



ENGIE Electrabel

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To : Elia Date: 30/11/2020

From: ENGIE Electrabel
(contact: Mathilde Catrycke & Christophe Baugnet)

Subject: Electrabel's answer to the Public consultation on the methodology, the basis data and scenarios used for the study regarding the adequacy and flexibility needs of the Belgian power system for the period 2022-2032

Preliminary remarks

Electrabel thanks Elia for the organization of this consultation.

Electrabel fully supports the answer provided by FEBEG. With this position paper, Electrabel wishes to provide additional information regarding the fleet it operates or its views on hypothesis taken based on its experience in the field of adequacy studies.

Comments on the input data (excel file)

Individually modelled thermal generation

- **Nuclear Units:** Electrabel agrees that REMIT publications constitute an accurate source of information for the best estimates of the availability of its nuclear fleet over the period 2022-2023. REMIT publications however do not reflect potential risks on the availability which likelihood is considered as below 50%.

In view of REMIT's regular updates and potential new risks on the availability, Electrabel encourages ELIA to update the information available shortly before the time of publication of its study (around June 2021).

In its agreement of September 2020, the federal government reaffirms its policy to phase out nuclear power in Belgium by 2025. The agreement also leaves room to consider an extension of up to 2GW if uncertainties regarding the country's security of supply persist at the end of 2021. Being a responsible operator, Electrabel works in strict compliance with the law. As for a possible LTO of 2 GW as from 2025, as explained at several occasions by Electrabel, an extension is only possible when certain legal, financial and technical constraints are taken into account, which require a decision by the end of 2020 at the latest.

- **Vilvoorde:** Electrabel would like to highlight that there is no guarantee that the existing capacity of 255 MW, will remain available on the market at the 2025 horizon due to the technical lifetime of the GT.

- **Rodenhuize:** If the Flemish authorities were to stop granting certificates to electricity production from biomass, Rodenhuize will be in operation only when Knippegroen is in planned maintenance. It will therefore have a limited added value for the security of supply of Belgium, given the multiple operating constraints.
- **CHP's:** the availability of assets will strongly depend on contract extensions and actual demand of steam by industrial clients. For this reason, we recommend to **Elia to consider that a part of the CHP parc will no longer be in the market in the coming years**
- **Turbojets:** the availability of assets will gradually decrease. For this reason, **we also recommend Elia to consider that a part of the turbojets' parc will leave the market due to obsolescence in the coming years.**

Storage

- **Coo:** There is no split of the capacity for unit. In any case, Electrabel reminds that the capacity of Coo should be limited to the value published on the ENGIE transparency website. The capacity is equal to 1.080 MW.
 - Coo I: 3x145 MW = 435 MW
 - Coo II: 3x215 MW = 645 MW
- **On the potential of storage:** the potential of storage, in line with the NCEP, is very ambitious according to Electrabel and as highlighted by Elia in the Task Force "Strategic Reserve" held on 30th November 2020 for the coming years. It is unlikely that this capacity would enter the market in the current market circumstances and with the current regulatory framework, without additional visibility on their business case in the coming years.
- **On the potential of V2G:** the volume highly depends on the number of electric vehicles in Belgium but also on the roll-out of the available technology to make them active market participants to the electricity system. Electrabel has strong doubts about this latter aspect at the 2025 horizon.

Total electricity consumption

- **Peak demand:** Elia does not provide any information regarding the peak assumptions for Belgium or for the surrounding countries in the explanatory note for the Public consultation. In particular, the short-term negative effects on power consumption (annual TWh) of the COVID19 crisis do not necessarily translate in the same proportional decrease of peak demand, which is the relevant dimension to consider for assessing adequacy.
- **Electrical vehicles:** Regarding the electrical vehicles' penetration in the market, Electrabel is surprised to see relatively flat projections in the coming years until 2025 taking into account the ambition of the Federal government on that topic. Electrabel would expect a bigger increase for the years 2021 to 2025.
- **Electrolysers:** In Electrabel's opinion, Elia should consider that some electrolysers' projects may be launched in the coming years, with an impact on the electricity demand.

Fuel and CO₂ Prices

According to current assumptions on gas, coal and CO₂ prices, CCGTs are positioned on the right of the merit order, after most of coal assets. Margins are expected to be focused mainly on a few (scarcity) hours and highlight, therefore, a higher risk. We suggest to take that aspect particularly into account when assessing the economic viability of gas-fired assets.

Demand Side Response

- **Shedding capacity:** Electrabel considers that applying a yearly increase of 5% for the coming years is too ambitious for the base-case scenario. While Electrabel is convinced about the role that Demand Side Response will play in the market in the coming years, we estimate that the strong increase observed in the last few years (cf. E-cube study) may not necessarily continue to materialize in the following decade – pending the full roll-out of the smart meters - as the additional DSM potential for certain types of grid users will be limited. In addition, Electrabel would like to remind that the methodology applied by E-Cube cannot ensure that the identified potential corresponds to market response only (e.g. at 150 €/MWh or more blocks could also be linked to super peakers like turbo jets or possibly OCGTs under some circumstances). In addition, the volume expected in terms of market response are highly different from ENTSO-E assumptions in their Mid-Term Adequacy Forecasts.
Given its experience in the CWE market, Electrabel doubts that this potential would become effective, without additional support, at the 2025-30 horizon. In comparison, in France where a capacity market is in place, Electrabel observes that “only” 3¹ GW of DSR² have been certified, in a market where the load is much more thermo-sensitive.
- **Shifting capacity:** Electrabel considers that the figures presented are also very ambitious and would like more insight about the evolution proposed in the framework of this consultation.

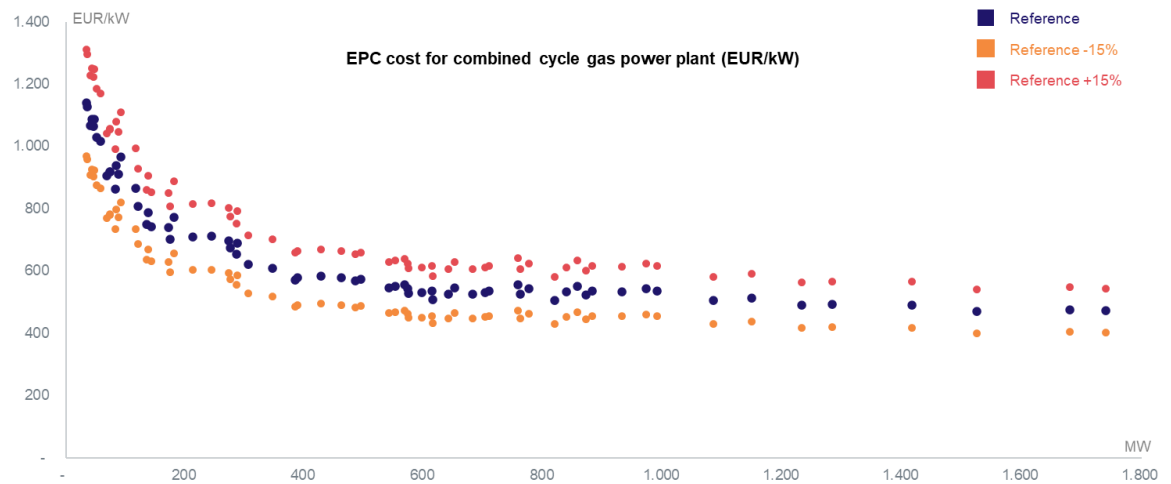
Investment costs

- **New capacities:**
 - **CCGT:** First, we understand that Elia refers here to the total capex (of which the EPC cost represents a significant part). Electrabel does not agree with the proposed total capex level as these do not take into account the recent technology developments (HL-class CCGT). The below analysis is an update of the Gas Turbine Handbook for the year 2020 for the EPC costs, which is – in our opinion – the latest public information on the topic. However, **it is important to mention that this source does not yet consider the next generation HL-class CCGT plants that are in development phase and will be the reference for the coming years, for which even lower EUR/kW costs can be achieved due to their greater scale and efficiency.** Electrabel refers here to an example of the next-generation HL-class CCGT plant recently announced by Edison in Presenzano, Italy, while the investment required for this plant is significant, amounting to EUR 370 million (EPC cost only).

¹ <https://www.services-rte.com/fr/visualisez-les-donnees-publiees-par-rte/registre-des-capacites-certifiees.html>

² Given a consumption of about six times the Belgian consumption, a DSR volume of 1521 MW compared to about 3 GW in France would imply that Belgium amount proportionally twice as much DSR as in France, which is seems utterly optimistic.

Therefore, taking into account these important evolutions, we recommend Elia to use, at the minimum, the GTH updated values for 2020 and integrate an error margin of minimum -15% to the reference data to capture the evolutions in the market.



Source: GT Handbook, 2020³

- **OCGT:** The broad range of OCGTs makes it very complex to provide average capex levels. In the case of OCGTs, the scale effect also plays an important role.

Flow-based domains

- minRAM in 2023 for Belgium mentions “derogation” in the presented slides on 30/10 but not in the excel sheet. However, Elia is currently only in the process to get approved a derogation for 2021. There is then no view on further derogations in 2022 and 2023. Should it still be the case, then we ask Elia how (and if) the derogation is applied in their calculation (today this is based on the level of loop flows passing through BE compared to a loop flow threshold – if $\Delta > 0$ then reduction of the 70%).
- minRAM for other countries than FR,NL,DE,BE are not mentioned. However they will have an impact (derogation of action plan) – e.g. AT recently acknowledged a shift towards an Action plan (hence limited XB capacity until 2025).

³ The analysis is based on data from the Gas Turbine Handbook 2020 edition, which provides an annual update of equipment and construction budget prices for bare bones combined cycle plants, converted from USD to EUR based on the 6 November 2020 exchange rate. A +/-15% range around the reference price is shown in the graph to capture the scope uncertainty as suggested by the Gas Turbine Handbook.



Overall, Electrabel considers that there remains some uncertainty on whether the ambition of min RAM 70%⁴ will really be achieved by 2025. Therefore, a sensitivity should be made by Elia to tackle this risk.

- Electrabel is surprised that PST are not used during the market coupling optimisation / allocation (cfr. Elia vision around congestion management presented end of 2019). Moreover, what does “PST selected” mean during the capacity calculation?

Flexibility Characteristics

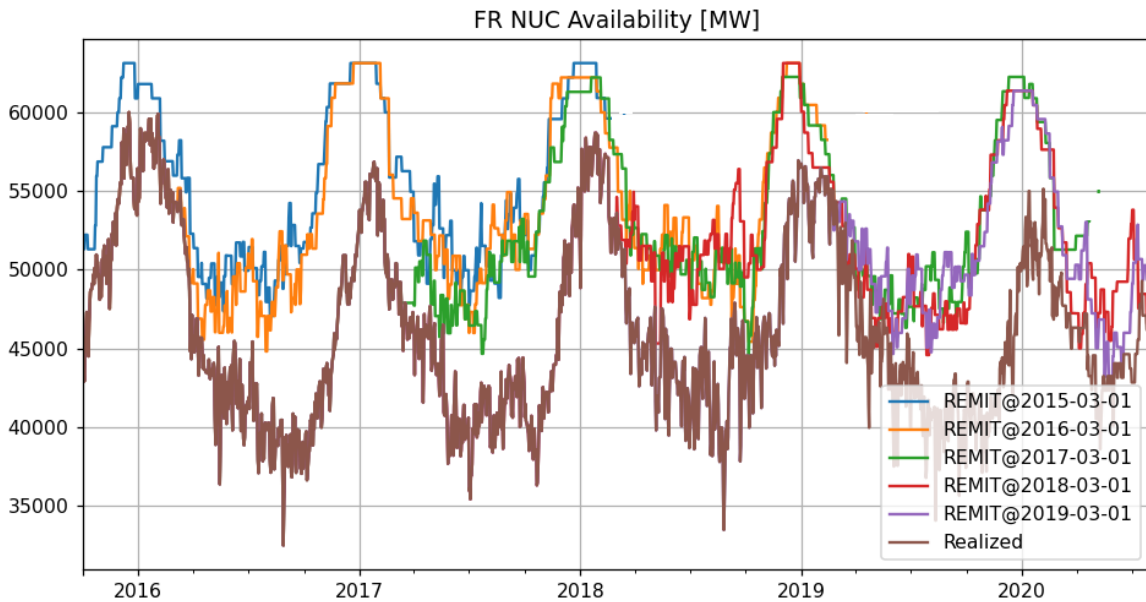
- Regarding “Minimum Down Time” for new and recent CCTG’s, for “Hot Start up time”, of respectively 0.5 hour and 1 hour seems very optimistic and should reasonably be set at 1 hour and 1.5 hour.

Data for other countries

Electrabel considers that a particular attention should be paid to the availability of capacities in foreign countries in the coming years. In particular, Electrabel refers to:

- **The availability of French Nuclear assets:** Historical data show that variations over the winter months between announced availability (based on REMIT figures) and actual availability go up to more than -15 GW. The variations are on average at least -6 GW between the planned and actual figures over the last 4 years. Data on the French CRM, in particular, reveals that the view on the reliably nuclear capacity has consistently been overestimated over the past years. At the end of a delivery year, at least 5 to 6 GW were missing compared to initial certification. Electrabel would propose therefore to consider effective availability of French nuclear in the base case, not as a sensitivity.

⁴ Even though this minRAM set at 70% is a purely political setpoint that does not imply that foreign capacity will be available for import when needed.



Source: Data compiled from the RTE website

- **Coal phase out across Europe** (in particular in Germany and in the Netherlands): given the expected reinforcement of the GHG emission reduction targets by 2030 (EC proposal = minimum -55% compared to 1990 levels), a clear risk factor to be assessed is the additional decommissioning of coal/lignite capacities to meet these targets. This example is particularly striking as it necessarily requires assumptions outside of Belgium (p.m. no more coal capacity in Belgium).
- Particular attention should be paid to the German grid reserve (6.6 GW foreseen for Winter 2020-21) and to the question how this reserve is treated in the adequacy assessment. In principle, the reserve was allowed by the EC as a transitional measure till June 2020 and there is no information on a possible re-notification. Also, the reserve is meant to address only congestion issues in the internal German network and it should therefore not be considered in the adequacy study, where Germany is considered as a copperplate.

Electrabel definitely recommends to Elia to integrate in the base-case the risk associated with the unavailability of capacities located in neighboring countries, and in particular the unavailability of some French nuclear units, and make sensitivities to capture the other risks of unavailability.

Comments on the methodology

- **Climate Years:**

Electrabel welcomes the efforts of Elia to align, to the extent possible to the ERAA requirements but is in the opinion that a coordinated approach among European countries is preferred,

especially when it comes to the consideration of the relevant climate years and the possible impact of global warming on the adequacy situation which is to be looked at regional level.

In principle, Electrabel can follow the reasoning of Elia to comply with option 1 of the ERAA methodology (i.e. rely on a best forecast of future climate projection) and the implementation of the '200 synthetic climate years' used by the French TSO (RTE). However, a few clarifications are needed before applying them in the adequacy study:

- Could Elia clarify if 200 synthetic climate years are computed for all European countries, or only for Belgium? Weather-related uncertainties should consistently be modelled across European countries.
- RES production profiles not only depend on climate but also location of PV and wind. Is that taken into account in the model?

Electrabel suggests to test the new model based on historical climate years and historical scenarios in order for market parties understand the magnitude of the impact of this change of methodology on the adequacy situation.

In addition, Electrabel suggests to further develop the alternative approaches, as soon as possible, should the implementation of the '200 synthetic climate years' used by the French TSO (RTE) not be possible in due time.

In any case, Electrabel also suggests to include a sensitivity with a sufficiently broad ranges of years (at least 34 years as performed in the previous adequacy study) to integrate the risks linked to more extreme climate conditions, which actually matters when assessing the adequacy situation of a country.

- **Economic Viability Assessment:**

Electrabel welcomes the efforts of Elia to align, to the extent possible to the ERAA requirements but is in the opinion that a coordinated approach among European countries is also preferred.

Electrabel wishes to highlight or illustrate different elements of the paper of Professor Bouts on "Economic viability of investments in electricity capacity: design of a simulation-based decision rule" based on our company experience in a note in appendix . While we understand that Elia proposes to integrate the limitations of its modelling through a top-up to the WACC called "hurdle rate", it should be clear to all stakeholders that this hurdle rate is not be considered as an additional risk premium investors may take but as an attempt to compensate an imperfect model. Therefore, Electrabel cannot judge on the percentage to consider for this exercise.

In addition, Electrabel has the following questions:

- We understand that the decision to stay/leave/enter the market is taken by considering margins and costs in one reference year. In practice, however, this is an intertemporal considerations (future margins need to be taken). Electrabel would like to ask Elia to provide more information on how the investment (or disinvestment) decisions are taken.
- In particular, how will the consistency between the results between the different target years be assessed concretely, especially now that the economic viability of assets outside Belgium will be assessed? We invite Elia to provide information on the investment/Disinvestment in the neighbouring countries, to better assess the adequacy situation in Belgium.
- ERAA considers a reference scenario with and without approved CRM. Will Elia also perform this exercise?

- **Regional scarcity events**

Given that Belgium is highly interconnected with its neighbours, scarcity is very likely to be a regional, not a national event. In practice, one can expect that Member States are net importers or net exporters during system stress. We therefore propose to differentiate between scarcity events with and without load curtailment. While the adequacy study in principle only looks at moments of load curtailment (loss of load expectation), such characterization of the scarcity event would add information on the reliable capacity sharing among Member States, and help assessing the Belgian situation even better.