



**Volume determination of the
strategic reserve for winter
2018-19:**

Update 17 August 2018

Contents

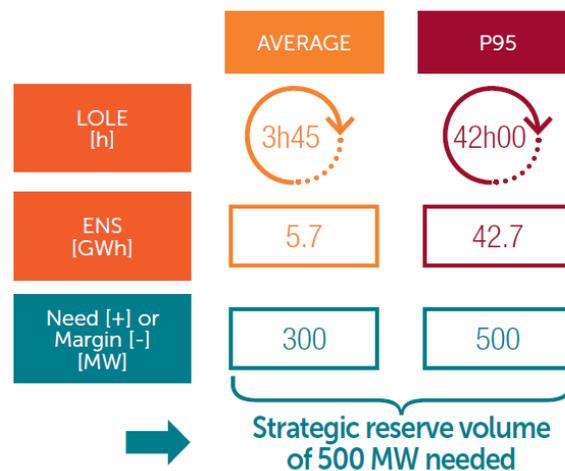
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1. Introduction

The “Adequacy study for Belgium: The need for strategic reserve for winter 2018-19 and outlook for 2019-20 and 2020-21” was sent to the Minister and DG Energy on 15 November 2017 and published by Elia on its webpage on 30 November 2017¹.

The results for winter 2018-19 ‘base case’ led to a margin of 900 MW, with an average LOLE of 45 minutes and a LOLE95 of two hours. Under the assumptions made for this ‘base case’ scenario, the analysis did not identify a need for contracting strategic reserves for winter 2018-19 in order to meet the legal criteria.

In order to capture the effect of low nuclear availability, as observed in Belgium and France during the last five winters, a so-called “low-probability, high-impact” sensitivity analysis was performed. In this sensitivity, 1 GW of nuclear generation capacity in Belgium as well as 4.5 GW of nuclear generation capacity in France was considered out of service for the entire winter. This analysis resulted in identified needs for strategic reserves of 500 and 600 MW, with the Drogenbos unit considered to be operating during the entire winter in CCGT and OCGT mode respectively. The detailed results of this sensitivity analysis with Drogenbos operating in CCGT mode are repeated in the figure below (from Figure 105 in the original winter 2018-19 assessment).



The DG Energy provided its advice to the Minister on 15 December 2017 and concluded that the Minister should instruct Elia to contract a volume of 500 MW of strategic reserves. On 15 January 2018 the Minister instructed Elia, via Ministerial Decree to contract a strategic reserve for winter 2018-2019 of 500 MW.²

According to this Ministerial Decree and more precisely its article 3, the Minister can decide to review the volume at the latest by 1 September 2018.

¹ <http://www.elia.be/en/products-and-services/Strategic-Reserve/Information-produit>

² « Arrêté ministériel donnant instruction au gestionnaire du réseau de constituer une réserve stratégique à partir du 1er novembre 2018, 15-1-2018 ».

In that respect, an official request for an update of the volume assessment was addressed to Elia by the Minister on 28 June 2018. This report provides this updated volume assessment, as requested by August 17th.

2. Main evolutions

In the request, the Minister indicates a need to update the volume of strategic reserves to account for recent relevant market evolutions and the return to the market of the Seraing power plant.

In that respect, the following elements are taken into account in this updated analysis for the volume for strategic reserve for winter 2018-19:

1) Return to the market of Seraing CCGT as of 1/11/2018

- EDF Luminus has announced the return to the market of Seraing CCGT as of 01/11/2018. Please find further information in this link: <https://edfluminus.edf.com/edf-luminus/activites/production-d-energie/urgent-wholesale-market-message>
- As indicated in the functioning rules of strategic reserves, an announcement of return to the electricity market of a production unit needs to be published on the website of Elia within five working days. Therefore Elia provided this information on its webpage.¹
- The return to the market of Seraing will provide more capacity than initially foreseen in the energy market and thus lowers the need for strategic reserve.

2) Introduction of the “MinRAM20%” in the flow-based market coupling algorithm

- During 2018, CWE NRAs asked CWE TSOs to implement a 20% minimum Remaining Available Margin (MinRAM20%) for the day-ahead Flow-Based Market Coupling (FBMC). The agreed MinRAM20% level equals 20% of the Fmax (the maximum allowed power flow), applied on each Critical Network Element and Contingency (CNEC). The feasibility of the MinRAM20% application is verified by TSOs for each business day. The go-live of the MinRAM20% implementation was on 24 April 2018 in D-2 (for FBMC Business Day 26 April 2018).³
- The MinRAM20% process is applied to provide a minimal flow-based domain to the market. The MinRAM20% is applied using the AMR (Adjustment for Minimum RAM) attribute of each affected CNEC which guarantees a minimal RAM per CNEC.⁴

³ “Update on 20% minRAM implementation” Joint Allocation Office (JAO) webpage
<http://www.jao.eu/news/messageboard/view?parameters=%7B%22NewsId%22%3A%22bbb7dbda-a15d-454c-9225-a8c8012bb828%22%7D>

⁴ « Documentation of the FB MC solution». September 2017, Version 2.1
<http://www.jao.eu/support/resourcecenter/overview?parameters=%7B%22IsCWEFBMCRelevantDocumentation%22%3A%22True%22%7D>

- The implementation of MinRAM20% will provide more capacity for commercial exchanges and thus lowers the need for strategic reserves.
- From now on the effect of MinRAM20% will be taken into account as baseline assumption for the base-case scenario in any further assessment performed by Elia regarding the volume assessment for strategic reserves, since this feature is currently operational in the capacity calculation of the FBMC framework.

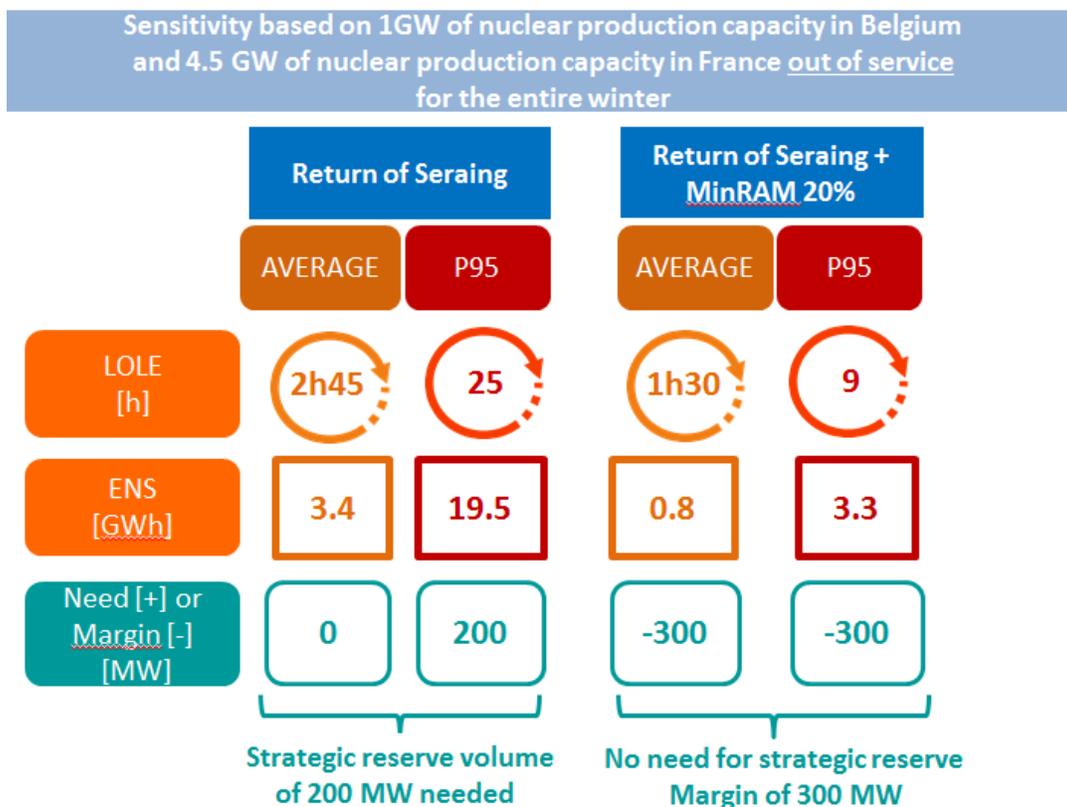
3. Results

For the updated analysis, the exact same model and assumptions were used as for the analysis of November 2017, except for the evolutions as mentioned in chapter 2. We recall that in the scenario retained by the Minister, a low availability of nuclear generation is taken into account (1 GW of nuclear production capacity out of service in Belgium and 4.5 GW in France for the entire winter), and that the Drogenbos unit is considered to be operating in CCGT mode during the entire winter.

Two additional analyses were performed, based on the above mentioned evolutions:

- A) **The return to the market of the Seraing unit;**
- B) **The return of Seraing (A) + the effect of the “MinRAM20%”.**

The figure below shows the results obtained after both simulations were performed. LOLE [h] and ENS [GWh], both average and P95, refer to a situation without any strategic reserve volume.



Return of Seraing: The legal adequacy criterion defined for the LOLE P95 indicator leads to a resulting strategic reserve volume of 200 MW. The contribution of Seraing is not equal to the full Pmax of the unit due to the effect of “forced-outages”⁵.

Return of Seraing + MinRAM20%: In addition to the contribution of Seraing, the MinRAM20% requirement introduces a positive effect on the adequacy of Belgium. In this case a margin of around 300 MW is found for Belgium and thus no need for strategic reserves remains.

4. Conclusions

The return to the market of Seraing will introduce an important contribution to Belgium’s adequacy in tight situations. Despite the fact that the nominal volume of the unit is close to the originally identified volume of strategic reserves of 500 MW, the occurrence of forced outages on this unit as well as on the rest of the modelled thermal park in Belgium and its neighbours still requires a volume of 200 MW of Strategic Reserves, in order to reliably cover the legal LOLE-criteria (more in particular the $LOLE_{95} \leq 20$ h).

More importantly, when the additional effect of the MinRAM20% patch is considered in the simulations, the combined effect of both Seraing and MinRAM20% results in a margin of 300 MW and thus no need to constitute a volume of SR for winter 2018-19.

5. Recommendation

Elia therefore recommends that both above mentioned evolutions are taken into account in the decision of the Minister, implying there is **no need to constitute a volume of Strategic Reserve** for winter 2018-2019. The simulations identify indeed a margin of 300 MW.

⁵ An identified strategic reserve volume is considered to be available 100% of the time. On the other hand, the installed capacity of all individually modelled thermal units is not 100% available throughout the whole winter as it is subject to so-called “forced outages”. Utilized forced outage rates were subject to a public consultation and were published together with the adequacy analysis report. For Seraing CCGT, the forced outage rate used is 8.8% (see Figure 35 of the original winter 2018-19 assessment).