



## Master thesis

**Correction algorithms for cleanup global-european optimal solutions of probabilistic load coverage analyses - a comparison of implemented solution approaches in the "European Resource Adequacy Assessment - ERAA" Initial**

### situation and motivation

The association of all European transmission system operators (ENTSO-E - European Network of Transmission System Operators for Electricity) carries out annual load coverage analyses to estimate the adequacy of resources for all pan-European bidding zones. Following the Clean Energy for all Europeans' Package (CEP), a load flow based approach shall be applied. After obtaining global-European optimal results from this optimization, shortage conditions shall be distributed in a second step to all bidding zones in a politically fair way. For this purpose, a correction algorithm following the Euphemia algorithm already established in European electricity trading is applied (with rules of curtailment sharing and local matching). For the implementation of this algorithm different approaches have been developed within the ERAA process. In the course of this work, a comparison of the distributions developed so far will be made.

### Research questions

- Mathematical formulation of the "local matching and curtailment sharing" rules according to Euphemia (incl. reduction of the existing algorithm for the application in ERAA).
- Application of an R-based post-patch to ERAA results obtained by the Antares simulator.
- Testing of a newly developed version of the Antares simulator considering the "local matching and curtailment sharing" strategy already in the optimization procedure.
- Comparison of the both previously described accesses (post-patch and directly integrated in the optimization process).

### Procedure/methodology/task

- In-depth literature review on the relevant research questions.
- Execution of software-based simulation and result extraction.
- Analysis of applicability and evaluation of distinguishing features.
- Presentation of results or findings and documentation in the form of a master's thesis.

### Organizational

As of now.

### Supervisor

DI Marlene Petz ([marlene.petz@apg.at](mailto:marlene.petz@apg.at)), Prof. Robert Schürhuber