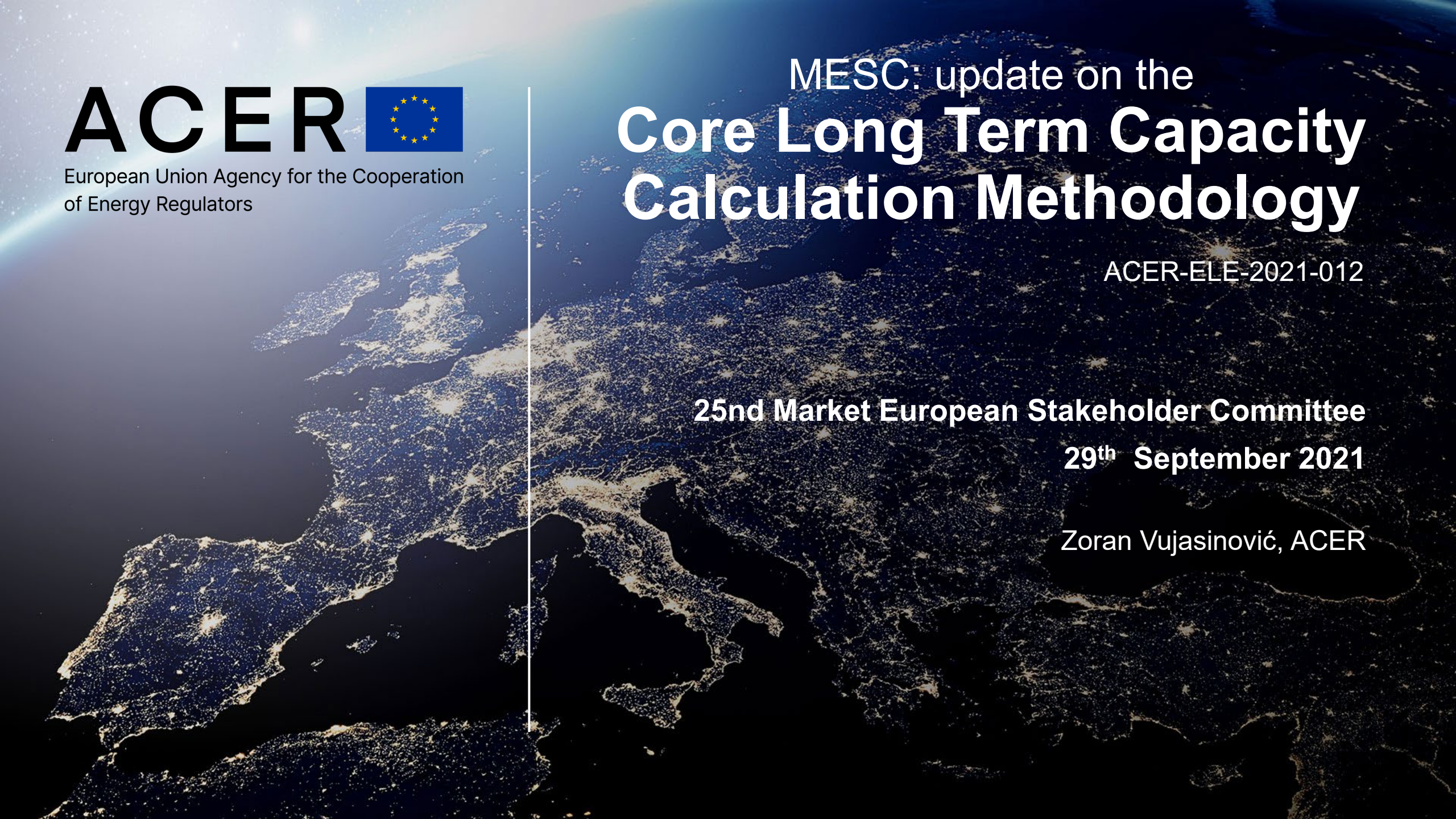

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MESC: update on the

Core Long Term Capacity Calculation Methodology

ACER-ELE-2021-012

25nd Market European Stakeholder Committee

29th September 2021

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Introduction

- The Core Long Term CCM has been referred to ACER in April 202
- The methodology and the decision are due early November 2021

- It shall be applied for the yearly and monthly time frame
- 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

- Proposed implementation timeline: 3 years
  - Yearly auctions for 2025
  - Monthly auctions for Jan-2025

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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

- ACER is of the view that the LT CNEC list should be consistent with the DA CNEC list

  - No financial risk: according to the Core DA CCM, day-ahead validation cannot lower the remaining available margin (RAM) values below the LT allocation level

  - No security risk: unlikely that LT could lead to over-allocation, due to its safe-side approach
    - simultaneous application of union of constraints by all CGMs
    - allocating Options
    - netting of counter flows is not considered
    - besides: the proposed minimum RAM at long term (20% at Y+10% at M) is much lower than the CEP minimum requirement for the day-ahead level (70%)

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Scenarios (Common Grid Models)

- ACER aims for the coordinated use of LT CGMs across Europe, as provided in the CGMM
- In order to accommodate the needs of Core LT CC process, the temporary regional CGM development procedure shall be allowed until the first next CGMM amendment, with respect to:

Issue	Comment
Some CGMs are not yet implemented	E.g. monthly CGMs are missing
TSOs require better granularity of CGMs for LT CC	Y: 8 CGMs/y → 24 CGMs/y M: 2 CGMs/m → 2 CGMs/week The additional CGMs to have flexible timestamp selection
TSOs require actual planned topology per timestamp implemented at CGMs	Actual CGMM models apply outage only if element is out for the whole period

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Capacity Calculation outputs

- Final flow-based parameters are: PTDF/RAM after validation
- An “union” of CNECs from all scenarios shall be the set of constraints for 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)

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Experimentation

- During the methodology development ACER made an experimentation by simulating the yearly LT FB capacity calculation and auctions, based on:
  - 4 CGM timestamps provided by the Core TSOs (Jan/Apr/Jul/Oct 2020, peak hours)
  - The bids from yearly 2020 NTC auctions at Core borders
  - Comparing the results with realised 2020 NTC auctions

- Although limited in sense of time, data and variants applied, this experimentation provided important inputs for the implementation options, among them the most important:
  - economic efficiency by applying the FB approach at LT time frames in Core?
  - the required level of minimum RAM to be applied?

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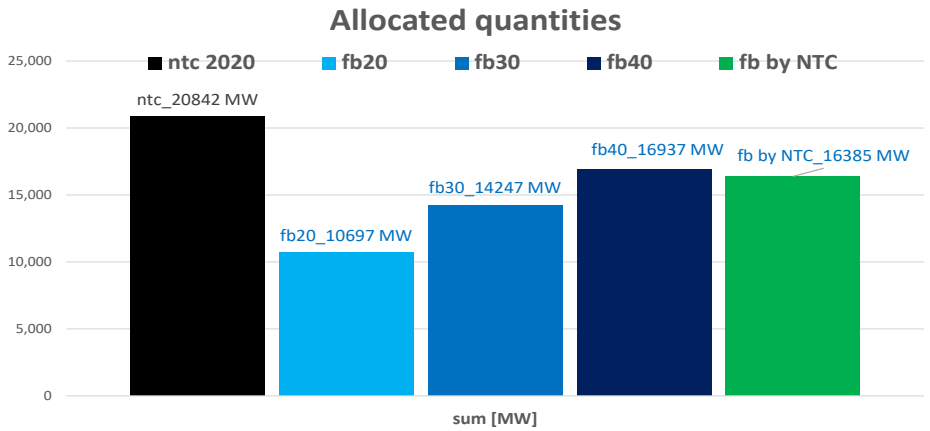
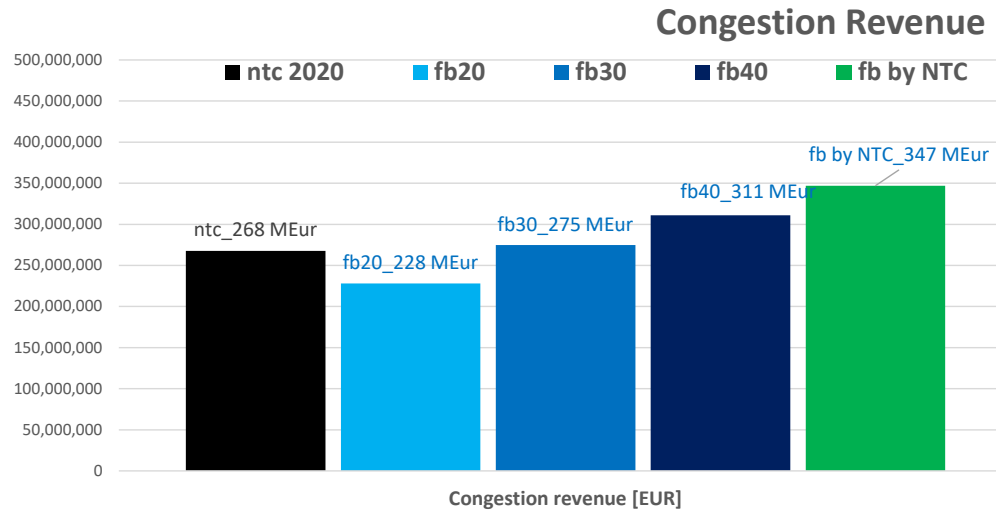
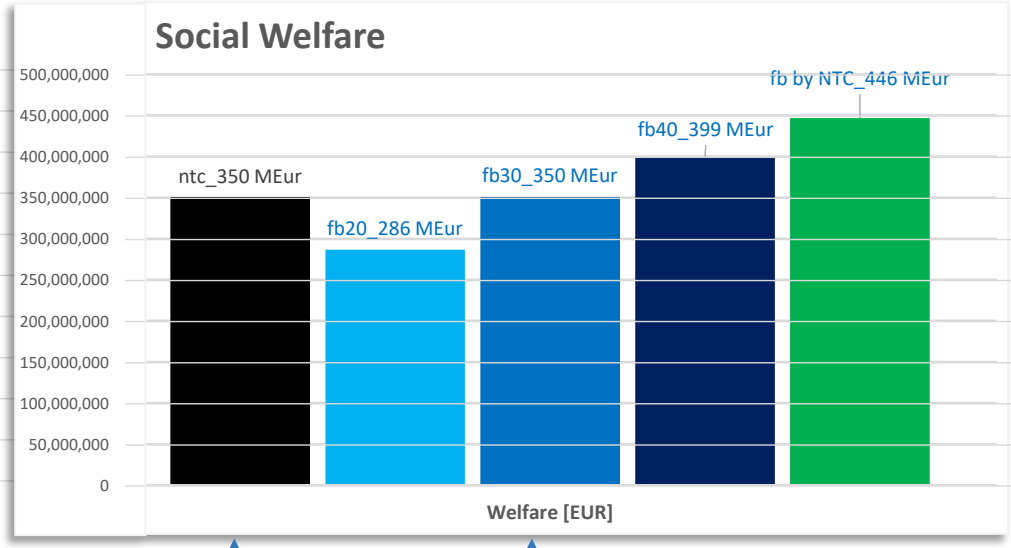
"NTC": NTC-based auctions from Y2020, *compared with*
"FB20": minRAM = 20%Fmax
"FB30": minRAM = 30%Fmax
"FB40": minRAM = 40%Fmax
"FB by NTC": minRAM per CNEC to accommodate flows by NTC values from Y2020





With the same level of network security (NTCs → minRAM), FB auctions provide 27% higher welfare than the NTC auctions



FB auctions with 30% of minRAM provide similar welfare as the NTC auctions

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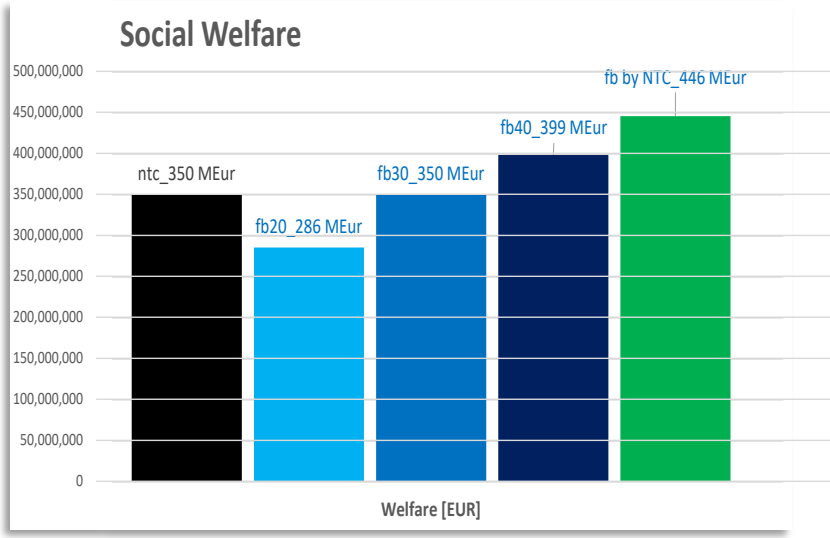
Experimentation conclusions

- With the same level of network security (NTCs → minRAM), FB auctions provide 27% higher welfare than the NTC auctions
- All FB auctions provide lower allocated quantities (which are not the optimisation priority)

⇒ **flow-based approach provides improved economic efficiency**



- FB auctions with minRAM 30% provide similar welfare as the realised yearly 2020 NTC auctions (≈350 M€)
- (-) Here are compared the yearly NTC auctions that provided about 68% of NTC (32% was provided at monthly level), with FB auctions providing 100% of capacity
- (+) FB auctions with 30% provide for more security than the NTC (or FB_by_NTC) auctions: the average minRAM for FB_by_NTC was 43% at congested CNECs)

⇒ **the proposed minRAM is: 20% for yearly auctions + 10% for monthly auctions**

During the implementation, Core TSOs may adjust these values, based on additional analyses

Thank you for your attention.

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