

Consultation report of the public consultation on the scenarios, sensitivities and data for the CRM parameter calculation for the Y-1 Auction with Delivery Period 2026-27, Y-2 Auction with Delivery Period 2027-28 and Y-4 Auction with Delivery Period 2029-30

June 2024

Table of contents

Introduction	4
1. Legal and regulatory framework	6
2. Elia’s recommendation	7
Recommendation for the reference scenario for 2026-27/Y-1	10
Recommendation for the reference scenario for 2027-28/Y-2	11
Recommendation for the reference scenario for 2029-30/Y-4	11
3. Received feedback and Elia’s answer	12
3.1 Methodology	12
3.2 Scenario dataset	15
3.2.1 General remarks	15
3.2.2 Generation & storage summary	16
3.2.3 Individually modelled thermal generation capacities	16
3.2.4 Storage	18
3.2.5 RES capacities	22
3.2.6 Profiled thermal capacities	24
3.2.7 Forced outage rates	25
3.2.8 Consumption	27
3.2.9 Demand side response	35
3.2.10 Economic parameters	38
3.2.11 Flow based domain	38
3.2.12 Balancing capacity	40
3.2.13 Other countries data	41
Update of the dataset for Netherland	43
3.3 Reactions on proposed sensitivities	44
3.3.1 General Remark	44
3.3.2 Nuclear capacity Great-Britain 1	46
3.3.1 Nuclear capacity Great-Britain 2	47
3.3.2 French nuclear availability	47
3.3.3 Flow-based CEP rules	49
3.3.4 Regarding the uncertainties on Belgian thermal units	49
3.3.1 Nuclear forced outage rate in Belgium	50

3.3.2 Conclusion	50
3.4 Preselected capacity types	51
3.5 Post-delivery scenarios	53
3.6 IPC	54
3.7 Revenue parameters	55
Appendix: Scenario dataset proposed by Elia	56
Generation and Storage	56
Individually modelled thermal generation	57
Storage	61
Profiled thermal without daily schedule	61
Forced Outage Rates	62
Demand	62
Demand-side Response	63
Balancing need	63
Neighboring countries	64

Introduction

Elia organized a public consultation on the scenarios, sensitivities, and data for the CRM parameter calculation for the Y-1 Auction with Delivery Period 2026-27 (2026-27/Y-1), for the Y-2 Auction with Delivery Period 2027-28 (2027-28/Y-2) and for the Y-4 Auction with Delivery Period 2029-30 (2029-30/Y-4). This public consultation took place in the framework of the 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 (hereinafter ‘the Royal Decree’).

Article 5, §2 of the Royal Decree sets out the topics to be at least 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 Royal Decree, an explanatory nota in PDF format¹ and the slides presented during Working Group Adequacy from Friday 12 April 2024².

The consultation aimed at receiving comments from market participants on the presented data and assumptions as well as suggestions for additional sensitivities in order for the Minister to decide on a reference scenario for each auction. In line with the Royal Decree, this decision is to be taken on the basis of a proposal from the CREG, to be formulated taking into account this consultation report, including Elia’s recommendations, and after an advice on this proposal by the FPS Economy.

The consultation period was set from Tuesday the 12th of April until Monday the 13th of May 2024, 6:00pm and was publicly announced on the Elia website.

In total, 2 fully confidential reactions and 4 public reactions (CREG, FEBEG, Febeliec and FPS

¹ https://www.elia.be/en/public-consultation/20240412_public-consultation-on-the-scenarios-sensitivities-and-data

² <https://www.elia.be/en/users-group/adequacy-working-group/20240412-meeting>

Economy) were received.

This document is structured as follows:

- first, the legal and regulatory framework of this public consultation is reminded;
- then, Elia's recommendation will be presented in line with article 5, §3 of the Royal Decree;
- 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. Elia provides answers on the methodology, the scenario dataset, the proposed sensitivities, the preselected capacity types, the post-delivery scenarios, the intermediate price cap and the strike price.

In the framework of this public consultation, it should be noted that some elements were not included and will be presented in the WG Adequacy of the 27th of August:

- the electricity consumption, as Climact is currently updating the trajectories, which will include:
 - the latest macro-economic trajectories per sector that will be published by the Federal Planning Bureau in June 2024;
 - the update of the assumptions regarding additional electrification from industry in close collaboration with Elia's customers;
 - the findings of the PRICED study on the evolution of electricity demand in Belgium (energy efficiency, elasticity, demand destruction) as best as possible;
- the demand-side response from existing usage.

In addition, Elia proposed to update the dataset for the Netherlands after the publication of the Monitoring Leveringszekerheid by Tennet. This report was published on the 8th of May 2024. The public consultation report therefore also integrates a specific section on the proposed updates for Netherlands assumptions. In the case of Great Britain is publishing the new "Future Energy Scenarios" before the reference scenario selection by the Minister, Elia proposed to also include it in the dataset, as it was performed in previous scenario processes.

This public consultation report will be published on Elia's website as well as all the non-confidential feedback received.

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

1. Legal and regulatory framework

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. The procedure is further defined in a Royal Decree laying down the parameters with which the volume of capacity to be provided is determined, including their calculation methods, and the other parameters necessary for the organization of auctions, as well as the method and the conditions for granting an individual exemption from the application of the intermediate price ceiling(s) in the context of the capacity compensation mechanism (the Royal Decree) setting out the method for calculating the required volume of capacity and the parameters necessary for the organization of auctions under the capacity remuneration mechanism. For the first time, and following an amendment to the Electricity Law, Elia also made the necessary reference scenario process for the Y-2 auction.

A concertation and collaboration meeting was organized with the FPS Economy and the CREG on 26 March 2024. Elia provided further information and clarifications by e-mail on the 10th of April. A WG Adequacy was organized to provide market parties all information regarding the scenarios put forward in the public consultation on 12 April 2024. Then, the public consultation was organized from 12 April 2024 to 13 May 2024 at 6pm. Based on the feedback received, Elia prepared this public consultation report as well as the recommendation required by the Royal Decree. Both the recommendation and answer to stakeholders' feedback were presented during the WG Adequacy organized on 14 June 2024. The CREG will elaborate a reference scenario proposal for each auction based on all available information and the FPS Economy will provide an advice on them. Finally, the Minister will select the two final reference scenarios by 30 September 2024 based on the proposal from the CREG, Elia's recommendations, and advice from the FPS Economy.

2. Elia's recommendation

This section aims to provide Elia's recommendation, as mentioned in article 5, §3 of the Royal Decree. This recommendation is made for the calculation of the required volume and parameters needed in the framework of the CRM calibration report for 2026-27/Y-1, 2027-28/Y-2 and 2029-30/Y-4. This recommendation is formulated to provide a robust, realistic, and balanced reference scenario proposal for each auction, considering 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. These sensitivities are therefore part of the proposed reference scenario. The received feedback from stakeholders and detailed comments can be found in the next chapter.

Elia proposes to take into account the scenario dataset presented in the public consultation as a starting point for 2026-27/Y-1, 2027-28/Y-2 and 2029-30/Y-4. This dataset has been constructed based on the latest published European Resource Adequacy Assessment (ERAA 2023) from ENTSO-E. This initial dataset has been updated to take into account the latest available information on Belgian and European areas as well as feedback from stakeholders during the public consultation process which took place between the 12th of April and the 13th of May 2024. On top of this dataset, Elia's recommendation proposes to integrate some relevant sensitivities (as part of the reference scenario) for each auction's reference scenario as described below. Elia's recommendation intends to integrate the feedback received in order to provide relevant and justified reference scenarios proposal. All answers and proposals from stakeholders can be found in the next section of this consultation report.

Compared to the assumption workbook provided in the public consultation, Elia proposes:

- to update the dataset for Netherlands, following the recent publication of the Monitoring Leveringszekerheid by Tennet³ (Table 3, Table 4, Table 5) and to consider in the reference scenario any further national announcement or relevant studies to be published before the decision of the Minister;
- to integrate the correction for small-scale batteries, as presented on Figure 5.

Regarding fuel and CO₂ prices, Elia also recommends considering the latest forward prices available before the decision of the Minister.

³ https://tennet-drupal.s3.eu-central-1.amazonaws.com/default/2024-05/20240514%20Monitor%20Leveringszekerheid%202024_0.pdf

It should be noted that Elia's recommendation doesn't include:

- the electricity consumption, as Climact is currently updating the trajectories, which will be presented during the WG Adequacy of the 27th of August and which will include:
 - the latest macro-economic trajectories per sector that will be published by the Federal Planning Bureau in June 2024;
 - the update of the assumptions regarding additional electrification from industry in close collaboration with Elia's customers;
 - Additional insights (energy efficiency, elasticity, demand destruction) gained through the PRICED study will be included in the presented curves as best as possible and if available by then; and
- the demand-side response from existing usage (also called 'market response'), for which an update will be presented in the WG Adequacy of the 27th of August, following the study being performed by N-Side for winter 2023-24.

Based on the list of sensitivities, Elia recommends the following choices:

- Regarding the **integration of flow-based CEP rules**, Elia proposes to keep the central scenario in each auction, considering a 70%min RAM for all countries in order to be compliant with European regulation however Elia acknowledges that the risk that some countries do not always comply with it exists.
- Regarding the **potential closure of thermal units due to CO₂ thresholds** to be applied in the CRM, Elia proposes to consider the closure of all turbojets resulting in 140MW nominal capacity to be removed.
- Regarding the **forced outage rate of the Belgian nuclear units**, Elia proposes to integrate stakeholder's feedback and to consider 10% instead of 20.5 %.
- Regarding the sensitivity on the **nuclear availability in France**, Elia proposes:
 - for 2026-27/Y-1, to use the latest REMIT data calibrated to an expected yearly generation value. Indeed, as demonstrated in the past, REMIT data overestimate the nuclear availability in France. The reduction is calculated as described in the Explanatory Note of the public consultation based on the minimum EDF forecast for winter only which is obtained from the minimum EDF forecast for the entire year and a distribution factor based on historical generation. Note that the EDF generation forecast for 2026 is between 335 TWh to 365 TWh⁴.
 - For 2027-28/Y-2 and 2029-30/Y-4, to consider at least 4 units unavailable on top of the availability foreseen in the published ERAA 2023.

⁴ <https://www.edf.fr/en/the-edf-group/dedicated-sections/journalists/all-press-releases/estimated-nuclear-generation-in-france-for-2026>

The reasons to consider such a sensitivity are multiple (non-exhaustive list):

- Elia believes that taking into account this sensitivity is relevant to reflect a realistic view of additional uncertainties abroad beyond Belgium's control which could significantly impact the adequacy situation in Belgium. Indeed, given Belgium's high dependency on imports, any event happening abroad can have a significant impact on the adequacy requirements of the country. Among all the different risks identified, the choice of the nuclear availability in France is the one with the estimated highest probability for the reasons explained below and is relevant to keep consistency with previous reference scenario selected by the Minister.
- The French nuclear fleet is going through major overhauls to extend the lifetime of its ageing fleet beyond 40 years. The maintenance schedule foresees a substantial number of "decennial visits" over the next 5 years, in particular for the 900 MW nuclear power plants.
- In addition, found corrosion defects in some welding greatly impacted the availability of all nuclear reactors in the previous years and might still impact them in the future as inspections are still being performed and could lead to possible additional maintenances/works, as recently observed on Blayais 4 unit.
- The nuclear fleet is very vulnerable to generic issues given the same technological conception used in the reactors. A similar situation (to the one of the weldings) was already experienced during winter 2016-17.
- RTE proposes a nuclear generation of 350 TWh from 2026 onwards for the next 'Bilan Prévisionnel', while the historical generation was above 400 TWh. Note that the yearly generation expected for Flamanville 3 is expected by RTE to reach 10 TWh. RTE also run a low sensitivity (330 TWh) as well as some stress tests on the nuclear units to assess the simultaneous unavailability of 12 nuclear units (280 TWh).
- The EDF generation forecasts for the coming years do not match with the sum of unit availability reported on REMIT. Therefore, a reduction of the unit availability reported on REMIT is required.
- **On other foreign risks:**
 - Regarding the **nuclear capacity in the UK**, Elia proposes to consider the Hinkley Point C nuclear plant as unavailable for all delivery periods except if official publication is available before the decision of the Minister;
 - Regarding the **possible extension of AGR nuclear plants in the UK**, given that no concrete extensions have been announced or approved yet, Elia proposes not to include any extensions in the reference scenarios.
 - Regarding the **availability of Cordemais**, Elia proposes to consider that the conversion to biomass of Cordemais will happen and by consequent that Cordemais is considered available for all delivery periods;

Note that the dataset for each auction’s reference scenario is to be found in Appendix: Scenario dataset proposed by Elia.

Recommendation for the reference scenario for 2026-27/Y-1

The recommendation for 2026-27/Y-1, including the sensitivities selection, is summarized on Figure 1.

Elia’s recommendation – Y-1 auction with delivery period 2026-27

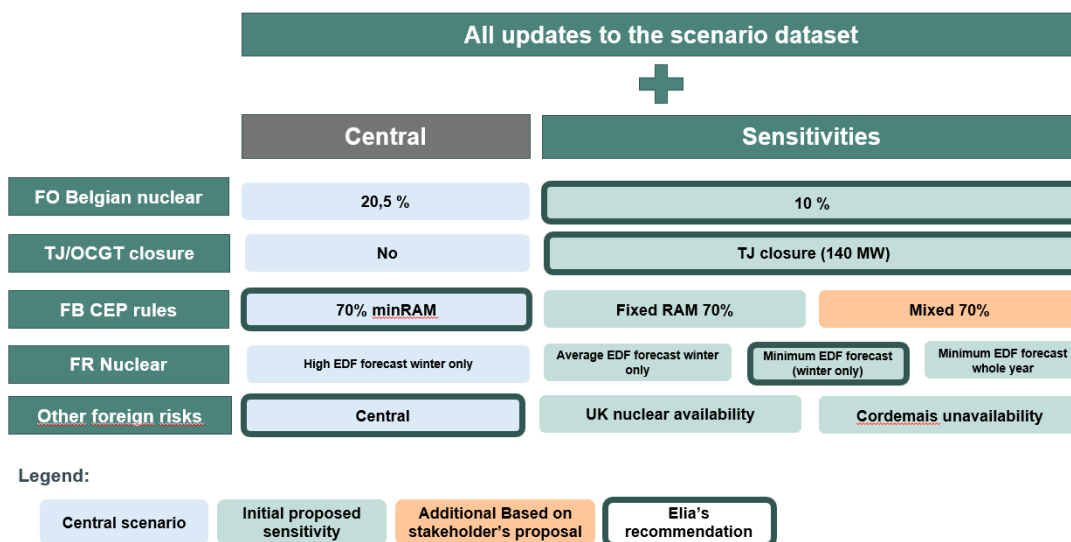


Figure 1: Elia's recommendation for the Y-1 auction with Delivery Period 2026-27

Recommendation for the reference scenario for 2027-28/Y-2

The recommendation for 2027-28/Y-2, including the sensitivities selection, is summarized on Figure 2.

Elia's recommendation – Y-2 auction with delivery period 2027-28

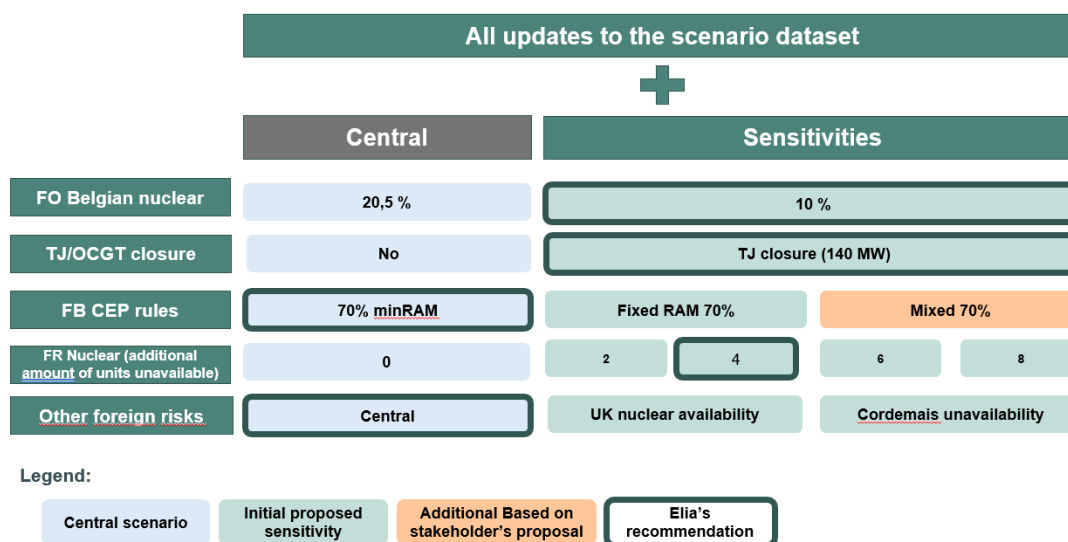


Figure 2: Elia's recommendation for the Y-2 auction with Delivery Period 2027-28

Recommendation for the reference scenario for 2029-30/Y-4

The recommendation for 2029-30/Y-4, including the sensitivities selection, is summarized on Figure 3.

Elia's recommendation – Y-4 auction with delivery period 2029-30

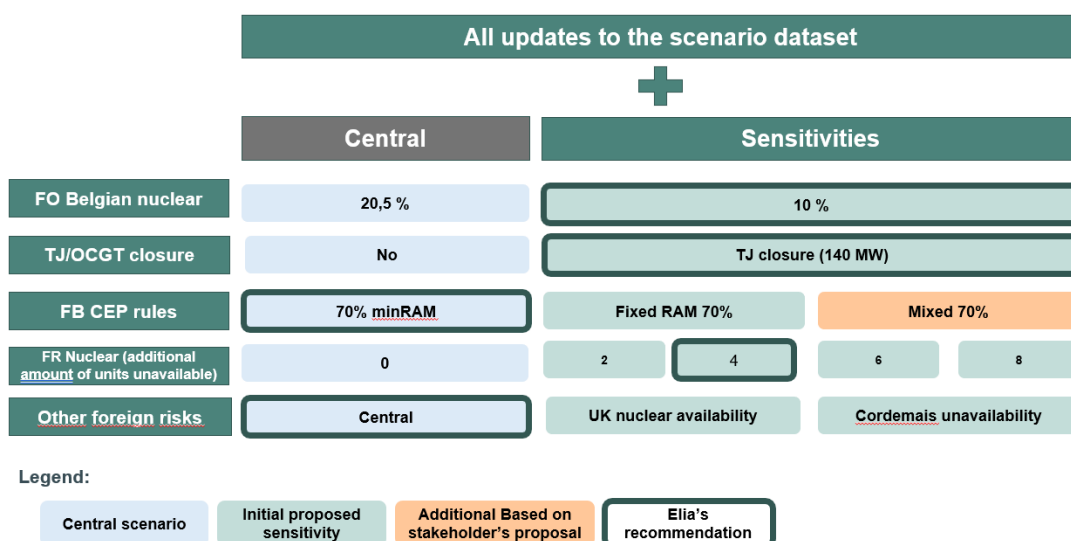


Figure 3: Elia's recommendation for the Y-4 auction with Delivery Period 2029-30

3. Received feedback and Elia’s answer

This chapter of the public consultation report provides an overview of the received feedback, a justified answer from Elia and how Elia proposes to take it into account for the CRM calibration, as part of Elia’s recommendation.

In the framework of this public consultation on scenarios, sensitivities and data for 2026-27/Y-1, 2027-28/Y-2 and 2029-30/Y-4, 6 answers were received: 4 non-confidential (FEBEG, CREG, FPS Economy and Febeliec) and 2 fully confidential answer. This document provides answers to the 4 non-confidential feedbacks received.

3.1 Methodology

CREG	La CREG demande à Elia d’indiquer la date de la dernière mise à jour de la base de données de Météo France. La base de données climatiques devrait prendre en compte le changement climatique et le réchauffement de la planète. Comme les années climatiques ne sont pas publiées, rien ne prouve que les années climatiques prospectives sont réellement représentatives. La CREG aimerait voir comment les années historiques récentes peuvent être intégrées dans la base de données climatiques.
Febeliec	Febeliec strongly regrets that Elia still does not involve the stakeholders in the development of this methodology, other than the stakeholders imposed by the law (FPS Economy plus coordination with CREG). Febeliec will provide its comments on the consultation but this does not mean that Febeliec agrees with the applied methodology and should in no case be interpreted as such.
Febeliec	Febeliec wants to reiterate its longstanding position regarding the calculation being conducted for just one scenario, with only one specific subset of sensitivities being selected. While Febeliec understands that in the end one final scenario has to be selected for the calibration, Elia could still conduct calculations for multiple scenarios which would allow much better insight in the sensitivity of the results regarding the changes in the scenario. Even though no legal obligation exists for such additional calculations, there also does not exist a legal prohibition for such calculations and they would deliver essential insights for a thorough analysis and selection of the final scenario to be applied. Febeliec insists that it would be wise and prudent to run at least some alternative scenarios, even though there is no legal obligation, in order to provide the necessary relevant input for any governmental decisions.
Febeliec	On climate years, Febeliec can only reiterate its known comments on the blackbox approach of Elia by applying the forward looking model of Météo-France, which also incorporates policy choices regarding climate scenarios and is

<p>as such not a neutral model. Moreover, Elia refers to ERAA but a.o. ACER has voiced also concerns about the approach chosen by ERAA in this domain as well as the underlying database.</p> <p>Febeliec again proposes to include a scenario where the historic approach, with only 30 historic climate years (and also listed as an option in the European framework) is followed, to see what the impact is of the chosen approach compared to the previous approach, to get a feeling for the implications of the blackbox that is now applied by Elia.</p>
--

Elia would like to remind Febeliec that the CRM calibration process and the reference scenario and the methodology to determine the different CRM parameters are described in article 12 of the Royal Decree on the determination of volume and parameters⁵, approved by the European Commission. The methodology applied is compliant with the latest European methodologies approved in 2020, as applied in the Adequacy and Flexibility study 2023-34, in line with article 12, §2 and §3 of the Royal Decree.

Regarding the CRM calibration methodology itself, Elia would also like to remind that it has also been discussed extensively in the CRM Design phase, through the publication of design notes⁶, ⁷, discussions in task forces⁸, Royal Decree proposals⁹, ¹⁰ and different related public consultations^{11,12,13}.

Elia takes note of Febeliec's comment. Elia follows the Royal Decree on this matter, which considers only one reference scenario to be selected by the Minister after a clear process including a collaboration and concertation phase with the FPS Economy and the CREG, this public consultation, including a complete consultation report integrating Elia's recommendations, a reference scenario proposal from the CREG and an advice from the FPS Economy on this latest proposal. Moreover, it should be noted that all comments and proposals

⁵ <http://www.ejustice.just.fgov.be/eli/arrete/2021/04/28/2021041351/justel>

⁶ <https://www.elia.be/-/media/project/elia/elia-site/users-group/ug/tf-crm/2020/crm-design-notes--september-2019---all.pdf>

⁷ <https://www.elia.be/-/media/project/elia/elia-site/users-group/ug/tf-crm/2020/crm-updated-design-notes---march-2020---all---clean-version.pdf>

⁸ <https://www.elia.be/fr/users-group/crm-implementation/meetings>

⁹ https://www.elia.be/-/media/project/elia/elia-site/users-group/ug/tf-crm/landing-page/20191122_royal-decree-methodology-elia-proposal_fr_nl.pdf

¹⁰ https://www.elia.be/-/media/project/elia/elia-site/users-group/ug/tf-crm/landing-page/20191220_updated-kb-elia_volumeparameters_frn1_clean.pdf

¹¹ https://www.elia.be/fr/consultations-publiques/20190913_formal-public-consultation-on-the-crm-design-notes-part-i

¹² <https://www.elia.be/fr/consultations-publiques/20190902-formal-public-consultation-on-the-crm-design-notes-part-ii>

¹³ <https://www.creg.be/fr/consultations-publiques/consultation-publique-concernant-le-projet-de-proposition-relative-aux>

are shared with the authorities.

Regarding the question of the CREG on the Météo France climate database, Elia utilises a climate database generated for the target year 2025, as described in Annex J of Adequacy and Flexibility study 2024-2034. The climate change and in particular the increase of the temperature can be observed by analysing the evolution of the HDD. The Figure 4 shows the historical HDD for the period 1991-2020, the historical HDD for the period 2009-2023 and the HDD calculated based on the Metéo France for 2025. The HDDs are computed using the formula developed by SYNERGRID. Note that SYNERGRID relies on the temperature measurement at Uccle. However, in this analysis, the population weighted average temperature in Belgium is used. The HDD calculated based on the Météo France for 2025 follows the expected trajectory.

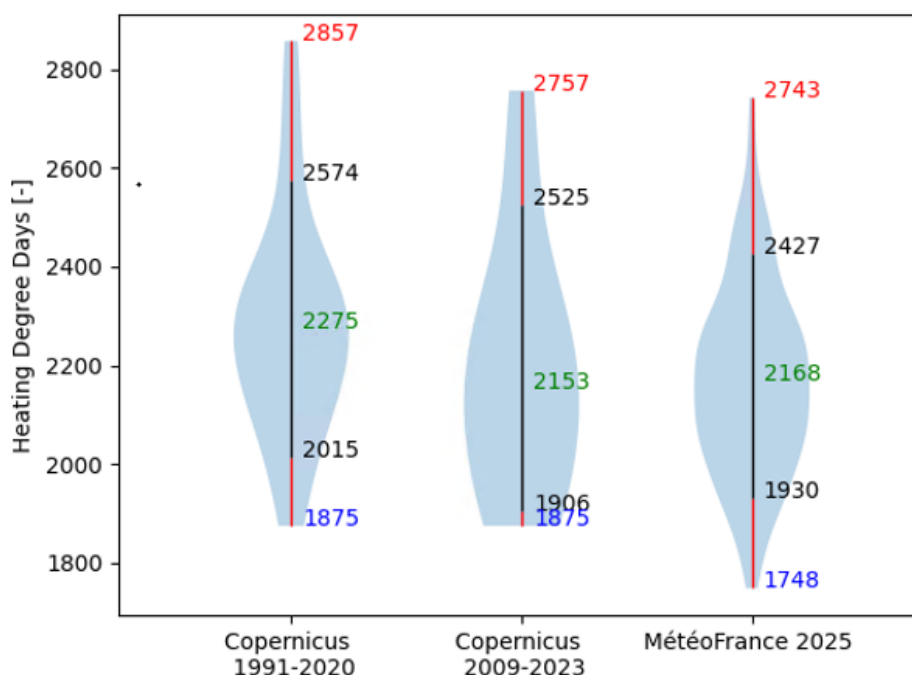


Figure 4: Comparison of the HDD calculated based on Copernicus and Metéo France 2025

Regarding Febeliec’s last comment on the use of the forward-looking model of Météo France, Elia wants first to recall that this approach is fully compliant with the ERAA methodology. It is also the goal that ENTSO-E moves towards such forward looking data in the upcoming ERAA studies. Using such kind of datasets is considered by Elia as best practice for the future. Therefore, Elia still relies on the Météo France climate database as its best available forward-looking climate database and will further follow up on the topic if better forward-looking databases are made available.

3.2 Scenario dataset

3.2.1 General remarks

FEBEG	We welcome that ELIA made a comparison between the data used for previous auctions (Y1 auction delivery year 2025-26 and Y-4 auction delivery 2028-29) compared to the different auctions planned in 2025 (Y-1 auction delivery 2026-27, Y-2 auction delivery year 2027-28 and Y-4 auction delivery 2029-30). Such comparison allows to better grasp the changes in figures considered between the different auctions. We would welcome that such comparison is added in the XLS sheet. Additionally, as a matter of information the actuals of these values would also be welcome. This information is useful in order to assess whether the hypotheses seem to be plausible or not.
Febeliec	In general, Febeliec already wants to indicate the lack of much actual data provided by Elia. Many spreadsheets provide hardly any methodology used for the calculation or determination of the data, do still not provide all sources and thus in fact provide hardly any basis to provide input on.

Regarding FEBEG's comment, Elia agrees that adding the data used for previous auctions facilitates comparison between different auctions. However, Elia considers that adding data from previous auctions to the assumptions workbook excel submitted to public consultation could lead to misinterpretations. Consequently, Elia proposes to keep only the data consulted in the excel document, but to publish an excel with data from previous auctions to facilitate comparison in a later stage. Concerning the actual values, Elia proposes to include the installed capacity of December 2023 in an updated assumptions workbook which will be published with jointly with this public consultation report.

In response to Febeliec's comment regarding the lack of actual data, Elia respectfully disagrees. Elia provided an assumption workbook with the detailed assumptions and an explanatory note detailing how each of the scenario components were determined. Elia also included sources for each parameter and an explanation of the methodology. In addition, Elia would like to remind that Elia is always available during the public consultation (or before/after) to answer questions or clarifications on the data.

As a conclusion, Elia takes note of both comment and proposes to implement the following improvements in next scenario processes:

- to include the installed capacity of the last year in the assumption workbook;
- to publish a dedicated document to summarize the assumptions from each past auction.

3.2.2 Generation & storage summary

CREG	Dans le tableau 1 (page 10 de la note explicative), la CREG note que les valeurs indiquées pour la capacité installée pour ‘Large and small scale batteries’ divergent de celles indiquées dans le tableau Excel et dans les figures 4 et 5. La CREG considère que les valeurs correctes sont celles reprises dans le tableau Excel et dans les figures 4 et 5.
CREG	Dans le tableau ‘Generation & Storage summary’, la CREG demande à Elia de fournir également les capacités installées actuelles (dernières données disponibles ou au moins les capacités installées au 31 décembre 2023) pour toutes les technologies reprises dans le tableau, en particulier pour les batteries ‘large and small scale’ et pour les renouvelables.

In response to CREG’s first comment, Elia confirms that the interpretation of the CREG is correct. The Table 1 was incorrect. The capacity of small-scale batteries published in the assumptions workbook excel was incorrect. The correct capacity of small-scale batteries was correct in the slides presented in the WG Adequacy. The correct capacities for the different types of storage are presented on Table 1.

Batteries - Capacity in reference scenario	Capacity [MW]		
	2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
Total	951	1617	1711
Small-scale storage	620	662	756
Large-scale storage ("in-the-market")	331	955	955

Table 1: Capacity installed for small-scale and large-scale batteries

Elia agrees with the CREG, adding the current installed capacity to the excel dataset would indeed provide a more comprehensive overview for the reader. Elia therefore proposes to include the installed capacity of December 2023 in an updated assumptions workbook which will be published with jointly with this public consultation report.

3.2.3 Individually modelled thermal generation capacities

CREG	Concernant les capacités installées de production de gaz, Elia tient compte de la fermeture des capacités de production de Sappi Lanaken et Zwijndrecht Lanxess. La CREG est d’avis qu’Elia devrait examiner les raisons de ces mises à l’arrêt et, le cas échéant, pour l’évaluation de la demande, tenir compte de la réduction de la consommation ainsi que de l’abandon de projets futurs d’électrification.
CREG	Dans le tableau Excel ‘1.2 Ind. Mod. Thermal gen.’, la CREG constate que pour l’unité « SERAING ST », ligne 74, la capacité est de 170 MW tandis que, sur le lien proposé, renvoyant sur la page des « Notifications de mise à l’arrêt ou de réduction structurelle de capacité installée », la capacité mentionnée est de 158 MW. La CREG se demande donc d’où vient cette différence.

CREG	De même, pour la centrale de Vilvoorde, toujours selon les « Notifications de mise à l'arrêt ou de réduction structurelle de capacité installée », il est question d'un arrêt définitif de la centrale pour une puissance de 360 MW. Or, dans le tableau Excel 1.2, il est question d'une disponibilité de 255 MW à partir du 01/10/2025.
FEBEG	<p>While we have no particular comments on the hypothesis put forward by ELIA regarding the thermal generation capacities, we would like to underline that there is a need to maintain long-term visibility on the CO₂ emission's limits to participate in the CRM in order to allow the asset owners to make possible investment decisions in time.</p> <p>We also refer to the individual contributions of FEBEG's members on the matter.</p>
FEBEG	<p>Finally, FEBEG has highlighted on several occasions the importance for existing assets to remain in the market and their need to ensure the adequacy of the system in the coming years. Therefore the CRM mechanism needs to ensure a predictable investment climate and a level playing field for those capacities still expected to play an important role for the security of supply in the energy transition. We hope that the on-going adaptations of the legal and regulatory frame will be adapted to adequately address these issues and will increase the participation of existing units to the CRM in the future auctions. We invite the different authorities to also take the necessary action regarding the CO₂ emission's limits.</p>
Febeliec	<p>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.</p>
Febeliec	<p>Regarding decommissioning, Febeliec takes note of several decommissionings listed by Elia, such as Sappi Lanaken, but (see also below) wonders to what extent also the related energy consumption reductions are taken in to account.</p>

Regarding the impact of the decommissioning of certain units on the load. Elia agrees with the comments of CREG and Febeliec and will take these decommissionings into account when assessing evolution of the organic load as well as new electrification trajectories.

In response to CREG's comment regarding the installed capacity of Seraing ST, the installed capacity of the Seraing units is based on the information published on the transparency platform

of EDF¹⁴. For Seraing ST, the installed capacity on the transparency platform is 170 MW.

In response to CREG's comment regarding the Vilvoorde power plant, the Vilvoorde power plant is composed by two units: Vilvoorde ST, which has an installed capacity of 105 MW, and Vilvoorde GT, which has an installed capacity of 255 MW. Vilvoorde ST was definitively closed in April 2023. Vilvoorde GT will finally not be closed. Based on REMIT¹⁵, Vilvoorde GT will be available as of November 2025.

Elia would like to point out that since for both Seraing and Vilvoorde, the closures of parts of the power plants results in these power plants not being able to operate in CCGT mode anymore and should thus be considered as OCGT. This update was not included in the list of individually modelled units submitted to public consultation yet.

Elia takes note on the comment from FEBEG. Elia agrees with the first comment from FEBEG on long term certainty on the CO₂ emissions limits in the CRM. However, the CO₂ emissions limits are not the responsibility of Elia and are not part of this public consultation. Elia will share this consultation report along with the public responses to the public consultation with the relevant authorities.

Regarding Febeliec's first comment, Elia can only refer to the legal procedure related to the closure announcement of power plants in Belgium (article 4bis of the Electricity Law). Any question or request on this matter should be addressed to the competent authorities. Note that Elia will share this consultation report along with the public responses to the public consultation with the relevant authorities.

3.2.4 Storage

Large-scale batteries

CREG	Concernant les batteries contractées dans le cadre du CRM, la CREG demande à Elia de vérifier la date de mise en service de ces batteries. En particulier, il est important de savoir si ces batteries peuvent être mises en service avant la date de début de la première période de fourniture pour laquelle elles ont été contractées.
CREG	Dans le fichier Excel (feuille 1.3), il est indiqué que, pour les batteries 'large-scale', le contenu énergétique est partagé entre les batteries 2h et 4h. La CREG demande à Elia de préciser la répartition entre les deux types de capacité et de communiquer les hypothèses concernant l'évolution de cette répartition dans

¹⁴ <https://www.edf.fr/en/the-edf-group/who-we-are/activities/optimisation-and-trading/list-of-outages-and-messages/list-of-outages>

¹⁵ <https://umm.nordpoolgroup.com/#/messages?publicationDate=all&eventDate=all&units=22W20181005PU--J&areas=10YBE-----2>

	le temps.
CREG	De plus, la CREG demande à Elia de préciser la capacité minimale pour qu'une batterie soit considérée comme 'large-scale'. La CREG demande également à Elia d'indiquer si les batteries de plus de 25 MW sont considérées comme étant soumises à un programme journalier.
CREG	La principale hypothèse concernant l'évolution des batteries 'large scale' est que seules les nouvelles batteries contractées dans le cadre du CRM viendront s'ajouter aux capacités existantes. La CREG s'interroge sur les raisons qui pourraient empêcher le développement de batteries en dehors du CRM et demande à Elia de justifier le choix de cette hypothèse.
CREG	La CREG constate que la méthodologie utilisée pour évaluer la capacité disponible pour les batteries 'large-scale (in-the-market)' ne semble pas être la même que celle utilisée dans l'étude Adequacy & Flexibility 2024-2034 et détaillée au point '3.4.2.2. Large-scale batteries'. En effet, il semble que la capacité potentielle étudiée dans l'A&F n'est plus prise en compte dans l'établissement des scénarios de cette présente consultation. La CREG demande à Elia d'expliquer les raisons de ce changement de méthodologie.
CREG	Enfin, la CREG demande à Elia de fournir un tableau similaire à celui présenté dans la feuille 1.2 du fichier Excel reprenant, au minimum pour les batteries 'large scale', les informations suivantes : <ul style="list-style-type: none"> - Capacité installée ; - Capacité de stockage ; - Date de mise en service.
FEPEG	It is also of importance to consider to which extend the announced large-scale battery projects will be realized and the timing for these projects. While important amounts of battery capacities are in the pipeline we note that the connection to the grid might be more challenging than initially anticipated (we also refer to the on-going discussions regarding flex access and the EOS/EDS processes). Elia should definitely make a double-check with the limited connection capacity for the battery projects & crosscheck the likeliness of the announced timings.
Febeliec	For storage and in particular batteries, no full methodology is available describing volume determination.

Regarding CREG's comments, Elia would like to note that all batteries projects are closely followed-up, including the (expected) in service date. As an example, some batteries contracted are already in service today. However, without clear information from the projects, Elia takes a conservative approach, which does not prevent these projects to take part in an auction with

sooner delivery period. Moreover, information available on REMIT will be followed-up, as it is performed for individually-modelled thermal generation.

Regarding the energy content of large-scale batteries, the repartition is based on the available information regarding existing projects and on the selection of derating factors for units contracted in a CRM auction.

On the definition, Elia considers large-scale batteries as batteries which are usually directly connected to a DSO or TSO grid and are considered as 'in-the-market'. It includes both projects above and below 25 MW.

With regards to the question whether or not batteries with a capacity exceeding 25 MW are considered as Daily Schedule units, Elia refers to article II.3.1 of the Terms & Conditions of the Scheduling Agent contract¹⁶, which includes the threshold of 25 MW for the Technical Facility of the Connection Contract. It is worth mentioning that this only involves the obligation to follow the Scheduling Process; smaller units have the possibility to also follow the Scheduling Process but are not obliged to. Whether or not a unit is a Scheduling Agent does not impact the results of the simulation.

The methodology associated to the determination of the large-scale batteries is similar to AdeqFlex'23. The large-scale batteries are separated in an existing + contracted volume and a potential volume. In both case, the central scenario only includes the first category. In the AdeqFlex'23 study, the potential was used to perform sensitivities with higher amount of batteries while in the CRM process, additional volume is included in the preselected capacity types and can be added in the economic optimization loop. The applied methodology aims to not overestimate the amount of batteries in the reference scenario, as it might impact their derating factors, but it does not prevent other batteries projects to enter the market, with or without CRM support. As mentioned above, all projects are closely followed-up, meaning that any new project being commissioned is added to the list of existing projects.

Elia will also analyse the possibility to share more detailed information on large-scale batteries projects in the future, as part of it is not publicly available and is facing confidentiality issue.

Regarding FEBEG's comment, Elia would like to mention that only the existing and already contracted batteries are considered in the scenario. For those capacities, Elia assumes that the projects have the needed incentives to be available on time and sees no reason to deviate from it.

¹⁶ [Elia T&C SA 2024](#)

Small-scale batteries

CREG	Pour les batteries ‘small-scale’, Elia indique qu’elle considère qu’une capacité supplémentaire équivalente à 0,3 % de la capacité photovoltaïque installée existante totale sera installée (contre 0,2 % dans l’étude Adequacy & Flexibility 2024-2034). La CREG demande à Elia de préciser le choix de cette hypothèse d’évolution par rapport à l’étude Adequacy & Flexibility.
FEBEG	FEBEG welcomes the split between large-scale batteries and small-scale batteries. We however wonder to which extend the hypotheses regarding the split of in-market and out-of-market for small scale batteries are realistic and question the amount of in-market small-scale batteries.
Febeliec	Moreover, Febeliec is surprised by the proposal of Elia for small scale storage, as currently many new and existing players are active in this domain and the business cases for such batteries, even without CRM, have become very positive. Febeliec considers the proposal from Elia for small scale storage an underestimate and thus not in line with the legal lowest cost criterion.

First, Elia would like to point to an inconsistency in the dataset. The capacities of the small-scale batteries presented in the assumption workbook and in the explanatory note were incorrect. The capacities presented in the slides were correct. The correct values are presented in the Figure 5 below.

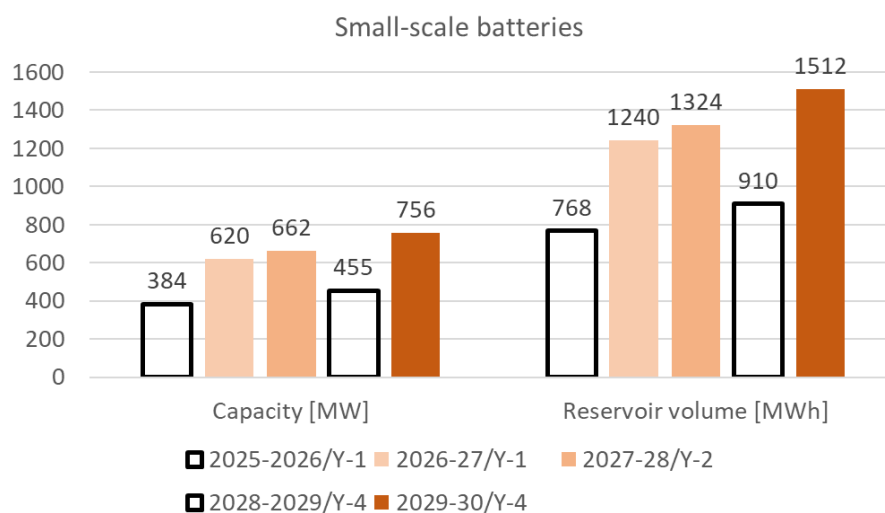


Figure 5: Overview of small-scale battery capacities

Elia updated the percentage of installed small-scale battery capacity compared to the total solar capacity because the installation rates of small-scale batteries in 2022 and 2023 were much higher than expected. High installation rates due to government support were expected but surpassed in 2022 and 2023. This leads Elia to believe it underestimated the adoption rate of small-scale storage, without subsidies. In addition, battery prices have fallen sharply over the

past years and are expected to continue getting cheaper¹⁷. These price reductions could lead to higher adoption rates for small-scale batteries.

On the comment of Febeliec of the battery capacities being underestimated. Elia believes the 0.3% adoption rate considered in the scenario reflects the lower cost of batteries while taking into account the ending of the support mechanism for small-scale batteries in Flanders. Elia will of course closely follow-up the installation rate of residential batteries without support and adapt the assumptions in future CRM scenarios processes if needed.

On the comment of FEBEG on the overestimation of the share of in-the-market small-scale storage, these values were estimated in the context of Adequacy and Flexibility study 2024-2034 based on findings from the DELTA-EE study on residential and tertiary flexibility (Appendix 3). Elia as of yet sees no reason to update this assumption but proposes to perform an in-depth reassessment in the context of the next Adequacy and Flexibility study.

3.2.5 RES capacities

CREG	En ce qui concerne le développement du photovoltaïque, Elia se base sur l'augmentation observée ces trois dernières années. Cependant, la CREG se demande si une telle hypothèse est réaliste compte tenu de l'arrêt de certains dispositifs favorables au développement du photovoltaïque (par exemple, la fin du compteur qui tourne à l'envers en Wallonie) et des prix élevés de l'électricité observés en 2022 et 2023 qui ont pu pousser l'installation de capacités photovoltaïques à la hausse.
FEBEG	FEBEG has no specific remarks on the data provided. However, it is important that Elia and the federal authorities double-check (political) ambitions with technical and economic feasibility and the NIMBY-effect (and in particular the delaying effects of the appeal procedures which should unfortunately not be underestimated).
FEBEG	It should furthermore be noted that, for the offshore wind growth ambitions, the execution of these projects will also depend on the timely execution of important infrastructure project. Experience has taught the sector that such large-scale projects will face the necessary challenges before they can be realized.
FEBEG	Regarding solar, it should also be considered that the usage of the important installation rate for PV over the last years might lead to an over-estimation of the installation rate for the future considering that recent installation have

¹⁷ <https://www.pv-magazine.com/2024/03/07/battery-prices-collapsing-grid-tied-energy-storage-expanding/>

	<p>been augmented by temporary external effects (eg. the recent energy price crisis has surely resulted in an increase of PV-installation² as well as the rush to have PV-installed in Wallonia before 31/12/2023 in order to benefit of the advantages of counters that run backwards)</p>
--	--

Concerning the installation rate for PV, Elia agrees with FEBEG and CREG comment on the change of the external effects (high energy prices crises and the rush in Wallonia to benefit of the advantages of counters that run backwards) and its impact on the installation rate. Nonetheless, there are also other parameters that can keep the installation rate high for the coming years. Currently, there is an over-supply of photovoltaics, which will continue to depress panel prices¹⁸. In addition to this, in 2023 approximately 1200 MW of photovoltaics were installed in Flanders only, although this region did not have the advantages of counters that run backwards. Furthermore, the legislation in Flanders states that industrial actors' and public authorities' implantations which reach a certain electricity consumption must be equipped with solar PV as of 2025¹⁹. Even more, the imposed PV power rate per rooftop square meters will increase every five years up to 2035²⁰. In addition, recent EU regulation requires member states to impose the deployment of solar PV on public, non-residential, and new residential buildings by 2030²¹. Moreover, the Energy and Climate National Plan states that federal government buildings should be equipped with solar PV's and that new public buildings in the Brussels region should be equipped as well from 2026²². It is also the case for NMBS train stations where solar PV's will be installed progressively²³. In addition, the Regie der gebouwen plans to put solar PV's on one fifth of the rooftop surface of its buildings²⁴. Taking into account these elements, Elia recommends keeping an installation rate of 1200 MW per year for photovoltaics.

In response to FEBEG's first comment regarding the double check with federal authorities, it is important to note that the scenario and sensitivities presented in this public consultation were previously discussed with the FPS Economy. Regarding technical and economic feasibility and

¹⁸ <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/electric-power/011224-world-stuck-in-major-solar-panel-supply-glut-module-prices-plummet-iea>

¹⁹ https://www.ejustice.just.fgov.be/cgi_loi/article.pl?language=nl&dt=ARRETE+GOUVERNEMENT+FLAMAND&pdd=2023-02-16&pdf=2023-06-24&fr=f&choix1=et&trier=promulgation&lg_txt=n&type=&sort=&numac_search=2023041669&cn_search=&caller=list&&view_numac=2023041669fx2021042801fr

²⁰ https://www.ejustice.just.fgov.be/cgi_loi/article.pl?language=nl&dt=ARRETE+GOUVERNEMENT+FLAMAND&pdd=2023-02-16&pdf=2023-06-24&fr=f&choix1=et&trier=promulgation&lg_txt=n&type=&sort=&numac_search=2023041669&cn_search=&caller=list&&view_numac=2023041669fx2021042801fr

²¹ [Energy Performance of Buildings Directive \(europa.eu\)](https://europa.eu/energy-performance-of-buildings-directive)

²² [be-pnec-projet-actualisation.pdf \(plannationalenergieclimat.be\)](https://plannationalenergieclimat.be/be-pnec-projet-actualisation.pdf)

²³ [be-pnec-projet-actualisation.pdf \(plannationalenergieclimat.be\)](https://plannationalenergieclimat.be/be-pnec-projet-actualisation.pdf)

²⁴ [Nationaal Energie- en Klimaatplan \(NEKP\) | Regie der Gebouwen](https://www.regiegebouwen.be/nl/energie-en-klimaatplan)

the NIMBY-effect, wind and solar energy are still the cheapest forms of electricity production²⁵. There is still enough space on buildings for additional solar capacity. For wind, procedures have already been simplified. The wind capacity is based on targets from the regions. It is therefore assumed that the necessary measures can be built. Moreover, the 2023 installation rate did not demonstrate reasons to deviate from it

In response to FEBEG’s second comment regarding the offshore wind growth, Elia agrees with FEBEG that such large-scale projects will inevitably encounter various challenges prior to their actual realization. However, it's essential to note that, to date, there have been no official delays published on the FPS Economy website²⁶ and by consequent Elia recommends following the official announcements.

3.2.6 Profiled thermal capacities

CREG	Pour les capacités ‘profilées thermiques sans programme journalier’, la CREG fait remarquer qu’il n’est pas possible de vérifier les valeurs présentées sans une liste détaillée des unités individuelles. Dès lors, la CREG demande à Elia de fournir une liste détaillée des unités individuelles prises en compte dans l’évolution de la capacité installée de ces technologies. La liste devrait contenir les mêmes informations que celles reprises dans la feuille ‘1.2 Ind. mod. thermal gen.’ du tableau Excel. De plus, les prévisions d’évolution des unités thermiques sans programme journalier ont été revues à la baisse sur base d’informations fournies par les DSO. La CREG s’interroge sur les raisons de cette baisse et demande à Elia de partager les informations dont elle dispose.
------	--

Elia’s internal database is already communicated to the CREG on a quarterly basis in order to provide more transparency and provides a list specific in the auction process in order to assess the participation of non-eligible units.

This database is highly evolutive and Elia is dependent on many players and Elia does not have the reasons behind the changes affecting more than a thousand units.

²⁵ <https://www.iea.org/reports/renewable-energy-market-update-june-2023/will-solar-pv-and-wind-costs-finally-begin-to-fall-again-in-2023-and-2024>

²⁶ <https://economie.fgov.be/en/themes/energy/belgian-offshore-wind-energy>

3.2.7 Forced outage rates

CREG	La CREG note que les valeurs prises en compte pour les taux d'interruption forcée sont celles de l'étude Adequacy & Flexibility 2024-2034 et qu'elles ne sont donc pas mises à jour sur base des données disponibles les plus récentes. Dès lors, la CREG demande à Elia de fournir une motivation pour le taux d'interruption forcée pris en compte pour chaque technologie. La CREG demande notamment à Elia d'indiquer comment les jours d'interruption forcée sont répartis au cours de l'année.
CREG	Concernant le taux d'interruption forcée du nucléaire, un taux de 20,5% pour les deux unités nucléaires de Doel 4 et Tihange 3 est nettement supérieur aux données prises en compte dans le LTO. La CREG estime qu'un taux maximum de 10% devrait être pris en compte dans le scénario de base et demande à Elia de justifier le taux pris en compte.
Febeliec	Febeliec does not understand why the forced outage rate of nuclear plants is considered so high, as the two most recent reactors will be maintained, after a very extensive overhaul and investment program, which should lead to positive effects regarding forced outages. Febeliec thus also recommends to apply the proposed sensitivity, with a much lower outage rate (which also at 10% is much higher as the outage rates used for all other technologies, with the exception of the (in the mean time quite dated) turbojets.

In response to CREG's comment regarding the forced outage rates, Elia would like to remind that the forced outage rates were calculated following a methodology developed by N-SIDE and Elia²⁷. The forced outage rates were calculated considering units from a group of countries on the information from 2015 to 2021. An update of this study was not foreseen for this CRM calibration. Elia proposes to not update the forced outage rates each year to ensure a certain stability in the parameters.

The forced outage rates are uniformly distributed throughout the year, following a geometric distribution. An overview of the characteristics of the forced outage parameters is given in the table below.

²⁷ https://www.elia.be/-/media/project/elia/elia-site/public-consultations/2022/20221028_nside_study-on-the-outages-on-generation-units-and-dc-links.pdf

Category	Number of FO per year	Average FO rate [%]	Average duration of FO rate [hours]
Nuclear	1.3*	20.5%**	199 hours* [around 8 days]
CCGT	9.4	5.5%	110 hours [around 5 days]
OCGT	9.2	8.2%	221 hours [around 9 days]
TJ	3.2	9.8%	130 hours [around 5 days]
CHP, waste, biomass	2.9	6.4%	111 hours [around 5 days]
Pumped Storage	5.8	2.9%	46 hours [around 2 days]
Batteries	/	2.0%***	/
DC links	1.9	6.7%	158 hours [around 7 days]

* Only considering technical forced outages.
 ** Also considering long-lasting forced outages.
 *** Regarding batteries, the forced outage rate is considered in the models by applying a derating factor on the installed capacity.

Table 1: Overview of the outage characteristics²⁸

Concerning the forced outage rate of the Belgian nuclear plants, Elia takes notes of Febeliec and CREG comments. The forced outage rate of 20,5 % for the nuclear plants was obtained taking into account the technical and long-lasting forced outages. Elia still considers the 20,5 % forced outage rate calculated on all nuclear units in the context of the Adequacy & Flexibility study 2024-34 as the relevant value to ensure the security of supply in Belgium, based on the justification provided in the explanatory note of the public consultation, as common mode failure risks and issues during LTO-works remain possible. Nonetheless, based on the feedback of the stakeholders, Elia will recommend the sensitivity that assumes a 10% forced outage rate for Belgian nuclear power plants.

²⁸ https://issuu.com/eliagroup/docs/adequacy_flexibility_study_for_belgium_2024-203?fr=sOTBhNDYxOTUwMTY (page 134)

3.2.8 Consumption

CREG	En ce qui concerne la consommation d'électricité, les valeurs et les motivations proposées doivent être soumises à consultation. La consommation d'électricité, notamment en période de pointe, est un des éléments les plus déterminants pour les paramètres de volume dans les courbes de demande. Ainsi, la CREG regrette qu'une seule des quatre composantes (i.e. l'électrification supplémentaire à partir des véhicules électriques et des pompes à chaleur) de la consommation d'électricité soit soumise à la présente consultation publique. De plus, Elia devrait soumettre à consultation le détail de la méthodologie qu'elle compte utiliser pour déterminer la valeur de la demande en période de pointe.
CREG	La proposition de présenter les hypothèses mises à jour et les valeurs pour la demande d'électricité lors de la réunion du WG Adequacy du mois d'août 2024 ne peut en aucun cas remplacer un processus de consultation tel que prévu à l'article 5 de l'arrêté royal sur le volume et les paramètres. Ainsi, la CREG insiste pour que la procédure de consultation soit également appliquée à la consommation d'électricité et que le délai minimum d'un mois soit accordé aux parties prenantes, en tenant compte de la période des vacances d'été pendant les mois de juillet et août.
CREG	Cette seconde consultation publique devrait notamment porter sur les trois autres composantes de la consommation d'électricité, à savoir l'électrification supplémentaire à partir de l'industrie, les pertes de réseaux et la demande organique.
CREG	La CREG ne perçoit d'ailleurs par la raison pour laquelle Elia ne pourrait pas, dès à présent, consulter sur les hypothèses prises en compte en matière de pertes de réseau.
CREG	Enfin, concernant la détermination de la demande d'électricité, la CREG est d'avis qu'il est important d'évoluer vers une approche plus intégrée. L'approche suggérée par Elia consiste à ajouter une demande supplémentaire, résultant de l'électrification de l'industrie et des véhicules électriques/pompes à chaleur, à la demande organique et aux pertes de réseau. La CREG se demande si cette approche prend suffisamment en compte l'amélioration de l'efficacité énergétique des applications existantes (qui sont remplacées).
CREG	De plus, Climact établit des projections de consommation sur base de la consommation passée. Or, cette consommation intègre progressivement les nouveaux usages. Les hypothèses prises par Climact au sujet, par exemple, de la consommation des pompes à chaleur en service sont-elles en ligne avec les hypothèses prises par Elia pour estimer la consommation des pompes à chaleur additionnelles ?
FEBEG	While on one hand some might put forward that the electricity consumption

	<p>could be reduced due to the consequences of the high electricity prices and collateral effects of the war in Ukraine (demand destruction), we also witness a sharp acceleration of the energy transition with an increased rate for further electrification. FEBEG therefore strongly recommends ELIA to consider these evolutions in the determination of the demand (and associated peak demand).</p>
FEBEG	<p>ELIA does not provide the final total electricity consumption that will be used as it will be updated with the latest Climact calculations based on Plan Bureau economic estimates to be published in June 2024. We welcome that ELIA will present the results in the WG Adequacy of August. It is also important that ELIA gathers feedback from the stakeholders once these figures are known.</p>
Febeliec	<p>For Demand, Febeliec regrets that currently no data nor assumptions are provided. Febeliec also regrets that this means that the assumptions of Elia on this topic will not be put into public consultation and can only hope that the applied (new and not yet consulted) methodology and results are both robust and correct. Febeliec in this context also wants to refer, sadly enough, to all the announced closures of industrial sites as well as the many sites and investment projects which are currently on hold or questionable, and insist that these are duly taken into account, both on the near future level of electricity consumption as the further in the future expected consumption, as it is clear that electrification effects will only be visible for those consumption sites that survive and remain in Belgium. Febeliec in this context also wants to refer to the study conducted by KPMG last year, in which 24 decision makers from industrial consumers indicate that, to the largest extent, apart from license to operate investments, hardly any additional investments are being decided, except in certain very specific cases, and this due to the high prices and the competitive disadvantages as compared to a.o. Other regions in the world. Febeliec insist that this is duly taken into account to avoid that through overdimensioning of the CRM the overall Belgian electricity costs would even further increase and thus further unduly hamper the competitive position of Belgian (industrial) consumers.</p>
Febeliec	<p>Febeliec hopes that also values will still be provided regarding overall and average peak consumption, and this during moments of scarcity (as a consumption peak during summer to absorb (otherwise incompressible) generation would of course not be relevant for an adequacy exercise. Febeliec wants to reiterate that consumers, when prices are high (in scarcity situations, relevant for the calibration of the CRM) would not continue to consume under normal behaviour, as the recent history has shown that consumers are already to a large extent price sensitive if prices already reach levels of 100s of euros and would presumably be even more price sensitive and thus show higher elasticity when price levels would reach 1000s of euros under scarcity situations, which is the only moment when peak load is relevant for the exercise conducted by Elia</p>

	in the framework of the CRM calibration.
Febeliec	For total electricity demand, Febeliec most strongly insist that an analysis is conducted on the quality of Elia’s total electricity forecasts during all its adequacy assessments (starting already a decade ago with the strategic reserve analyses) in comparison with the observed reality on the one hand for now historic years with measured values and on changes for future years over the different analyses it has conducted, as Febeliec is convinced that Elia systemically overestimates total electricity demand and thus creates a biased analysis of potential adequacy concerns at the detriment of unwarranted adequacy concerns and unnecessary costs for strategic reserves and CRMs, resulting in an unnecessary and undue additional system cost for consumers. Febeliec finds the approach by Elia non-representative of reality, resulting in a probably severe overestimate of total Belgian demand and thus an overestimate of adequacy needs, which will then result in potentially unnecessary higher costs for consumers (if needs are unnecessarily and artificially increased) who are currently already facing the very negative impact of higher energy bills.

Elia equally regrets that it can not include all the load components in this public consultation and followed the decision agreed in CdS regarding the load process.

Elia is still assessing the future demand from its customers and waiting on the economic forecasts from the Federal Planning Bureau. Given that the latest data are not yet available, data on the organic demand and future electrification from industry could therefore not be included in the public consultation. For future auctions, the timing of the load determination could be changed but this may cause the latest data to not be available on time. Elia did not include the losses as part of the public consultation because those depend on the other elements of the load as well.

Elia will only be able to present electricity demand trajectories in the WG of the 27th of August. It is therefore impossible to organize a full public consultation on this scenario component given the timing of the reference scenario decision by the Minister. However, Elia agrees that stakeholder feedback on this scenario component is important and therefore Elia will aim to incorporate stakeholders feedback as much as possible. After the WG of August there is still a 1-month period in which stakeholders can provide feedback before the decision by the Minister to support the proposal from CREG and the advice from FPS Economy.

Firstly, Elia proposes to present multiple trajectories for the future electricity demand reflecting different assumptions for both the organic load as additional electrification from industry. As such the impact of different assumptions can clearly be assessed and discussed during the WG Adequacy. Elia will prepare the trajectories in collaboration with the FPS Economy and CREG.

Secondly, Elia will aim to include the findings of the PRICED study on the evolution of electricity demand in Belgium in the determination of the demand trajectories. Interviews with stakeholders are foreseen as part of this study and as such their input can be considered in the

demand determination process.

The PRICED study which is currently ongoing, will take a bottom-up approach to analyse energy efficiency, elasticity on prices and demand destruction by sector and end-uses. The findings from this study will be used to improve the methodology for the determination of the electricity demand. Demand destruction due to closing of industrial sites is also a particularly important aspect of the study.

On the remark from Febeliec on the peak demand during scarcity, Elia would like to clarify that this cannot be estimated exactly in advance. This is a result of the simulation of the reference scenario and cannot be known exactly in advance. Elia would also like to reiterate that it does consider a large percentage of the load as flexible. In particular parts of EV, HP and new electrification from industry is considered to be flexible and therefore reacting to prices. The flexibility coming from this type of assets significantly reduces the load during moments of scarcity.

Elia takes note of the remark from Febeliec related to demand destruction and delays in investment decisions and will take this into account in the determination of the load trajectories.

On the comment from Febeliec on a comparison between historical consumption and past consumption trajectories assumed by Elia, Elia would like to stress the constantly changing environment in which it has to take assumptions. Policies, consumer behaviour, technologies and the geopolitical/economic context are constantly evolving and make it difficult to take accurate assumptions, especially several years in advance. Elia proposes the trajectories it deems the most likely to materialise and submits them to public consultation.

Additional electrification from industry

CREG	Compte tenu des annonces actuelles de réduction des capacités de production et du risque de fermeture d'entreprises, la CREG suggère que plusieurs scénarios de base soient pris en compte pour l'électrification de l'industrie. La CREG et la Ministre pourraient ainsi disposer des résultats de différents scénarios et opter pour le scénario qui correspond le mieux aux dernières perspectives.
CREG	La CREG est d'avis que seule une partie des projets actuels en matière d'électrification de l'industrie sera finalement réalisée et entrainera une augmentation de la demande. Ainsi, la CREG demande à Elia de préciser quel ratio de réalisation des investissements projetés par l'industrie elle compte prendre comme hypothèse pour l'électrification de ce secteur.
FEBEG	We note that Elia is currently working to improve its hypotheses on the volume and timing of the electrification in close collaboration with its customers and will update its assumptions regarding additional electrification from industry based on this. We remain very skeptical regarding the considered amount of flexibility for new the capacity needed by the electrification from industry and invite ELIA to crosscheck these elements with its customers as well (cf comment on DSR).

On the comment from the CREG on multiple scenarios for the load from additional electrification in industry. Elia agrees that this is a scenario component that given the current macro-economical and geopolitical context is particularly hard to estimate. In addition to these uncertainties not every company has full clarity on their electrification plans and indeed some announced projects might not materialise. Elia will aim to take these uncertainties into account and provide as much clarity on the assumptions that were taken in the estimation of the demand from additional electrification from industry. In addition, Elia proposes to include sensitivities on the additional electrification in industry. The Minister can then decide to include a sensitivity in the reference scenario or not. However, as stated in the RD Methodology, only 1 reference scenario is selected by the Minister and is integrated in the calibration process of the CRM.

On the comment of FEBEG on the flexibility related to additional electrification in industry, Elia will indeed look at the flexibility potential from this additional electrification. However due to the complexity of this analysis and the short amount of time available before the decision by the Minister, Elia proposes to update these assumptions in the framework of the next Adequacy and Flexibility study.

Additional electrification from EV and HP

CREG	La CREG demande à Elia de fournir les hypothèses retenues pour l'évolution du nombre de véhicules électriques et hybrides en circulation pour les différentes années cibles.
CREG	Page 14 de la note explicative, Elia indique que les véhicules électriques (V2G inclus) sont intégrés dans la demande d'électricité. La CREG demande à Elia de détailler les hypothèses retenues pour déterminer l'impact sur la demande des véhicules électriques pour les différentes années cibles (véhicule type pris en compte, nombre de kilomètres parcourus par an par véhicule, capacité de la batterie, etc).
CREG	La CREG demande également à Elia de fournir une comparaison entre les données de la Febiac et les dernières données de Statbel .
CREG	La CREG note que seule l'estimation de l'évolution du nombre de pompes à chaleur installées est soumise à consultation publique. Sachant qu'une part des pompes à chaleur vendues ces dernières années ont pour but d'assurer la climatisation ou le chauffage d'une piscine en été, la CREG estime que seule la consommation des pompes à chaleur économiquement pertinentes pour assurer le chauffage en hiver devraient être prises en compte. Ceci pourrait être corrélé à l'âge de l'habitation et à son PEB et devrait tenir compte des systèmes de chauffage complémentaires (poêle à bois ou à pellets).
Febeliec	Regarding EVs, Febeliec wonders to what extent the proposed increases are not an overestimate, as lately sales numbers of EVs have been declining and EVs

	appearing in secondary markets seem to be acquired mostly abroad, thus to a large extent not remaining in the Belgian market to increase the overall figures whenever electric (lease) vehicles are to be replaced by new ones.
Febeliec	Regarding heat pumps, Febeliec also wonders to what extent these figures are not overestimated, as also in this segment installation rates seem to lower, on one side because of lower (residential) electricity costs in comparison to the high of the energy crisis and on the other side due to higher financing costs, impacting the rate of return but also the overall level of affordability for consumers.

The scenario for EV is based on the same assumptions as Adequacy and Flexibility study 2024-2034 (chapter 3.3.3) but updated for the latest sales data of 2023 from Febiac. For passenger cars it is assumed that 415,000 new units will be sold per year during the period 2024-2035. Different policies are being put in place which will likely influence the electrification of this segment, as follows:

- It is assumed that all passenger car sales will be fully electric by 2035, due to the EU-wide ban on the sale of CO₂-emitting cars²⁹.
- In terms of company cars, it is assumed that due to fiscal measures implemented at the federal level and the Low Emission Zone (LEZ) in the Brussels Capital Region, all sales will be fully electric by 2029³⁰.
- In Flanders, it is assumed that all car sales will be fully electric by 2029.
- In Brussels, it is assumed that no more diesel or gasoline cars will be sold as from 2030 and 2035 respectively due to the LEZ.
- In Wallonia, no policies at the time of undertaking this study have been identified. It is therefore assumed that 40% of sales will comprise BEVs in 2030, with sales reaching 100% by 2035, in line with the EU regulation.

The rapid electrification of vehicles observed is mainly driven by the company car segment. It is assumed that the electrification of the private car segment will happen at a somewhat slower rate, accelerating from 2030 onwards, with Flanders being a bit ahead of the other two regions due to local policies.

The consumption from EV's is calculated based on the same assumptions as applied in AdeqFlex'23 and detailed on Table 2.

²⁹ <https://www.europarl.europa.eu/topics/en/article/20221019STO44572/eu-ban-on-sale-of-new-petrol-and-diesel-cars-from-2035-explained#:~:text=When%20will%20there%20be%20a,sector%20can%20become%20carbon%2Dneutral.>

³⁰ <https://lez.brussels/mytax/nl/practical?tab=Agenda>

SEGMENT		Usage (km/year)	Efficiency (kWh/100 km)	Annual consumption (kWh/year)
Passenger car	Private	12 350	BEV : 18 PHEV : 8.5	BEV : 2200 PHEV : 1000
	Company	22 750	BEV : 18 PHEV : 2	BEV : 4100 PHEV : 500
Freight – LDV		16 300	BEV : 30 PHEV : 15	BEV : 5000 PHEV : 2500
Freight – HDV		55 250	120	66 000
Buses		45 000	124	56 000

Table 2: Consumption parameters for the different road transportation segments (Table 3-1 from AdeqFlex'23)

For more details around the flexibility associated to EVs Elia refers to paragraph 3.3.3.5 of AdeqFlex'23.

On a comparison between STATBEL data and Febiac data is difficult to make as STATBEL counts plug-in hybrid and full electric cars in the same category³¹. According to STATBEL data 59% of all cars sold in 2023 were hybrid or full electric vehicles.

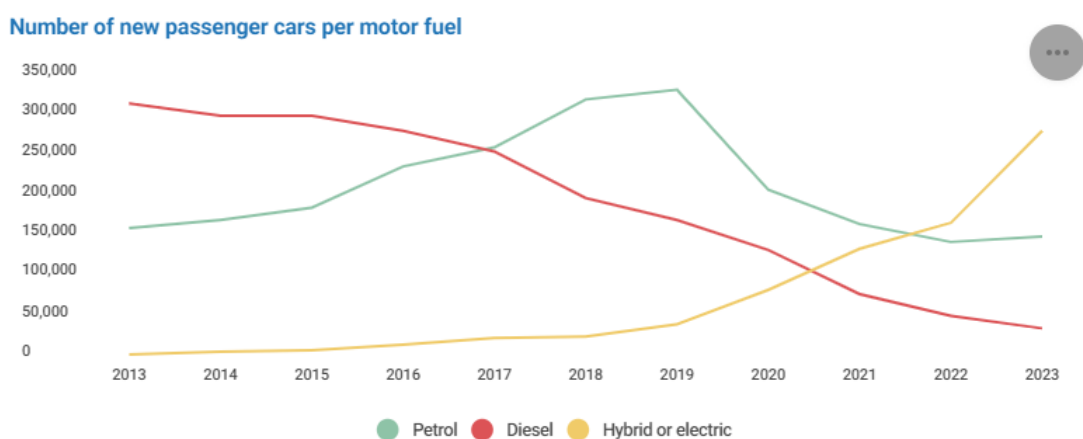


Figure 6: Number of new passenger cars per motor fuel according to STATBEL

This is a higher share than the 48% combined market share reported by Febiac.

³¹ <https://statbel.fgov.be/en/news/hybrid-supplants-petrol-59-cars-sold-2023-are-hybrid-or-electric#:~:text=93%2C086%20electric%20cars%20were%20sold,2022%20to%20191%2C522%20in%202023.>

Inschrijvingen per motortype						
	Nieuwe wagens			Tweedehands auto's		
	2022	2023	Evo. 23 Vs 22	2022	2023	Evo. 23 Vs 22
Benzine	48,9%	42,2%	-6,7%	52,9%	54,0%	1,1%
Diesel	16,4%	8,8%	-7,6%	39,6%	35,6%	-4,0%
PHEV	16,2%	21,1%	+4,9%	2,4%	3,9%	1,5%
HEV	7,5%	7,7%	+0,2%	3,2%	4,2%	1,0%
BEV	10,3%	19,6%	+9,3%	1,4%	1,8%	0,4%
CNG	0,1%	0%	-0,1%	0,3%	0,2%	-0,1%
LPG	0,7%	0,7%	=	0,2%	0,3%	0,1%
H2	0%	0%	=	0,0%	0,0%	=
Geëlektrificeerd	34%	48,4%	+14,4%	7%	9,9%	2,9%
Stekker	26,5%	40,7%	+14,2%	3,8%	5,7%	1,9%

Figure 7: Registrations per motor type according to Febiac

Since Febiac bases itself on actual sales data from its members, Elia deems this the most accurate source for car sales data. On the comment of Febeliec on decreasing sales of EV, Elia agrees that this might be true on a global level but is of the opinion that it doesn't apply to Belgium. Indeed, based on the latest quarterly analysis of car sales in Belgium by Febiac car sales and EV sales more specifically increased³².

On HP modelling Elia refers to chapter 3.3.4 of AdeqFlex'23 for the macro assumptions and appendix E for the consumption profiles. The annual heating demand is derived from data shared by Fluvius, which is linked to metering data belonging to more than 2 million residential consumers. The data from Fluvius is clustered per EPC³³ category, with an average heating demand for each. It is assumed that HPs are installed in new and (sufficiently) renovated buildings, such that new buildings are associated with the average annual heating demand associated with dwellings that fall within the EPC A category, and renovated buildings are associated with the annual heating demand associated with the EPC C category. Tertiary buildings are much more diverse and can include anything from small shops to large offices, with varying surfaces and hence demands. For simplicity, these are considered as an aggregate; the annual heating demand for these is based on data from EUROSTAT, where the total space heating demand is divided by the number of tertiary buildings in Belgium. For a renovated and new building a 25%, respectively 50% lower heating demand is assumed.

Elia did not take into account heat-pumps for swimming pool heating separately because it found no data on this.

On the comments from Febeliec, based on the sales data from 2023 Elia sees no reason to deviate from the proposed numbers. Elia found no sales data for 2024 reporting on lower

³² <https://febiac.be/nl/news/analyse-van-de-automobiemarkt-in-q1-2024>

³³ <https://www.vlaanderen.be/epc-voor-een-residentiele-eenheid/uitleg-bij-het-epc-res>

volumes in Belgium.

3.2.9 Demand side response

DSR from existing usages

CREG	La CREG regrette que la mise à jour de l'étude réalisée par E-Cube sur les volumes historiques ne fasse pas l'objet de la présente consultation. La CREG est d'avis qu'une session du WG Adequacy au mois d'août 2024 ne peut pas remplacer la période de consultation d'un mois exigée par la loi.
CREG	Ainsi, la CREG insiste pour que la procédure de consultation soit également appliquée à la 'demand-side response' et que le délai minimum d'un mois soit accordé aux parties prenantes, en tenant compte de la période des vacances d'été pendant les mois de juillet et août.
FEBEG	<p>The capacity of this type of flexibility applicable in the reference scenarios of last year's calibration was calculated by E-Cube based on historical volumes. We note that an update of this study using the same methodology will be performed this year and that the results will be presented during the WG Adequacy of August.</p> <p>As mentioned in previous consultations, FEBEG is convinced that the Demand Side Response will play an increasing important role for the security of supply in the coming years; however, the proposed 'existing' value remains very high in our opinion. It should also be assessed if the historical and expected volumes will still be present.</p>
Febeliec	Febeliec regrets that, also related to the lack of overall electricity demand, no overall figures for demand side response can be provided. Febeliec regrets that a new methodology, in replacement of the E-Cube study with all its conceptual flaws, will not be put into consultation, nor its results, although both are detrimental to a correct determination of any adequacy concerns.
Febeliec	Febeliec continues to wonder, after already having made this comment in several previous consultations, how exactly emergency and other diesel generators will be treated, as it remains unclear if and how such generators are taken into account, and if so, for which volumes. Febeliec wants to stress that in Belgium literally 100s of MWs of emergency generators are installed, with its own members already having massive volumes of emergency generators (in at least one case even 100s of MWs for certain grid users), not even taking into account the 100s of MWs installed at a.o. hospitals, where a CREG study indicated an installed capacity of at least 200 MW. Febeliec explicitly asks that Elia finally provides some clarity on this element and its inclusion in the analysis.

Regarding the comments of the CREG and Febeliec on the updated DSR volume determination method and its results not being submitted to a public consultation. Elia will aim to present the updated study and the results in a WG Adequacy before August. This way stakeholders can still provide feedback on the methodology and results.

Regarding FEBEG's comment on high assumptions for DSR capacities compared to other countries. Elia would like to remind that Elia will follow a quantitative methodology to calculate the existing DSR volume based on market bids. Elia agrees that the DSR capacity for Belgium is relatively high. Belgium has a high level of industrialization and several initiatives have been taken to encourage the development of DSR capacity in Belgium. The CRM mechanism in particular provides strong incentives for the development of DSR capacities in Belgium³⁴. Elia wants to add that the methodology for the DSR volume calculation is currently being refined by N-Side.

Regarding Febeliec's comment, the diesel generators and emergency generators are only taken into account if they actively participate in the day-to-day market. If so, their contribution is considered in the market response volume calculated by E-CUBE. Those volumes are therefore not part of the profiled thermal volume, calculated based on information from Elia's internal database, in order to avoid double counting.

In the context of the CRM auction, these capacities are eligible if they meet the specific criteria outlined in the functioning rules. To participate in the auction, they can select the appropriate Service Level Agreement (SLA) category or consider the derating factor labelled "Category V: Thermal technologies without a daily schedule. Additionally, Elia would like to point out that in case the installed capacity of the grid user's emergency generators exceeds 1MW, these units have the obligation to prequalify and as a result are taken into account accordingly into the CRM.

³⁴ https://smarten.eu/wp-content/uploads/2022/01/the_smarten_map_2021_DIGITAL_final.pdf

End-user flexibility

FEBEG	FEBEG is convinced that end-user flexibility will have a pivotal role for the security of supply in the future, however unlocking the end-user flexibility will require adaptations and implementations of new platforms and tools which will take time. We fear that these implementations will cause delays and that the end-user flexibility will only materialize at a later stage and that ELIA is too optimistic on availability of end-user flexibility in short time.
-------	---

Elia agrees with FEBEG, the end-user flexibility will play a key-role for the security of supply in the future. Unlocking this flexibility is one of the main priorities of Elia. In order to reach this objective, Elia puts a lot of efforts by organizing workshops³⁵, working groups³⁶ or hackathon³⁷ on this topic. In the upcoming Adequacy and Flexibility study that will be published in June 2025, the flexibility will be again one of the main concerns of the study, and Elia will make its best to improve the current methodology. However, currently the DELTA-EE³⁸ study that Elia uses as reference for the modelling of the flexibility is the best study available.

DSR volumes from newly electrified industry or new usages

FEBEG	<p>We understand that Elia is currently working on updated capacity assumptions regarding the flexibility associated with the electrification assumptions from industrial heat pumps, e-boilers, steel, CCS or datacenters. When looking at Table 3 of the document and the percentage of flexibility of each of the different technologies, we are wondering to which extend these values are realistic and will materialize as the core business of industry is to produce and not to provide flexibility. It would be more prudent to back up the analysis with a more fundamental view:</p> <ul style="list-style-type: none"> • Which industrial sectors contribute to DSR and in which industrial sectors do we expect further growth? • Is there a real commitment from the industry to further increase its ability and willingness to adjust its power demand to prices?
-------	---

Elia shares the view of FEBEG that the flexibility assumptions from additional electrification can be further detailed with a more fundamental view. However, as this is a very complex process requiring detailed inputs, Elia proposes to update these assumptions in the context of the next

³⁵ <https://www.elia.be/en/users-group/workshop>

³⁶ <https://www.elia.be/fr/users-group/wg-consumer-centric-market-design>

³⁷ <https://www.eliagroup.eu/en/hackathon-2024>

³⁸ https://www.elia.be/fr/consultations-publiques/20221028_public-consultation-adequacy-study-2022-2032

Adequacy and Flexibility study but to keep using the current assumptions in this year CRM scenarios.

3.2.10 Economic parameters

CREG	Pour qu'il soit possible de tenir compte d'un changement significatif des prix futurs des combustibles et du CO ₂ survenant avant l'adoption de l'arrêté ministériel, une sensibilité à la hausse et une sensibilité à la baisse de ces paramètres devrait être prévue de façon à pouvoir disposer des résultats du scénario le plus pertinent lors de la calibration du CRM.
CREG	La source utilisée par Elia pour calculer les prix futurs « CO ₂ » est « EEX EUA futures ». La CREG ne parvient pas à retrouver les chiffres avancés par Elia en consultant cette source. De plus, il est à noter que ces prix divergent du rapport « World Energy Outlook 2023 » au niveau de l'annexe B, Table B.2, CO ₂ prices. La CREG s'interroge sur les raisons qui peuvent justifier cette différence.
FEBEG	FEBEG recommends to carefully choose the best new entrant technology in order to calibrate the CRM demand curve. Selecting the technology with the lowest cost which does not have the full potential to solve the adequacy issue given its constraints would put the security of supply of Belgium at risk by excluding all other valuable technologies.

Elia proposes to update the fuel prices based on the last futures shortly before the decision by the Minister in order to use the most up-to-date prices. As such a sensitivity on fuel prices is not necessary in Elia's opinion. On the determination of fuel prices, Elia would like to state that the prices are expressed in €2023/MWh. This requires multiple conversions taking into account inflation rates, monetary exchange rates and energy unit conversions. Without further details Elia cannot explain which difference is the result of which conversion.

Elia agrees with the comment of FEBEG on which technologies to consider and did take into account that only technologies able to improve the security of supply in Belgium are considered.

3.2.11 Flow based domain

CREG	La CREG demande à Elia de motiver son choix de se baser sur le modèle du réseau du TYNDP 2022 plutôt que sur celui du TYNDP 2024 dans la mesure où les scénarios pour le TYNDP 2024 ont été publiquement consultés et que le rapport de synthèse de cette consultation a été publié (le réseau de référence a fait partie de la consultation publique).
FEBEG	FEBEG has taken note of the use of fixed RAM 70% for the entire European perimeter, however, as stated previously, FEBEG considers that the consideration of the minRAM 70% for all EU countries listed in the excel sheet is overly optimistic for several reasons.

	<p>FEBEG members still observe a difficult and slow process to achieve anything near a dependable and universal application of the 70% as confirmed by ACER’s monitoring activities on the evolution of cross-zonal capacities over the last years which has shown that a large share of EU TSOs are still far from fulfilling the minimum 70% requirement. It should be noted that ACER sees significant difficulties in achieving the structural and efficient fulfilment of the minimum 70% requirement across the whole EU by 20264.</p> <p>Furthermore, the assumption of a complete transmission grid availability in the winter period remains overly optimistic according to FEBEG. A non-complete grid will increase internal flows on network elements which will put under pressure the compliance with the so-called CEP rule of minRAM 70%.</p> <p>Finally, FEBEG considers that during moments of grid tension, TSO’s ability to make the necessary adjustments to guarantee the 70% will be degraded. As such, there will be very limited probability that in such a context 70% will be achieved on all borders, even if the two previous comments would no longer be applicable.</p> <p>Therefore, FEBEG reiterates its view that a sensitivity should be integrated in the reference scenario that is more pessimistic by using RAM values lower than 70% rather than fixed RAM 70%.</p>
Febeliec	<p>Febeliec agrees that for the minimum minRAM 70% is chosen (although Febeliec insists that this value is a legal minimum and TSOs should strive to do better as consumers pay for 100% of the (cross-border) infrastructure). Febeliec also opposes any value below 70% as his 70% is a strict legal requirement.</p>
Febeliec	<p>On cross-border capacities, Febeliec does not see any information on which future grid (based also on investments) is taken into account, which is a.o. very relevant in light of many recent announcements (e.g. on hybrid offshore grids).</p>

Regarding CREG’s comment on the choice to consider TYNDP 2022 instead of TYNDP 2024, Elia can not use the TYNDP 2024 as the detailed grid for TYNDP2024 with the cross-border network reinforcements as well as the translation of the different market scenarios to this model are still being worked on, and will not be ready in time for constructing the FB domains for the different time horizons.

Regarding the flow-based domain, Elia takes note of the feedback from both FEBEG and Febeliec on the ambition of minRAM 70% for delivery periods 2026-27, 2027-28 and 2029-30.

Regarding FEBEG’s comment on the uncertainty of reaching a minRAM of 70%, from 31/12/2026 onwards, still following the current legal framework, the 70% minRAM requirement has to be applied to all CNECs. Elia agrees that there might be a risk that this requirement is not met by some countries, but Elia will recommend considering the legal framework for the reference

scenario. However, as this requirement might impact the risk on cross-border participation, it is relevant according to Elia to integrate at least one sensitivity to consider a realistic view of additional uncertainties abroad beyond Belgium’s control which could significantly impact the adequacy situation in Belgium, as presented in §0.

Regarding Febeliec’s comment on assumptions for the future grid, Elia considers as reference the future grid proposed in the Federal Development Plan and in the Adequacy and Flexibility study 2024-2034.

3.2.12 Balancing capacity

Febeliec	Febeliec regrets that Elia takes every year higher volumes of balancing capacity to be reserved, while at the same time watering down certain balancing obligations for BRPs (e.g. Day Ahead balancing obligation). As Elia considers needs for balancing capacity to rise over time, it should rather strengthen balancing obligations, in order to avoid that evermore capacity needs to be contracted and paid for by consumers.
Febeliec	Febeliec insist that the impact of cross-border balancing capacity should be taken into account as reduction factor for balancing capacity needs, all European balancing platforms should be functional and thus should reduce the balancing capacity reservation needs. At the same time also inter-TSO capacity must be taken into account. Moreover, Febeliec also wants to point to studies in the framework of regulatory incentives conducted by Elia, which could result in less or no reservation of balancing capacity, while this impact is not at all taken into account in this report.

While Elia’s average reserve needs are expected to increase towards 2030, driven by increasing capacity of renewable generation, as indicated in the projections in the Adequacy and Flexibility study 2023 and the report on the public consultation regarding the Princess Elisabeth Zone, the upward FRR needs taken into account in simulations for the CRM is limited to the needs during scarcity risk periods and is expected to remain constant at 1030 MW for 2026-27/Y-1, 2027-28/Y-2 and 2029-30/Y-4. It is explained in the consultation document that “while the FRR capacity is determined on a day-ahead basis by means of Elia’s dynamic dimensioning method taking into account prediction error risks and forced outage risks, it is expected that the reserve capacity needs during scarcity risk periods are determined by the deterministic incident (in this case the outage of the largest nuclear generation unit, Tihange 3). This is explained by the fact that renewable generation prediction risks are typically low during scarcity risk periods (characterized with low renewable generation). The FCR capacity is expected to slightly increase in the next years as the expected value for 2026-27/Y-1, 2027-28/Y-2 and 2029-30/Y-4 is 97 MW but these requirements are not substantially impacted by the BRP balancing performance over periods of 15 minutes (in contrast to FRR).”

In this light, Elia does not agree with the statement of Febeliec that Elia accounts increasing

reserve capacity in its CRM calculations following reduced balancing obligations. It does take note on the position of Febeliec to strengthen balancing incentives which is for the above-mentioned reasons out of scope of this consultation and refers to the discussions in the Working Group balancing. As regards the DA Balance Obligation, agreement is that Elia keeps monitoring the market behavior, but so far the relaxation has not impacted the P1/P99 of the System Imbalance and Elia showed that open positions taken by the market in DA are, in average, helping the system in RT.

Regarding Febeliec’s second comment, Elia refers to the explanations given in earlier consultations (e.g. the consultation on the adequacy and flexibility study 2021) that, in line with the ERAA guidelines, the full FRR needs need to be deducted from the assets modelled. Indeed, even if Elia is able to count on reserve sharing (referred to by Febeliec as inter-TSO) or non-contracted balancing energy bids to reduce its balancing capacity to be procured, this capacity still needs to be considered ‘firm’, i.e. availability is guaranteed. The reduction of balancing capacity (to be procured) following the availability of sharing or non-contracted balancing energy bids, as indicated in the projections in the Adequacy and Flexibility study 2024-34 and the report on the public consultation regarding the Princess Elisabeth Zone, have therefore no impact on the CRM simulations.

3.2.13 Other countries data

CREG	La CREG demande à Elia, dans les tables 4 à 6, d’indiquer également les valeurs actuelles (dernières données disponibles ou au moins la demande en 2023 et les capacités installées au 31 décembre 2023) ainsi que les données de l’ERAA 2023, en plus de celles proposées par Elia. Cela permettra aux parties prenantes d’analyser plus facilement les mises à jour proposées par Elia.
CREG	Pour l’enchère 2026-27/Y-1, Elia propose d’évaluer l’indisponibilité des unités nucléaires sur base de la production annuelle prévue, exprimée en TWh. Cette approche ne serait correcte que si les unités nucléaires françaises produisaient à plein régime 365 jours par an. Or, les unités de production françaises produisent en fonction de la demande et des prix de marché. Il semble donc aléatoire de déduire un nombre de MW disponibles à partir d’une projection de production annuelle exprimée en TWh.
FPS Economy	En ce qui concerne les centrales à charbon en France, la DG Énergie se demande quelle est l’hypothèse de disponibilité de la centrale Emile Huchet (600 MW) pour l’hiver 2026-2027 et si une éventuelle reconversion en centrale biomasse pour cette centrale est recommandée par Elia.
Febeliec	Concerning the updates of other countries data, Febeliec takes note that Elia derives information from recent national studies (where it is unclear which cut-off point is taken into account to include or not updates). Febeliec wonders for example to what extent the current proposals which are

	discussed in a.o. Germany regarding CRM are taken into account.
Febeliec	Because of the lack of any overall electricity consumption figures for Belgium, it is difficult to validate whether similar trends can be observed.

In response to CREG’s comment regarding the installed capacity of the other countries data, Elia would like to bring to light the difficulties of such request. The other countries data are mainly based on the ERAA study. In this study, the installed capacity at the expected date (31/12/2023) is not available. Although the ERAA study is the reference study for the other countries data, Elia also updates the other countries data based on more recent national studies. In these national studies, the “current” installed capacity is not necessarily given for the expected date (31/12/2023). By consequent, determining the installed capacity for a specific year could be difficult and even more difficult to align the same date for all the countries. However, this exercise can be performed in the framework of the next Adequacy & Flexibility study, as more time will be available for other countries to publish data for 2023 and for Elia to collect all the needed data.

In response to CREG’s comment regarding the unavailability of French nuclear power plants, Elia agrees with the CREG on the fact that the nuclear power plants produce in function of the demand and the market prices. Elia takes into account this flexibility of the French nuclear units in the calculation of the number of unavailable units. This flexibility is taken into account by the application of the coefficient of utilization K_u , which is equal to 93 %. RTE considers the same approach in the ‘Bilan Prévisionnel’.

Regarding the FPS Economy’s comment on the Emile Huchet coal-fired power plant, the plant’s conversion project still appears to be vague. Consequently, Elia recommends considering the Cordemais unit as available, but does not recommend considering the Emile Huchet coal-fired power plant as available.

Concerning the first Febeliec comment, Elia only takes into account official announcements and more recent national studies. Other proposals under discussions are rather considered as sensitivities for the scenario selection. Regarding the CRM, Elia would like to note that it is assumed that every country will take the necessary actions to ensure compliance with the reliability standards in the market for the mid-term, even if no market-wide capacity mechanism is planned by the country. For the short-term, existing and new capacities are taken into account for each country as included in national studies or the ERAA 2023. Given the time it takes to implement a capacity mechanism and get it approved, for countries which do not have an approved market-wide capacity mechanism in place today, no additional capacity is included to respect the national reliability standard. However, for countries that do have a market-wide capacity mechanism in place today, such capacities are added where required to respect the reliability standard.

Elia takes note of Febeliec’s second comment and refers to section 0 for further details.

Update of the dataset for Netherland

Elia proposed to update the dataset for Netherlands after the publication of the ‘Monitoring Leveringszekerheid’ by Tennet. This report was published the 8th of May 2024. The public consultation report therefore also integrates updates for Netherlands assumptions.

The updates are presented on Table 3, Table 4, and Table 5. The appendix of this document also integrates this update.

2026-27/Y-1	ERAA 2023	Monitoring leveringszekerheid
Demand [TWh]	134	137
Onshore Wind [GW]	8	8
Offshore Wind [GW]	6	7
Solar [GW]	47	46
Coal [GW]	3	3
Nuclear [GW]	0,5	0,5
Gas [GW]	13,6	12,2

Table 3: Update of the input data for the Netherlands based on the Monitoring Leveringszekerheid report of 2024 for auction 2026-2027/Y-1.

2027-28/Y-2	ERAA 2023	Monitoring leveringszekerheid
Demand [TWh]	139	141
Onshore Wind [GW]	8	8
Offshore Wind [GW]	8	8
Solar [GW]	51	51
Coal [GW]	3	3
Nuclear [GW]	0,5	0,5
Gas [GW]	13,6	11,7

Table 4: Update of the input data for the Netherlands based on the Monitoring Leveringszekerheid report of 2024 for auction 2027-2028/Y-2.

2029-30/Y-4	ERAA 2023	Monitoring leveringszekerheid
Demand [TWh]	156	151
Onshore Wind [GW]	9	9
Offshore Wind [GW]	15	17
Solar [GW]	59	59
Coal [GW]	0	0
Nuclear [GW]	0,5	0,5
Gas [GW]	12,7	10,1

Table 5: Update of the input data for the Netherlands based on the Monitoring Leveringszekerheid report of 2024 for auction 2029-2030/Y-4.

3.3 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 are located inside or outside the Belgian market zone, as described in article 3, §4 of the Royal Decree. These sensitivities can be integrated in the reference scenario (i.e. only one scenario will therefore be constructed). The Minister will decide on the data and assumptions that will be selected as reference scenario, including the potentially selected sensitivities, based on a proposal from the CREG, the advice from the FPS Economy on this proposal and Elia’s recommendations.

3.3.1 General Remark

CREG	De manière générale, la CREG souhaite souligner que les sensibilités proposées ont bien été présentées au SPF et à la CREG mais qu’elles ne sont pas le résultat d’une discussion ou d’un accord avec les parties concernées.
Febeliec	On sensitivities, Febeliec strongly regrets that Elia only calculates one single configuration of the base scenario and a combination (or one single) sensitivities. This approach does not provide for additional meaningful insights by comparing different constellations, which would however be very useful.
Febeliec	On the sensitivities on UK and French nuclear availability, and as already discussed in the past, Febeliec remains surprised that this is even included, as UK and France already have a CRM in place, guaranteeing the adequacy of the UK and France and according to the ERAA methodology, NRAAs can only take into account national impacts and not those cross border. Febeliec insists that, taking into account the very high effort put on nuclear availability and nuclear extensions, that at least no sensitivities are chosen which would, by themselves, exacerbate the adequacy concerns in Europe, as governments seem increasingly aware of the impact of nuclear and are taking all the necessary steps to ensure sufficient availability, also in light of the huge impact of the high prices during this energy crisis on households as well as industrial consumers. A similar reasoning applies to other generation assets, such as the Cordemais plant. On nuclear capacity, Febeliec also wants to stress that there is ever less a link between the overall production volumes of nuclear (in France but also elsewhere) and the contribution to peak demand during periods of adequacy concerns, as incompressibility issues during a.o. summer could lead to fuel-saving scenarios, lowering overall generation volumes but not necessarily availability during scarcity moments. Febeliec insist that such effect is duly taken into account, in order to avoid erroneous conclusions which would negatively impact the overall costs.

Febeliec	Febeliec regrets that there is not even any mention of any possible sensitivities regarding lower demand in Belgium, due amongst other due to lower investments in industrial consumption. While no figures are provided by Elia, it is clear that such sensitivities should be considered to avoid undue overprocurement of capacity at the detriment of costs for consumers.
----------	--

Elia takes note of the comment of the CREG. Elia presented proposals for the scenario and some sensitivities to the CREG and the FPS Economy during a CdS on the 26th of March and responded by mail on the comments it received on the 10th of April. Elia tried to address all the comments received and include them in the scenario proposed in the public consultation. The members of the CdS can react to the public consultation and Elia addresses these reactions in this public consultation report.

Elia takes note of Febeliec’s comment. Elia follows the Royal Decree on this matter, which consider only one reference scenario to be selected by the Minister after a clear process including a collaboration and concertation phase with the FPS Economy and the CREG, this public consultation, including a complete consultation report integrating Elia’s recommendations, a reference scenario proposal from the CREG and an advice from the FPS Economy on this latest proposal. In addition, Elia performed a wide range of scenarios and sensitivities and quantify their impact on Belgium’s adequacy in the framework of the Adequacy and Flexibility study 2024-34.

The sensitivities on the nuclear availability in France are proposed in order to integrate the risk of lower nuclear availabilities compared to the expected availability in REMIT or in ERAA 2023. Such reasoning is compliant as it is justified and quantified as described in the explanatory note, in line with article 3, §4 of the Royal Decree. The sensitivities on the nuclear capacity in Great Britain was proposed to account for additional capacity in the scenario. The sensitivities proposed cover a wide range of evolutions that could affect nuclear capacities in other countries.

Elia agrees with the comment of Febeliec on a lower demand sensitivity. As explained in paragraph 0, Elia will present different curves on the electricity consumption in Belgium during the WG Adequacy of the 27th of August.

3.3.2 Nuclear capacity Great-Britain 1

CREG	La CREG demande à Elia de motiver les raisons qui l'ont poussée à considérer une durée d'extension de deux ans pour les centrales nucléaires AGR.
CREG	Au-delà de la durée de l'éventuelle extension de ces centrales, une incertitude existe également quant au nombre de centrales dont la durée de vie sera effectivement prolongée. EDF souhaite prolonger les quatre centrales AGR mais cette extension pourrait concerner qu'une, deux ou trois centrales. Compte tenu de l'impact significatif de cette éventuelle extension sur les capacités de production au Grande-Bretagne, la CREG propose quatre sensibilités différentes pour la prolongation des centrales AGR : <ul style="list-style-type: none"> - Sensitivité 1 : prolongation d'une centrale AGR pour une durée de 2 ans - Sensitivité 2 : prolongation de deux centrales AGR pour une durée de 2 ans - Sensitivité 3 : prolongation de trois centrales AGR pour une durée de 2 ans - Sensitivité 4 : prolongation de quatre centrales AGR pour une durée de 2 ans.
FEBEG	Concerning the possible extension for AGR plants, past experiences have demonstrated that making the necessary investments in nuclear plants and guarantee safety and the safety operations usually last much longer than initially expected. Since the extension of the plants is still uncertain, FEBEG fully supports that they are not considered in the base scenario. Including them is a sensitivity seems according to FEBEG premature and overly optimistic.
FEBEG	Concerning the possible extension for AGR plants (Nuclear capacity Great-Britain 1), we consider this sensitivity premature and overly optimistic. It should therefore not be retained.

Elia proposed a nuclear extension period of 2 years because no specific timing was communicated as of yet but the last extensions of Hysham 1 and Harlepool were for a duration of 2 years³⁹.

Elia agrees with the proposal from the CREG to split the sensitivity on nuclear extensions of AGR plants according to the amount of units. However as no additional announcements have been made around these extensions, Elia deems the base scenario without any AGR extensions the most likely. As mentioned by FEBEG extensions of nuclear units are complex processes and without any official announcements Elia deems it should follow a prudent approach and not recommend to include any extensions.

³⁹ <https://www.edfenergy.com/media-centre/news-releases/edf-confirms-plans-keep-turbines-turning-heysham-1-and-hartlepool-power>

3.3.1 Nuclear capacity Great-Britain 2

FEPEG	Concerning the entry into service of Hinkley Point C nuclear power plant, we consider that the possible realization of the optimistic scenario where the unit would be available 1 year earlier as very unlikely.
FEPEG	Concerning the entry into service of Hinkley Point C nuclear power plant (Nuclear capacity Great-Britain 2), we this sensitivity should not be retained.

Elia agrees with FEPEG that this scenario is very unlikely following the history of delays that have already taken place. Elia will therefore not include the sensitivity with an earlier availability of Hinkley Point C in its recommendation.

3.3.2 French nuclear availability

FPS Economy	<p>En ce qui concerne la sensibilité sur la disponibilité du nucléaire français associée à la période de livraison 2027-2028 (enchère Y-2) et 2029-2030 (enchère Y-4), la DG Énergie souhaiterait savoir si une méthodologie plus quantitative serait disponible pour correctement estimer la diminution nécessaire (ou non) du nombre d'unités nucléaires disponibles par rapport aux profils de disponibilité utilisés dans le cadre de l'ERAA 2023.</p> <p>En effet, par le passé, la DG Énergie considérait que les profils de disponibilité de l'ERAA surestimaient la disponibilité réelle du parc nucléaire français. Cela a d'ailleurs été reconnu dans les commentaires des pays par RTE dans l'ERAA 2022. Néanmoins, il est très flou pour la DG Énergie de savoir si cette surestimation est toujours d'application dans les profils de 2023 ainsi que l'intensité de cette éventuelle surestimation.</p> <p>A cet effet, la DG Energie se demande si une méthodologie similaire à celle utilisée pour l'enchère Y-1 sur base des données REMIT ne pourrait pas être également appliquée pour ces enchères Y-2 et Y-4. A la place de la disponibilité selon REMIT, la disponibilité selon les profils de l'ERAA 2023 pourrait être utilisée et transformée en production annuelle. Comme pour la méthodologie de l'enchère Y-1, les facteurs de forced outage rate et le coefficient d'utilisation (Ku) devraient être pris en compte s'ils ne sont pas déjà inclus dans les profils de disponibilité de l'ERAA 2023.</p> <p>Une comparaison avec les dernières estimations de production d'EDF (si disponibles) ou celle de RTE dans le cadre du Bilan Prévisionnel, pourrait donner une indication de la sensibilité à considérer.</p>
FEPEG	FEPEG firmly supports the need to include a sensitivity regarding the French nuclear availability in the reference scenario: in fact, based on past unavailability of the French nuclear these last years, it is clear that for SoS

	<p>reasons a precaution approach should be taken.</p> <p>As stated at numerous occasions, FEBEG considers that the French nuclear availability constitutes a major risk for the Belgian Security of Supply. The recent low availability of the French nuclear due to abnormal corrosion phenomena and its possible impact on the upcoming winters clearly demonstrates that this risk should be taken very seriously.</p>
FEBEG	<p>FEBEG firmly supports the need to include a sensitivity regarding the French nuclear availability in the reference scenario: in fact, based on past unavailability of the French nuclear these last years, it is clear that for SoS reasons and as a matter of precaution principle for Belgium, FEBEG believes that the French nuclear availability 3 sensitivity should be used.</p>

In response to FPS's comment, Elia would like to note that the ERAA profiles enable the calculation of an hourly unavailability for French nuclear units. As a result, the same methodology currently used for the REMIT data can be applied to both cases. In the REMIT approach, the forecasted production relies on EDF's production forecast, which is only available for the next three years. If the same approach is to be used for Y-2 and Y-4 auctions, the forecast will need to be based on an assumption. This assumption can be based on the predictions made by RTE in the Bilan Prévisionnel, where RTE considers a range from 320 TWh to 400 TWh, with a reference value of 350 TWh, excluding the generation from Flamanville. It should be noted that RTE also implemented a stress test scenario with 280 TWh which reflects the nuclear availability from 2022, in order to be representative of a major risk on nuclear power plants. The profile from ERAA 2023 is closer to the high sensitivity from RTE as presented in the 'Bilan Prévisionnel'. Therefore, Elia believes that the French nuclear sensitivity, as proposed in the recommendation (at least 4 units unavailable on top of the availability foreseen in the published ERAA 2023), is relevant in order to reach a nuclear generation in line with the reference value from RTE.

Elia takes note of FEBEG's comments concerning the choice of a sensitivity considering a lower availability by 6 units on average during winter compared to ERAA regarding the French nuclear availability.

3.3.3 Flow-based CEP rules

FEPEG	As mentioned in the section commenting the input data, FEPEG considers that the ambition of minRAM 70% is unlikely to be by 2025 in all countries. For delivery year 2026-27, we highly consider this improbable. We therefore consider it justified to embed this risk in the reference scenario for delivery 2026-27 and 2027-28 together with a prudent approach for delivery year 2029-30.
FEPEG	We reiterate our view that a country-per-country approach could be applied to better capture the uncertainty. If this is not possible, a prudent approach should be considered and therefore the minRAM70% hypothesis should not be included in the reference scenario.
Febeliec	On the flow-based CEP rules sensitivity, Febeliec opposes the inclusion of any sensitivity which would reduce the minRAM below 70% as this is the minimum threshold. Febeliec already considers the fixed RAM 70% a very conservative approach by Elia. Febeliec also wants to refer explicitly to the ACER Opinion on this topic which has recently been released, calling for more action for Commission and Parliament to ensure that the targets are met.

Elia refers to the answer in section 3.2.11.

3.3.4 Regarding the uncertainties on Belgian thermal units

CREG	Elia envisage la fermeture des turbojets pour les trois enchères en raison des seuils d'émissions spécifiques de CO ₂ appliqués dans le cadre du CRM. Cependant, les seuils sont fixés pour cinq ans. La CREG demande à Elia d'expliquer les raisons de son choix (à savoir de proposer cette sensibilité pour toutes les enchères) .
FEPEG	FEPEG suggests Elia to integrate, in the reference scenario, a reduction of the MW compared to table 1.2 (excel sheet) to account for some Belgian thermal plants (TJs, CHPs, ...) leaving the market for various reasons: no access to CRM, obsolescence, reduced steam need within the industry, ...

Regarding the comment of the CREG on the CO₂ thresholds only being fixed for a period of 5 years, Elia is of the opinion that CO₂-thresholds will not be further relaxed after this period given the EU climate targets for 2030 and 2050.

Elia takes note of FEPEG's feedback regarding the sensitivities to be integrated in the reference. Elia agrees that the TJ units are at risk of closure due to the CO₂ thresholds applicable in the CRM and will recommend to integrate this sensitivity in the reference scenarios for the CRM calibration.

3.3.1 Nuclear forced outage rate in Belgium

Febeliec	As mentioned above, Febeliec insists that the sensitivity on nuclear forced outage rates is taken into account and refers to the comments above.
----------	--

Concerning the forced outage rate of the Belgian nuclear plants, Elia takes notes of Febeliec comment. The forced outage rate of 20,5 % for the nuclear plants was obtained taking into account the technical forced outage, but also the long-lasting forced outage. Elia still considers the 20,5 % forced rate calculated on all nuclear units in the context of AdeqFlex'23 as relevant to ensure the security of supply in Belgium. Nonetheless, based on the feedback of the stakeholders, Elia will recommend to consider the sensitivity considering a forced outage rate of 10 % for the nuclear plants.

3.3.2 Conclusion

Febeliec	Febeliec as always remains available to discuss its comments to this consultation and the input data, but also still remains available to discuss the methodology. Febeliec is looking forward to the qualitative and especially quantitative results of the adequacy study from Elia and hopes that these will be presented and discussed.
----------	---

Elia thanks Febeliec for their constructive feedback on this public consultation.

3.4 Preselected capacity types

CREG	Les valeurs reprises pour les coûts FOM dans la feuille 8 du tableau Excel correspondent aux valeurs 'medium' de FOM de l'étude 'Cost of Capacity' réalisée par Entras. La CREG demande à Elia de justifier ce choix (alors que l'étude propose également des valeurs 'low' et 'high').
CREG	La CREG note également que les valeurs reprises pour le CAPEX des technologies CCGT et OCGT sont celles correspondant à de nouvelles unités, e.g. CCGT > 800 MW et OCGT > 100 MW. La CREG est d'avis que les valeurs pour les coûts FOM devraient correspondre aux mêmes technologies avec les mêmes gammes opérationnelles que celles utilisées pour les valeurs du CAPEX.
FEPEG	Capex should be reviewed in the light of the on-going ENTRAS study on capex and FOM costs launched by Elia. Considering the competitive nature of these questions we also refer to the individual contributions of FEPEG's members.
Febeliec	On preselected capacity types, Febeliec does not understand why OCGTs or other generation technologies are excluded for 2025-2026 (e.g. small diesel engines) and why other technologies as small-scale storage are not at all considered. Moreover, Febeliec remains puzzled why only demand side response with a SLA of 4h is considered, where many more categories exist.

Firstly, Elia would like to remind that the preselected capacity types will only be used in order to calibrate the reference scenario, as mentioned in article 5, §1 of the Royal Decree. This calibration is only applicable for a particular delivery period and reference scenario. The potential volume selected to ensure that the reference scenario is compliant with the security of supply criteria does not constitute a best estimate of Elia concerning the future installed capacity in the Belgian market area but is rather the result of an economic optimization loop.

Elia notes that the legal framework does not foresee that Elia distinguishes between different cost ranges. As a result, Elia sought to use the FOM values from Entras that were the most representative for the technology as a whole. The variations in FOM as determined by Entras are not driven by different operating regimes (indeed, Entras highlights themselves that they assume that plants are operated in such a way so as to keep the plant in mint condition), but rather by different types of e.g. turbines. In order to most accurately include these variations in FOM, Elia proposes to use the Mid value.

Elia agrees with the comment of the CREG that the FOM and CAPEX assumptions should be derived per technology using the same assumptions. Because the Entras report on the CAPEX is not available yet. Elia therefore used the values from the Adequacy & Flexibility study 2024-34. Elia proposes to align the cost parameters of the preselected capacity types with the intermediate values decided by the Minister.

Elia takes note of FEPEG's suggestion concerning the CAPEX costs. The CAPEX study by Entras is being finalized, and as already highlighted in the explanatory note of this public consultation.

Elia will align the cost assumptions of the preselected capacity types with the values from the Intermediate Values selected by the Minister.

Elia proposes to include OCGT's in the preselected capacity types for the Y-2 auction as its construction time is indeed 2 years. Small diesel engine were not proposed as the technology might not be compliant with the CO₂ criteria. Small-scale storage were not proposed as a large-scale storage category was already included. However, this category could be considered as an equivalent storage capacity, independently of the size of the battery. In any case, this choice between large-scale and small-scale storage won't have much impact on the results of the optimization loop.

Regarding DSR, Elia took into account the comment from Febeliec from last year and proposed to consider DSR 24h instead as this would impact the dispatching of the different DSR categories. Elia agrees with Febeliec's comment that many more categories of DSR exist, as demand side response is characterized by a large heterogeneity between the different units.

3.5 Post-delivery scenarios

Febeliec	Febeliec regrets that Elia has not foreseen data or an analysis for every year in scope, specifically for 2028 but more importantly for none of the years between 2034 and 2040, where merely an intrapolation seems to be used although this according to Febeliec does not provide a sound enough basis for the needs for the CRM, as any auction could lead to a very high and unnecessary overprocurement of capacity if only a very limited number of years would be identified with potential adequacy concerns (e.g. also due to the impact of all announcements for additional investments, which could greatly limit the need for assets with long subsidy cycles, which would then erode the business cases of other asset and technology classes).
----------	---

Elia agrees with Febeliec’s comment on post-delivery scenarios. However, it is not foreseen in the CRM calibration framework, to perform multi-year assessment. For this reason, Elia proposes to take into account the most up-to-date publicly available studies. Therefore, Elia proposes to consider the most suitable scenarios from the last Adequacy & Flexibility study in order to determine post-delivery year revenues.

However, Elia would like to remind that the post-delivery year are only used to get market revenues for later years. These data are then used by the CREG in order to provide a proposal for the net-CONE, setting point B ordinate of the demand curve. It doesn’t impact in any way the volume to be auctioned and cannot therefore lead to any over procurement.

3.6 IPC

CREG	Dans la mesure où les hypothèses prises par Entras dans son étude tiennent compte d'un programme de maintenance qui maintient la capacité à l'état « neuf » jusqu'à la fin de la durée de vie de l'actif, la CREG estime que seules les valeurs 'low' pour les coûts d'O&M devraient être retenues.
Febeliec	On the intermediate price cap, Febeliec wants to reiterate its comment on the arbitrary and too limiting selection of technologies by Elia , as this excludes many technologies (e.g. large and small scale batteries, demand side response with other SLAs, ...) and insists that the scope is extended to ensure that the CRM does not lead to unwarranted costs, in breach with the legal lowest cost criterion.

With regards to the “low-mid-high” ranges that are proposed by Entras, Elia wishes to highlight that the IPC aims to represent the missing money of the worst performer in the Belgian energy market. To that extent, Elia is reluctant to limit the calculation of the IPC to the “low” values proposed by Elia. Moreover, Elia in any case calculates a “low-mid-high” value for the IPC in the calibration report for the Auctions. Moreover, even though it is true that the Entras study is based on the assumption that Capacity Providers try to maintain their unit in mint condition, these costs can still vary depending on the type of unit and the supplier. Elia as such takes note of the CREG’s suggestion, and will keep it in mind when proposing the value for the IPC.

Elia understands Febeliec’s concern but wishes to stress that the Royal Decree requires Elia to include a shortlist of technologies, based on the list of technologies selected by Entras. In this particular case, Entras proposes to use large-scale batteries with a duration of 4 hours and Demand Side Response with a duration of 4 hours. As concerns the former, large-scale batteries with a duration of 4 hours are deemed to be the most representative. With regards to the latter, Demand Side Response is characterized by a large heterogeneity, making it a Sisyphean labor to exhaustively include them. Also in this case, Elia sought to include the most representative unit.

In the framework of the IPC calculation, it is worth mentioning again that the IPC is set by the worst performing unit. Including more technologies or units that run more cost-efficiently as such do not have an impact on the calculated IPC, vice versa not changing the cost of the CRM. As a result, Elia refers to its reply concerning the technologies considered for the preselected capacity types, where Elia included DSM with an activation duration of 24 hours to capture a wider range of DSM units, seeing as including a larger variation of technologies makes more sense there.

3.7 Revenue parameters

Febeliec	Febeliec continues to have problems with the approach by Elia, as balancing revenues are not taken sufficiently into account. Febeliec, as mentioned above, considers the technology list for the determination of the IPC to be too restrictive and in combination by e.g. not taking into account FCR revenues or aFRR revenues, the business case of storage is largely underestimated and thus also the larger deployment of this technology as compared to Elia's forecasts in the past.
----------	---

Elia takes note of Febeliec's comment and refers to the improvements brought to the methodology used last year by Compass Lexecon to assess net revenues. Following that updated method, results highlighted much higher net balancing revenues for certain technologies considered in the Calibration, including revenues coming from FCR & aFRR provision.

On the shortlist of technologies for IPC, Elia refers to the technologies established by Entras in which batteries have now been integrated as well.

Finally, Elia wants to add that Compass and Elia are working further on bringing additional refinements to the methodology used last year.

Appendix: Scenario dataset proposed by Elia

Updates compared to the excel from the public consultation and sensitivities selected in Elia's recommendation are highlighted in yellow.

Generation and Storage

Generation/Storage Type	Capacity [MW] 2026-27/Y-1	Capacity [MW] 2027-28/Y-2	Capacity [MW] 2029-30/Y-4
Nuclear	2056	2056	2056
Gas	8763	8769	8783
Oil	0	0	0
Hydro RoR	140	143	148
PSP	1305	1305	1305
Onshore Wind	4258	4588	5248
Offshore Wind	2261	2261	2961
Solar	12723	13923	16323
Biomass	610	611	611
Waste	316	316	316
Large- and small-scale Batteries	951	1617	1711

* Note that the sensitivities regarding the closure of TJ is included in the recommendation.

Individually modelled thermal generation

Owner	Generation unit name	Type	Fuel type	Derating type	Net generation capacity [MW]	2026-27 /Y-1	2027-28 /Y-2	2029-30 /Y-4
Engie - Electrabel	AALST SYRAL GT	CHP	Gas	CHP, waste & biomass	43	yes	yes	yes
Engie - Electrabel	AALST SYRAL ST	CHP	Gas	CHP, waste & biomass	5	yes	yes	yes
Engie - Electrabel	AALTER TJ	TJ	Oil	TJ	18	no	no	no
Engie - Electrabel	AMERCOEUR 1 GT	CCGT-GT	Gas	CCGT	289	yes	yes	yes
Engie - Electrabel	AMERCOEUR 1 ST	CCGT-ST	Gas	CCGT	162	yes	yes	yes
Engie - Electrabel	DROGENBOS GT1	CCGT-GT	Gas	CCGT	150	yes	yes	yes
Engie - Electrabel	DROGENBOS GT2	CCGT-GT	Gas	CCGT	150	yes	yes	yes
Engie - Electrabel	DROGENBOS ST	CCGT-ST	Gas	CCGT	160	yes	yes	yes
Engie - Electrabel	Flémalle NEW	CCGT	Gas	CCGT	890	yes	yes	yes
Engie - Electrabel	BEERSE TJ	TJ	Oil	TJ	32	no	no	no
Indaver	Beveren 2 Indaver	IS	Waste	CHP, waste & biomass	21	yes	yes	yes
Indaver	Beveren 3 Indaver	IS	Waste	CHP, waste & biomass	24	yes	yes	yes
Indaver	Beveren Ineos Phenol Chem	CHP	Gas	CHP, waste & biomass	25,1	yes	yes	yes
Indaver	Beveren Sleco	IS	Waste	CHP, waste & biomass	41	yes	yes	yes
Biopower	BIOMASSA OOSTENDE	IS	Biomass	CHP, waste & biomass	18	yes	yes	yes
Biostoom	BIOSTOOM OOSTENDE	IS	Waste	CHP, waste & biomass	19,4	yes	yes	yes
Borealis	Borealis Kallo Cogen GT_ST	CHP	Gas	CHP, waste & biomass	32	yes	yes	yes
Engie - Electrabel	CIERREUX TJ	TJ	Oil	TJ	18	no	no	no
Engie - Electrabel	DOEL 1	NU	Nuclear	NU	445	no	no	no
Engie - Electrabel	DOEL 2	NU	Nuclear	NU	445	no	no	no
Engie - Electrabel	DOEL 3	NU	Nuclear	NU	1006	no	no	no
Engie - Electrabel	DOEL 4	NU	Nuclear	NU	1026	yes	yes	yes

Engie - Electrabel	HERDERSBRUG GT1	CCGT-GT	Gas	CCGT	157	yes	yes	yes
Engie - Electrabel	HERDERSBRUG GT2	CCGT-GT	Gas	CCGT	156,3	yes	yes	yes
Engie - Electrabel	HERDERSBRUG ST	CCGT-ST	Gas	CCGT	167	yes	yes	yes
Euro-silo	Euro-Silo	CHP	Gas	CHP, waste & biomass	12,9	yes	yes	yes
Indaver	E-wood	IS	Waste	CHP, waste & biomass	22	yes	yes	yes
Direct Energie	MARCINELLE ENERGIE TGV	CCGT	Gas	CCGT	413	yes	yes	yes
Engie - Electrabel	Fluxys Zeebrugge	CHP	Gas	CHP, waste & biomass	40	no	no	no
Green Power	Greenpower Oostende	IS	Waste	CHP, waste & biomass	20	yes	yes	yes
Luminus	RINGVAART STEG	CCGT	Gas	CCGT	385	yes	yes	yes
Engie - Electrabel	SAINT-GHISLAIN STEG	CCGT	Gas	CCGT	385	yes	yes	yes
Luminus	HAM Gent-GT	CHP	Gas	CHP, waste & biomass	39	yes	yes	yes
Luminus	HAM Gent-ST	CHP	Gas	CHP, waste & biomass	-			
Luminus	SERAING NEW	CCGT	Gas	CCGT	885	yes	yes	yes
Luminus	SERAING ST	CCGT-ST	Gas	CCGT	170	no	no	no
T-Power	T-POWER	CCGT	Gas	CCGT	425	yes	yes	yes
INEOS	INESCO GT1	CHP	Gas	CHP, waste & biomass	44,8	yes	yes	yes
INEOS	INESCO GT2	CHP	Gas	CHP, waste & biomass	44,8	yes	yes	yes
INEOS	INESCO ST	CHP	Gas	CHP, waste & biomass	48,5	yes	yes	yes
INTRADEL	INTRADEL	IS	Waste	CHP, waste & biomass	32	yes	yes	yes
IPALLE	Ipalle THUMAIDE	IS	Waste	CHP, waste & biomass	34	yes	yes	yes
Engie - Electrabel	ISVAG	IS	Waste	CHP, waste & biomass	12	yes	yes	yes
Lampiris	IVBO	IS	Waste	CHP, waste & biomass	16	yes	yes	yes
Luminus	IZEGEM	CHP	Gas	CHP, waste & biomass	20	yes	yes	yes
Inovyn	JEMEPPE-SUR-SAMBRE GT1	CHP	Gas	CHP, waste & biomass	48	yes	yes	yes
Inovyn	JEMEPPE-SUR-SAMBRE GT2	CHP	Gas	CHP, waste & biomass	48	yes	yes	yes
Inovyn	JEMEPPE-SUR-SAMBRE ST	CHP	Gas	CHP, waste & biomass	10	yes	yes	yes
Engie - Electrabel	KNIPPEGROEN STEG	CL	Gas	OCGT	305	yes	yes	yes
Lillo Energy	Lillo Degussa GT1	CHP	Gas	CHP, waste & biomass	43	yes	yes	yes

Lillo Energy	Lillo Degussa GT2	CHP	Gas	CHP, waste & biomass	32	yes	yes	yes
Lillo Energy	Lillo Degussa ST	CHP	Gas	CHP, waste & biomass	10	yes	yes	yes
Engie - Electrabel	VILVOORDE ST	CCGT-ST	Gas	CCGT	105	no	no	no
Engie - Electrabel	MONSANTO LILLO WKK EBL	CHP	Gas	CHP, waste & biomass	43	yes	yes	yes
Engie - Electrabel	NOORDSCHOTE TJ	TJ	Oil	TJ	18	no	no	no
Engie - Electrabel	Oorderen Bayer	CHP	Gas	CHP, waste & biomass	43	yes	yes	yes
Zandvliet Power NV	ZANDVLIET POWER (pre-repowering)	CCGT	Gas	CCGT	380	no	no	no
Zandvliet Power NV	ZANDVLIET POWER	CCGT	Gas	CCGT	419	yes	yes	yes
Engie - Electrabel	RODENHUIZE 4	CL	Biomass	CHP, waste & biomass	-	no	no	no
Luminus	ANGLEUR TG 31	GT	Gas	OCGT	25	yes	yes	yes
Engie - Electrabel	SAPPI LANAKEN GT	CHP	Gas	CHP, waste & biomass	43	no	no	no
Centre de Tri	Schaerbeek SIOMAB 1	IS	Waste	CHP, waste & biomass	15	yes	yes	yes
Centre de Tri	Schaerbeek SIOMAB 2	IS	Waste	CHP, waste & biomass	15	yes	yes	yes
Centre de Tri	Schaerbeek SIOMAB 3	IS	Waste	CHP, waste & biomass	15	yes	yes	yes
EXXONMOBIL	SCHELDELAAN EXXONMOBIL	CHP	Gas	CHP, waste & biomass	140	yes	yes	yes
Luminus	ANGLEUR TG 32	GT	Gas	OCGT	25	yes	yes	yes
Luminus	ANGLEUR TG 41	GT	Gas	OCGT	64	yes	yes	yes
Luminus	ANGLEUR TG 42	GT	Gas	OCGT	64	yes	yes	yes
Luminus	HAM 31	GT	Gas	OCGT	58	yes	yes	yes
STORA	STORA LANGERBRUGGE CHP 1	CHP	Biomass	CHP, waste & biomass	10	yes	yes	yes
STORA	STORA LANGERBRUGGE CHP 2	CHP	Biomass	CHP, waste & biomass	40	yes	yes	yes
Taminco	TAMINCO GENT CHP	CHP	Gas	CHP, waste & biomass	6,3	yes	yes	yes
Engie - Electrabel	TIHANGE 1N	NU	Nuclear	NU	481	no	no	no
Engie - Electrabel	TIHANGE 1S	NU	Nuclear	NU	481	no	no	no
Engie - Electrabel	TIHANGE 2	NU	Nuclear	NU	1008	no	no	no
Engie - Electrabel	TIHANGE 3	NU	Nuclear	NU	1030	yes	yes	yes
Luminus	HAM 32	GT	Gas	OCGT	58	yes	yes	yes
Engie - Electrabel	TURBOJET VOLTA	TJ	Oil	TJ	18	no	no	no

Luminus	SERAING TG1	GT	Gas	OCGT	150	yes	yes	yes
Luminus	SERAING TG2	GT	Gas	OCGT	150	yes	yes	yes
TOTAL	WILMARSDONK TOTAL GT1	CHP	Gas	CHP, waste & biomass	43	yes	yes	yes
TOTAL	WILMARSDONK TOTAL GT2	CHP	Gas	CHP, waste & biomass	43	yes	yes	yes
TOTAL	WILMARSDONK TOTAL GT3	CHP	Gas	CHP, waste & biomass	43	yes	yes	yes
Engie - Electrabel	VILVOORDE GT	GT	Gas	OCGT	255	yes	yes	yes
Engie - Electrabel	ZEDELGEM TJ	TJ	Oil	TJ	18	no	no	no
Engie - Electrabel	ZEEBRUGGE TJ	TJ	Oil	TJ	18	no	no	no
Engie - Electrabel	ZELZATE TJ	TJ	Oil	TJ	18	no	no	no
Engie - Electrabel	Zwijndrecht Lanxess GT	CHP	Gas	CHP, waste & biomass	43	yes	yes	yes
Engie - Electrabel	Zwijndrecht Lanxess ST	CHP	Gas	CHP, waste & biomass	15	no	no	no

Legend Unit-Type			
CCGT	Combined Cycle	IS	Incineration Station
CL	Classic	NU	Nuclear
GT	Gas Turbine	TJ	TurboJet
ST	Steam Turbine	CHP	Cogeneration Unit

Storage

Pumped-storage facilities:

Reservoir Volume [MWh]	2026-27 /Y-1	2027-28 /Y-2	2029-30 /Y-4
Storage reservoir	6300	6300	6300
Storage reservoir derating (black-start services)	500	500	500
Available storage for economical dispatch	5800	5800	5800

Turbining capacity [MW]	2026-27 /Y-1	2027-28 /Y-2	2029-30 /Y-4
Total capacity	1305	1305	1305
Coo 1-6	1161	1161	1161
Platte Taille 1-4	144	144	144

Batteries:

Batteries - Capacity in reference scenario	Capacity [MW]		
	2026-27 /Y-1	2027-28 /Y-2	2029-30 /Y-4
Total	951	1617	1711
Small scale storage ("out-of-market")	248	199	76
Small scale storage ("in-the-market")	372	463	680
Large scale storage ("in-the-market")	331	955	955

Batteries - Reservoir volume in reference scenario	Reservoir volume [MWh]		
	2026-27 /Y-1	2027-28 /Y-2	2029-30 /Y-4
Total	2303	4785	4973
Small scale storage ("out-of-market")	496	397	151
Small scale storage ("in-the-market")	744	927	1361
Large scale storage ("in-the-market")	1063	3461	3461

Profiled thermal without daily schedule

Profiled thermal without daily schedule units	2026-27 /Y-1	2027-28 /Y-2	2029-30 /Y-4
Gas CHP - without daily schedule	1505	1511	1525
Biomass - without daily schedule	542	543	543
Waste - without daily schedule	30	30	30

Forced Outage Rates

Category	Average FO rate [%]
Nuclear	10%
CCGT	5.5%
OCGT	8.2%
TJ	9.8%
CHP, waste, biomass	6.4%
Pumped Storage	2.9%
Batteries	2.0%
DC links	6.7%

Demand

The electricity consumption, as Climact is currently updating the trajectories, will be presented during the WG Adequacy of the 27th of August and will include:

- the latest macro-economic trajectories per sector that will be published by the Federal Planning Bureau in June 2024;
- the update of the assumptions regarding additional electrification from industry in close collaboration with Elia's customers;
- Additional insights (energy efficiency, elasticity, demand destruction) gained through the PRICED study will be included in the presented curves as best as possible and if available by then.

Assumptions associated to the electrification of heat, transport, and industry to be integrated in the demand forecasts. Note that the flexibility associated to the heat pumps and the electric vehicles is described in the explanatory note.

Electric Vehicles	2026-27 /Y-1	2027-28 /Y-2	2029-30 /Y-4
Passengers Cars BEV [thousand]	650	893	1.469
Passengers Cars PHEV [thousand]	460	450	373
LDV freight BEV [thousand]	43	63	123
LDV freight PHEV [thousand]	15	19	28
HDV freight BEV [thousand]	0	0	2
Busses BEV [thousand]	3	3	4

Heat Pumps	2026-27 /Y-1	2027-28 /Y-2	2029-30 /Y-4
Residential HP [thousand]	934	1016	1194
Tertiary HP [thousand]	88	103	136

Demand-side Response

The demand-side response from existing usage (also called ‘market response’) will be presented in the WG Adequacy of the 27th of August, following the study being performed by N-Side for winter 2023-24.

Additional DSR from industry electrification (shedding capacity)	% of the additional electrification by industry considered flexible		
	2026-27 /Y-1	2027-28 /Y-2	2029-30 /Y-4
P2H - HP		80	
P2H - eBoiler		100	
DRI-EAF (Steel)		75	
CCS		0	
Data centres		50	

Balancing need

	Volume [MW]		
	2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
Total FCR	97	97	97
Total FRR	1030	1030	1030
Total reserve capacity	1127	1127	1127

Neighboring countries

The dataset is based on ERAA 2023 dataset and updated with the following values:

2026-27/Y-1	France	Germany	Netherlands	Great Britain	Spain	Italy	Poland	Denmark
Demand [TWh]	480	590	137	294	260	335	173	46
Onshore Wind [GW]	26	86	8	21	36	15	12	6
Offshore Wind [GW]	3	13	7	28	0	5	4	4
Solar [GW]	27	132	46	23	40	53	22	8
Coal [GW]	1	19	3	0	0	0	24	1
Nuclear [GW]	62,9	0,0	0,5	3,6	7,1	0,0	0,0	0,0
Gas [GW]	7,2	32,8	12,2	41,9	24,5	42,6	5,8	1,2

2027-28/Y-2	France	Germany	Netherlands	Great Britain	Spain	Italy	Poland	Denmark
Demand [TWh]	490	610	141	300	264	340	177	49
Onshore Wind [GW]	27	93	8	23	37	16	12	7
Offshore Wind [GW]	3	18	8	30	0	6	6	4
Solar [GW]	32	152	51	25	46	60	23	11
Coal [GW]	1	14	3	0	0	0	23	1
Nuclear [GW]	62,9	0,0	0,5	3,6	6,1	0,0	0,0	0,0
Gas [GW]	7,2	32,8	11,7	42,1	24,5	42,6	5,8	1,2

2029-30/Y-4	France	Germany	Netherlands	Great Britain	Spain	Italy	Poland	Denmark
Demand [TWh]	509	652	151	325	269	351	185	55
Onshore Wind [GW]	30	107	9	27	44	19	14	7
Offshore Wind [GW]	4	26	17	45	3	10	6	5
Solar [GW]	42	194	59	31	59	75	27	18
Coal [GW]	1	0	0	0	0	0	22	0
Nuclear [GW]	62,9	0,0	0,5	1,2	5,1	0,0	0,0	0,0
Gas [GW]	7,2	25,7	10,1	37,7	24,5	42,6	5,8	0,8