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Core Long Term Capacity Calculation Methodology

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Public Consultation WORKSHOP

9 July 2021, 10:00 - 11:15

- please keep mic muted and camera off
- you may pose questions via chat
- all attendees will view all questions and replies in chat
- if further clarifications are needed, you will be asked to open your mic and comment
- Q&A session is after each agenda item
- the slides will be shared with you

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AGENDA

	Topic	Time
1	Opening	10.00 - 10.05
2	General provisions of Core LT CCM	10.05 - 10.15
	Q&A, discussion	
3	Capacity calculation inputs	10.15 - 10.30
	Q&A, discussion	
4	Capacity calculation and validation	10.30 - 10.50
	Q&A, discussion	
5	Fallback, data, implementation	10.45 - 11:00
	Q&A, discussion	
6	Q&A on other topics, discussion, closing	11.00 - 11.15

Timeline

Core Long Term Capacity Calculation Methodology (**Core LT CCM**) pursuant to Article 10 of the FCA Regulation

Apr
- **Referral to ACER: 30 April**

May
- Kickoff; Initial discussions with Core NRAs and TSOs

June-Aug
- Working meetings with NRAs and TSOs; drafting
- **Public consultation 4 weeks (5 – 31 July); public workshop (9 July)**

Sep
- Hearing with NRAs and TSOs, 2 weeks (6 - 19 Sep)

Oct
- Elelctricity Working Group advice on 6-7 October
- Board of Regulators on 27 October

Nov
- **Deadline for the Decision: 3 November**

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General provisions of Core LT CCM

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General provisions of Core LT CCM

- Core LT CCM shall be applied for the yearly and monthly timeframe
- It shall apply the flow-based (FB) approach
- It shall apply the multiple scenarios (Common Grid Models) for calculation of FB parameters
- It shall provide the FB parameters (PTDF/RAM) for explicit flow-based auctions with Options

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Topic: Application of the flow-based approach

- ACER supports the application of a FB approach, as in line with the FCA and CACM Regulation

- FB approach: appropriate for meshed networks such as the Core CCR and consistent with the approach applied in Core Day-ahead CCM (Core DA FB goes-live Feb 2022)

- The efforts to implement the Coordinated NTC approach in Core CCR have failed:
  - no agreement how to split the interdependent cross-zonal capacities among Core borders
  - For FB such split is not necessary: FB allocation determines the volume of allocated capacities per each border based on maximisation of economic surplus

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Topic: Application of the flow-based approach

- In order to apply the FB approach on LT level, ACER requested by all TSOs to amend the documents related to FCA Regulation:
  - requirements for the single allocation platform (SAP)
  - harmonised allocation rules (HAR)
  - congestion income distribution methodology (CiD)
  - methodology for sharing costs for firmness and remuneration of LT transmission rights (FRC)

General provisions of Core LT CCM

Q&A (5-10’)

Provide your questions on the subject in the chatbox

We will group the questions and try to provide an answer and may ask to further explain if necessary.

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Capacity calculation inputs

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Capacity calculation inputs

- Critical Network Elements and associated Contingencies (CNEC) dedicated slide provided →
- Allocation (external) constraints dedicated slide provided →
- Common Grid Models (Scenarios) dedicated slide provided →
- Operational Security Limits (Fmax)
- Reliability Margin (FRM)
  - The FRM values from DA level shall be applied, under the assumptions related to the Common Grid Models
- Generation Shift Keys (GSK)
- Remedial Actions (RA)
  - The coordinated optimisation of RA shall not be applied for LT CC, due to the uncertainty of RA forecasting at a long timeframe
- HVDCs at Core borders
  - The Evolved Flow Based (EFB) principles shall be applied for cross-border HVDCs, as in the Core DA

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Topic: Selection of critical network elements

- The initial TSOs Proposal allowed the TSOs to include additional internal CNECs in the LT CC, on top of those defined in the initial day-ahead CNEC list
- As argued by the Core TSOs:
  - required to avoid negative financial consequences for the TSOs in case of over-allocation at LT level, and the need to accommodate such LTA at the day-ahead level

- **ACER is of the view that the LT CNEC list should be consistent with the DA CNEC list**
  - According to the Core DA CCM, day-ahead validation cannot lower the remaining available margin (RAM) values below the level required to accommodate the long-term allocation. As such, ACER sees no financial risk to the TSOs
  - ACER also considers it unlikely that LT over-allocate and thus endanger the security, since it applies conservative approach in simultaneous application of constraints by all scenarios, and no-netting of counter flows

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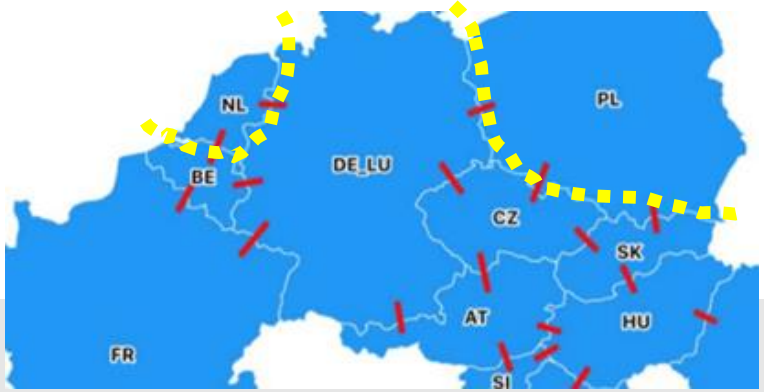
Topic: Application of allocation (external) constraints

- The LT CCM provides a possibility for TSOs to apply the allocation constraints (external constraints, i.e. export/import limits) on top of the flow-based parameters

- ACER notes that external constraints are currently exercised by TenneT (the Netherlands) and PSE (Poland) in the DA timeframe
  - ACER understands that as long as the external constraints are applied at the day-ahead level, they are also required at the long-term level, in order to accommodate the day-ahead external constraints and avoid over-allocation at the long-term level
  - ACER reminds that external constraints (at DA) can be applied only if there is no other alternative to efficiently model the system limitations (through FB parameters)
  - ACER also proposes to strengthen the monitoring of the applied values of external constraints



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Topic: Common Grid Models (Scenarios)

- ACER's position: standard LT scenarios (CGMs) should be used pursuant to CGM Methodology (CGMM), for the Core LT CCM go-live
  - Yearly CGMs (8 per year)
  - Monthly CGMs (2 per month)
- **ACER aims for the coordinated use of LT CGMs across Europe, as provided in CGMM**
- The situations where the temporary of general improvements might be needed:

Issue	Comment	Proposal
Some CGMs are not yet implemented	E.g. monthly CGMs are missing	TSOs can establish the temporary regional procedure To be applied until the CGMM-compliant solution is implemented
TSOs require better granularity of CGMs for LT CC	Y: 8 CGMs/y → 24 CGMs/y M: 2 CGMs/m → 2 CGMs/week	The temporary regional procedure is possible here as well, ONLY IF: 1. This does not endanger the go-live date 2. The temporary solution is low-effort and low-data 3. The TSOs and ENTSOE would ASAP forward this procedure as CGMM amendment, to become EU-wide
TSOs require actual planned topology per timestamp implemented at CGMs	Actual CGMM models apply outage only if element is out for the whole period	

Q&A (5-10’)

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Capacity calculation and validation

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Capacity calculation and validation

- Calculation:

	Calculation	Comment
PTDF calculation	$\mathrm{PTDF}_{\mathrm{zone-to-slack}} = \mathrm{PTDF}_{\mathrm{node-to-slack}} * \mathrm{GSK}_{\mathrm{node-to-zone}}$ $\mathrm{PTDF}_{\mathrm{zone1 \rightarrow zone2}} = \mathrm{PTDF}_{\mathrm{zone1-to-slack}} - \mathrm{PTDF}_{\mathrm{zone2-to-slack}}$	Linearized calculation of PTDFs (DC); PTDF sensitivity threshold is <u>not</u> foreseen (to omit the small PTDFs during allocation)
Reference flows	$\vec{F}_{0,\mathrm{Core}} = \vec{F}_{\mathrm{ref}} - \mathrm{PTDF}_{\mathrm{f}} \overrightarrow{\mathrm{Exchanges}}_{\mathrm{ref,Core}}$	$\vec{F}_{\mathrm{ref}}$ shall be calculated with AC Load Flow by default
Remaining Available Margin (initial)	$\mathrm{RAM}\ \ (\mathrm{initial}) = \mathrm{Fmax}\ - \mathrm{FRM}\ \ - \vec{F}_{0,\mathrm{Core}} - \mathrm{F}_{\mathrm{AAC}}$	Initial RAM before minRAM implementation
minRAM inclusion	$\mathrm{RAM}\ \ (\mathrm{initial}) + \mathrm{F}_{\mathrm{AAC}} \geq \mathrm{R}_{\mathrm{amr}} * \mathrm{F}_{\mathrm{max_l}} = \mathrm{AMR}$ $\mathrm{AMR} = \max(0;\ \mathrm{R}_{\mathrm{amr}} * \mathrm{F}_{\mathrm{max}}\ - (\mathrm{F}_{\mathrm{max}}\ - \mathrm{FRM} - \mathrm{F}_{0,\mathrm{Core}}) - \mathrm{F}_{\mathrm{AAC}})$	AMR - Adjustment of Minimum RAM dedicated slide provided →
Remaining Available Margin (before validation)	$\mathrm{RAM}_{\mathrm{bv}} = \mathrm{F}_{\mathrm{max}}\ - \mathrm{FRM} - \mathrm{F}_{0,\mathrm{Core}} - \mathrm{F}_{\mathrm{AAC}} + \mathrm{AMR}$	

- Validation: Individual validation - data issues, voltage, reactive power flows, influence of RA

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Topic: Minimum remaining available margin (RAM)

R_{amr} = 20%(Fmax) was the initially proposed level of minRAM

- minRAM: important threshold, ensuring the minimum level of allocation available at LT timeframe
- 20% reflects the current minRAM applied at the day-ahead CWE flow-based approach
- ACER is concerned that this level may likely lead to much lower LT cross-zonal capacities

minRAM	Auctions – flows	Likehood of minRAM utilisation	Consequence
DA level	With Obligations ⇒ allows for netting of counter flows	High	Low minRAM
LT level	With Options ⇒ does not allow for netting of counter flows	Low	Higher minRAM than the one on DA

- ACER investigates the effect of no netting on minimum RAM, and level of offered capacities, and propose a higher minimum RAM value for the LT if possible
- In addition, ACER investigates the options of:
- a) using historical long-term NTCs converted into minimum RAM, or
- b) statistical analysis of day-ahead RAMs ⇒ providing minimum applied DA RAM, to be used for LT minRAM

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Topic: Capacity Calculation outputs

- Final FB parameters: PTDF/RAM after validation
  - Defining “union” of CNECs from all scenarios as a set of constraints to the LT auction

Illustration: Union of RAM&PTDF parameters from all scenarios for Y timeframe

Scenario (Y)	CNEC	RAM	PTDFs			
1 Jan-peak	CNEC 1	950	0.06	0.5	0.2	…
	CNEC 2	900	0.07	0.44	0.22	…
	CNEC 3	500	0.33	0.06	0.3	…
	…	…	…	…	…	…
	CNEC N	1100	0.08	0.06	0.3	…
2 Jan-offpeak	CNEC 1	1100	0.055	0.44	0.22	…
	CNEC 2	910	0.07	0.44	0.22	…
	CNEC 3	520	0.33	0.06	0.3	…
	…	…	…	…	…	…
	CNEC N	1110	0.07	0.06	0.3	…
…	…	…	…	…	…	…
8 Dec-offpeak	CNEC 1	1000	0.06	0.48	0.21	…
	CNEC 2	880	0.07	0.45	0.22	…
	CNEC 3	550	0.23	0.06	0.3	…
	…	…	…	…	…	…
	CNEC N	1110	0.08	0.055	0.29	…

union of constraints from all scenarios at Y timeframe

- The same CNECs are repeated multiple times, but are calculated on the basis of different CGMs
- Presolve function will remove redundant constraints
  - (e.g: CNEC1 from Jan-peak “covers” the CNEC1 in Jan-offpeak)

Q&A (5-10’)

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Review, updates, data and implementation

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Fallback, data, implementation

- Fallback
  - Usage of previous FB parameters (from corresponding timestamp) is foreseen as a fallback in case of implausible FB calculation
- Data publication
  - In general aligned with the Core DA CCM process
- Review, updates, implementation

dedicated slide provided →

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Topic: Implementation timeline and revision

- The TSOs Proposal foresaw the implementation timeline for the LT CCM of up to **5 years**
- The Core NRAs and ACER are of the view that this timescale is excessively long compared to the developments required
- The Core NRAs recommended shorter implementation timeline for the LT CCM and, where possible, application of the already existing experiences/tools
- CWE FB already provides significant experience, and will be extended to the entire Core - Feb22
- **ACER proposal:**
  - The go-live methodology is being designed as simple as possible
  - For this reason, ACER proposed the **go-live within 2.5 years** after issuing the Decision: i.e. monthly auction July 2024 and yearly auction 2025
  - to allow for a subsequent **revision of the methodology 18 months after the go-live**

- Core TSOs have raised numerous concerns about the non-simultaneous switch to flow-based yearly and monthly auctions, so this issue has still been discussed

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Fallback, data, implementation and General (closing) comments

Q&A (…11:15)

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Thank you for your attention.

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