination Areas

Computation of MACZT requires definition of coordination areas.



- State of play:
 - Few coordination areas with more one bidding zone border:
 - CWE
 - Italy North
 - (Nordic)
 - Bilateral NTC calculation dominant
- Coordination areas are going to correspond to capacity calculation regions, once capacity calculation methodologies are implemented

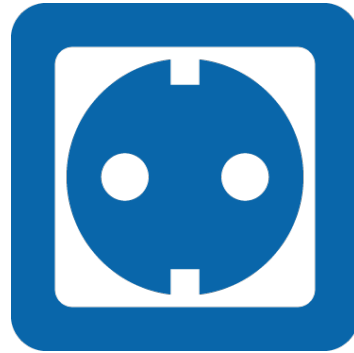


Third Countries

Consideration of 3rd Countries

Basic principles laid down in letter from EC.

- EC letter dated 16 July 2019
 - *“... The Commission therefore considers that consideration of third country flows in capacity calculation should be possible on the condition that an agreement has been concluded **by all TSOs of a CCR with the TSO of a third country.** ...”*
 - *“The final agreement should be fully in line with EU capacity calculation principles and rules and cover at least the following:*
 - 1) *consideration of internal third country constraints for intra-EU capacity calculation,*
 - 2) *consideration of EU internal constraints for capacity calculation on the border with third country, and*
 - 3) *cost-sharing of remedial actions”*
 - If such an agreement is struck, flows from/to 3rd countries can be taken into account when assessing 70%
- Discussions on ‘technical agreement’ with Switzerland ongoing



Example

Pleinting - St. Peter 258

Cross-zonal CNE on DE-AT bidding zone border. Observe: CNE is directed.

- CNE:

- Pleinting - St. Peter 258

- Associated contingencies:

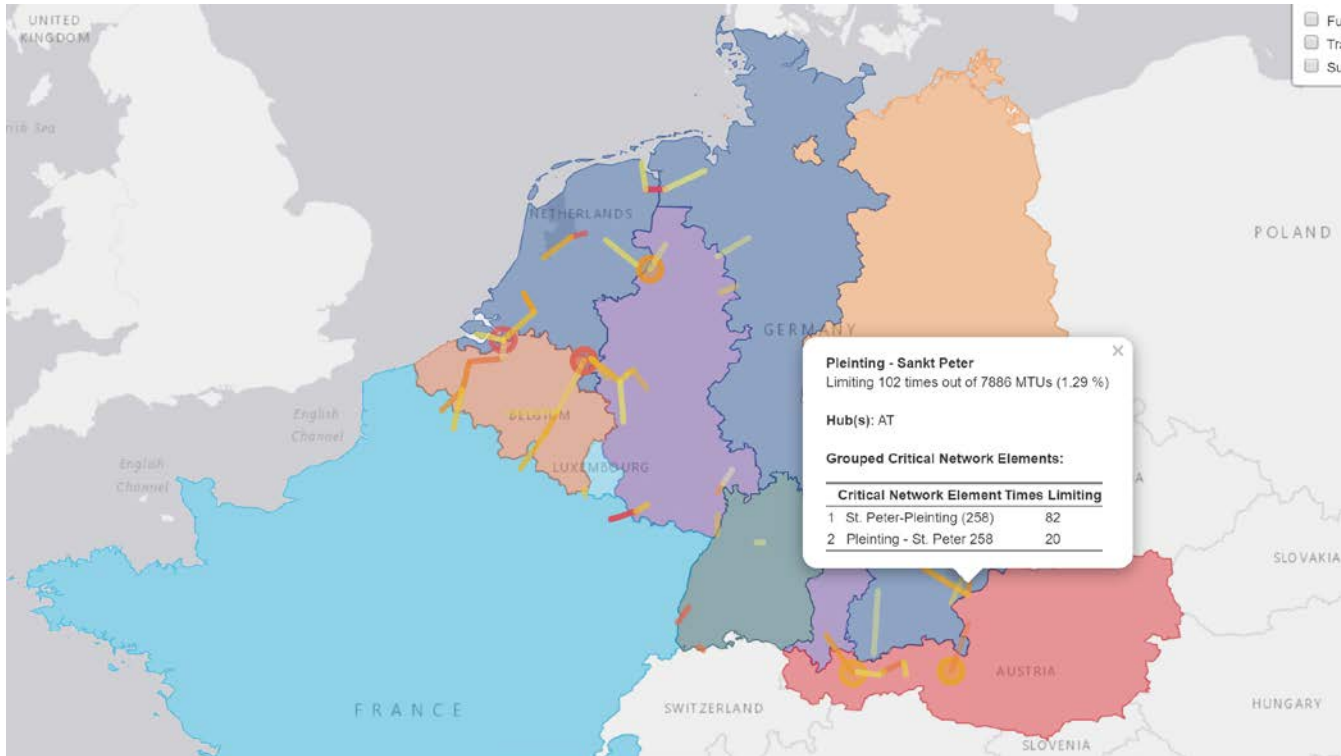
- (BASECASE)

- Simbach - St. Peter
- Pirach - St. Peter
- Schwandorf – Plattling
- Duernrohr – Kronsdorf
- Etzersdorf – Kronsdorf
- Tauern PST



Pleinting - St. Peter 258

Assigned to coordination area CWE. Occasionally limiting exchanges in CWE in day-ahead market coupling.



- Comprised of bidding zone borders:
 - AT-DE
 - BE-FR
 - BE-NL
 - DE-FR
 - DE-NL
- Only coordination area with operating flow-based capacity calculation and allocation

Pleinting - St. Peter 258 – MCCC

Example data for 25 September 2019 MTU 9. Computation of MCCC normalised by F_{max}

$$MCCC_{FB}(CC\ MTU) = \underbrace{RAM_{DA}(CC\ MTU)}_{\text{RAM} \sim 310 - 463\ MW} + \underbrace{\sum_{b \in \text{coordination area}} PTDF_{z2z,b}(CC\ MTU) * AAC_{DA,b}(CC\ MTU)}_{\text{Long-term nominations} = 0}$$

Contingency	F_{max}	RAM	AT-DE	DE-AT	BE-NL	NL-BE	DE-NL	NL-DE	BE-FR	FR-BE	FR-DE	DE-FR	MCCC
BASECASE	656	459	0	0	0	0	0	0	0	0	0	0	0.70
Simbach - St. Peter 233/230	656	459	0	0	0	0	0	0	0	0	0	0	0.70
Simbach - St. Peter 234/230	656	459	0	0	0	0	0	0	0	0	0	0	0.70
Pirach - St. Peter 256	656	456	0	0	0	0	0	0	0	0	0	0	0.70
Schwandorf - Plattling 465	656	448	0	0	0	0	0	0	0	0	0	0	0.68
Duernrohr - Kronsdorf 433	656	454	0	0	0	0	0	0	0	0	0	0	0.69
Etzersdorf - Kronsdorf 434A	656	463	0	0	0	0	0	0	0	0	0	0	0.71
Tauern PST (TAPST)	656	310	0	0	0	0	0	0	0	0	0	0	0.47

Pleinting - St. Peter 258 – MNCC

Example data for 25 September 2019 MTU 9. Computation of MNCC normalised by F_{max} .

$$\boxed{MNCC(CC\ MTU)} = \sum_{b \notin \text{coordination area}} \underbrace{PTDF_{z2z,b}(CC\ MTU)}_{\text{Zone-to-zone PTDFs}} * \underbrace{CGME_b(CC\ MTU)}_{\text{Day-Ahead NTCs (used as proxy)}}$$

Contingency	F_{max}	RAM	AT-CZ	...	SI-SK	AT-CZ	...	SI-SK	MNCC
BASECASE	656	459	PTDF	...	PTDF	500	...	0	0.50
Simbach - St. Peter 233/230	656	459	PTDF	...	PTDF	500	...	0	0.31
Simbach - St. Peter 234/230	656	459	PTDF	...	PTDF	500	...	0	0.31
Pirach - St. Peter 256	656	456	PTDF	...	PTDF	500	...	0	0.33
Schwandorf - Plattling 465	656	448	PTDF	...	PTDF	500	...	0	0.37
Duernrohr - Kronsdorf 433	656	454	PTDF	...	PTDF	500	...	0	0.07
Etzersdorf - Kronsdorf 434A	656	463	PTDF	...	PTDF	500	...	0	0.25
Tauern PST (TAPST)	656	310	PTDF	...	PTDF	500	...	0	0.34

Pleinting - St. Peter 258 – MACZT

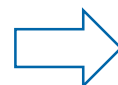
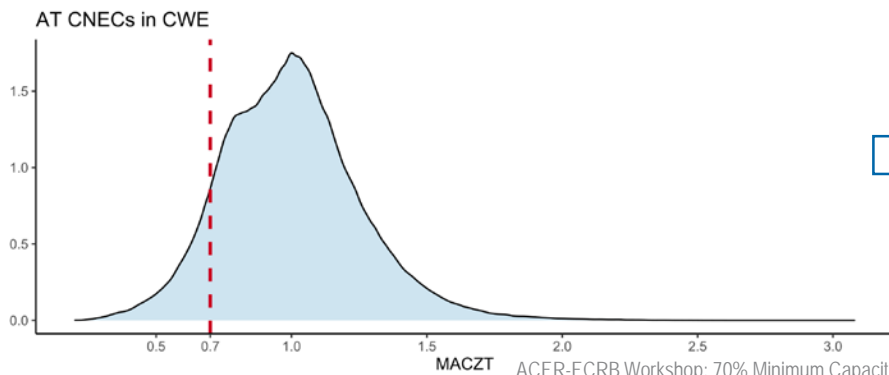
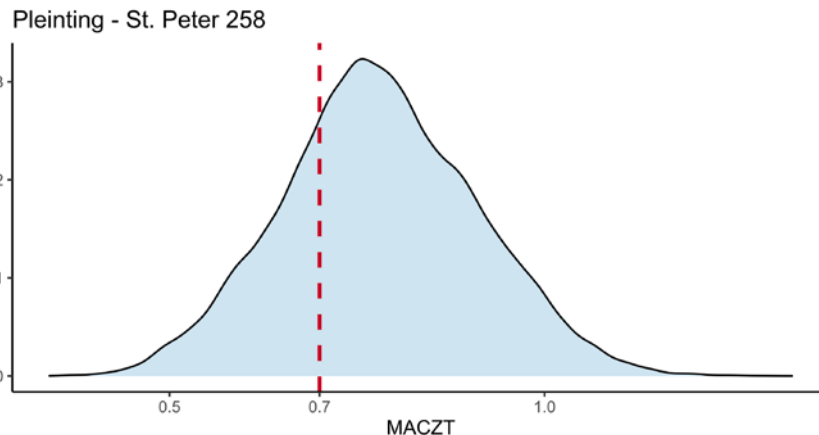
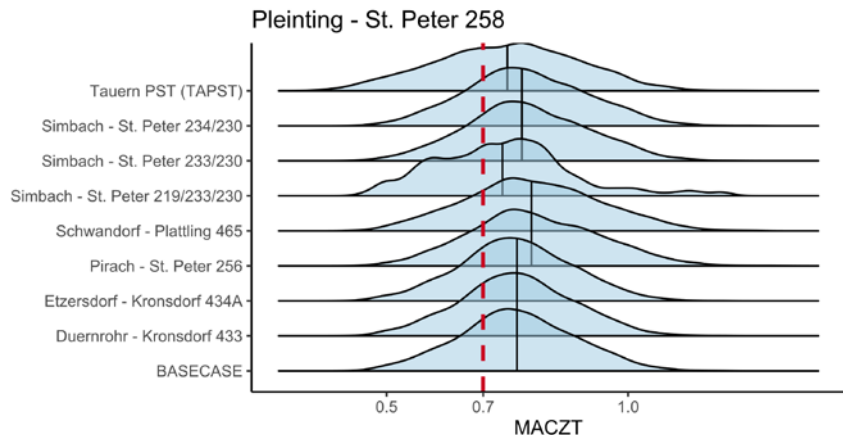
Example data for 25 September 2019 MTU 9. Finally: MACZT normalised by F_{max}

$$\boxed{MACZT(CC\ MTU)} = \underbrace{MCCC(CC\ MTU)}_{MCCC} + \underbrace{MNCC(CC\ MTU)}_{MNCC} \geq 70\% F_{max}(CC\ MTU)$$

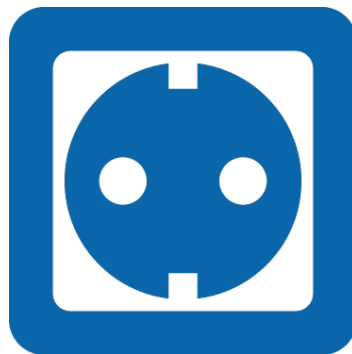
Contingency	F_{max}	RAM	MCCC	MNCC	MACZT
BASECASE	656	459	0.7	0.50	1.20
Simbach - St. Peter 233/230	656	459	0.7	0.31	1.01
Simbach - St. Peter 234/230	656	459	0.7	0.31	1.01
Pirach - St. Peter 256	656	456	0.7	0.33	1.03
Schwandorf - Plattling 465	656	448	0.68	0.37	1.05
Duernrohr - Kronsdorf 433	656	454	0.69	0.07	0.76
Etzersdorf - Kronsdorf 434A	656	463	0.71	0.25	0.96
Tauern PST (TAPST)	656	310	0.47	0.34	0.81

Aggregation

Aggregation over time on CNEC level → CNE → All CNECs of TSO/Member State/ coordination area



- TSO
- Member State/Country
- Coordination area



Outlook

Challenges ahead

Data provision and quality to be improved. More applicable once CCMs and CGM is in place.

- **Data provision**
 - ENTSO-E Transparency Website and JAO do not provide all required data (e.g. forecast exchanges, z2z PTDFs for coordination areas other than CWE)
- **Applicability**
 - Several CCMs implemented before CACM GL and used today are not based on CNECs
 - ACER Recommendation based on data which is (partly) first available once CCMs are implemented
 - Forecasts and assumptions in capacity calculation first fully aligned among all TSOs when CGM is implemented
- **Third Countries**
 - Discussions on agreement with CH ongoing among EC and neighbouring Member States
 - **When are you joining? You may already want to start hiring data analysts. 😊**

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