



# **Volume determination of the strategic reserve for winter 2019-20**

**Update 2 August 2019**

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# 1 Introduction

The “Adequacy study for Belgium: The need for strategic reserve for winter 2019-20 and outlook for 2020-21 and 2021-22” was sent to the Minister and DG Energy on 15 November 2018 and published by Elia on its webpage on 30 November 2018<sup>1</sup>.

The results for the winter 2019-20 ‘base case’ scenario led to a margin of 3300 MW, with an average LOLE of less than 15 minutes and no LOLE95. Under the assumptions made for this ‘base case’ scenario, the analysis did not identify a need for contracting strategic reserve for winter 2019-20 in order to meet the legal criteria.

To capture the effect of low nuclear availability however, as often observed in Belgium and France during the last six winters, a “low-probability, high-impact” analysis was performed. In this analysis, 1.5 GW of nuclear generation capacity in Belgium as well as 3.6 GW of nuclear generation capacity in France is considered out of service for the entire winter on top of the planned and forced outages as simulated in the “base case”. This analysis resulted in an average LOLE of 1h45 and P95 of 16 hours. Both values meet the legal adequacy criteria. The corresponding margin was found to be 400 MW.

The DG Energy provided its advice to the Minister on 14 December 2018<sup>2</sup> and concluded that the Minister should instruct Elia not to acquire a strategic reserve. On 15 January 2019 the Minister instructed Elia, via Ministerial Decree, not to contract a strategic reserve for winter 2019-20<sup>3</sup>.

According to this Ministerial Decree, and more precisely its article 3, and art. 7quater of the federal electricity law, the Minister can decide to review the volume until 1 September 2019 at the latest.

In the first quarter of 2019 changes in the availability of both nuclear and classical thermal generation units in Belgium for winter 2019-20 were announced. In that respect, an official request for an update of the volume assessment was addressed to Elia by the Minister on 29 April 2019. Elia performed this reassessment and handed over the accompanying report on 20 May 2019. For this analysis, an extra unavailability of 1 GW<sup>4</sup> nuclear capacity was simulated on top of the already announced planned outage of 2 GW of nuclear units for the winter 2019-20. This update resulted in a need for a strategic reserve volume of 200 MW to ensure compliance with the legal adequacy criteria in the “Low probability, High impact” scenario. Elia has not received an instruction to constitute a strategic reserve volume following this analysis.

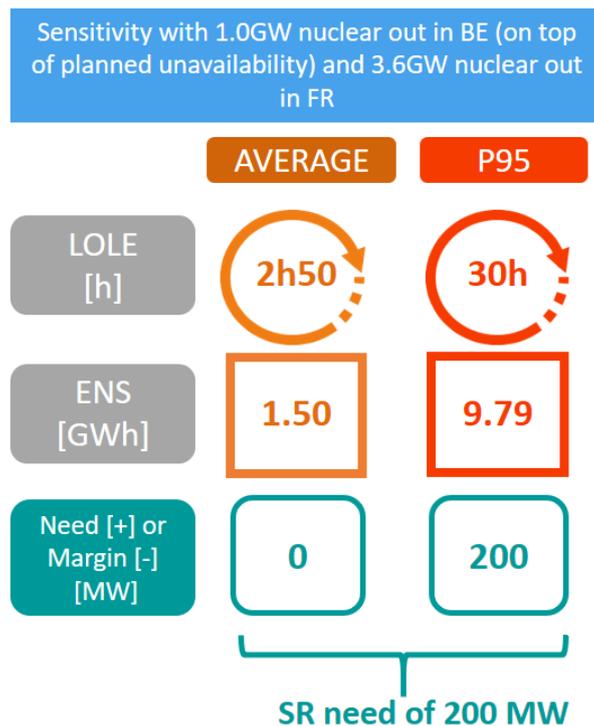
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1 <http://www.elia.be/en/products-and-services/Strategic-Reserve/Information-produit>

2 <https://economie.fgov.be/sites/default/files/Files/Energy/Strategische-reserve-Advies-AD-Energie-winterperiode-2019-2020.pdf>

3 « Arrêté ministériel donnant instruction au gestionnaire du réseau de constituer une réserve stratégique à partir du 1er novembre 2019, 15-1-2019 ».

4 Note that the definition of the sensitivity scenario was changed in the latest rerun in order to capture an adequate nuclear unavailability given the already announced additional planned outages.



On 12 July 2019 ENGIE announced via REMIT a shift in the revision planning of the Tihange 1 nuclear power plant. This is detailed in section **Error! Reference source not found.**. The Minister consecutively asked Elia on 17 July 2019 to perform a reassessment of the adequacy situation for winter 2019-20. This report provides this updated volume assessment.

## 2 Main evolutions

This report builds further on the latest update, dating from May 2019, and includes the latest announced changes, as referred to in the request for an update from the Minister.

In that respect, the following elements are taken into account in this updated analysis for the volume for strategic reserve for winter 2019-20.

### 2.1 Change in nuclear generation unit availability

On 12 July 2019 ENGIE announced a shift in the revision planning of the Tihange 1 nuclear power plant.

- The previous planning: revision from 03/08/2019 until 15/02/2020
- The new planning: revision from 29/12/2019 until 10/07/2020

Both graphs below visually represent this change in nuclear generation availability.

|            |      | WINTER 2019 - 2020 |                      |                    |                    |                    |
|------------|------|--------------------|----------------------|--------------------|--------------------|--------------------|
| UNIT       | PNOM | NOVEMBER           | DECEMBER             | JANUARY            | FEBRUARY           | MARCH              |
| DOEL 1     | 433  | Known availability | Known availability   | Known availability | Known availability | Known availability |
| DOEL 2     | 433  | Known availability | Known availability   | Known availability | Known availability | Known availability |
| DOEL 3     | 1006 | Known availability | Known availability   | Known availability | Known availability | Known availability |
| DOEL 4     | 1039 | Known availability | Known availability   | Known availability | Known availability | Known availability |
| TIHANGE 1N | 481  | Known availability | Known availability   | Known availability | Known availability | Known availability |
| TIHANGE 1S | 481  | Known availability | Known availability   | Known availability | Known availability | Known availability |
| TIHANGE 2  | 1008 | Known availability | Known availability   | Known availability | Known availability | Known availability |
| TIHANGE 3  | 1038 | Known availability | Known availability   | Known availability | Known availability | Known availability |
|            |      | Known availability | Known unavailability | New availability   | New unavailability |                    |

Figure 2.1 Change in the nuclear availability calendar during the winter months

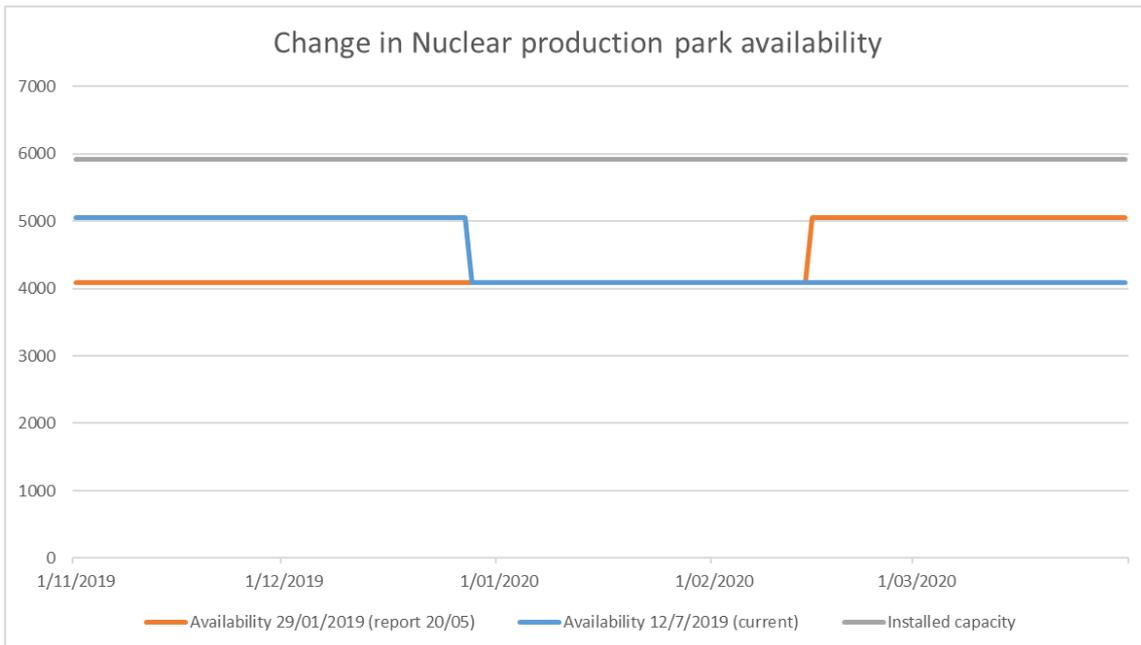


Figure 2.2 Available nuclear generation power during the winter months

The new data was made available on REMIT, which is publically accessible<sup>5</sup> and is the most up-to-date information available to consider for the nuclear generation availability in Belgium.

The change in the revision date increases the available capacity by 1 GW in November through December 2019, yet decreases the available capacity by 1 GW from ca. mid-February through end of March.

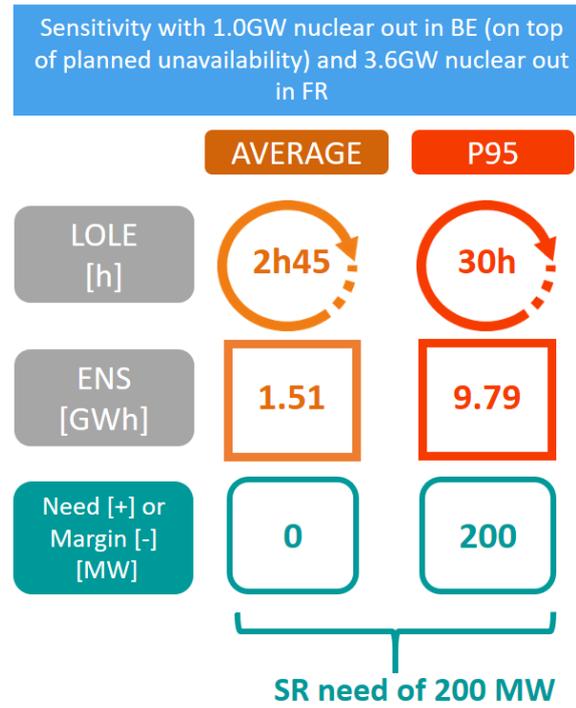
### 3 Results

For the updated analysis, the exact same model and assumptions are used as for the analysis of May 2019 (the previous reassessment), except for the evolutions as mentioned in chapter 2. This means

<sup>5</sup> [http://transparency.engie.com/REM\\_REMIT/](http://transparency.engie.com/REM_REMIT/)

that no additional changes are applied to the load profiles, thermal availabilities, RES generation capacity, pump storage or demand side response (DSR)<sup>6</sup> in any of the countries in the model.

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



The shift in nuclear revision for Tihange 1 impacts the Belgian adequacy situation on a monthly level, yet does not have an impact on the winter situation as a whole. From a Belgian adequacy point of view two effects are occurring:

- The scarcity hours that were induced at the end of 2019, mainly driven by decreased tightness due to thermal availability in neighbouring countries are decreasing because of the shift of the nuclear revision of Tihange 1. This improves the Belgian adequacy situation.
- Additional scarcity hours are induced because of the shift of the nuclear revision of Tihange 1 in the first quarter of 2020, which already faces less favourable climatological variables. This is worsening the Belgian adequacy situation.

The analysis has shown that both effects are equally changing the Belgian adequacy situation in opposite directions. The result is a status quo.

<sup>6</sup> There is not yet an agreement with and between the market parties on a DSR growth coefficient. This question will be part of the input consultation which will be held in September 2019 for winter 2020-2021.

The updated analysis reflects the changes in the Belgian adequacy situation for winter 2019-20 and shows that a need of 200 MW in the “Low probability, High impact” scenario remains.

## **4 Conclusions**

The changes in thermal generation availability between 20 May 2019 and the time of writing of this report are neutral for the Belgian adequacy situation in winter 2019-20. The impact of the shift of the nuclear revision of Tihange 1 does not change the legal criteria outcome.

The analysis has shown that a strategic reserve volume of 200 MW would be required to ensure compliance with the legal adequacy criteria in a “Low probability, High impact” scenario where an extra unavailability of 1 GW would occur on top of the already planned outage of 2 GW of nuclear units for the winter 2019-20, even if 1 GW of this planned outage now shifts from the beginning of the winter towards the end.