Addressing economic viability in the context of European Resource Adequacy Assessments

Energie-/Klimapolitik,Versorgungssicherheit

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Introduction

In the context of Resource Adequacy Assessments (RAAs), great novelties have been introduced by the new electricity regulations within the Clean Energy for all Europeans Package (CEP), specifically by Regulation (EU) 2019/943 [1]. The methodology for the European Resource Adequacy Assessment (ERAA) [2] introduces an Economic Viability Assessment (EVA) of the generation (and flexibility) capacity in the electricity market. The aim of the EVA is to assess the likelihood of the decommissioning, (de-)mothballing, life extension and new investments of generation (and flexibility) resources. The scope of performing an EVA in the context of RAAs is two-folded. On the one hand, it introduces an economic and market-oriented endogenous approach to refine and benchmark national and pan-European input data in terms of expected available generation capacity in future horizons. On the other hand, it provides an instrument to assess the need for out-of-market interventions to ensure the desired level of security of supply in Member States (e.g. through the introduction of a Capacity Mechanism (CM)).

Motivation and Methodology

This paper further elaborates on the topic of methodological developments for ERAA [3] focusing on the scope and implementation of EVA in the recent ERAA publications, highlighting (i) the progress made, (ii) the challenges faced and (iii) the future roadmap. The paper consolidates and compares the EVA methodology developed and applied by a team of experts, including the authors, within the ENTSO-E ERAA 2021 and the ERAA 2022 reports [4][5]. The comparison is performed over 10 selected criteria for the EVA methodology. The analysis is complemented by a discussion of the necessary decisions and simplifications taken to overcome the challenges faced, as well as the identification of crucial area of development to further improve the EVA methodology.

Results and Conclusions

Table 1 depicts the key criteria selected for the comparison, the assessed EVA characteristics reported for the ERAA 2021 and the ERAA 2022 respectively, as well the corresponding articles in the target methodology [2].

EVA Criteria	EVA in ERAA 2021	EVA in ERAA 2022	Priority	Article(s)
EVA Approach	Min. overall system cost	Min. overall system cost	Low	6.2
Multi-year Horizon	Single year	Stepwise 2-3 years	High	4.1(b)
Temporal Discr.	Full hourly discretization	Fitted - 18 blocks/day	High	4.1(h)
Sampling	Deterministic (average) 7 CY - derated FOs	Stochastic 3 CY - derated FOs	High	4.1(e), 4.2, 4.4(e)
EVA Variables	(Dis-)investment	(Dis-)investment, mothballing, extension	Low	6.5, 6.7
EVA Technologies	Thermal*, e-DSR	Thermal*, e-DSR, Batteries	Low	6.1, 6.3
Market Coupling	NTC	NTC	Medium	4.6, 6.13
EOM add. Revenues	Not considered	CHP revenue credit	Medium	6.9
Market Price Cap	Single estimate	Dynamic - Exogenous	Medium	7.8, 7.9
Investor Risk	Hurdle rate approach	Hurdle rate approach	Low	6.9(a), 6.15

Table 1: Short summary of criteria, characteristics, future priorities and reference articles of EVA in ERAA.

The paper concludes that several new elements and improvements have been included in the EVA in compliance with the ERAA methodology. Crucial challenges are identified and stand as high priorities in Table 1 towards future work and further development, especially in the areas of (i) Multi-year horizon, (ii) Temporal discretization and (iii) Sampling.

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Literature

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