Consultation report of the Public consultation on the scenario's, sensitivities and data for the CRM parameter calculation for the Y-4 Auction with Delivery Period 2025-26

June 2020

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Introduction

Elia organized a public consultation on the scenarios, sensitivities and data for the CRM parameter calculation for the Y-4 Auction with Delivery Period 2025-26. This public consultation took place in the framework of the proposal of Royal Decree laying down the method for calculating the required capacity volume and the parameters necessary for the organization of the auctions within the framework of the capacity compensation mechanism, proposed and published by FPS Economy[1].

Article 6, §2 of the proposed Royal Decree sets out the subjects to be submitted for public consultation, namely:

- the update of data and assumptions regarding the scenario(s), as well as any potentially selected sensitivities to be included in the reference scenario;
- the relevance of the sensitivities, including the data and assumptions on the basis of which they were established;
- the type of additional capacity;
- the public sources of the scenarios for the years subsequent to the year of delivery from which the input data are used to calculate inframarginal rents;
- the shortlist of existing technologies that will be reasonably available and which are eligible for the determination of the intermediate price cap.

The public consultation material consisted of an Excel file, containing all the data and assumptions regarding scenarios, sensitivities and parameters required by the proposed Royal Decree, an explanatory nota in PDF format and the study carried out by the external consultant Fichtner, to support the determination of the parameters. Moreover, the slides presented during Task Force CRM meeting from Tuesday 5 May 2020[2] can also be considered as support.

The consultation aimed at receiving comments from market participants on these data and assumptions in order for the Minister to decide the selection of a reference scenario. In line with the proposed Royal Decree, this decision is to be taken on the basis of a proposal of the CREG, to be formulated taking into account this consultation report and after an advice on this proposal by the FPS Economy. It explicitly foresees that Elia should make a recommendation for the scenario to be taken.

The consultation period was set from Tuesday 5 May to Friday 5 June 2020, 6:00pm, was publicly announced on the Elia website and during the Task Force CRM meeting

[1] https://economie.fgov.be/sites/default/files/Files/Energy/AR-methode-de-calcul-volume-de-capacite-parametres-encheres-mecanisme-de-remuneration-de-capacite-Annexe-4-avant-projet-AR-clean.pdf
[2] https://www.elia.be/en/users-group/crm-implementation/20200505-tf-crm-11

from Tuesday 5 May 2020. The overall calendar for this public consultation and the consecutive steps was equally presented by the FPS Economy on the TF CRM meeting of May 5th 2020[3].

In total 4 confidential reactions and 6 public reactions (CBS, Febeg, Febeliec, ODE-EDORA-BOP, Ecolo-Groen and IEW-Greenpeace) were received.

This document is structured as follows:

- First, the legal and regulatory framework of this public consultation is reminded;
- Then, Elia's recommendation is presented in line with article 6, §3 of the proposed Royal Decree;
- Finally, this public consultation report provides the overview of received questions, a justified answer from Elia and how these will be taken into account for the CRM calibration. This public consultation report will be published on Elia's website as well as all the non-confidential feedback received.

It should also be noted that a particular public consultation report will be provided in July 2020 regarding the topics related to the feedback received on the input parameters for determining the intermediate price cap. This second public consultation report will be provided in a later stage, following the possibility for Elia from article 6, §1 of the Proposed Royal Decree to organize more than one public consultation.

Finally, Elia would like to thank all the market parties for their contributions and for providing written feedback during the public consultation.

[3] https://www.elia.be/nl/users-group/implementatie-crm/20200505-tf-crm-11

1. Legal and regulatory framework

The law of 22 April 2019, modifying the federal electricity law of 29 April 1999 foresees in its article 7undecies §2 that the Transmission System Operator (Elia) elaborates on a yearly basis and after public consultation, the reports providing the calculation for the necessary volume and a proposal of auction parameters on the basis of a methodology adopted by the king, on proposition of the TSO, made after public consultation and advice of the regulator.

Since the adoption of the law, the Electricity Regulation (2019/943) entered into force and is applicable as of January 1st 2020. This regulation implies some evolutions to this legal framework and has led to several alignment discussions within the 'Comité de Suivi', i.e. the working group presided by the FPS Economy and bringing together representatives of the cabinet of the Minister of Energy, the CREG and Elia.

These discussions have lead the CREG to propose a note on certain aspects for the above mentioned methodology to be adopted by the King on the one hand, and Elia proposed a methodology for other related aspects of the volume determination. Both have been provided to the FPS Economy after public consultation.

The FPS Economy combined both inputs, made some modifications and has put an integrated proposal for Royal Decree Methodology for the volume and parameter calculation of the CRM to public consultation. The consultation report, the advice from the FPS Economy and the modified final proposal of Royal Decree, as submitted towards the European Commission, is published on the FPS Economy's website[4] as of April 21st.

For more context and background, we refer to the advice of the FPS Economy and the other documents published on the above mentioned website.

Following the finalization of this proposal of Royal Decree, the FPS Economy received an instruction from the Minister of Energy to prepare, together with the Members of the 'Comité de Suivi', the necessary works for the first auction, and this in accordance with the secondary legislation as introduced towards the European Commission (i.e. in this case, the proposed Royal Decree). The Members of the Comité de Suivi were informed about this on April 20th. Elia commits to ensure the qualitative completion of its tasks as requested by the public authorities, even though the secondary legislation is not (yet) formally adopted. The concrete instruction that the FPS Economy received from the Minister of Energy and which has been shared with the 'Comité de Suivi' is the following:

4 https://economie.fgov.be/nl/themas/energie/bevoorradingszekerheid/capaciteitsremuneratiemechanis

Madame Mahieu,

La législation secondaire relative à la mise en œuvre de la loi CRM (hormis l'AR financement) ayant été introduite auprès de la DG Concurrence et en vue d'assurer la sécurité d'approvisionnement du pays en électricité dès 2025, la Ministre demande à la DG Energie de faire, en collaboration avec les membres du comité de suivi CRM, le nécessaire pour préparer la première enchère qui devra avoir lieu en 2021 et ce, en respectant la législation secondaire comme elle a été introduite, y compris les délais, les procédures et les méthodologies y décrits.

Il convient notamment d'inviter les membres du comité de suivi CRM à commencer dans les plus brefs délais les travaux décrits dans les articles 4 et 5 de l' « avant-projet d'arrêté royal fixant la méthode de calcul du volume de capacité nécessaire et des paramètres nécessaires pour l'organisation des enchères dans le cadre du mécanisme de rémunération de capacité », y compris les consultations publiques, en vue d'un choix de un ou plusieurs scenario(s), des données et hypothèses à partir desquels ils sont établis et de paramètres intermédiaires avant le 30 juin de cette année.

The FPS Economy consequently organized further meetings and requested Elia to prepare the necessary alignment with the FPS Economy and the CREG, as stipulated in article 4 of the proposed Royal Decree.

This alignment has been duly performed via teleconference meetings on April 24th and 30th, with intermediate written feedback. The CREG has decided to participate as observer in both meetings and requested an additional concertation, bilaterally with Elia, on May 4th. This concertation has taken place, with the FPS Economy as observer. These interactions have led to several modifications of the consultation documents.

The proposed Royal Decree (art. 6 §1) stipulates that the public consultation should last for a period of one month. It was thus organized from 05/05/2020 until 05/06/2020 (18h).

The consultation report results from article 6, §3 of the proposed Royal Decree, stipulating that Elia needs to make such a report, including its recommendations. It will be submitted to the Minister, the FPS Economy and CREG. As next step, it is foreseen that the CREG makes a proposal for scenario, taking this consultation report and the stakeholder feedback into account. Consequently, the FPS Economy makes an advice on this proposal (art.4, §6) and ultimately, it is up to the Minister of Energy to make a decision by June 30th (art.4 §7). This decision concerns the scenario and the intermediate values of gross CONE and the X-factor, for which a separate public consultation will be organized by the CREG in accordance with art. 5 of the proposed Royal Decree.

Given the short timings for this first auction, and as foreseen in art. 26 of the proposed Royal Decree, a slight modification to the planning has been agreed in the 'Comité de Suivi' (with CREG as observer). This implies that the Minister's above mentioned decision will not be taken before June 30th, but before July 21st. This timing foresees two weeks for the CREG to elaborate their proposal (by June 30th) and two weeks for the FPS Economy to provide their advice (by July 14th). This timing has been presented by the FPS Economy during the TF CRM of May 5th 2020.

2. Elia's recommendation

This section aims to provide Elia's recommendation, as mentioned in article 6, §3 of the proposed Royal Decree. This recommendation is formulated to provide a robust, realistic and balanced reference scenario, taking into account the received feedback from stakeholders, while ensuring the security of supply of the country against a limited, but realistic subset of unexpected events, referred to as 'sensitivities' in this report, according to the proposed Royal Decree denomination. Those sensitivities are therefore part of the reference scenario. The received feedback and detailed comments can be found in the next chapter.

This recommendation holds for the calculation applied on one single reference scenario of the required capacity volume and the parameters necessary for the organization of the Y-4 auction for delivery year 2025-26.

The overall starting point that Elia recommends is the dataset as used in the latest European adequacy study (and presented by Elia in the framework of the public consultation) adjusted with latest available updates and relevant sensitivities, as summarized on Figure 1.

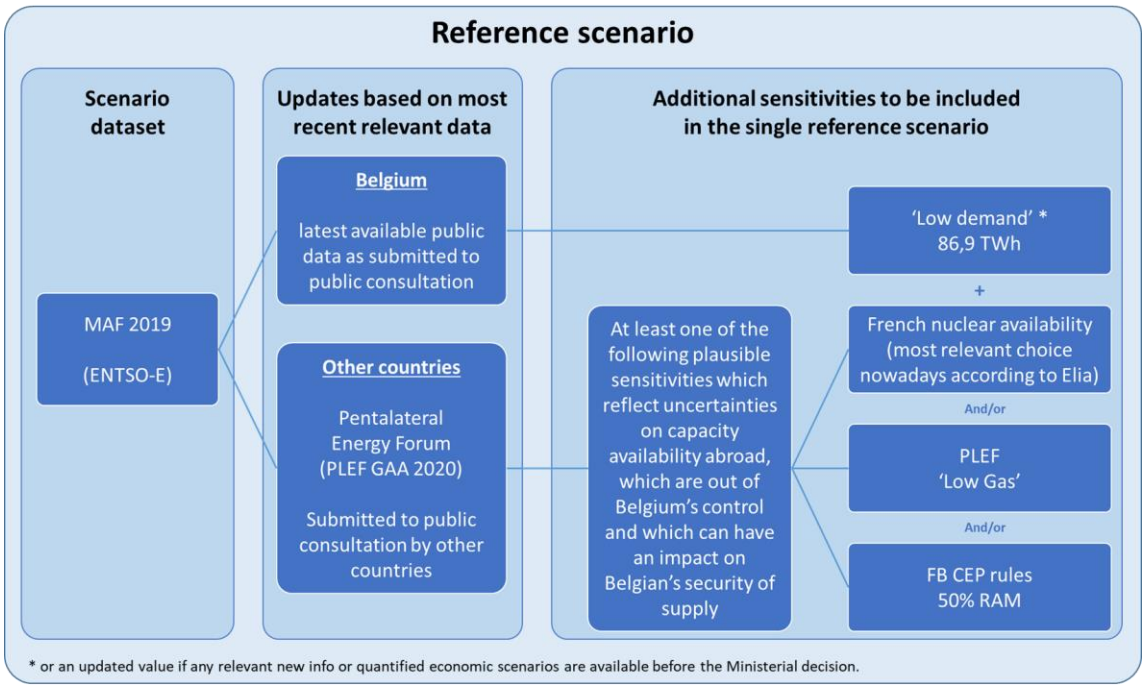

Figure 1: Elia's recommendation - Summary

The referred dataset is based on the latest Mid-Term Adequacy Forecast (MAF 2019) by ENTSO-E. Regarding Belgian data, the dataset was updated according to the latest available public data and submitted to public consultation, following article 4, §3 of the Proposed Royal Decree. Regarding other countries, the dataset from MAF 2019 had been updated based on the latest study of the Pentalateral Energy Forum (PLEF GAA published in May 2020) and submitted to public consultation.

Furthermore, Elia recommends to integrate to this dataset the following sensitivities as part of the reference scenario, as they have an impact on Belgian security of supply, are uncertain but plausible, and their realization is for most of them 'beyond control' of Belgium.

On the one hand, Elia proposes to take the 'low demand' sensitivity proposed to public consultation into account for Belgium in the reference scenario. On the basis of the received feedback from stakeholders, the uncertainty associated with the impact of covid-19 on the 2025-26 delivery period and the absence of updated official quantified data or scenarios regarding the Belgian consumption for delivery year 2025-26, Elia estimates it could be used to reflect a lower growth of the consumption. Nevertheless, Elia remains available to provide updated values for the delivery year 2025-26 if any relevant new info or quantified economic scenarios from public authorities (e.g. the latest projections from Plan Bureau) are available before the Ministerial decision (by making it available to the Minister).

On the other hand, Elia recommends to integrate in the reference scenario at least one sensitivity affecting the availability of imports from neighboring countries. Given the large amount of plausible uncertainties abroad, their significant impact on Belgium's security of supply, and their uncontrollable nature for Belgian authorities, Elia estimates relevant in this exercise to integrate at least one sensitivity (as part of the reference scenario) regarding the ability of other countries to provide the needed energy in periods of scarcity.

Elia estimates that the sensitivity regarding the nuclear availability in France (lower availability by 4 units on average during winter), the sensitivity 'Low gas' performed in the PLEF 2020 (additional gas closures in the CWE region due to economic reasons) and the non-achievements of the CEP rules for the delivery period 2025-26 regarding interconnections (by taking into account 50 % RAM instead of 70%) are the most relevant uncertainties in this context given their plausibility and impact. The Belgian security of supply should therefore be assessed by taking into account at least one of these independent sensitivities

According to Elia, the most relevant choice nowadays is to take into account lower nuclear availability values for France. This can be justified by observations in the recent 4 winters where the unavailability of the French nuclear fleet significantly increased (compared to the historical trend prior to winter 2015-16). This observation is again confirmed for the winter to come. Comparing the forecasted unavailability before the winter with the realized unavailability shows that the forecasts are under-estimating the unavailability of the nuclear fleet. This trend was confirmed by RTE (the French TSO) and can be clearly observed for last winter (W19-20) or the winter to come (W20-21) where the planned and the realized availability show a difference of 6 GW on average over the winter (see Figure 2).

Moreover, there are several indications that such trend is likely to repeat itself in the future (and for the 2025-26 delivery period):

- The nuclear fleet is ageing and several reactors need longer downtimes for their '4th Decennial inspections';

- More stringent safety rules might require additional unplanned works/upgrades during those downtimes;
- Common mode failures (e.g. issues found in one reactor which can affect more than one nuclear unit due to their similar design) are likely to occur as observed in the past winters.

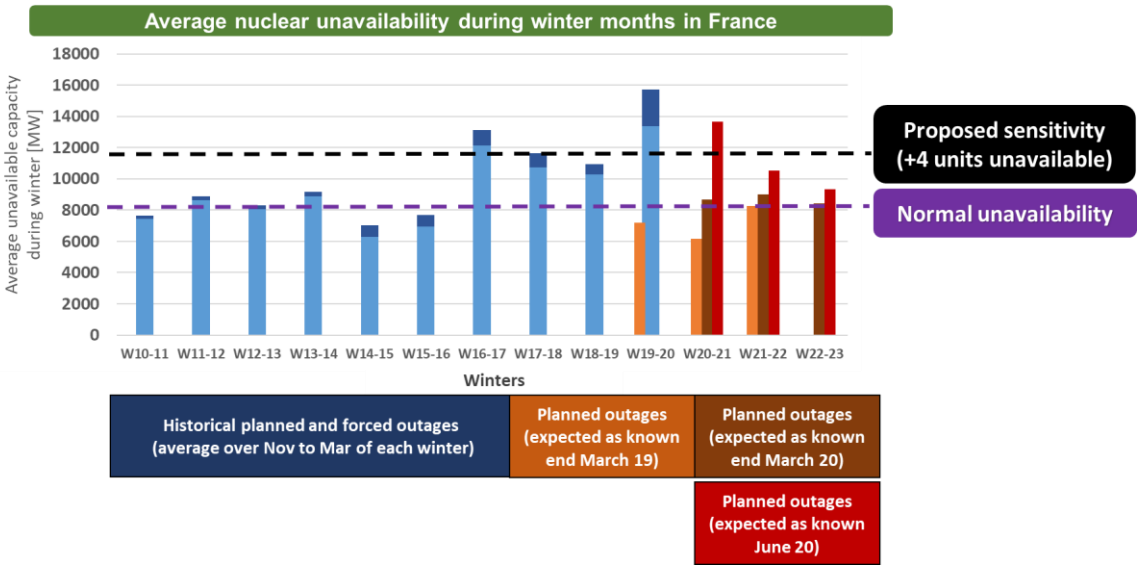

Figure 2: Analysis of the nuclear unavailability in France during winter months in France for the appropriate sensitivities selection.

3. Received feedback and Elia's answer

This chapter of the public consultation report provides the overview of received feedback, a justified answer from Elia and how these will be taken into account for the CRM calibration.

Regarding the received feedback from stakeholders, and before answering in details to all the comments, Elia would like to clarify 2 points in general which are related to the framework of this public consultation on scenarios, sensitivities and data for the CRM auction volume and parameter calculation for the delivery year 2025-26 which follows the requirements of Proposed Royal Decree.

Firstly, the **CRM auction volume and parameters calculation will be performed on one single reference scenario** decided by the Minister, based on CREG's proposal, FPS' advice and Elia's recommendations, as stated in article 4, §7. This reference scenario will be constructed based on the steps described in article 4, §2 to 4. This reference scenario can potentially integrate sensitivities that can have an impact on the Belgian security of supply and located inside or outside the Belgian market zone, as described in article 4, §4 of the proposed Royal Decree. If selected by the Minister, **those sensitivities will be integrated as part of one single reference scenario**.

Secondly, **the data and assumptions selected as reference scenario by the Minister, are adjusted with additional capacities based on preselected capacity types**, if needed in order for the reference scenario to be compliant with the Belgian security of supply criteria, as described in article 7, §1 of the proposed Royal Decree. This final dataset will be modelled in a market simulator in order to determine the information and proposal integrated in Elia's report, as defined in article 7, §2. This dataset does not represent an estimation of the outcome of the auctions and should not be considered as Elia's forecast of the expected capacity mix for delivery year 2025-26.

Regarding the annexes provided by Febeliec, Elia refers to the answers provided in the framework of the previous public consultations to which those annexes were provided as feedback.

3.1 Methodology

In the framework of Y-4 auction for 2025-2026 delivery period of the CRM, Elia organized a public consultation on scenarios, sensitivities and data for the CRM auction volume and parameter calculation. This public consultation takes place in the framework of the FPS' preliminary draft of Royal Decree laying down the method for calculating the required capacity volume and the parameters necessary for the organisation of the auctions. Elia strictly applies the methodology set in the Proposed Royal Decree and especially article 6, §2 regarding the content of the public consultation hence comments regarding the methodology or the 'need for a CRM' are to be analysed in the context described above.

3.1.1 General remarks

IEW-Greenpeace	Tout d'abord, la mise en place d'un CRM doit être considérée comme une mesure de dernier recours tel que prévu par le prescrit européen. Les alternatives (EOM only, Reserve stratégiques) doivent être investiguées parallèlement par le GRT en terme de coût et d'efficacité pour maintenir un niveau de fiabilité du système électrique suffisant.
IEW-Greenpeace	Si le marché de capacité s'avérait la meilleure option, il doit favoriser les solutions les moins impactantes climatiquement et éviter de nous enfermer dans une dépendance de long terme aux énergies fossiles (lock in).
Febeliec	Febeliec would like to thank Elia for this consultation on the scenarios, sensitivities and data for the CRM parameter calculation for the Y-4 Auction for Delivery Period 2025-2026. Febeliec strongly regrets that Elia still, as for all other adequacy related studies and analyses, only conducts a consultation on the input data, now complemented with some sensitivities and scenarios, and does not conduct a consultation on the methodology itself that it will apply for this extremely crucial decision on the instauration of a CRM in Belgium. Febeliec continues to strongly regret that Elia has chosen yet again not to involve the stakeholders in the development of this methodology, other than the stakeholders imposed by the law (FPS Economy plus coordination with CREG). Even though no such legal obligation exists, Elia could (and according to Febeliec, should) have opted for a much larger involvement from all stakeholders, in order to obtain a much stronger buy-in from stakeholders in the methodology, the study and its results. Febeliec will provide its input on the proposed excel-file by Elia, but this does not mean that Febeliec agrees with the applied methodology and should in no case be interpreted as such. Febeliec has understood that Elia is to apply the methodology it has developed unilaterally for its bi-annual Adequacy and Flexibility Study, on which Febeliec has made ample comments and provided ample questions,

	many of which still have not been resolved or even have not been answered in detail, thus also leaving at least the same comments and questions on this consultation. Febeliec has comments both on the excel spreadsheet as well as the two accompanying documents, the explanatory note and the cost of capacity for calibration of the Belgian CRM study."
Febeliec	Febeliec takes note that Elia states that “as from the start, Elia, together with the FPS Economy and the CREG have set up an intensive stakeholder involvement process”, and while not even going into the point that this stakeholder involvement process with respect to the design of the CRM has a myriad of issues that render it less than up to the level for such an important decision in the Belgian energy landscape, for this consultation at hand it is very important to note that none of the topics, scenarios, sensitivities and data, have been discussed at all during the aforementioned stakeholder involvement process, nor has any methodology for the determination of the need for a CRM ever been discussed or consulted upon during this period. Febeliec thus, as mentioned above, voices its strongest concern but also opposition to the way Elia frames the context of this consultation and reiterates its major concerns on the lack of real stakeholder involvement.
Febeliec	On the general scope of an analysis on the need for a CRM or this input for the CRM parameter calculation for the Y-4 Auction for Delivery Period 2025-2026, Febeliec strongly wonders how such an analyses, including least cost of the CRM analysis (as defined in the Belgian Electricity Law) as well as an economic viability analysis can be performed knowing that the design and corresponding functioning rules of the proposed CRM has not even been finalised yet, let alone approved by the European Commission based on compatibility and compliance with European legislation and validated by the relevant authorities in their respective decision domains. The explanatory note itself indicates that an (incomplete, as e.g. the financing aspect is missing) file has been provided to the European DG Competition, and that as far as Febeliec knows as of yet no approval has been received. Febeliec also notes that the very tight timing also foresees only ten days for Elia to rework its proposal based on the input from stakeholders, which reinforces Febeliec in its belief that this consultation is mainly done because it is required and not in order to get real interaction with stakeholders (also shown by the fact that none of these topics have been addressed before in the stakeholder involvement process), while the timing also allows for only two weeks for the CREG to elaborate a proposal (without any further consultation) and two weeks for the FPS Economy to provide and

	advice and one week for the Minister to take a decision by July 21st (already 3 weeks behind the initial schedule). Febeliec remains under the impression that while the involved parties in preparing the required steps for the instauration of a Belgian CRM are always citing urgency, they have not taken appropriate measures to ensure that all relevant documents were prepared and time and duly discussed and consulted with all stakeholders, thus creating a substantial risk for a poorly prepared and validated CRM (if any were already actually required for security of supply in Belgium), to the detriment of cost for consumers.

Elia understands that the instauration of the CRM is subject of a vast debate with a high involvement of many actors. Elia therefore welcomes all reactions, but notes however that many of these are part of larger contributions, going beyond the scope of the public consultation on the scenarios, sensitivities and data for the CRM parameter calculation for the Y-4 Auction for Delivery Period 2025-26 as meant by the proposed Royal Decree.

In that respect, Elia highlights two main aspects:

- Elia respects and applies the applicable legal and regulatory framework, as explained in chapter 1;
- The unique objective of this public consultation is to gather feedback and input for the determination of the reference scenario for the calculation of the needed volume and parameters for the first auction in the CRM, in line with the proposed Royal Decree and the electricity law.

Therefore all reactions going beyond this scope and beyond the responsibility of Elia within its mandate are qualified as out-of-scope. This in particular relates to the above received remarks concerning the need for a CRM, the missing capacity need, the design of the CRM, etc.

However, all received comments, whether these are in or out of scope, will be transmitted to the Minister, the CREG and the FPS Economy for their consideration.

Ecolo-Groen	We first wish to share our concerns regarding the methodology that is being used. Elia is indeed using the only methodology available today, provided by ENTSO-E. The methodology that will be made available in August 2020 by ACER would have been, to us, more appropriate owing to their neutral status.
Febeliec	On the scenario and sensitivities, Febeliec is already surprised to see that Elia states that the methodology related to the model and simulation will be in line with the latest Mid-Term Adequacy Forecast (MAF 2019), and not with the methodology for the European Resource Adequacy Assessment (ERAA). While some might argue that the latter is not finalised and approved (to a large extent due to the transmission system operators not being ready on time), for Febeliec

	the proposed approach is extremely insufficient as the ERAA methodology has to be consulted upon, as compared to the MAF (or even Elia's own Adequacy and Flexibility Study). For Febeliec this is clearly not in line with the requirements written down in the Clean Energy Package (CEP) that has entered into force since this year, while this could have been circumvented by conducting a (non-mandatory but therefore not less necessary) consultation on the methodology on a Belgian level, to respect at the very least the intent of the CEP.

Elia would like to remind that the methodology to be applied is the one prevailing in the legal framework according to Proposed Royal Decree, article 12, §2 and §3. Following this article, the simulation methodology that will be applied shall be therefore in line with the relevant sections of the 'European Resource Adequacy Assessment' methodology, as referenced in Article 23 of the EU Regulation 2019/943 of the European Parliament and of the council of 5 June 2019 on the internal market for electricity, provided that such an approved methodology exists at the time of performing the calculations and is implemented in the most recently published ENTSO-E ERAA report. Given that nor the methodology for the ERAA is yet approved by ACER, nor it was already used in an ERAA, the latest 'European adequacy assessment' corresponds to the 'ENTSO-E Mid-Term Adequacy forecast report (MAF)' published end of 2019. Elia also wishes to indicate the articles referred to in the above mentioned European Regulation deal with the methodologies for adequacy assessments (ERAA, NRAA), which is to be clearly distinguished from the parameters calibration of a CRM which is dealt with here. Although the proposed Royal Decree seeks alignment in terms of methodology with ongoing European developments and best practice (but also defines how to proceed in case this is not yet fully available), from a legal perspective, it does not imply, according to Elia, that those European rules (for ERAA and NRAA) are directly applicable in this case.

3.1.2 Climate Years

Ecolo-Groen	Finally, the public consultation does not suggest reassessment of some variables that have been used by Elia in their adequacy study and that will be key in determining Y-4 auction. Indeed, as it has been shown by a study conducted by researchers from the VUB1, the Loss of Load Expectations is very sensitive to the temperature that are recorded. Because extremely cold winters are unlikely to occur due to climate change, the meteorological data used by Elia seems irrelevant. We suggest that the climatic and meteorological assumptions made for the simulations are modified to take into consideration these scientific findings. Because, as it has been shown by a study conducted by researchers from the VUB, extremely cold winters are unlikely to occur due to climate change, we suggest to add a sensitivity based on other climatic and meteorological assumptions that take into consideration these scientific findings, or to modify this variable made for the simulations.
ODE EDORA BOP	The explanatory note of Elia, nor the Excel file, mention the climatic and meteorological assumptions made for the simulations. Still these parameters are paramount for determining the capacity volume needed to cover the future (near) scarcity moments, especially with regard to cold waves (length, strength and probability) and wind regimes. BREF asks these assumptions to be clarified and evidence based. The regulator has commissioned a study which is now available and could serve as a basis for these assumptions pending a peer review of the study.
IEW-Greenpeace	Les projections de données météorologique utilisées par Elia peuvent-elles encore être considérées comme peu représentatives étant donné l'évolution du climat en Belgique. L'impact sur les productions renouvelables ou sur les consommations électriques de pointe en hivers est important. Une étude spécifique de l'IRM permettrait de dégager des scénarios climatiques plus en phase avec l'évolution du climat.

Elia takes note of the comments regarding the climate years to be applied in the framework of this exercise.

First of all, Elia would like to remind that the methodology to be applied is the one prevailing in the legal framework according to Proposed Royal Decree, article 12, §2 and §3. Following this article, the simulation methodology that will be applied shall be therefore in line with the relevant sections of the 'European Resource Adequacy Assessment' methodology, as referenced in Article 23 of the EU Regulation 2019/943 of the European Parliament and of the council of 5 June 2019 on the internal market for

electricity, provided that such an approved methodology exists at the time of performing the calculations and is implemented in the most recently published ENTSO-E ERAA report. Given that nor the methodology for the ERAA is yet approved by ACER, nor it was already used in an ERAA, the latest 'European adequacy assessment' corresponds to the 'ENTSO-E Mid-Term Adequacy forecast report (MAF)' published end of 2019.

For questions related to the methodology and assumptions, more details on the ENTSO-E climate database assumptions and data can be found on the latest MAF study page[5].

Regarding considerations of climate change and climate years for adequacy studies, some elements of answer can be found in the answer of ENTSO-E to the public consultation of proposed ERAA methodology[6] (April 2020) and in the latest PLEF generation adequacy assessment[7] (May 2020). It results from those that:

- Incorporating effects of 'climate change' are not straightforward and needs careful analysis as it is key to capture the different probabilities of occurrence without losing in representativeness and confidence of results;
- ENTSO-E is currently working on improving its climate database. This process will take a certain time as it is not straightforward. This improved database will not be ready for the CRM calibration report (due in November 2020).

Regarding the mentioned study from the VUB. Elia would like to highlight two points. First, as TSO, Elia does not contest the results of the study regarding the tendency of climate change and the correlation between cold periods and the occurrence of LoLE-hours. We are indeed not climate experts, but consider ourselves however as adequacy experts. And it is exactly the link between those two domains which requires further analysis. Elia believes it requires further analysis and alignment with other TSO's and Member States to integrate the global and thus European effect of climate change on adequacy. Unilaterally making assumptions, without coordination with Member States could lead to incoherent results, having significant impacts on the adequacy of the countries deviating from European practices. This would be particularly the case for Belgium, given the high and structural dependence of imports for its security of supply.

Indeed, would the lower frequency of occurrence of cold spells in Europe lead to a lower need for capacity, without reducing the SoS standards and thereby the risk profile of the country, this could lead in the long run to less installed capacities in many European countries, with as a result less excess of capacity available that can be used by countries structurally dependent on import like Belgium. Without an in depth investigation and a thorough European assessment it is not possible to best guess if (and if so to what

[5] https://www.entsoe.eu/outlooks/midterm/#download
[6] https://consultations.entsoe.eu/entso-e-general/proposal-for-european-resource-adequacy-assessment/
[7] https://www.elia.be/fr/actualites/communiques-de-presse/2020/05/20200520_third-regional-generation-adequacy-assessment-report

extent) the ‘positive’ impact of the lower frequency of cold spells would outweigh the ‘negative’ impact of the reduced availability of generation in neighboring countries needed for Belgium’s import (as Belgium is structurally dependent on import) on Belgium overall capacity need. Such European investigation and assessment are not available yet.

Given the above considerations, the database used by ENTSO-E (to be fully in line with the latest European adequacy assessment as stated in the proposed Royal Decree) will be used in the framework for the Y-4 auction of delivery year 2025-26.

However, Elia commits to analyze and see what is feasible and meaningful to be implemented for the next ‘adequacy & flexibility study’ (to be due for end of June 2021 according the law) taking into account the developments ongoing at ENTSO-E level.

3.1.3 Others

IEW-Greenpeace	Les objectifs de fiabilité du système électrique (adequacy) exprimés en Loss of load expectation (LOLE) constituent une variable d'ajustement et devrait dès lors faire l'objet d'une consultation publique. La Belgique, se fixe pour objectif un LOLE moyen de 3H (et 20 hours pour le P95). D'autres pays comme l'Irlande se fixe des standards de fiabilité moins contraignants (l'Irlande fixe un LOLE de 8H).

First of all, Elia would like to remind that it applied the methodology set in the Proposed Royal Decree and especially article 6, §2 regarding the content of the public consultation.

In the framework of the Proposed Royal Decree, Elia refers to article 7, §1. This articles mentions that Elia has to ensure that the reference scenario selected by the Minister is compliant with the security of supply criteria described in article 7undecies, §3 of the Electricity Law, by adding additional capacity to the Belgian market zone if needed.

Within the applicable law, the security of supply criteria is the following:

§ 3. Le niveau de sécurité d'approvisionnement à atteindre visé par le mécanisme de rémunération de capacité correspond à la courbe de demande calibrée avec comme référence: *1° le cas échéant, des normes harmonisées établies par les institutions européennes compétentes en la matière;* *2° en l'absence de normes harmonisées au niveau européen, les normes harmonisées fixées le cas échéant au niveau régional, en particulier au niveau du marché de l'électricité du Centre Ouest de l'Europe;* *3° en l'absence de telles normes, un calcul de LOLE inférieur à 3 heures et de LOLE95 inférieur à 20 heures.*	*§ 3. Het te bereiken niveau van bevoorradingszekerheid dat wordt vooropgesteld voor het capaciteitsvergoedingsmechanisme, komt overeen met de vraagcurve, die gekalibreerd wordt met als referentie:* *1° desgevallend, de geharmoniseerde normen vastgesteld door de in deze aangelegenheid bevoegde Europese instellingen;* *2° bij het ontbreken van geharmoniseerde normen op Europees niveau, desgevallend de geharmoniseerde normen vastgesteld op regionaal niveau, inzonderheid op het niveau van de Centraal-West-Europese elektriciteitsmarkt;* *3° bij het ontbreken van zulke normen, een berekening van een LOLE van minder dan 3 uur en van een LOLE95 van minder dan 20 uur.*

In the absence of security of supply as described in 1° or 2°, Elia will apply the 3h LOLE and 20h LOLE95 criteria defined on 3°.

However, in the framework of EU Regulation 2019-943, a new methodology proposed by ENTSO-E and to be approved by ACER regarding the Reliability Standard/Cost of New Entry/Value of Lost Load calculation will be available soon. If an updated value for the reliability standard of Belgium (based on this new methodology) is adopted by Belgium sufficiently ahead of the Elia report of 15th November, this can be taken into account in the calculations.

Febeliec	Febeliec wants to voice in any case one particular comment that was also discussed during the Task Force CRM of 05/05/2020 on which electricity price data Elia will take into account. Elia stated, as can also be seen in he minutes of this meeting, that it does not intend to use any forward market prices, but will only apply one price reference (also thus not covering a.o. intraday prices), while according to consecutive yearly analyses of the CREG up to 80% of electricity in Belgium is sold on the forward market. While a day-ahead price might be a relevant reference for certain calculation, in case of looking at economic viability it would be incorrect to not look at the revenues generated on the forward market, especially because of its volume-based dominance. Moreover, market actors selling their electricity production on the forward market should apply a full costing logic, in order to cover their full cost, as alternatively they would reduce their own revenue artificially and create missing money by their own volition (e.g. to gain market share), in which case such missing money would be covered by the concerned market player and not by the overall market, in particular not through a subsidised CRM paid by consumers. Especially if liquidity (in all dimensions) would be lower in such CRM, the overall outcome would be less efficient and thus unnecessarily more costly to consumers.

Elia does a market modelling simulation but there is no explicit differentiation of markets horizons such as forward markets. The potential for additional revenues that can be expected from intertemporal arbitrage opportunities on both the real time and intraday markets, as well as the forward markets, is limited for the following reasons.

Revenues from the forward markets may possibly deviate from the anticipated revenues from the DA market. However, notwithstanding some historical observations, it generally remains unclear to what extent and in which direction.

In most commodities markets, there is a natural relationship between spot and forward prices, due to the fact that commodities can usually be stored. However, this is not the case in the electricity markets, given electricity can hardly be stored. Hence the relationship is far from straightforward.

The theoretical link between the spot and forward price (for which often is referred to the academic work of Bessembinder and Lemon in 2002) has been tested and has largely

not been validated by the empirical literature. Indeed its validity is conditional upon several specificities and assumptions that are not necessarily verified in practice. The empirical link between spot and forward strongly depends on a number of key elements in the context:

- The generation mix of the analyzed market. Results on Nord Pool market dominated by hydro-storage are very different from those obtained in central Europe that are dominated by thermal plants and have a much more limited storage capacity. Redl and Bunn (2011) and Redl (2011) also find that price risks of fuels substantially affect the risk premia of electricity price.
- The analyzed period and evolution in time. It is important to take into account evolutions over time. For instance, Lucia and Torro (2008) indicate that Nord Pool was subject to structural changes in 2002-2003 and find different results depending on the period considered. Huisman and Kilic (2012) find time-varying risk premia in the Dutch futures prices, while Redl et all. (2009) find evidence that price formation in the considered markets was influenced by historic spot market prices.

Note that Elia is not aware of any academic work properly assessing the situation of Belgium or the central-west European energy market.

Hence, the robustness of the link assessed empirically between the spot price and the forward price is limited and the explanatory power of empirical models is questionable. As a consequence, it is common practice to assume that forward markets simply act as financial instruments anticipating the day ahead price (without any risk premium or discount).

As a conclusion, it appears that long term markets are complex to model, and the level of possible additional revenues relative to the DA market may be limited. Hence, it is common practice to simulate the energy market as if all energy was sold on a “day-ahead” basis. This is also the current practice in European studies (MAF) and national studies across Europe.

ODE EDORA BOP	Another missing element of Elia’s file for public consultation is the reserved capacity volume in Y-1 for units functioning less than 200h per year, as foreseen in CRM law and further detailed in the draft Royal Decree. Since this volume has to be withdrawn from the Y-4 auction volume, and as the potential for these units seems very high (see analyses of the CREG), BREF asks that this assumption be specified and detailed in the volume parameters.

First of all, Elia would like to remind that it will apply the methodology set in the Proposed Royal Decree and especially article 6, §2 regarding the content of the public consultation.

In the framework of the Proposed Royal Decree, Elia refers to article 7, §2. On the basis of the reference scenario selected by the Minister and made compliant if needed with

the legal security of supply criteria by adding additional capacity, Elia will provide the load duration curve defined in article 11, §5 required for CREG in order to determine the 200h reserved volume.

3.2 Scenario dataset

3.2.1 Data sources

Febeliec	On the data and assumptions for the scenario, Febeliec will provide its comments in more detail on the different sheets of the spreadsheet, but already wants to voice some more general concerns here. Elia states that for example generation and storage have been updated according to the most recent available information sources, yet does not disclose which those sources are, making it very difficult to validate the Elia's choices. This comment has already been made by stakeholders on other adequacy assessments by Elia, yet has still not been addressed.
Febeliec	Febeliec has following remarks and comments to the spreadsheet. In general, Febeliec already wants to indicate the lack of much actual data provided by Elia. Most spreadsheets provide hardly any data, almost no sources and in fact provide hardly any basis to provide input on. It is impossible to discern whether the values are based on external sources, internal estimates, or a mix of both, making it also nearly impossible to validate or falsify the data.

Elia does not agree with Febeliec on this point. Elia provided at least all the data required by article 6, §2 of the Proposed Royal Decree for the delivery year 2025-26.

The Excel file presented all the necessary data and assumptions required for calculating the required capacity volume and the parameters necessary for the organization of the Y-4 auction. This dataset is based on the latest Mid-term Adequacy Forecast (MAF 2019) performed at ENTSO-E. A link to this dataset was also provided in the document. All the updates in comparison with MAF 2019 had been integrated in the Excel file with the sources for each value. Moreover, the Excel file refers for each sheet to a particular section of the explanatory note providing additional information on the dataset (including sources). Finally, the whole scenario dataset as well as the proposed sensitivities had been presented during the TF from the 5th of May 2020[8]. Elia clearly mentioned on its website that the slides presented could be considered as a support for this public consultation.

As a conclusion, Elia believes it has performed its commitment to the Belgian authorities in line with the current legal framework and as requested by the Minister instruction.

[8] https://www.elia.be/en/users-group/crm-implementation/20200505-tf-crm-11

3.2.2 RES

Febeg	The PNEC objectives as defined for the 2030 horizon could induce a boost at the end of the decade only with a less favorable impact for the year 2025.The objectives are ambitious, especially for onshore wind and biomass, but the NIMBY-effect-and in particular the delaying effects of the appeal procedures -should unfortunately not be underestimated.
Febeg	It should also be noted that overall, in the 3 regions, there is a heavy downwards trend in the subsidies while the 2020 objectives are missed or barely reached with the existing subsidies in Brussels and Flanders. In Wallonia, in particular regarding PV, the confidence might be undermined due to the constantly changing regulatory framework. There is a fear that these are indications that policy makers might have abandoned the commitment to reach the objectives of the PNEC. In any case, it would require significant additional efforts to make up for the delay in the roadmap towards the 2030 objectives.

Elia takes note of the remarks of Febeg. Indeed, the modification of the regulatory framework and the NIMBY-effect are effects that could lead to the non-respect of the RES objectives fixed for Belgium. Despite those effects, Elia believes that the authorities will activate the necessary levers to achieve the RES objectives proposed by the authorities in the framework of the 'National Energy and Climate Plan' such as submitted to the EC end of 2019.

Febeliec	Febeliec is surprised that based on the spreadsheet renewables seem to be no longer considered whatsoever by Elia, despite the tremendous cost for consumers for this renewable capacity. While Febeliec could still understand discarding solar capacity, it is now observing that also all other types of renewables, including wind, run of river etcetera do not seem to be taken into account anymore.

Elia does not understand this comment. The renewable capacities for the delivery period 2025-26 are presented in the Excel file for every category (wind onshore, wind offshore, solar, hydro run-of-river, biomass and waste). Those information can be found on the sheet '1.1 Summary' from line 18 to 29.

Those numbers are also presented in the explanatory note and were presented during the TF11 from 5th May 2020.

Febeg	It furthermore should be noted that, for the offshore wind growth ambitions, the execution of these projects will also depend on the

	timely execution of the Ventilus project. Experience has taught the sector that such large-scale projects will face the necessary challenges before they can be realized.
ODE EDORA BOP	The increase of power generated by (offshore and onshore) wind turbines also need a special focus, since the effect of these on peak load cannot be underestimated, as pointed out by the regulator in a recent study.
ODE EDORA BOP	Elia foresees an additional offshore connection capacity of 700MW when commissioning the new Ventilus overhead line in 2026 (cf. Ventilus website). Since the grid infrastructure is the bottleneck in the further development of this offshore wind capacity, since the Flemish government in its government declaration committed itself to supporting the roll-out of the project and Elia is 'ready to accelerate the energy transition' (cf. annual report 2019) this grid connection capacity should be made available by December 2025 and could be included in the reference scenario for the winter 20252026, i.e. 3,000MW offshore wind.

Elia takes note of the received feedback on offshore wind.

Firstly, regarding the current available information, the additional offshore connection capacity of 700MW is not expected by 2025 and is thus not considered in the Y-4 auction for the delivery year 2025-26 as the availability of this additional capacity is strongly related to the commissioning of the Ventilus project. Elia will of course re-assess this element in the framework of the next auctions' reference scenario.

Secondly, as mentioned in the reaction to BOP in the public consultation on the design notes, the wind power profiles come from the data used at ENTSO-E. These data are provided with the cooperation of Meteo-France and the Technical University of Denmark. They are based on wind speeds, expected (future) power curves, locations, outages… This database should therefore take into account the request from BRP. The database can be found on the ENTSO-E MAF study website[9].

3.2.3 Thermal

Ecolo-Groen	On the parameters determining the capacity volume, it appears that the new updated value leads to withdrawing 2,5GW of new CCGT. We do not understand such a loss. What could explain that the Energy Only Market (EOM) will be less efficient than what was first predicted

[9] https://www.entsoe.eu/outlooks/midterm/

	by the MAF study? If that is the case, wouldn't there be measures that could ensure better incentives coming from the market itself?
ODE EDORA BOP	Elia withdraws 2.5 GW of new CCGT capacity compared to the reference publication made by ENTSO-E in its last mid-term adequacy forecast (MAF 2019 scenario). The explanation given by Elia for this withdrawal is not clear, a clarification is needed on the reasons for this major withdrawal: is the EOM market functioning less well than foreseen by ENTSO-E? Are the EOM revenue forecasts lower than foreseen for new CCGT's, in spite of the major withdrawals foreseen in Belgium (nuclear phase-out) and abroad (coal phase-out)? In general the link between the shutdown of existing capacities until 2026 and the room made therefore for new (CCGT) capacities in existing EOM markets is not being investigated by Elia in its assumptions and scenarios. BREF asks that this link be duly investigated by Elia in its reference scenario. Besides, at least in one sensitivity scenario, the expected volume of gas power plants that could potentially be incentivized to remain in the market or be induced by the scarcity pricing mechanism that the regulator ask to put in place until 2024 has to be calculated.
Febeliec	Febeliec is also surprised to see that Elia discards the 2500 MW of new capacity in Belgium that is considered by the MAF 2019 (which Elia itself refers to as the methodology to apply in this analysis), thus not only creating a large gap in the Belgian adequacy situation which of course will lead to a need for new capacity but even more questionable is thus the omission of already planned generation (and storage/flexibility) projects for which the completion is not necessarily linked to the introduction of a CRM in Belgium. For Febeliec, such approach is a gross underestimate of reality and as such will artificially create a sense of urgency.

This point has been discussed during the TF11 from the 5th May 2020.

The scenario for Belgium used in the MAF study already assumed 2.5 GW new thermal capacity (arbitrary choice) in 2025 as it is assumed that Belgium will be adequate in 2025 (based on the MAF scenario) and will be compliant with the legal security of supply criteria as defined in article 7undecies, §3 of the Electricity Law. This additional capacity was thus not based on an economic viability check nor a representation of market incentives nor an assessment of the efficiency of the Energy Only Market. It was an ex-ante arbitrary choice to add that capacity without any guarantee (as demonstrated in other studies) that such capacity would be invested in. It is the reason why it is proposed to remove the 2.5 GW of new CCGT assumed in MAF2019 from the scenario.

For the construction of the reference scenario for the CRM calibration, this arbitrarily added capacity in the MAF (as explained above) would then be removed. Once the

reference scenario will be established by the Minister, if the scenario does not meet the legal security of supply criteria, additional capacity based on preselected types will be added step by step by Elia, according to the article 7, §1 of the Proposed Royal Decree.

Febeliec	Febeliec has no comments on the specific units presented, but reiterates a longstanding comment on the lack of transparency on the announced (temporary) closure of power plants in Belgium. Moreover, Febeliec also notices that Elia does not consider any additional units in Belgium in the period till 2025 and wonders whether this is realistic.

On the first point, Elia can only refer to the legal procedure related to the closure announcement of power plants in Belgium (article 4bis of the Electricity Law).

On the second point, Elia took into account all the available information regarding the units in the market for the delivery period 2025-26.

On the one hand, it might happen that additional capacities will enter the market before this delivery period. In that case, those will be taken into account in the 'reference scenario' to be defined for the calibration of the Y-1 auction. Concerning the Y-4 auction, the reference scenario selected by the Minister will be made adequate by adding new capacities if needed from preselected capacity types. Then, the reference scenario will be used in order to define among others the volume parameters of the demand curve. The capacity mix used in the calibrated reference scenario does not imply that this capacity will be the one (or a forecast from Elia of the one) resulting from the auction, as mentioned in the general disclaimer described on §3.

On the other hand, it might happen that some units referenced by Elia in its dataset will not be anymore in the market for the delivery period depending on e.g. investment decision from the producers or CRM Y-4 auction results or the absence of economic support. In this case, the calibration of the Y-1 auction will be adapted to not underestimate the total volume to be procured.

Therefore, Elia believes that the proposed dataset can be considered as the best available information on the existing thermal units that would be in the market with a CRM for the delivery year 2025-26.

Febeliec	As stated, Febeliec will make punctual comments on the spreadsheet below, but one element strikes Febeliec on the forced outage rates, in particular with respect to the HVDC force outage rate (which will be quite important in light of NEMO and Alegro and potential future HVDC interconnectors), where Elia states that "a consensus was reached with 5% of forced outage", which makes Febeliec wonder between which parties such consensus was reached, as the methodology has not been consulted upon and thus this decision rather seems to be an

	arbitrary decision by Elia and in any case not based on a broad stakeholder consensus, as would be implied by the Elia statement. Febeliec is concerned that many more implicit and explicit decisions have been taken that are presented as a consensus yet are in essence the mere decision of Elia itself, for the already mentioned lack of any stakeholder involvement on the methodology.
Febeliec	Febeliec regrets that no sources have been provided, making it difficult to assess the information. For example for DC links, Febeliec wonders on which historical data this is based and which technologies have been taken into account; Febeliec has always understood that the applied technology for at least NEMO and Alegro is new should thus not lead to important outage rates.

Elia understands the comment of Febeliec regarding the fact that no sources were provided for the HVDC links.

As background information, Elia would like to mention that ENTSO-E uses a forced outage rate of 6% for HVDC links which is based on historical data. This value is used for all HVDC links (in non-meshed grids). Indeed, the upcoming 'ALEGrO' interconnector is part of the 'flow based capacity calculation method' and modelled as 'evolved flow based', hence its impact and outage is covered by the other CNECs in the grid.

Concerning the specific outage of the NEMO interconnector, there are not enough data available to have representative data. In the framework of the strategic reserve Elia had proposed to use the same rate as in ENTSO-E (6%) but Febeliec shared concerns that the 6% rate could be too high[10]:

With respect to the HVDC forced outages, Febeliec takes note from the fact that Elia puts the unavailability of these HVDC interconnectors at 6% and wonders whether this is not a bit steep, especially since these interconnectors will still be new a thus not prone to ageing effects within the horizon of this assessment.

Following this comment, an historical analysis on the BritNed availability resulted in 5% unavailability. This value was used for the 'Adequacy & Flexibility study' (Elia, 2019), §2.5.3 and was submitted to public consultation upon, as mentioned in the associated public consultation report[11]:

For DC-links, note that 6% is proposed by ENTSO-E for HVDC FO rate. However, in the

[10] https://www.elia.be/-/media/project/elia/elia-site/public-consultations/2017/20170424_febeliec_en.pdf
[11] https://www.elia.be/-/media/project/elia/elia-site/public-consultations/20190121consultationreportofthepublicconsultationonthedatausedforthestudyregardingtheadequacyandflex.pdf?la=en

scope of SR, stakeholders have expressed the fact that 6 % is too high. A consensus was reached with 5% of FO. This is the value taken as well in this study. Given that NEMO is only in service for a few weeks, it is impossible to get reliable data on its FOs. For the forced outage duration, a period of 7 consecutive days was retained and corresponds to the assumption used by ENTSO-E (based on CIGRE data) for the Mid-term Adequacy Forecast.

The written source of the consensus source for the 5% of HVDC was not found but Elia would like to remind that it always adapt its dataset in a transparent way in the framework of the public consultation associated with its adequacy studies. Despite the fact that this updated value had been chosen in order to fit with stakeholders feedback, Elia won't therefore use it as a reference in the framework of the CRM calibration. Elia strongly refute Febeliec's allegation and reminds that every modification of a dataset are proposed by Elia in the framework of a public consultation and (in)validated in the framework of the public consultation report.

In order to keep consistency with European studies, and given that there are not enough data on the NEMO link interconnector, Elia proposes to stick to the 6% outage rate used at ENTSO-E level.

Febeliec	Febeliec regrets that it is not clarified which power plants are included here, in particular what with CHPs (large and small), diesel generators, emergency generators (all considered market response?) etcetera. Because of a lack of breakdown (only aggregated data is shown), it is also impossible to identify why certain periods (in particular in middle of the winter and beyond the Christmas Holiday period) show a much reduced generation pattern. As such, it impossible to provide any meaningful comments to the proposed data.

In order to answer to Febeliec's concerns, Elia refers to the Excel file submitted to public consultation. The sheet '1.1 Summary' provides a clear overview of the split between the different categories and the associated generation capacity.

Regarding gas-CHP, biomass and waste, a part of the units are individually modelled in the simulation and the details are presented on the sheet '1.2 Ind. mod. thermal gen.' and for the other part a thermal generation profile based on historical data is used and is presented on the sheet '1.4 Profiled thermal generation'. This last sheet mentioned that 1244MW of profiled generation capacity is taken into account for gas and other. Diesels generators are part of this category.

Indeed, for modelling purposes, there is a need to distinguish the 'large' units which are individually modelled (with an associated forced outage) and the 'smaller' units which are taken into account with an historical average generation profile.

In order to perform this split, Elia maintains a database of centralized and decentralized generation units, which is updated on a monthly basis following exchanges with DSOs and grid users directly connected to the Elia grid. The database includes both units with and without a CIPU contract.

The profiled generation time series are constructed on the basis of available historical data.

Emergency generators are not explicitly taken into account in the profiled thermal generation but are included in the market response shedding and shifting categories.

3.2.4 Nuclear

Febeliec	Moreover, Febeliec also wonders which data Elia will use to model nuclear availability in other countries, knowing that Elia refers several times to such scenarios as having a major impact, yet does not provide any quantitative insight on its methodology.

As mentioned in the explanatory note, the data for the simulated countries (EU22) come from the latest Mid-term Adequacy Forecast performed at ENTSO-E level. A link to the ENTSO-E study and database is presented in the Excel (section 5). This database provides also data regarding the availabilities for each technology. Then, other countries data had been updated according to the PLEF GAA 2020 published in May 2020. Please note that only the capacities had been updated and not the associated technical parameters.

Elia will not use other information in the scenario dataset for other countries that the parameters applied in the framework of MAF2019 (and updated in the PLEF GAA 2020 for the installed capacities). Additional sensitivities on those technical parameters or capacities that can have an impact of the Belgian security of supply might then be integrated in the reference scenario, as defined in the Proposed Royal Decree.

3.2.5 Storage

Febeg	FEBEG understands that these assumptions are based on expressed political ambitions that are translated in the PNEC. However, at this stage, there are no guarantees that these ambitions will materialize, in particular in absence of a regulatory and/or economic framework to stimulate the development of these capacities. FEBEG believes that this capacity increase could actually only materialize when an appropriate regulatory and/or economic framework –such as for example a capacity remuneration mechanism -would be implemented in Belgium at that horizon. Therefore, the considered assumptions related to storage and market response should be reviewed: only the capacity that would be developed based on existing market conditions should be used as input in the modelling. The context of the remark above is the fact that the Elia methodology determines the volume to be auctioned based on the GAP volumes, where the GAP is the result of the structural block reduced with import, CHP, storage and market response. FEBEG is of the opinion that the structural block can only be reduced with imports and CHPs that are already subsidized. By doing so the GAP provides in a more accurate picture of the required volumes to fulfill the adequacy criteria. It does not seem logical to FEBEG that market response and storage are deducted from the structural block to arrive at the GAP unless Elia believes that market response should not be eligible to participate in the auction. In the same logic it would seem strange as well that all existing thermal capacities would be deducted from the structural block. Notwithstanding the above comment, FEBEG is convinced that market response and storage will indeed play a role in helping to secure security of supply insofar as they are in the money and can compete on an equal footing with other technologies.
Febeg	FEBEG also wants to point out that it is up to the market to decide on an efficient mix of technologies that will constitute the structural block and GAP. Unless specific measures are concretely being put in place by the authorities, the market will decide on the technology mix. In other words, the adjusting variable of the structural block should not be limited to gas-fired power plants.
Febeliec	For storage no source is available for the information nor a detailed quantitative breakdown (e.g. in number of batteries, technologies, vehicles, … or e.g. the capacity increase in Coo) nor a methodology describing the increase of storage, making it impossible to provide any meaningful comments to the proposed data. This comment has been voiced before and still has not been addressed by Elia in a complete way.

First, Elia would like to remind the purpose of this public consultation. This public consultation takes place in the framework of the FPS' preliminary draft of Royal Decree laying down the method for calculating the required capacity volume and the parameters necessary for the organization of the auctions. Elia therefore strictly applies the methodology set in the Proposed Royal Decree and especially article 6, §2 regarding the content of the public consultation. In the framework of the CRM calibration, it is not foreseen to determine a 'GAP volume' nor to refer to a 'structural block'. Those concepts were part of the '10-year Adequacy and Flexibility study' published in June 2019. Elia considers these comments as out-of-scope regarding the CRM calibration.

Then, Elia would like to remind that, regarding all the data and assumptions for every technology mentioned in the Excel file for the public consultation on the scenarios, sensitivities and data for the CRM parameter calculation for the Y-4 Auction for Delivery Period 2025-26, it is assumed that a CRM is implemented for the delivery period and provides the required support for each capacity contributing to the Belgian's security of supply to be available in the market.

Elia believes that the authorities will activate the necessary levers to achieve the storage objectives proposed by the authorities in the framework of the 'Energy Pact'. If those storage capacities contribute to the Belgian security of supply and meet the eligibility criteria, they could be supported by the CRM.

At the end, the reference scenario selected by the Minister will be made adequate by adding new capacities if needed, based on preselected capacity types including among others a storage category, that Elia proposes to add as requested by stakeholders during the TF11 from the 5th of May 2020. Then, the reference scenario will be used in order to define among others the volume parameters of the demand curve. The capacity mix used in the calibrated reference scenario does not imply that this capacity will be the one (or a forecast from Elia of the one) resulting from the auction, as mentioned in the general introduction described on §3 of this document.

Finally, regarding the storage installed capacity, Elia refers to Engie's website regarding the capacity increase project in Coo[12], as well for the reservoir size increase, as for the installed power increase and for the planning associated with this project. For the batteries, Elia presented in the Excel file and in the associated explanatory note the reservoir volume and capacity for this category, in line with the 'Energy Pact' figures which were also the ones used in the '10-year Adequacy and Flexibility study 2020-30' (Elia, 2019). The split between the different categories (small scale storage, large scale storage and vehicle-to-grid) is also presented in the Excel file. For any further details regarding this split, Elia refers to §2.5.2.1 of the '10-year Adequacy and Flexibility study 2020-30' (Elia, 2019).

[12] https://corporate.engie-electrabel.be/projet-extension-centrale-coo/

3.2.6 Market Response

Febeliec	Febeliec also continues to voice important questions and comments towards the values used for market response, which are based on the Belgian Energy Pact, which first of all pre-dates the current covid-19 crisis, but also does not provide a quantitative background for the provided numbers. Febeliec is thus unsure how for example to evaluate the impact of the roll-out of smart meters for a.o. residential consumers or the introduction of dynamic price contracts (per CEP) or the introduction of new grid tariff structures and incentives (in particular on the distribution grids, as can already be seen in Flanders). Elia for example refers to emergency generators as being part of market response, yet a break-down of the overall value in categories is not provided. Febeliec can only reiterate that there is a very substantial volume of emergency generators installed in Belgium, both at industrial sites (Febeliec has knowledge of several hundreds of MWs of industrial emergency generators connected to the Elia grid) but also at other sites such as hospitals (where a CREG study indicated an installed capacity of at least 200 MW). Due to the lack of any quantitative (or even qualitative) breakdown or background of the proposed values Febeliec can thus not validate any of them, but can only indicate that it is very concerned that the provided values underestimate reality.
Febeliec	Febeliec refers to the numerous comments it made to the methodology developed by E-Cube in the recent past and its reservations it has towards this methodology; no new data has been provided based on an updated study and thus Febeliec cannot comment this (while the spreadsheet in any case does not provide any details whatsoever)
Febeliec	Moreover, Febeliec strongly wants to contest that base value that Elia is using for the determination of demand response in the future. It is unclear on which source Elia bases its initial starting point and refers to its previous comments on this, in particular related to winter 2018-2019, with a.o. announcements by two of the largest BRPs in the Belgian system of substantial volumes (+500MW and +200MW) of contracted market response, apart from what all other actors such as aggregators still had contracted in their portfolios. Febeliec reiterate its longstanding request for Elia to finally provide a detailed breakdown of its data in order to be able to analyse this element. Febeliec is convinced that Elia underestimates the market response for the period 2025, as it does in the table not even provide any future data, but only a (non-detailed) overview of the (current?) capacity that it considers.

Febeliec	Moreover, Febeliec refers to its comment on the introduction of smart meters and variable price contracts and the fact that this will unlock a vast volume of currently untapped (untappable) flexibility in the residential and SME segments. Febeliec wonders whether, how and from when onwards this is taken into account in the Elia proposed values.
Febeliec	In case Elia would account for diesel generators in the category "market response", Febeliec would want to see a clear breakdown of the different constituting elements (in order to be able to assess the expected evolution over time by Elia) and also wonders whether the category of non-emergency diesel generators would be accounted for as they do not constitute negative offtake. Moreover, if Elia would count diesel generators (and similar technologies) as market response, the volume of market response is an even large underestimate than described above.

First of all, Elia would like to remind that the scenario dataset provided in the framework of the public consultation consists of the ambition set in the NECP and the 'Energy Pact'[13]. In the latter one, the authorities have set the following targets/ambitions for market response for 2030 in the Energy Pact:

- 2.0 GW demand shedding;
- 1.5 GWh demand shifting.

It is also mentioned that the main increase will be after 2025 (so from 2025 to 2030) with around 30% to 40% of the target achieved in 2025. The split in the different categories of market response is based on a study performed for the evaluation of the strategic reserve volume determination in 2017 where it was calculated based on a questionnaire sent to market participants. Elia also integrates (on top of the 'Energy Pact' values) all the 565MW of existing volume procured on DSR for balancing purpose to the market response shedding category with a max use of 4 hours. This lead to an ambitious volume of 1,565 GW for market response shedding and 0,5 GWh/day for market response shifting.

As mentioned in the explanatory note, a part of the volume of market response shedding with a max use of 4 hours (485MW) is assumed for ancillary services. This lead to a total market response shedding volume participating in the energy market of 1080MW.

Moreover, additional volume could be integrated in the step-by-step approach to make the reference scenario adequate if needed from the preselected capacity types which

[13] https://www.tommelein.com/wp-content/uploads/bsk-pdf-manager/Visienota_-_BE_Interfederaal_Energiepact_209.pdf

includes a market response category.

Then, Febeliec refers to the impact of the covid-19. Regarding market response, there is an absence of quantified data or scenarios providing numbers on the long run and assessing the impact of covid-19 until the 2025-26 delivery period. If Febeliec can provide such information and source, Elia will of course analyze it and consider it for future studies.

Elia would also like to remind Febeliec that the volume of market response accounted for in the reference scenario for the Y-4 auction for delivery year 2025-26 in no way limits the amount of market response offered into the CRM auctions. The reference scenario will be used in order to define among others the volume parameters of the demand curve. The capacity mix used in the calibrated reference scenario does not imply that this capacity will be the one (or a forecast from Elia of the one) clearing in the auction results, as mentioned in the general disclaimer described on §3.

Moreover, as stated in Article 11, §5 of proposed Royal Decree a volume will be reserved from Y-4 auction to Y-1 auction. This will also allow to assess more precisely a.o. the impact of the roll-out of smart meters for residential consumers, the introduction of dynamic price contracts (per CEP) or the introduction of new grid tariff structures and incentives, mentioned by Febeliec.

Regarding the announcements for winter 2018-2019 by two of the largest BRPs in the Belgian system of substantial volumes (+500MW and +200MW) of contracted market response, apart from what all other actors such as aggregators still had contracted in their portfolios, those volume are allowed to participate in the CRM auction, as any other technology. This volume can be interpreted as a part of the market response volume forecasted by the authorities in the Energy Pact. If the owner of those capacities assesses those to be suitable for participating in the CRM auction, there is no reason they will not take part in the auction. As described in the CRM design, in the end, the optimal set of bids will be selected in the auction process, leading to the lowest-cost CRM for the consumers. Moreover, if those capacities are already available, they could already take part in the Y-4 auction.

Moreover, as answered by Elia in the framework of the latest strategic reserve public consultation on input data[14], Elia wishes to reiterate that it remains open to update or revise the methodology and that, besides feedback, it welcomes proposals from stakeholders for such improvements in the methodology. Note that in this respect Elia is already updating the methodology to include both complex orders as well as any volumes from Nordpool Spot. However, it should be understood that the current methodology, being based on a thorough research effort and bearing in mind experiences with alternative methodologies in the past, cannot be abandoned without having a better

[14] https://www.elia.be/-/media/project/elia/elia-site/public-consultations/2019/20191202_sr-2020-21-elia-answers_public-consultation_inputdata_20191127.pdf?la=en

alternative at hand. Elia is interested in learning and open to discuss how referred to volume could be objectively quantified and integrated in a yearly recurring assessment other than by looking at market data such as the offer curves. In that respect also the integration of a potential impact of the increased balancing price cap seems difficult to isolate from the market response as observed in the analyzed curves, as this represents 'the' market, including how anticipates on the balancing time frame.

Regarding the emergency generators, as explained in §3.2.3, those are considered in the market response volume.

As already mentioned in the framework of the Strategic Reserve public consultation report, Elia believes emergency generators that want to respond to market signals can only do so by participating in the market, and therefore should be assumed covered in the 'E-cube methodology'. Elia cannot predict how emergency generators, which are not in any way active in the market would act on a scarcity market signal, the very first question would be why they are then not in the market and whether it would be wise to take them into account in the context of this market response analysis.

For the same reasons, emergency generators are allowed to offer into strategic reserves, a product specifically for out-of-the-market capacity (i.e. capacity that will not react to any price signal).

3.2.7 Consumption

The comments on the electricity consumption and the 'low demand' sensitivity have been commented in §0 (Reactions on 'low demand' sensitivity) as they are strongly interconnected. Given the comments received and the uncertainty related to the future consumption (due to the current 'covid-19' crisis), Elia recommends to take the 'low demand' sensitivity into account as part of the reference scenario.

3.2.8 Cross-border & Flow-based

Febeg	FEBEG also recommends Elia to carefully model the expected available capacity in neighboring countries in the short and medium term considering changing energy policies across Europe. In the case of Germany, it seems that Elia did not consider the latest announcement in Q1 2020 regarding the coal phase-out.

Elia takes note of Febeg remark but asks for further clarification regarding it.

The referred to dataset is based on the latest Mid-Term Adequacy Forecast (MAF 2019) by ENTSO-E. Regarding other countries, the dataset from MAF 2019 had been updated based on latest study from the Pentalateral Energy Forum (PLEF GAA published in May 2020). In the framework of the PLEF GAA 2020, additional capacities have been added to the German dataset to reflect the recent changes in the dataset compared to the MAF2019. It takes into account 2,3 GW of additional lignite/coal/biomass capacity, 0,8 GW of additional gas capacity and 1 GW of additional market response capacity.

Regarding coal phase-out, these assumptions lead to 25,4GW of coal/lignite installed capacity (9,4GW from lignite and 13,7GW from hard coal according to MAF2019 and 2,3GW from PLEF GAA 2020). Moreover, Elia takes into consideration the commissioning or decommissioning dates (when known) of individually modelled units as provided in the MAF2019 dataset by TSOs which can lead to changes of the total capacity by technology in the simulated region over the year.

If Febeg refers to other sources that the one used by Elia in the framework of the public consultation, Elia welcomes any additional information in order to provide a more up-to-date dataset for the selection of the reference scenario by the Minister.

Febeliec	Concerning the cross-border market capacities, Febeliec welcomes that Elia will not base this on historical data, as this would be a non-relevant framework in light of the important changes that are continuously being made, not in the least related to the minimum cross-border capacity that will have to be given to the market (at least 70% by 01/01/2026 at the latest). Febeliec however regrets that the generation adequacy assessments made in the framework of the Pentalateral Energy Forum (PLEF) is presented as a valid base for the analysis (just as the Elia Adequacy and Flexibility study, for which no consultation was ever conducted on the methodology, as Febeliec has already mentioned before), as Febeliec nor consumers in general are allowed to participate in the discussions, as opposed to generators (represented by a.o. the Market Parties Platform (MPP), which does not represent nor allow any consumers), thus at the least indicating a potential bias as in particular generators are non-neutral parties with respect to any CRM, as this would represent a potentially very

	substantial additional revenue stream, which from the viewpoint of consumers might actually result in windfall profits to the detriment of cost for consumers. With respect to the calculation of PTDFs, Febeliec takes note that a 2018 reference grid will be used in a 2020 study, regretting that no updates are considered, and also wonders if the "hundreds of CNECS" referred to are all cross-border CNECs, as internal lines are in the future not to be used for cross-border market capacity calculation. Febeliec also observes that for the flow-based perimeter, reference is made to the extension towards the CORE region as well as reference towards the treatment of external flows (for Belgium the flows with the UK being very relevant), yet also sees that it is merely a short description without any real explanation on which impacts are expected nor how the impact of these aspects will be calculated. Febeliec also does not support a very strict application of the 70% minRAM obligation for each future year. While this could be a relevant assumption for 2025 or 2026, Febeliec hopes that TSOs are not intending to develop their grids in the next decades to only barely reaching the 70% threshold, but hopes that bottlenecks will continue to be treated by additional investments in cross-border capacity, as can also be discerned from their own extensive and expensive investment programs (for which Febeliec also hopes that these investments will be taken into account in the modelling).

Elia has worked on an improved method to take into account the different evolutions planned in the cross border capacity calculations: the 70% CEP rule, the extension of the 'flow based' zone, etc. Elia is to date the only TSO in Europe (to our knowledge) that takes those evolutions into account in adequacy studies. The methodology to calculate available cross border capacities is an improvement from what was used in the PLEF study (and Elia's 'adequacy and flexibility study of June 2019') as it will integrate more bidding zones to the 'flow based' capacity calculation zone. This adds complexity to the calculation (as it adds more variables and constraints). The 'hundreds CNECs' in this case are only referring to cross border lines even though internal CNECs could still be included in the calculation if there is thorough justification. The so-called 'reference grid' is the expected European grid for the year 2027 which includes all investments planned in the framework of the TYNDP2018 (the TYNDP2020 not being released yet). For Belgium this includes all projects until year 2025. Future investments in the European grid are decided based on a cost benefit analysis.

On the application of CEP 70% rule, the assumption taken in this CRM calibration framework does not mean that the objective of Elia is to limit the possible capacities to that value. The assumption only tries to reflect a best-estimate of the future flow-based domains shape.

Febeliec	The provided data, without any clarification, does not provide any information. It is even not specified what the values on the spreadsheet are supposed to represent, nor for which years these are supposed to be. Febeliec regrets the lack of data and clarity.

For clarifications on the calculation method, Elia refers to the paragraph §2.1.4 of the explanatory note that was accompanying the Excel file. The flow based data are in the same format as used today by the market and market coupling algorithm. Those are the different 'CNECs' (rows) and associated 'PTDF' and 'RAM' (columns). The data, as for all the other parameters submitted to this public consultation are for the delivery year 2025-26.

Febeliec	For Febeliec it is unclear how for example Alegro will be taken into account in the model and what will be the impact. Moreover, as the study looks 10 years ahead, Febeliec wonders how potential projects proposed in the Elia TYNDP (Nautilus, Alegro II) should be taken into account (making even abstraction of all other interconnectors with for example the UK and the Nordics will be realised from CWE in the next decade). The same applies to all the enormous grid improvement and extension projects Elia has planned on the backbone grid as well as the underlying grids in the next decade.

As already answered in the framework of the public consultation on the 10-year Adequacy and Flexibility study 2020-30 (Elia, 2019), ALEGrO is taken into account as in the 'evolved flow based' method. More information can be found on §2.2.6 of the 'Explanatory Note CORE DA and ID FB CCM' from ENTSO-E[15].

"*This is achieved by taking into account the impact of an exchange over an HVDC interconnector on all CNEs directly during capacity allocation*" […]

On the investments in the grid, those will be taken into account according to the TYNDP2018 and the Elia's federal development plan 2020-2030[16], hence the projects mentioned (Alegro II or Nautilus) are not considered for the 2025-26 delivery period.

[15] https://eepublicdownloads.blob.core.windows.net/public-cdn-container/clean-documents/Network%20codes%20documents/Implementation/ccr/methodologies/core/cacm-deliverables/da-and-id-ccms-art-20ff/20180604-core-tsos-explanatory-note-for-core-da-id-fb-ccm-fv.pdf

[16] https://eliafederaldevelopmentplan.be

Febeliec	With respect to the flow-base domain, it is very unclear how Elia will take into account the proposed modifications as well as certain clarifications and specifications that have been added in the Clean Energy Package, more precisely in the Energy Directive and Regulation, with respect to the cross-border market coupling and loopflows.

Regarding the flow-based domains and the integration of the Clean Energy Package rules, Elia would like to clarify that the model will use a fixed 70% RAM being available for market exchanges on each cross border CNEC in the considered flow based region (for the 2025-26 delivery period). Loopflows, internal flows and flow reliability margins can therefore be considered part of the remaining 30%.

3.2.9 Economic parameters

ODE EDORA BOP	BREF proposes that Elia takes updated economic parameters assumptions of leading institutions NBB and FPB about their reference economic scenario post-COVID
Febeliec	On the economic parameters, Febeliec can only observe that Elia is basing its analysis on the IEA World Energy Outlook 2019, pre covid-19 crisis, and that the impact of covid-19 should be taken into account, not only on demand (as mentioned before) but also on oil, gas, coal, CO2 prices, which have all fallen to consistently lower levels, and their impact. The IEA has in the meantime already published its Global Energy Review 2020 with the impacts of the covid-19 crisis on global energy demand CO2 emissions, which clearly shows the extreme impact, far beyond the scope of a.o. the 2008 financial crisis.
Febeliec	Febeliec refers to its previous comments on these and hopes Elia will at least conduct some sensitivity analyses on these parameters, as they will have an enormous impact on the outcome, but regrets that Elia has not included any data for such sensitivities (e.g. based on other IEA scenarios or scenarios from other sources)

Elia notes the comment from Febeliec that the covid-19 will certainly have an impact on the fuel and CO_2 prices. A sensitivity (to be integrated as part of the 'reference scenario') could make sense as it can impact the calibration of the economic parameters of the CRM auction and would therefore be fully aligned with the purpose of article 4, §4 of the Royal Decree.

However, article 6, §2 mentions that the data and assumptions used to define the sensitivities need to be based on justified and quantified sources. Regarding fuel and CO_2 prices, there is an absence of quantified data or scenarios providing numbers on

the long run assessing the impact of covid-19 until for the 2025-26 delivery period.

The reference provided by Febeliec also states the following:

"In response to the exceptional circumstances stemming from the coronavirus pandemic, the annual IEA Global Energy Review has expanded its coverage to include real-time analysis of developments to date in 2020 and possible directions for the rest of the year."[17]

The IEA Global Energy Review 2020 does not provide any number for the delivery period 2025-26 and cannot therefore be used as source to justify different values for the fuel and CO_2 prices.

Elia will therefore suggest to consider the numbers mentioned in the 'World Energy Outlook 2019' as reference for the CRM calibration. If there are any updates on those data from official/public sources prior to the Ministerial decision on the 'reference scenario' to be used, Elia will provide this information to the Minister.

[17] https://www.iea.org/reports/global-energy-review-2020

3.3 Sensitivities

3.3.1 Reactions on proposed sensitivities

In the framework of the public consultation, Elia submitted a set of sensitivities to stakeholders, including the source of the data and assumptions used. The purpose is to potentially include in the reference scenario one or multiple sensitivities that can have an impact on the Belgian security of supply and located inside or outside the Belgian market zone, as described in article 4, §4 of the proposed Royal Decree. Those sensitivities will be integrated in the reference scenario (i.e. only one scenario will therefore be constructed). The Minister will therefore decide on the data and assumptions that will be selected as reference scenario, including the potentially selected sensitivities, based on a proposal from CREG, the advice from FPS on this proposal and Elia's recommendations.

The set of sensitivities proposed during the public consultation is presented on Figure 3.

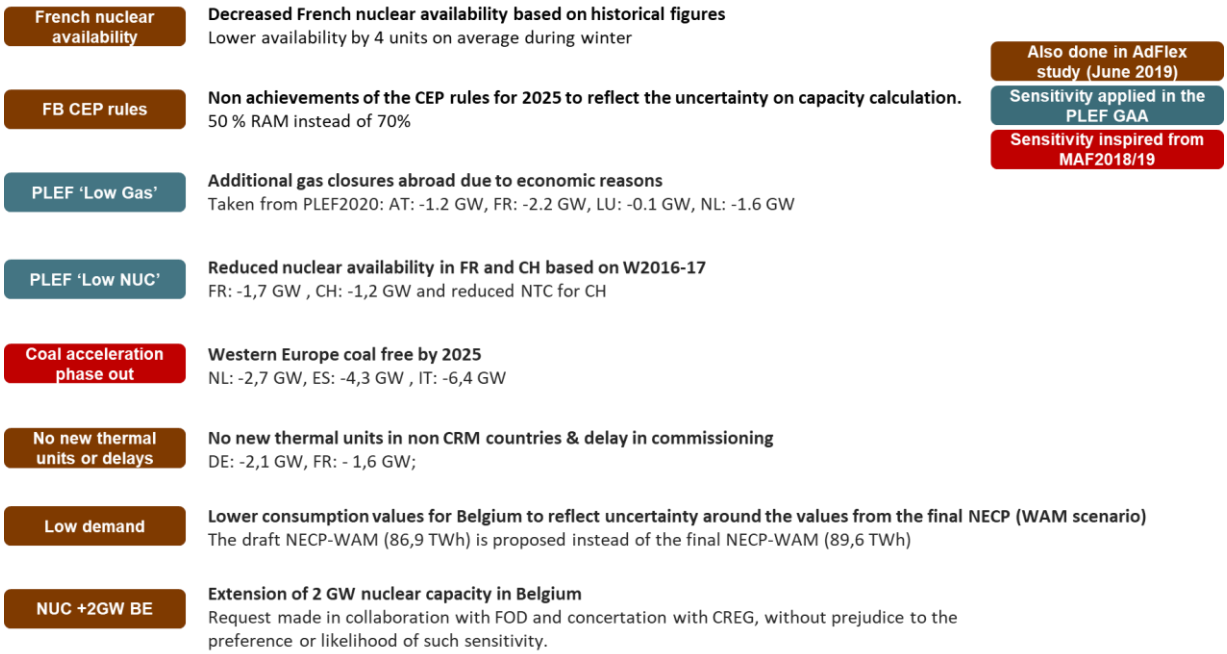

Figure 3: Sensitivities proposed in the framework of the public consultation

3.3.1.1 General remarks

ODE EDORA BOP	The 8 proposed sensitivity analyses almost all have an upward impact on the required CRM volume, which seems not to be balanced for 'sensitivity analyses' (normally both upward and downward impacts). BREF proposes that Elia regroup some sensitivity scenarios that are very similar in one or two upward sensitivity scenarios (for example scenarios 1, 3, 4 and 6 have similar or redundant assumptions on availability of thermal units abroad).

Elia would like to remind the purpose of the proposed sensitivities which is to potentially integrate one or multiple sensitivities (as part of the reference scenario) that can have an impact on the Belgian security of supply and are located inside or outside the Belgian market zone, as described in article 4, §4 of the proposed Royal Decree. Those sensitivities will be integrated in the reference scenario (i.e. only one scenario will therefore be constructed with the chosen sensitivities). The Minister will then decide of the data and assumptions that will be selected as reference scenario, including the potential selected sensitivities, based on a proposal from CREG, the advice from FPS on this proposal and Elia's recommendations.

The purpose as defined in the proposed Royal Decree is therefore not to run multiple simulations on different scenarios and sensitivities but to perform one simulation based on a reference scenario for calculating the required capacity volume and the parameters necessary for the organization of the auctions within the framework of the CRM.

As the sensitivities need to be justified and quantified, Elia proposed multiple probable events based on publically available data and assumptions in collaboration with the FPS and concertation with the CREG. Elia submitted those to public consultation in order to receive feedback from stakeholders on the relevance for Belgian authorities to cover itself against this sensitivity in order to integrate them to the reference scenario.

3.3.1.2 Extension of 2 GW nuclear capacity in Belgium

Febeliec	On the extension of 2GW nuclear capacity in Belgium, Febeliec does not have any objections to this sensitivity but would like to see an additional sensitivity, guaranteeing 2 GW of nuclear capacity being available in Belgium after 2025. Febeliec believes that such sensitivity, as all the other sensitivities, would provide extremely valuable additional information for stakeholders and decision makers and would find it irresponsible not to include such information in light of the major change the activation of a CRM would bring to the Belgian market and the potentially very high additional costs for consumers.
Febeliec	Febeliec wonders which assumptions Elia will apply for its sensitivities including a nuclear extension.

As mentioned in the public consultation's explanatory note, this sensitivity comes from the alignment meetings that have been held with FPS and with CREG (as stipulated in the proposed Royal Decree, the consultation is to be organized after collaboration with FPS and concertation with CREG), without prejudice to the preference or likelihood of such sensitivity.

Indeed, this sensitivity is integrated in the framework of the CRM calibration given the uncertainties and current discussion on the Belgian energy market, as referred to by Febeliec. However, note that the associated assumption is not in line with the current legal framework governing the nuclear phase-out.

Elia therefore considers that the choice of this sensitivity is a political choice that should be taken by the Belgian authorities. If a 2GW nuclear extension sensitivity would be chosen by the Minister, the parameters related to the extended nuclear assets should be assessed and defined as part of the scenario, such as forced outage and planned outage rates.

3.3.1.3 Flow-based CEP rules

Febeliec	On the flow-based CEP rules sensitivity, Febeliec is surprised to see that Elia proposes to diminish the capacity, although the finalisation date for the minimum 70% minRAM has legally been determined as 01/01/2026, meaning that Elia considers that the law will not be respected.

Firstly, Elia would like to remind the purpose of the proposed sensitivities. In the framework of the public consultation, Elia submitted a set of sensitivities to stakeholders, including the source of the data and assumptions used. The purpose is to potentially select one or multiple sensitivities that can have an impact of the Belgian security of supply, as described in article 4, §4 of the Proposed Royal Decree. The Minister will then decide on the data and assumptions that will be selected as reference scenario, including the potential selected sensitivities against which the Belgian authorities want to cover themselves, based on a proposal from CREG, the advice from FPS on this proposal and Elia's recommendations.

In this context, Elia proposed this sensitivity as it estimates that there are uncertainties on whether the 70% RAM margin will be available at all times. The framework was already clearly presented in the explanatory note:

"*While CEP requirements target a minimal margin level of 70% by 2025 at the latest, different reasons (in Belgium or in other European Member States) might exist that could lead to domains smaller than those determined as explained in previous sections of this report. A reason could be that current requirements do not exclude the existence of internal grid elements internal to a Bidding Zone constraining the market. Decreasing the margin can be considered as proxy to the inclusion of internal constraints into the market coupling.*

To capture the impact of this uncertainty, a sensitivity is assessed where the exchange capacities given for cross-border exchanges are reduced. It is assumed that a margin of 50% is ensured for the market. Such a scenario might not be in line with the general CEP requirements (and therefore require one or more derogations), but could still remain in line with CEP in case internal constraints are considered."

Moreover, Elia indicates that this sensitivity is not the only one based on the assumption that the applicable law may not be respected.

3.3.1.4 French nuclear availability

Febeliec	On the French nuclear availability, as already discussed in the past, Febeliec is surprised that this is even included, as France already has a CRM in place, guaranteeing the adequacy of France (unless Elia would claim that the French existing CRM is performing badly, in which case Febeliec would like to see a full analysis of this). Moreover, in the scope of a potential activated Belgian CRM as of 2025, Febeliec wonders why Elia, taking into account the French CRM, is still considering French nuclear maintenance issues in a.o. winter 2019-2020 as relevant (without providing any justification nor data in a graph beyond winter 2022-2023), other than merely qualitatively and without any details mentioning the 4th decennial inspections.

In the framework of the CRM calibration, Elia is only looking at what capacity would be available in France in the 2025-26 delivery period. This capacity is based on the data and assumptions provided by RTE in the dataset of the Mid-Term Adequacy Forecast 2019, as presented in the explanatory note, §2.1.5. This is in line with article 4, §2 of the Proposed Royal Decree.

This sensitivity on the nuclear availability in France is proposed in order for the Belgian authorities to cover themselves against lower nuclear availabilities in France as experienced in the most recent winters. Such reasoning is compliant as it is justified and quantified as described in the explanatory note, in line with article 4, §4 of the Proposed Royal Decree.

This can be justified by observations in the most recent 4 winters where the unavailability of the French nuclear fleet significantly increased (compared to the historical trend prior to winter 15-16). This observation is recently again confirmed for the winter to come. Comparing the forecasted unavailability before the winter with the realized unavailability shows that the forecasts are under-estimating the unavailability of the nuclear fleet. This trend was confirmed by RTE (the French TSO) and can be clearly observed for last winter (W19-20) or already for the winter to come (W20-21) where the planned and the realized availability show a difference of 6 GW on average over the winter (see Figure 4Figure 2).

Moreover, there are several indications that such trend is likely to repeat itself in the future (and for the 2025-26 delivery period):

- The nuclear fleet is ageing and several reactors need longer downtimes for their ‘4th Decennial inspections’;
- More stringent safety rules might require additional unplanned works/upgrades during those downtimes;
- Common mode failures (e.g. issues found in one reactor which can affect more than one nuclear unit due to their similar design) are likely to occur as observed in the past.

Therefore, in this sensitivity (if integrated in the reference scenario), it is suggested to

remove 4 units from the nuclear capacities defined in the dataset of MAF2019 for the winter period 2025-26 (as this corresponds to the observed increased average unavailability during winter in the past 4 winters in France). It is therefore neither foreseen to look at the French security of supply nor to assess the performance of a CRM abroad in the framework of the CRM calibration.

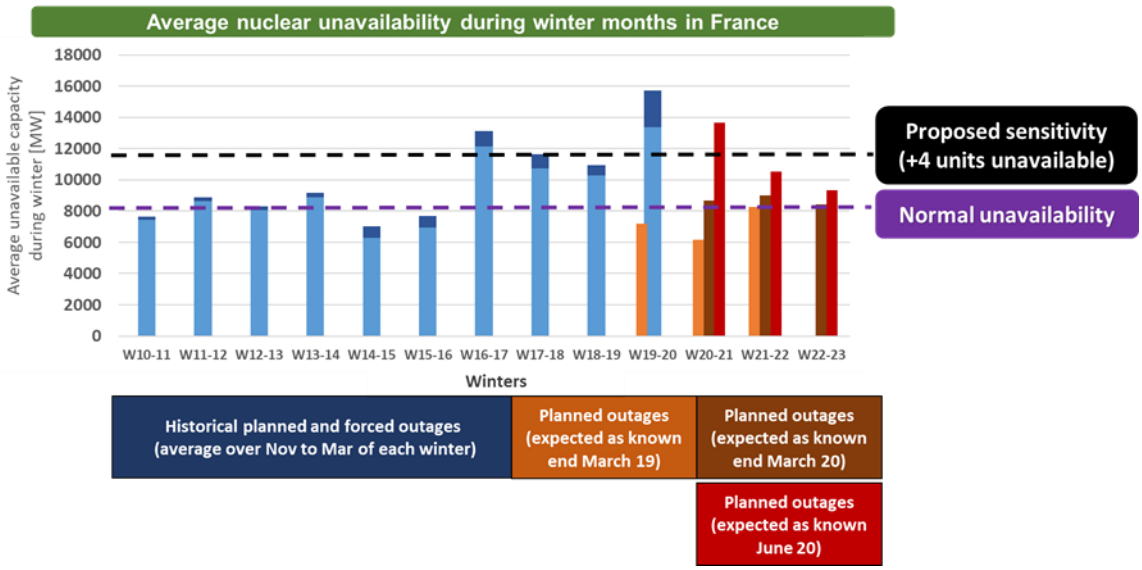

Figure 4: *Analysis of the nuclear unavailability in France during winter months in France for the appropriate sensitivities selection*

3.3.1.5 No new thermal units or delays

Febeliec	On the “no new thermal units or delays” scenario, Febeliec wants to reiterate its comment on the French, ensuring viability of at least those plants needed for French adequacy. On Germany, Febeliec takes note that Elia states that “Germany has no market wide CRM and economic viability of new units could be at risk”, yet Germany has a wide range of different strategic reserves, including some reserves that contain purpose-built new gas plants, while Germany also has to ensure that it can comply with the minimum 70% minRAM cross-border capacity stipulation in the CEP, and thus has to ensure either sufficient internal lines and/or sufficient internal redispatch capacity, the latter currently already being applied as a solution and this capacity being additional (dispatchable and thus presumably gas-fired) capacity near consumption centres in the southern part of Germany. On the comment on the commissioning of Flamanville in France, Febeliec is surprised that Elia is considering this will still not be operational in 2025. In any case, Febeliec also in this context reiterates its comment about the French CRM, which would then guarantee alternative means to ensure at the least French adequacy.

In the framework of the CRM calibration, Elia is only looking at what capacity is available abroad. This capacity is based on the data and assumptions from the dataset of the Mid-Term Adequacy Forecast 2019, as presented in the explanatory note, §2.1.5. This dataset had been completed according to the latest data from PLEF 2020. This is in line with article 4, §2 and 3 of the Proposed Royal Decree.

This “no new thermal units or delays” sensitivity is proposed in order for the Belgian authorities to assess if they want to cover themselves against this event, based on a justified and quantified analysis described in the explanatory note, in line with article 4, §4 of the Proposed Royal Decree.

Therefore, in this sensitivity (if integrated in the reference scenario), it is suggested to remove thermal units in Germany and the new Flamanville nuclear power unit in France. It is therefore neither foreseen to look at the French or German security of supply nor to assess the performance of a CRM or a strategic reserve scheme abroad in the framework of the CRM calibration.

3.3.1.6 PLEF Sensitivities

Febeliec	On the PLEF "Low Gas" sensitivity, again Febeliec is surprised that a.o. France is included in this, despite having an operational CRM. Febeliec refers to its above comment on this. Moreover, Febeliec wants to reiterate its comment on the PLEF, as for the adequacy studies a.o. consumers are not represented (by choice of the governments and despite numerous requests from Febeliec to be included) in the relevant working groups, while parties with vested interests in CRMs, such as producers, of course have a bias towards subsidies for their installations, whether warranted or not. Moreover, as gas prices, even before the covid-19 crisis but definitely since the beginning of this crisis, have dropped to absolute lows (with gas in Europe even being cheaper than in the US), Febeliec cannot imagine that commercial viability of gas plants would be at risk and leading to mothballing and/or decommissioning for economic reasons. If however Elia were to retain this sensitivity, Febeliec urges to include a "high gas" alternative too, taking into account exactly the current gas (and coal/…) prices and an even higher availability of gas plants (e.g. through less mothballing and/or decommissioning than in the base scenario), as this scenario could also well become reality.
Febeliec	On the PLEF "Low NUC" sensitivity, Febeliec wants to reiterate this comment about the PLEF as well as the French CRM as well as the relevance in 2025.

As already mentioned, in the framework of the CRM calibration, Elia is only looking at what capacity is available abroad. This capacity is based on the data and assumptions from the dataset of the Mid-Term Adequacy Forecast 2019, as presented in the explanatory note, §2.1.5. This dataset had been completed according to the latest data from PLEF 2020. This is in line with article 4, §2 and 3 of the Proposed Royal Decree.

Then, Elia estimates relevant to consider the two sensitivities developed in the framework of the PLEF GAA 2020, as those have been defined in collaboration between Ministries, Regulators and TSOs in the PLEF group. Elia estimates that both sensitivities should be at least referred to in the framework of the public consultation in order for the Belgian authorities to assess if they want to cover themselves against those, based on a justified and quantified analysis described in the explanatory note and in the PLEF GAA 2020. These sensitivities are both fully in line with article 4, §4 of the Proposed Royal Decree.

Therefore, in this sensitivity (if one of them is integrated in the reference scenario) it is suggested to adapt the reference scenario with the assumptions described in the "PLEF sensitivities". It is therefore neither foreseen to look at other countries' security of supply nor to assess the performance of a CRM or a strategic reserve scheme abroad in the framework of the CRM calibration.

3.3.1.7 Coal acceleration phase-out

Febeliec	On the coal acceleration phase-out scenario Febeliec is also quite surprised to see that Spain is mentioned (where it is unclear what any impact would be for Belgium, as France has an operational CRM and thus is to be considered adequate at any point in time), the Netherlands (mentioning the legal ban for coal-fired generation as of 2030, but without clear indication what would be the impact in 2025 other than that "the three most recent coal-fired plants could be closed earlier than expected" especially in combination with previous adequacy studies by Elia that showed a clearly decreasing potential capacity gap for adequacy in Belgium in the years after 2025) and Italy (for which again the direct impact on Belgium is unclear, especially with a non-binding coal phase-out and an operational CRM in place, which according to Elia should be effective as Elia is always referring to the Italian CRM as a relevant reference for Belgium).

As already mentioned, in the framework of the CRM calibration, Elia is only looking at what capacity is available abroad. This capacity is based on the data and assumptions from the dataset of the Mid-Term Adequacy Forecast 2019, as presented in the explanatory note, §2.1.5. This dataset had been completed according to the latest data from PLEF 2020. This is in line with article 4, §2 and 3 of the Proposed Royal Decree.

Then, Elia estimates relevant to take into account this sensitivity regarding coal phase-out in Western Europe as there is uncertainties in Europe due to economic or environmental reasons. Elia proposes in this framework to accelerate the planned coal phase-out to better reflect these uncertainties in the framework of the public consultation of the CRM calibration in order for the Belgian authorities to assess if they want to cover themselves against this event, based on a justified and quantified analysis described in the explanatory note. This sensitivity is also in line with article 4, §4 of the Proposed Royal Decree.

Therefore, in this sensitivity (if integrated in the reference scenario), it is suggested to adapt the reference scenario with the proposed coal capacity in the Netherlands, Spain and Italy. It is therefore neither foreseen to look at other countries security of supply nor to assess the performance of a CRM or a strategic reserve scheme abroad in the framework of the CRM calibration.

3.3.2 Reactions on ‘low demand’ sensitivity

This section integrates both remarks on consumption data considered in the scenario dataset and the remarks on the ‘low demand’ sensitivity as they are strongly linked.

ODE EDORA BOP	The baseline scenario in terms of electricity consumption in 2025-2026 is high (89.6 TWh), compared to 83 TWh in 2019 even before the COVID-19 crisis but takes into account the ambitions of the NECP in terms of electrification and additional industrial use in Flanders. It seems that this assumption could potentially overestimate the electricity consumption, in a post COVID-19 world. This seems to be also the case for the sensitivity scenario “low demand” which corresponds to 86.9 TWh. BREF proposes that Elia takes updated economic parameters assumptions of leading institutions NBB and FPB about their reference economic scenario post-COVID, and, if relevant for adequacy studies, adapts the electricity consumption accordingly. This new reference scenario should also take new electric uses (electric vehicles, heat pumps) planned in the NECP into account, in order to be both realistic and in line with NECP.
Ecolo-Groen	Moreover, the total consumption assumptions trigger apprehension on our side. The baseline scenario assumes a 89.6TWh electricity consumption in 2025-2026, and the low scenario 86,9TWh, compared to 83 TWh in 2019. This is explained by the foreseen growth in industrial consumption in Flanders. These appear to be extremely high, especially with regards to the Covid crisis we are experiencing. We would like to ask therefore to, at least in the sensitivity scenario on low electricity demand, take economic parameters that are more probable, based on more recent economic predictions.
IEW-Greenpeace	Les projections de demande électrique prévues par ELIA (89.6 TWh en 2025-2026 à comparer avec 83 TWh en 2019) sont excessivement élevées par rapport aux évolutions historiques de la demande électrique. Elia annonce s’être basé sur les projections de demande électrique prévues dans le Plan national énergie climat (NECP) rendu par la Belgique à la Commission européenne fin 2019. Nous constatons toutefois que aucun chiffre de consommation électrique n’est à notre connaissance mentionné dans le NECP public. Il serait dès lors utile de clarifier les sources utilisées par Elia. Nous notons toutefois que le NECP belge s’inscrit dans une logique d’augmentation de la consommation d’énergie finale entre 2015 et 2025 poussée par des projections dans les secteurs industriels en total décalage avec les observations historiques relevées ces dernière années.

	A contrario, les projections du NECP ne prévoient pas d'électrification des processus industriels ou du transport, l'augmentation prévue de la consommation d'énergie finale étant justifiée par des objectifs politiques en terme de croissance économique et d'industrialisation. La crise du COVID aura également un impact certain sur les paramètres économiques pris en compte dans le NECP. Au final cette surestimation de la demande électrique finale risque d'entraîner une surévaluation des capacités CRM nécessaires et de gonfler le soutien public attribué/MW à ces capacités.
IEW-Greenpeace	Le scénario de sensitivité "low demand" 86.9 TWh reste également très élevés par rapport aux évolutions historiques. Il est donc crucial qu'Elia conduise des estimations de demande en ligne avec les projections des principaux paramètres économiques les plus récentes (croissance, industrialisation, électrification) pour éviter une surévaluation des besoins en capacité CRM, voir surévalué la nécessité d'implémenter ce mécanisme.
Febeliec	On consumption (or demand, as the terminology is in the spreadsheet), Febeliec is even more concerned. Not only is it unclear on which basis this demand is determined. Elia is referring to the latest forecast from the final (yet not approved by the European Commission) National Energy and Climate Plan (NECP), which was published end of 2019, based on additional measures. However, and as already commented by Febeliec and not yet taken into account by Elia, as of 2020 the world has entered in presumably the worst global economic crisis in over a century (Covid-19 crisis), with definitely a major impact on electricity demand in the short term (Elia itself presenting values that drop up to 25% at some points) and which presumably will also continue to wreak havoc in future years, both in the level of growth (or lack thereof) as well as the starting point for the growth curve (if the crisis indeed severely impacts the basis of the economic tissue of the world economy). Elia for example states that "there is an increase in the numbers between the draft and the final NECP (WAM scenario) which is mainly due to additional industrial consumption in Flanders considered by the authorities", which should at least also include an assessment of the additional generation capacities linked to these projects. Febeliec in this context wants to refer to data that was provided by Elia on Belgian overall electricity demand in the period 2000-2019 (both non-normalised and normalised data).
Febeliec	As can be seen from this data, the 2008 financial crisis, which was the major economic crisis in the current millennium with substantial global economic impact, shows a clear drop of more than 6TWh (or around

	7% of Belgian consumption) in the wake of this crisis. A decade later, Belgian electricity demand has still not regained pre-2008 levels (with a.o. 2019 showing even a continued decrease in overall demand, reaching a level that was last seen in 2002, despite a substantial increase in Belgian GDP over that period). While the underlying reasons for this observation are beyond the scope of this consultation (e.g. impact of energy-intensity of GDP-growth, impact of energy-efficiency measures …), the trend can be clearly observed. Important in the light of the current covid-19 crisis, which will presumably have a much more pronounced effect on the global economy, is that it would be imprudent to non-take into account such impact on Belgian electricity demand, also when looking at 2025 and beyond. Febeliec asks that at the very least additional sensitivities are included (see below) in case this impact would not be considered in the central reference scenario, and this in particular to avoid that the analysis would indicate a potential need for a CRM, based on outdated data sets, leading to a very costly yet unnecessary subsidy scheme to be financed by consumers.
Febeliec	Febeliec is also surprised to see that only one absolute value is provided, without any curve before and after 2025, making it impossible to provide any meaningful comments by lack of data.
Febeliec	On the NECP Low Demand sensitivity, Febeliec has no comments as such, except that this is based on the NECP published end of 2019, in pre-covid-19 times. Febeliec refers to its abovementioned comments on the impact of covid-19; according to Febeliec it would be unrealistic to imagine that covid-19 would not have any effect on Belgian electricity demand in light of the unprecedented drop in global economic activity in recent times and in light of Elia's own public statements and data on the more than substantial drop in electricity demand in the recent months. As can be seen from the Belgian electricity demand data 2000-2019 provided by Elia (with very little fundamental differences between normalised and non-normalised data, other than that in the data set normalised data on average slightly overestimates real electricity demand), electricity demand dropped very sharply in the aftermath of the 2008 financial crisis (minus 6 TWh or around 7%), which showed a less pronounced reduction in economic activity than can now already be observed by the non-ended cobvid-19 crisis, with a recovery afterwards that still has not reached in 2019 the pre-2008 level (still more than 3,5 TWh down compared to 2008 levels). Febeliec would thus propose to add two times two new sensitivities. A first additional sensitivity set could be to take the impact of the 2008 financial crisis as a proxy (so a drop of 6TWh in overall Belgian electricity demand based on the provided demand data from Elia) and then have two variations on this, one with

	a V-shaped recovery (as after the financial crisis of 2008, yet also there with even a decade later still electricity demand levels that are several percent lower) and one with a much slower recovery (to mimic a second wave of covid-19 or other effects that could generate additional damage to the economic tissue, with increased ripple-through effects in 2025 and beyond). A second sensitivity set would then contain two similar sensitivities, but based on a much more pronounced drop in electricity demand in 2020 (e.g. -10 TWh). Febeliec proposes these four additional sensitivities as the current proposed sensitivity based on the NECP of end 2019 does not take into account any scenario with a decrease in electricity demand, a scenario that in any case should be analysed unless one would to consider the covid-19 crisis as irrelevant.
Febeg	Particular caution should be considered for the forecasts of peak demand (MW) as different plausible assumptions lead to different evolutions of this key driver. While on one hand some might put forward that the electricity consumption could be reduced post-COVID due to reduced economic activities on one hand, the re-launch plan and the fact that the momentum could be used to accelerate the green-deal objectives with an increased rate for further electrification could on the other hand increase the peak demand and the energy consumption more than expected.

Elia notes the numerous remarks regarding consumption data, mainly related to the potential future impact of the covid-19. To summarize the different received feedbacks:

On the one hand, some comments are advocating a lower electricity consumption forecast:

- Febeliec mentions that both proposed values (reference and 'low demand' sensitivity') are pre-covid-19 and do not take into account the impact of the economic crisis. IEW-Greenpeace refer to the covid-19 impact on economic parameters and mentions that the 'low demand' sensitivity remains high compared to the historical data. Ecolo-Groen asks to take more recent economic predictions based on more probable economic parameters;
- The additional industrial use in Flanders could be overestimated, both for the 'base case' at 89.6 TWh and the 'low demand' sensitivity at 86.9 TWh, according to ODE-EDORA-BOP. Febeliec mentions that the forecast should also include an assessment of the additional generation capacities linked to these industrial projects.

Some comments do not precise if the impact is positive or negative:

- The new electric uses (electric vehicles and heat pumps) should be reviewed according to ODE-EDORA-BOP.

On the other hand, some comments inform about potentially higher electricity consumption:

- Febeg mentions a possible relaunch/rebound effect related to the fact that the momentum could be used to accelerate the green-deal objectives with an increased rate for further electrification.

Febeliec also proposes additional sensitivities justified with the consumption drop after the 2008 crisis and to include at the very least additional sensitivities in case this impact would not be considered in what they refer to as central reference scenario. Febeliec proposes to add two times two new sensitivities:

		Crisis recovery	
		V-shaped	Low
Electricity consumption drop	6 TWh	Sensitivity 1	Sensitivity 2
	10 TWh	Sensitivity 3	Sensitivity 4

- The first parameter is linked to the electricity consumption drop. The first option would be to use 2008 crisis as proxy and the second option would be to consider a much more pronounced drop;
- The second parameter is linked to the recovery after the crisis. The first option would be to consider a V-shaped recovery and the second option would be to consider a lower recovery to mimic a second wave of covid-19 or other effects that could generate additional damage to the economic tissue, with increased ripple-through effects in 2025 and beyond.

First of all, Elia would like to remind that the proposed consumption data were based on the latest available 'forecast' from the Belgian authorities (regions and federal) which was provided in the framework of the National Energy and Climate Plan to the European Commission and which intend to integrate the different measures to achieve the 2030 targets (energy efficiency, RES, …), end of 2019.

Given the uncertainty linked to the 'covid-19 crisis' (that happened after the final NECP submission), a sensitivity 'low demand' was proposed (based on the draft NECP published in 2018 but which resulted in a lower consumption) during the public consultation. As stated during the presentation of such sensitivity in the Task Force CRM, this could be used to reflect a lower growth of the consumption. As mentioned in Article 6, §2, of the proposed Royal Decree the data and assumptions from which the sensitivities have been established need to be provided in the framework of the public consultation. This is the reason why Elia based its electricity consumption values on the publically available sources.

Regarding the received feedback, Elia takes note of the uncertainty regarding the trend of the electricity consumption for 2025-26 and based on the received feedback, that the consumption from the final NECP (made prior to the covid-19) could be an overestimation.

However, to date, there are no new 'official' nor updated data on the Belgian consumption (nor official economic projections) for the delivery period 2025-26 taking into account the impact of the 'covid-19' crisis. No public official data nor scenarios are available, meaning that there is no source to justify another value, as required by the Proposed Royal Decree for the proposal of new sensitivities.

Regarding Febeliec's proposed sensitivities, Elia would like firstly to refer to its general disclaimer as presented in §3 of this document. The reference scenario can potentially integrate some sensitivities that can have an impact on the Belgian security of supply and located inside or outside the Belgian market zone, as described in article 4, §4 of the Proposed Royal Decree. If selected by the Minister, those sensitivities will be integrated in the one single reference scenario. It means that at the end the Minister has to choose only one value regarding the electricity consumption. No additional sensitivities will be performed in the framework of the CRM calibration (unlike it was the case in the framework of the 10-years Adequacy and Flexibility study (Elia, 2019) which serves another purpose). It means that only one of the four sensitivities proposed by Febeliec could be taken into account in the reference scenario.

Secondly, looking at the example of the '2008 crisis', it can be observed that the electricity consumption two years after 2008 was nearly back to its level before the crisis, which can suppose that the levers explaining the electricity consumption evolution after 2010 are not only driven by the '2008 crisis'.

Thirdly, Elia would like to point out the limits of an extrapolation exercise. The extrapolation of past data is not necessarily the best indicator for future state of a parameter. Regarding this point, even if the potential impact on economic parameters is justified, it does not mean that the same trend can be applied for other parameters. Additional electrification regarding among others transport or heating is not foreseen in such an extrapolation. In this framework, Elia also refers to Febeg feedback that mentions that "*the re-launch plan and the fact that the momentum could be used to accelerate the green-deal objectives with an increased rate for further electrification could on the other hand increase the peak demand and the energy consumption more than expected*".

Elia therefore proposes in its recommendation to take the 'low demand' sensitivity into account as part of the reference scenario for Belgium. Nevertheless, Elia remains available to provide updated values for the delivery year 2025-26 if any relevant new info or quantified economic scenarios from public authorities (e.g. the latest projections from Plan Bureau) are available before the Ministerial decision (by making it available to the Minister).

Moreover, ODE-EDORA-BOP, IEW-Greenpeace and Ecolo-Groen refer in their feedback to a consumption of 83 TWh in 2019. Elia reminds that the normalized total electricity consumption for 2019 is equal to 85,7 TWh, which is closer to the 'low demand' sensitivity proposal.

Finally, Elia provided all the necessary data regarding the delivery year 2025-26, in line with the objective of the Proposed Royal Decree and is therefore surprised to see Febeliec mentioning a lack of data.

ODE EDORA BOP	BREF also asks to clarify the link between electricity consumption scenario's and electricity load, especially during (near-) scarcity periods of time.
IEW-Greenpeace	Les projections en matière de Demande d'électricité de pointe représentent une donnée essentielle dans le calcul de l'adequacy. Plutôt que des estimations de demande exprimées en TWH, Elia devrait établir des présenter des scénarios de demande journalier/hebdomadaires/saisonniers.

In order to define the consumption profiles, the state of the art tool developed and used by ENTSO-E is used to create the consumption profiles for all countries for its adequacy and market studies. This tool[18] takes into account several parameters (historical profiles, temperature, heat pumps, electric vehicles...). It is therefore consistent with the ENTSO-E method and other countries consumption profiles. In terms of peak demand, this is an output of the consumption data creation (the peak consumption is impacted by the different assumptions taken to create the demand profiles). The different peak consumption distributions will be published with the final report (such as done for previous Elia reports).

[18] https://eepublicdownloads.blob.core.windows.net/public-cdn-container/clean-documents/sdc-documents/MAF/2019/MAF%202019%20Appendix%202%20-%20Methodology.pdf

3.3.3 Additional sensitivities

Febeg	COVID is an unforeseen factor that will no doubt have an impact on the future evolution of several important parameters for the adequacy and flexibility study. At this stage, it is huge challenge to try to assess the impact of the COVID crisis as every crisis creates opportunities (Green Deal, green relaunch of the economy, …) and risks (cost reduction, impact on electricity bill, …). In this context, FEBEG recommends to add some sensitivities to try to capture as much as possible the potential impacts of the COVID crisis: (1) a sensitivity with a higher peak demand and electricity consumption as a result of an accelerated electrification in the context of the Green Deal, and (2) a sensitivity with lower figures for renewables, market response and storage due to the lack of an appropriate regulatory and/or economic framework for budgetary reasons.

Elia takes note of Febeg sensitivities' suggestion. On the sensitivity with a higher peak demand and electricity consumption, Elia agrees that the covid crisis framework could lead to an accelerate electrification in the context of the Green Deal. However, as mentioned in Article 6, §2 of the Proposed Royal Decree, the data and assumptions from which the sensitivities have been established need to be provided in the framework of the public consultation. Regarding the consumption forecast for the delivery year 2025-26, no published data nor scenarios are available, meaning that there is yet no publically available source to justify another value, as required by the Proposed Royal Decree for the proposal of new sensitivities.

However, as mentioned in §3.3.1 and regarding the received feedback on the trend of the electricity consumption for 2025-26, the electricity consumption mentioned in the scenario dataset could be an overestimation mainly regarding the impact of the additional industrial use in Flanders. Elia therefore proposes in its recommendation to take the 'low demand' sensitivity into account as part of the reference scenario. Nevertheless, Elia remains available to provide updated values for the delivery year 2025-26 if any relevant new info or quantified economic scenarios from public authorities (e.g. the latest projections from Plan Bureau) are available before the Ministerial decision (by making it available to the Minister).

Regarding Febeg's second sensitivity proposal, Elia takes note of Febeg proposal but would like to remind that, regarding all the data and assumptions for every technology mentioned in the Excel file for the public consultation on the scenarios, sensitivities and data for the CRM parameter calculation for the Y-4 Auction for Delivery Period 2025-26, it is assumed that a CRM is implemented for the delivery period and provides the required support for each capacity contributing to the Belgian's security of supply to be available in the market.

Elia believes that the authorities will activate the necessary levers to achieve the objectives proposed by the authorities in the framework of the 'National Energy and

Climate Plan' or the 'Energy Pact'. If those capacities contribute to the Belgian security of supply and meet the eligibility criteria, they could be supported by the CRM.

At the end, the reference scenario selected by the Minister will be made adequate by adding new capacities if needed, based on preselected capacity types. Then, the reference scenario will be used in order to define among others the volume parameters of the demand curve. The capacity mix used in the calibrated reference scenario does not imply that this capacity will be the one (or a forecast from Elia of the one) resulting from the auction results, as mentioned in the general disclaimer described on §3.

ODE EDORA BOP	A "flexible low voltage" scenario, where up to 3,000 MW of flexible capacity could be made available on low voltage consumers and prosumers. Note that the Flemish government decided to accelerate the roll-out of digital meters ahead of 2025 and the Flemish energy regulator VREG is preparing a capacity tariff for DSO charges to enter into force in 2022.
Ecolo-Groen	We also wish demand-side flexibility potential from low voltage consumers to be included in the scenario by Elia. We believe that additional flexibility potential could be found on the distribution network, where low voltage consumers and producers could modify their consumption behaviors when given appropriate signals (such as with tariffs adaptation).

Elia takes note of ODE-EDORA-BOP and Ecolo-Groen sensitivity proposal regarding higher market response capacity.

Elia would like to remind that, regarding all the data and assumptions for every technology mentioned in the Excel file for the public consultation on the scenarios, sensitivities and data for the CRM parameter calculation for the Y-4 Auction for Delivery Period 2025-26, it is assumed that a CRM is implemented for the delivery period and provides the required support for each capacity contributing to the Belgian's security of supply to be available in the market.

Elia believes that the authorities will activate the necessary levers to achieve the market response objectives proposed by the authorities in the framework of the 'Energy Pact'. If those capacities contribute to the Belgian security of supply and meet the eligibility criteria, they could be supported by the CRM.

At the end, the reference scenario for the Y-4 auction for delivery in 2025-26 selected by the Minister will be made adequate by adding new capacities if needed based on preselected capacity types. Then, the reference scenario will be used in order to define among others the volume parameters of the demand curve. The capacity mix used in the calibrated reference scenario does not imply that this capacity will be the one (or a forecast from Elia of the one) resulting from the auction results, as mentioned in the general disclaimer described on §3.

Regarding the ambitious market response objective set in the 'Energy Pact', Elia believes this is the best available information for the CRM calibration for delivery year 2025-26.

Moreover, as stated in §3.2.6, a volume will be reserved from Y-4 auction to Y-1 auction in line with Article 11, §5 of proposed Royal Decree. This will also allow to assess more precisely the impact of the roll-out of smart meters for a.o. residential consumers or the introduction of dynamic price contracts (per CEP) or the introduction of new grid tariff structures and incentives, mentioned by Febeliec.

Finally, additional volume could be integrated in the step-by-step approach to make the reference scenario adequate if needed from the preselected capacity types which includes a market response category.

Ecolo-Groen	Furthermore, we believe that different sensitivities may be included in the reference scenario regarding renewable energy generation. For instance, 4GW of offshore wind capacity could be made available in the winter 2025-2026 as this could have an important contribution for the peak demand in the winter. Ambitious objectives taken by the regions and the European Union (Green Deal) could also be integrated as a proxy of the high Renewable Energy scenario of Elia adequacy studies. Indeed, an acceleration of renewable installations, as it is planned in the EU Green Deal, would lead to higher share of solar, wind and biomass production.
ODE EDORA BOP	Acceleration of renewable energy installations in all sectors, in line with the EU Green Deal and -50 to -55% GHG 2030 target. Belgian targets are still missing for this, but as a proxy the "high RES" scenario of the Elia adequacy and flexibility study could be used. This could be reinforced with higher assumed fuel and/or CO2 costs.
ODE EDORA BOP	A specific scenario of an acceleration track for wind offshore energy (4.4 GW in winter 2025-2026), considering the substantial impact of this assumption on frequency of scarcity moments during peak in winter. Id est 2.3GW already installed + 2.1GW additional capacity in the new zones of the MRP. Note that by 2030, a 6 GW offshore scenario for Belgium is feasible, as explained in the wind offshore scenario of WindEurope.
IEW-Greenpeace	La régulation Gouvernance de l'UE prévoit un processus de révision des projections en matière d'efficacité énergétique, d'énergies renouvelables, de flexibilité ou de stockage d'ici 2023. Cette réévaluation des objectifs ne peut se faire que dans le sens d'un renforcement de l'objectif climatique et des objectifs d'efficacité

	énergétique et d'énergie renouvelable. En outre, la Région Wallone s'est déja engagée à revoir ses trajectoires climatiques à la hausse pour "atteindre l'objectif climatique de 55% de réduction des gaz à effet de serre d'ici 2030. Ces révisions programmées politiquement de l'objectif devraient dès lors faire l'objet d'étude de sensitivité supplémentaires. Nous constatons qu'à ce stade les scénarios de sensitivités réalisés par Elia (sauf les scénarios low demand et nuke) s'inscrivent uniquement à la hausse en terme de capacité nécessaire. Des scénarios baissiers permettraient d'investiguer les options alternatives à l'instauration d'un CRM comme un scénario 4 GW éolien offshore dès 2025.

Elia takes note of the comment regarding the forecasted wind offshore capacities referenced for the next years.

However, as mentioned in §3.2.2, regarding the current available information, Elia considers that the additional offshore connection capacity of 700MW is not expected in 2025 and won't consider it in the Y-4 auction for the delivery year 2025-26 as the availability of this additional capacity is strongly related to commissioning of the Ventilus project. Taking into account more offshore capacities appears therefore to be very unlikely for the delivery year 2025-26 and Elia won't consider this sensitivity proposal for its recommendation in order to establish the reference scenario.

Regarding the proposed sensitivities for 2030, Elia could consider those in the framework of the next 10-year Adequacy and Flexibility study to be due for end of June 2021 according the law.

Febeg	One sensitivity where the PNEC ambitions are not realized and/or grid developments are not timely realized (in particular regarding market response/storage/RES developments).

As mentioned before, Elia would like to remind that, regarding all the data and assumptions for every technology mentioned in the Excel file for the public consultation on the scenarios, sensitivities and data for the CRM parameter calculation for the Y-4 Auction for Delivery Period 2025-2026, it is assumed that a CRM is implemented for the delivery period and provides the required support for each capacity to be available in the market. Therefore, it is considered that the CRM will provide the adequate economic support in order to ensure that the objective set by the Belgian authorities will be met.

According to Elia, there is therefore no reason to deviate from the dataset presented in the public consultation documents and Elia won't take this point into account for its recommendations.

3.4 Preselected capacity types

Febeliec	On the preselected capacity types, Febeliec takes note by the selection decided by Elia of relevant technologies, yet wonders whether current technological options are relevant for a CRM that could easily cover 15 years in case this duration were to be selected for subsidies to certain capacity providers. Febeliec is however very surprised to see that for market response, “incremental capacity is added to each of the categories already defined for the Belgian market zone proportionally to each market response category size”, without any qualitative nor quantitative justification. While Febeliec has continuously voiced many concerns regarding the way Elia treats market response in its adequacy studies, as also referred to above, Febeliec is even more surprised to see that Elia expects that on-going evolutions will have no impact whatsoever on the categorisation and related volumes of market response (e.g. smart meter roll-out or heat pump or electric vehicles penetration, which is on-going and should have not only a substantial impact on the overall potential volume of demand response, but also presumably on the relative position of the different categories of market response).
Febeliec	Also on the 100MW steps Elia applies in the framework of its adequacy studies, Febeliec refers to its numerous comments that have still not been duly answered on the need for such a large step.
Febeliec	Concerning the economic viability assessment that Elia conducts, Febeliec is surprised that Elia does not provide more data. Febeliec has in the past (a.o. on the Elia Adequacy and Flexibility study 2019) provided many comments (as have many other stakeholders). Febeliec would have expected to get more insight in how Elia will conduct such assessment as well as the underlying data (especially when looking towards market prices for a horizon 15 years beyond 2025, as is the scope of the proposed Belgian CRM), yet also this part of the methodology is not consulted upon nor clarified.

First, Elia would like to remind the purpose of the preselected capacity types. Once the reference scenario will be defined by the Minister, it does not mean that this reference scenario will be compliant with the legal security of supply criteria, as defined in article 7undecies, §3 of the electricity law. The next step in the methodology is therefore to calibrate the scenario to the security of supply criteria in order to reach the right volume to be procured for the Y-4 auction of 2025-26 delivery period.

It does mean that the energy mix determined with the preselected capacity types is only valid for one delivery year and for one auction, depending on the data and assumptions defined in the reference scenario. The purpose is not to select capacities for the next 15 years.

Regarding the market response category, as the focus is only on one specific delivery year for which a categorization had been proposed based on a qualitative and quantitative approach, it is assumed that the additional capacity will be in line with the proposed categorization. This is the reason why incremental capacity is added to each of the categories already defined for the Belgian market zone proportionally to each market response category size. According to Elia, there is no technical reason to modify the split of market response.

Regarding Febeliec's second comment on the incremental steps, Elia would like to remind that it applies the requirements as mentioned in article 7, §1, 2° of the proposed Royal Decree[19]. Elia will therefore integrate an increment as used in the ERAA/NRAA described in articles 23 and 24 of EU Regulation 2019/943 and lower or equal to 100MW. Given that nor the methodology for the ERAA is yet approved by ACER, nor it was already used in an ERAA, the latest 'European adequacy assessment' corresponds to the 'ENTSO-E Mid-Term Adequacy forecast report (MAF)' published end of 2019. MAF 2019 does not integrate an economic viability check nor an economic loop in order to add new capacities to market zones in order for each market zone to be compliant with its national security of supply criteria. Therefore, Elia will use a step lower or equal to 100MW, as described in the Proposed Royal Decree. As mentioned in the framework of the 10-year Adequacy and Flexibility study 2020-30 (Elia, 2019), The block size of 100 MW was chosen to be as small as possible, while still ensuring statistically robust results for the determination of the volume. Especially when searching for the tail of the distribution (e.g. P95 criterion), this statistical robustness is a limiting factor. Choosing a smaller step size might lead to a calculation result that differs depending on the random seeding of the model, as already illustrated by Elia in the context of previous stakeholder interactions[20]. The 100 MW block size is also the resolution used in the scope of the evaluation of strategic reserve volume and the other adequacy analyses performed by other TSOs and within ENTSO-E.

Regarding Febeliec's last comment, Elia would like to clarify that the addition of new capacities in order to ensure that the reference scenario selected by the Minister is compliant with the Belgian security of supply, as mentioned in article 7, §1 of the Royal Decree is not equivalent to an economic viability check, as mentioned in article 23, §5, (b) of the 2019-943 EU Regulation. The purpose here is not to assess the likelihood of retirement, mothballing or new-built of any assets but to add the required capacity to be adequate based on a relevant choice of existing technologies without assessing if those technologies would be viable in an Energy-Only Market, as an appropriate support

[19] https://economie.fgov.be/sites/default/files/Files/Energy/AR-methode-de-calcul-volume-de-capacite-parametres-encheres-mecanisme-de-remuneration-de-capacite-Annexe-4-avant-projet-AR-clean.pdf

[20] http://www.elia.be/~/media/files/Elia/users-group/Working-Group-Balancing/TF_Strategic_Reserves/Agenda/TF_09072018_Elia.pdf

mechanism is taken as assumption for the CRM calibration.

EDORA (TF)	MoM from TF11 : "EDORA asks if the storage capacities are considered in type 4 “market response”. Elia answers that the market response category is in line with the market response category proposed in the scenario dataset, which does not consider specific storage capacities. Elia adds that an additional specific category could be justified in the context of the public consultation. EDORA replies it would indeed be interesting to add a category type “storage”."

As proposed by EDORA during the TF11 from 5th May 2020, a storage category is proposed to be integrated in the preselected capacity, described in article 7, §1 of the Proposed Royal Decree.

Regarding the associated volume, as for market response, Elia proposes to add incremental capacity with the predefined step to each of the categories already defined for the Belgian market zone proportionally to each storage category size.

Febeg	It is questionable whether IC engines are relevant technologies to ensure the long-term adequacy in Belgium in (i) a European green deal context and (ii) a context where the additional capacity to ensure the security of supply is expected to replace baseload capacity. Of course, FEBEG acknowledges that IC engines can have a role to play in a capacity open to all technologies if they satisfy the CO2 emission performance standard set by the Electricity regulation. However, FEBEG also understands that this CO2 emissions’ requirement is an ex-ante control and might lead to an underestimation of the total CO2 emissions of the concerned asset.

Elia takes note of Febeg’s arguments regarding the IC engines category as part of the preselected capacity types.

Firstly, Elia would like to remind that ‘IC engines’ could also refer to gas assets which could be compliant with the Electricity regulation. Moreover, if the asset uses biofuel or synthetic fuel from renewable energy excess, this could also lead to compliance with the Electricity regulation.

Secondly, the preselected capacity types will only be used in order to calibrate the reference scenario, as mentioned in article 7, §1 of the Proposed Royal Decree. This calibration is only applicable for a particular delivery year. Looking at long-term adequacy

is not the purpose of this step. According to Elia, this technology could be representative for the delivery year 2025-26 and should therefore be kept as preselected capacity type.

3.5 Post-delivery scenarios

Febeg	Elia proposes to use the 2020-2030 Federal Development Plan as reference for the proposed post-delivery scenarios for the period 2035 and 2040. FEBEG would like to remind that the 2020-2030 Federal Development Plan has been approved by the Minister in 2019 but some additional interconnections projects with Germany and UK have to be further substantiated by Elia and prove they will effectively bring more benefits to the Belgian consumers than their important cost. FEBEG proposes to only consider the investments that have been fully approved by the Minister
Febeliec	On the other parameters, Febeliec takes note of the statement that a.o. “this includes the sources of scenarios for periods after the delivery period in order to calculate the market revenues” and in this framework clearly wants to refer to all its above mentioned comments on this topic, as well as comments made during previous consultations on adequacy studies by Elia.
Febeliec	On the scenario post-delivery period, Febeliec is surprised that Elia will still not provide an overview for each individual year, while all previous adequacy studies by Elia, and in particular its Adequacy and Flexibility study of 2019, show that their analysis provides substantially different results for each of the analyzed years. Moreover and even more important, the identified need for a CRM by the Elia study, to which Febeliec continues to have more than substantial questions, also clearly indicates a substantially diminishing need for such a CRM over time; by excluding individual years from the analysis, it is impossible to clearly identify which elements are determining year after year and get a more deep understanding of the intrinsic underlying effects. Febeliec even wonders whether the proposed approach is in line with the stipulations in the CEP (Cf. ERAA), in line with which (see comments above) Elia should conduct its assessment according to Febeliec to the largest possible extent.

Regarding Febeg’s comment, Elia confirms that the reference grid used in the Federal development plan is the one integrating the investments that have been fully approved by the Minister and not the conditional projects, as mentioned in the 2020-2030 Federal Development Plan.

Regarding Febeliec first comment, Elia would like to remind that Elia organized a public consultation on scenarios, sensitivities and data for the CRM auction volume and parameter calculation in the framework of Y-4 auction for 2025-26 delivery period of the CRM. This public consultation takes place in the framework of the Proposed Royal Decree laying down the method for calculating the required capacity volume and the parameters necessary for the organization of the auctions. Elia strictly applies the

methodology set in the Proposed Royal Decree and especially article 6, §2 regarding the content of the public consultation hence comments regarding the methodology or the 'need for a CRM' are to be analyzed in the context described above.

In this framework, Elia applies the requirement of article 6, §2, 4°. The sentence mentioned by Febeliec is Elia's own translation of the content of the above article. Elia therefore proposed to use the sources as mentioned in the public consultation documents in order to calculate the market revenues. Despite the comments raised by Febeliec and answered by Elia in the framework of those studies, Elia believes these studies are the best available source in order to determine market revenues for the given period.

Regarding Febeliec second comment, Elia will use all the available public sources in order to perform the market calculation which will be used to calibrate the net-CONE and the intermediate price cap. For now, there are no other available source to Elia's knowledge that the one presented in the framework of this public consultation. However, for the next CRM calibration, Elia would be able to use more refined data from the next 10-year Adequacy and Flexibility study which should be published before June 2021 according to the electricity law.

On the CRM need and its evolution, Elia refers to its comment from §3.1.1.