FCR provision by Limited Energy Reservoirs

Luca Ortolano

System Operation European Stakeholder Committee
15 December 2017

Regulatory Framework

- **SO GL - title V – describes the requirements for Frequency Containment Reserve**
- **Under title V, art. 156 describes FCR provision requirements, also for Limited Energy Reservoirs (LER)**
- **In particular, about LER – art. 156(9) prescribes that:**
  - "For the CE and Nordic synchronous areas, each FCR provider shall ensure that the FCR from its FCR providing units or groups with limited energy reservoirs are continuously available during normal state. For the CE and Nordic synchronous areas, as of triggering the alert state and during the alert state, each FCR provider shall ensure that its FCR providing units or groups with limited energy reservoirs are able to fully activate FCR continuously for a time period to be defined pursuant to paragraphs 10 and 11. […]"
- **Art. 156(10) and 156 (11) requires that CE and Nordic SAs' TSOs "shall develop a proposal concerning the minimum activation period to be ensured by FCR providers" which shall consider the results of a CBA**

Regulatory Framework

The aforementioned CBA shall take into account at least:

a) experiences gathered with different time frames and shares of emerging technologies in different LFC blocks;

b) the impact of a defined time period on the total cost of FCR reserves in the synchronous area;

c) the impact of a defined time period on system stability risks, in particular through prolonged or repeated frequency events;

d) the impact on system stability risks and total cost of FCR reserves in case of increasing total volume of FCR reserves;

e) the impact of technological developments on costs of availability periods for FCR from its FCR providing units or groups with limited energy reservoirs.

Art. 156 (9-10-11) - implementation

- In order to accomplish the requirements under article 156 ENTSO-E constituted a project team with members of both SAs CE and Nordic with the goal of editing the CBA for FCR provision by LER.
- The CBA shall be sent to all NRAs by 6 months from the SO GL entry into force (14th of March 2018)
- The public consultation is supposed to start by January; during the public consultation period also a workshop is foreseen

CBA development

The current progress of work is presented in the following with reference to the requirements sets by Art.156.

Article 156 (11a)

experiences gathered with different time frames and shares of emerging technologies in different LFC blocks;

- **Assessment of the impact of LER in countries where they are already in service (E.g. Germany, Italy, France, Belgium, SA Nordic).**
- **Evaluation of the current procurement scheme implemented in countries with LER (E.g. Germany, Italy, France, Belgium, SA Nordic).**
- **Analysis of the existing research studies aimed to assess the impact of different storage emerging technologies on FCP framework.**

CBA development

Article 156 (11b)

the impact of a defined time period on the total cost of FCR reserves in the synchronous area;

- **Assessment of the cost of the FCR in the synchronous area considering the impact of a defined time period on investment costs for LER.**
- **Total cost of FCR estimation taking into account the relationship between cost of FCR provision and the energy market prices.**
- **Assessment of cost variation related to an increase of FCR volumes.**

CBA development

Article 156 (11c)

the impact of a defined time period on system stability risks, in particular through prolonged or repeated frequency events;

- **Statistical analysis of prolonged and repeated frequency events that really occurred in different synchronous areas.**

CBA development

Article 156 (11d)

the impact on system stability risks and total cost of FCR reserves in case of increasing total volume of FCR reserves;

- **Increase FCR in order to maintain operational security in the face of a LER depletion.**
- **Analysis of feasibility and operational impact of FCR increase.**
- **Analysis of cost increase related to the variation of the FCR volume.**

CBA development

Article 156 (11e)

the impact of technological developments on costs of availability periods for FCR from its FCR providing units or groups with limited energy reservoirs;

- **Analysis of different time horizons are being considered in order to assess future developments of the energy system and regulations, including costs of availability periods for LER.**
- **Future developments will be defined according to TYNDP scenarios defined by ENTSO-E.**

Thank you for your kind attention