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 2027-28, Y-2 Auction with Delivery Period 2028-29 and Y-4 Auction with Delivery Period 2030-31

June 2025

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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 2027-28 (2027-28/Y-1), for the Y-2 Auction with Delivery Period 2028-29 (2028-29/Y-2) and for the Y-4 Auction with Delivery Period 2030-31 (2030-31/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 format[1] and the slides presented during Working Group Adequacy from Thursday 17 April 2025[2].

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 Thursday 17th of April to Monday 19th of May 2025, 6:00pm and was publicly announced on the Elia website.

In total, 6 public reactions were received, including reactions from the CREG, FEBEG, Febeliec, Engie and Cogen Vlaanderen, as well as one by a private citizen.

[1] https://www.elia.be/en/public-consultation/20250417_public-consultation-on-the-scenarios-2025
[2] https://www.elia.be/en/users-group/wg-adequacy/20250417-meeting https://www.elia.be/en/users-group/adequacy-working-group/20240412-meeting

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 the update of the demand-side response from existing usage was not included and will be presented in the WG Adequacy of the 28th of August 2025, as it requires information from the last winter period.

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 14th of May 2025. 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.

A first proposal for the scenarios and sensitivities was sent by Elia to FPS Economy and CREG on the 27th of March. Two concertation and collaboration meetings were organized with the FPS Economy and the CREG, on the 3rd of April 2025 and on the 10th of April 2025. 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 17 April 2025. Then, the public consultation was organized from 17 April 2025 to 19 May 2025 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 20 June 2025.

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 three final reference scenarios by 30 September 2025 based on the proposal from the CREG, Elia's recommendations, and advice from the FPS Economy.

1.1 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 2027-28/Y-1, 2028-29/Y-2 and 2030-31/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 2027-28/Y-1, 2028-29/Y-2 and 2030-31/Y-4. This dataset has been constructed based on the latest published European Resource Adequacy Assessment (ERAA 2024) from ENTSO-E[3]. 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 17th of April and the 19th of May 2025. 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. 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 Tennet[4] and to consider in the reference scenario any further national announcement to be published before the decision of the Minister.

Regarding fuel and CO_2 prices, Elia also recommends considering the latest forward prices available beginning of September, before the decision of the Minister on the reference scenario.

[3] https://www.entsoe.eu/eraa/2024/
[4] https://www.tennet.eu/nl/over-tennet/publicaties/rapport-monitoring-leveringszekerheid

It should be noted that Elia's recommendation doesn't include the demand-side response from existing usage (also called 'market response'), for which an update will be presented in the WG Adequacy of the 28th of August, following the study being performed for winter 2024-25.

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

- Regarding the reference scenario, Elia proposes to consider the '**Current Commitments & Ambitions**' scenario as it follows the Belgian state commitments and ambitions with respect to climate objectives. It takes into account the regional and federal ambitions set out in the latest energy and climate plans.
- 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 there is a risk that some countries do not always comply with their minRAM target and that several optimistic assumptions are made while creating flow-based domains: no limitation of the internal CNECs for cross-border exchanges in market coupling, no operational security validations steps included, no grid maintenances assumed and modelling of the external borders to the Central Europe (CE) capacity calculation region (CCR) done using Advanced Hybrid Coupling (AHC). Even if this risk is not considered as part of the reference scenario, it further justifies the need to account for risks abroad, beyond Belgium's control which could significantly impact the adequacy situation in Belgium.
- Concerning **the potential closure of thermal units due to CO2 thresholds** in the CRM, Elia proposes not to consider closing all turbojets. However, Elia recommends closely monitoring announcements related to Article 4 bis or updates on the renewal of environmental permits. Elia also emphasizes the importance of continued attention to this matter, as the retention of existing units in the market is critical to ensuring Belgium's security of supply
- Regarding the commissioning of **PEZ I** (+700 MW), Elia proposes to align with the latest federal coalition agreement considering an extension of the construction period for wind farms in the Princess Elisabeth Zone from 4 years to 5 years. This leads to not consider the commissioning of PEZ I (+700 MW) for all delivery periods to be covered by these calibration reports. However, the decision must be based on the most up-to-date planning information available to the FPS. In its recommendation, Elia suggests that the FPS provides the updated timelines to be incorporated into the scenario within the advice they are required to deliver.
- Elia recommends excluding the extension of **Tihange 1** from the reference scenarios due to significant uncertainties, as there are currently no guarantees that the unit will be available during the delivery periods covered by these calibration reports. While there is a willingness from the government on extending the lifetime of existing nuclear, there is currently no decision on a potential extension and no guarantee that the unit would be extended and

further available. Ultimately, it is the Minister's prerogative to decide whether or not to include it. However, it is important to emphasize that, in the context of the CRM, incorporating a capacity that remains uncertain is not a sound approach and can lead to adequacy issues if it does not materialize. Should the certainty around this capacity improve in the future, it could be considered for inclusion in the Y-2 or Y-1 auctions. If the government decides to integrate Tihange 1 in the reference scenario for 2030-31/Y-4, it should be noted that the effective contribution could be (significantly) limited due to capacity limitations on the transmission system in the region around Tihange as already highlighted by Elia in the past.

Although this might seem strange at first given the historical presence of nuclear capacity, one must take into account that when the authorities decide to force by law the closure of specific technology (such as nuclear production capacity), the related "liberated" capacities can and will be assigned to other uses in order to ensure an efficient usage of transmission infrastructure. With relation to the main "other uses" we firstly refer to article 16 from EU Regulation 2019/943, also known as the Clean Energy Package. In summary, it states that bottlenecks in the country-internal transmission grid cannot structurally constrain cross-border trade, and at least 70% of the thermal capacity of grid elements needs to be reserved for cross-border market exchanges. This rule therefore indirectly restricts the number of grid users that can be connected to the backbone grid, as those generate flows competing with these cross-border flows. Derogations to this regulation are only allowed until 2025. Secondly, significant amounts of other grid users (new CCGT's, batteries, ….) have in the meanwhile secured capacity reservation or allocation in the respective regions. If unmitigated, this situation will lead to unacceptable congestions on the transmission system, requiring possibly significant redispatching measures, as already highlighted by Elia at the beginning of 2023. These redispatch measures concern mainly units injecting electrical power in the transmission system what thus effectively would mean on overall reduction of available production capacity in the regions.

As requested by the Minister, Elia is undertaking grid studies to investigate the necessary boundary conditions in terms of redispatching and required grid reinforcements for the prolonged operation lifetimes of Tihange 1, Doel 1, and Doel 2 in order to manage grid congestion.

- Regarding the sensitivity on the **nuclear availability in France**, Elia proposes for each auction to follow the 'variante basse' from the BP2023 of RTE, corresponding to a scenario which consider 4 units unavailable on top of the availability foreseen ('cas de base').

  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 and is relevant to keep consistency with previous reference scenario selected by the Minister.
  - The French nuclear fleet is undergoing a period of major overhauls which are aimed at extending its life-time beyond 40 years and even beyond 50 years (the first fifth 'decennial visit' is foreseen in 2029 for Tricastin 1[5]). The high number of industrial projects that are due to be undertaken over the next few years calls for caution regarding the scheduled shutdown timetable and changes in yearly nuclear generation patterns.
  - 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. Common-mode failures are a major risk on the French nuclear units. Any issue found in a reactor leads to suspicions in others.
  - Regarding common-mode failure, the corrosion defects that were found in some welding has greatly impacted the availability of all nuclear reactors over the past few years and could still impact them in the future, since inspections are still being carried out and could lead to possible additional maintenance work in the short-term. Latest news referring to new defects detected on Civaux 2 (confirmed by ASN on the 10th of June 2025), requiring the replacement of damaged sections before restarting, demonstrate that it is still impacting the French nuclear units. In general, these events show how vulnerable the nuclear fleet is to generic issues, given that the same technological conception is used in all of its reactors.
  - 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 ran a low sensitivity (330

[5] https://www.edf.fr/sites/groupe/files/2024-04/annual-results-2023-facts-and-figures-en-2024-04-23.pdf

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 decommissioning of Hartlepool and Heysham 1 by the end of 2027, the decommissioning of Torness and Heysham 2 by the end of 2030 and the availability of the first unit of Hinkley Point C for winter 2030-31. Those assumptions could be re-evaluate if official publication is made available before the decision of the Minister;
    - Regarding the **availability of Emile Huchet**, Elia proposes to consider that the conversion to gas/biogas of Emile Huchet is likely to happen, following the Law[6];

Note that the dataset for each auction's reference scenario is to be found in the Excel file 'Assumptions workbook' published with this report on Elia's website.

Update for Netherlands' assumptions

	2027-28/Y-1		2028-29/Y-2		2030-31/Y-4	
	Before PC	After PC	Before PC	After PC	Before PC	After PC
Demand [TWh]	129	135	134	141	143	153
Onshore Wind [GW]	8	8	9	8	9	8
Offshore Wind [GW]	6	6	6	6	12	12
Solar [GW]	31	34	33	36	37	41
Coal [GW]	2.7	2.7	2.7	2.7	0	0
Nuclear [GW]	0.5	0.5	0.5	0.5	0.5	0.5
Gas [GW]	12	12	11	11	9	10

[6] https://www.assemblee-nationale.fr/dyn/actualites-accueil-hub/adoption-de-la-proposition-de-loi-visant-a-convertir-des-centrales-a-charbon-vers-des-combustibles-moins-emetteurs-en-co2-pour-permettre-une-transition-ecologique-plus-juste-socialement-dite-saint-avold

2. 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 2027-28/Y-1, 2028-29/Y-2 and 2030-31/Y-4, 6 answers were received: In total, 6 public reactions (CREG, FEBEG, Febeliec, ENGIE and Cogen) were received, of which one by a private citizen.

2.1 Methodology

CREG	La CREG se félicite de l'introduction, pour la première fois, de scénarios alternatifs dans la consultation publique d'Elia, en complément d'un scénario central. Elle encourage la poursuite de cette approche pour les futurs calculs des paramètres CRM. Toutefois, elle recommande de ne plus utiliser l'appellation "scénario central", afin d'éviter toute confusion réglementaire, et de nommer les scénarios conformément à l'étude "Adequacy & Flexibility 2026-2036" : 'Constrained Transition', 'Current Commitments & Ambitions' et 'Prosumer Power'.
CREG	La CREG note également que, dans son document de consultation publique, Elia n'a pas repris la dernière version de l'article 3 de l'arrêté royal « Méthodologie », tel qu'il a été modifié par l'arrêté royal du 28 mai 2024.

Elia takes note of the CREG's recommendation about the scenario naming and has updated the scenario naming for future publications to avoid any confusion.

Elia acknowledges the CREG's remark and will take the necessary actions to update the reference to Article 3 of the Royal Decree Methodology in the next public consultation.

CREG	La CREG demande davantage de transparence sur la manière dont Elia ajuste sa modélisation lorsque le critère de fiabilité (LOLE) dépasse 3 heures. La CREG souhaite qu'Elia partage sa méthodologie dans le rapport de consultation publique et l'intègre aux futures consultations sur les scénarios et sensitivités liés aux enchères CRM.

The methodology to determine volume and CRM parameters is defined in the Royal Decree Methodology[7].

In response to CREG's comment regarding transparency in Elia's modeling adjustments, when the LOLE exceeds three hours, Elia conducts a calibration phase as outlined in Article 6 of the Royal Decree Methodology.

Indeed, if Belgium is found to exceed its reliability standard, additional capacity is added in order to be compliant with its security of supply criteria. Therefore, an iterative process is performed based on the Loss of Load Expectation (LOLE) criteria.

Elia would like to specify that if neighbouring countries do not respect their reliability standard for later years, additional capacity is then allocated to the country with the greatest need for capacity. If this assessment was not performed at the European level, additional capacity would need to be added in Belgium to compensate for adequacy issues occurring abroad.

Similarly, if Belgium and its neighbouring countries are found to be below their reliability standards, a margin is calculated at European level.

This iterative process involves a significant number of simulations until the equilibrium is reached at the European level. Although this process is highly computationally intensive, it is essential to avoid both underestimating and overestimating the volume to be contracted and to accurately calculate the CRM volume parameters.

7 https://www.ejustice.just.fgov.be/eli/arrete/2021/04/28/2021041351/justel

2.2 Scenario dataset

2.2.1 General remarks

ENGIE	ENGIE thanks Elia for the organization of a consultation on the scenario, sensitivities, and data for the CRM parameters' calculation. Such a consultation is particularly important in the current context of electrification and rising demand for electricity, as well as in a geopolitical context where energy independence is the order of the day. For this reason, local power generation capacity plays an important role in guaranteeing security of supply, and CRM parameters need to be calibrated to attract this capacity (existing and new) ENGIE welcomes Elia's proposals on the three scenarios presented for the 2030-2031 delivery period (Y-4 auction): the current commitment scenario, the prosumer scenario, and the constrained transition scenario. ENGIE believes the current commitment scenario should serve as the future reference, as it enables the Belgian state to meet its obligations with respect to European climate objectives. However, this scenario could be supplemented with sensitivities, allowing the Minister to make an informed decision in November on the most likely scenario. Therefore, ENGIE welcomes the sensitivities proposed by Elia. Nevertheless, these sensitivities should be based on plausible scenarios rather than unrealistic ones. (…)
FEBEG	FEBEG reiterates that the T-4 auction remains the primary mechanism for attracting investments in new capacities or major upgrades on existing assets. Consequently, making overly optimistic assumptions regarding the delivery period covered by the T-4 auction poses a risk to the security of supply during that timeframe. FEBEG therefore urges Elia to adopt conservative, prudent, and realistic assumptions for the T-4 auction. (…)
FEBEG	FEBEG is very concerned regarding the increased uncertainty caused by continuously changing rules, regulatory conditions and policy decisions. FEBEG wants to state very clear that the investments that are needed to ensure security of supply are very capital intensive and need sufficient long term stable regulatory and market context and the prospect of a positive return on investment to allow positive investment decisions. Therefore, FEBEG requests that no changes will be made to the CO2-trajectories and that the IPC derogation and investment files with multi-year contracts are approved. Having short term contracts and higher volumes in the Y-2 and Y-1 auctions do not provide a sufficient long term perspective to assure investments in large scale flexible capacity that can adequately contribute to SoS

Aboubacar	La note explicative est bien structurée, mais une version simplifiée en français (ou en néerlandais) permettrait de mieux inclure les non-techniciens dans ce type de débat. Une courte synthèse vulgarisée avec infographies serait bienvenue.
Aboubacar	Il serait utile d'expliquer davantage le choix des scénarios haut / bas pour la consommation ou la production renouvelable. Une comparaison visuelle avec les scénarios européens ENTSO-E renforcerait la transparence
CREG	La CREG regrette qu'Elia n'ait pas publié le fichier Excel 'Assumptions Workbook' mis à jour dans le cadre de la consultation publique de l'étude Adequacy & Flexibility 2026-2036, alors que de nombreuses références y sont faites dans la note explicative. La CREG estime que ce document est essentiel pour garantir la transparence des hypothèses, notamment pour les périodes postérieures à 2031 et les flexibilités liées aux véhicules électriques et aux pompes à chaleur. La CREG demande qu'à l'avenir, Elia consulte sur un rapport complet et autonome incluant toutes les données et hypothèses.

Elia acknowledges the ENGIE comment to consider a scenario for aligning with EU climate targets.

Elia takes note on Engie et Febeg concerns to consider plausible and prudent sensitivities to avoid underestimating the capacity needs for future Y-4 auctions.

Regarding the sensitivities selection, Elia proposed a list in collaboration with FPS and concertation with CREG, taking into account the different risks and uncertainties identified in Belgium and abroad. It was therefore agreed to put sensitivities on Belgian nuclear and offshore, in line with the latest declaration from the authorities.

Elia takes note of the comment of FEBEG regarding the changing rules, regulatory conditions and policy decisions. Elia aims to discuss any changes to the CRM Functioning Rules at length in the WG Adequacy and through public consultation.

Elia welcomes the remark of Cisse Aboubacar on a synthetic version and additional visuals and refers to the slides presented during Working Group Adequacy from Thursday 17 April 2025[8]. Furthermore, additional explanation on the choices made for the scenarios are part of the explanatory note submitted to public consultation.

Finally, Elia takes note on CREG's comment on the assumptions workbook and will publish an updated version in the CRM framework aiming to integrate the latest information following this public consultation.

[8] https://www.elia.be/en/users-group/wg-adequacy/20250417-meeting https://www.elia.be/en/users-group/adequacy-working-group/20240412-meeting

2.2.2 Individually modelled thermal generation capacities

FEBEG	In confirmation of concerns that FEBEG made previously, the recently published ERAA 2024 report also shows that significant volumes of fossil-fuelled capacity are likely to become economically non-viable by 2030 due to the rise in renewables. On that part, FEBEG again warns that the assumption that existing capacity will automatically remain in the market is incorrect. This assumption ignores the fact that the fleet of gas units is aging and requires increasingly significant investments to keep them in the system. This will cause them to leave the market when significant costs for maintenance, repair or overhaul become necessary. This is confirmed by the recent European Resource Adequacy Assessment (ERAA) 2024 published by ENTSO-E, where it is stated that significant volumes of fossil-fuelled capacity are likely to become economically non-viable by 2030, inducing large exits of capacity in 2026, 2028 and 2030 timeframes.
FEBEG	In the context of the CRM, new capacities need to subscribe an 'Energy Transition Declaration' envisaging carbon neutrality by 2050. In the Flemish Region carbon neutrality by 2040 is imposed in the environmental permits. FEBEG warns that the requirement to become CO2-neutral are unrealistic and can probably not be met by a number of CCGTs and OCGTs. Due to technical but even more due to financial reasons the requirement to become CO2-neutral by 2040 is not realistic. It will increase the cost or pose technical challenges for older plants.
FEBEG	Next to that, the CRM Functioning Rules have CO2 emission limits for participation to CRM. These limits are more severe that the limits proposed by the EU Regulation that aimed at creating a level playing field between countries. These limits are already excluding thermal assets from participation in the CRM: this means that there's a very high chance that these assets will leave the market when they are confronted with significant investments for a major overhaul or lifetime extension. On top of that, there's the risk that these limits would become more severe in the future. FEBEG repeats its' comment regarding the need to maintain long-term visibility on realistic CO2 emissions limits to participate in the CRM in order to allow the asset owners to make possible investment decisions in time. The running hours of thermal plants will lower due to increasing low carbon electricity production, thereby lowering the global emissions of the thermal capacity. Therefore, FEBEG wants to stress the need for stable and reasonable CO2 emissions limits that allow the participation of existing capacities.
FEBEG	Another fact that is ignored when assuming existing capacity will remain in the market is that the renewal of environmental permits is increasingly difficult. Concerns regarding Security of Supply are not

	taken into account in permitting decisions which have already proved to be a dealbreaker with regards to new thermal capacity. In conclusion, FEBEG strongly emphasizes that the primary goal of the CRM mechanism is providing security of supply. Strict CO2 emissions limits will increase the cost significantly to keep existing plants in the market while the efficiency of the measure is unsure due to the diminishing running hours in the future. This comes on top of an already difficult investment climate for these capacities. Therefore, the reference scenario should include a certain amount of existing capacity to be removed for the year 2030 and later. FEBEG also requests a sensitivity that takes into account that the existing plants with higher CO2 emissions will leave the market.
ENGIE	Knippegroen: is a conventional gas fired boiler, with a condensing steamturbine for electricity production - overall efficiency around 42%. So NO gas turbine present there. As under CRM there is no category "conventional unit", ENGIE prequalified Knippegroen as OCGT in the past. We do not understand the comment “In addition, the unit is considered to be able to run at Pmin (65 MW) simultaneously with Knippegroen in case of scarcity situation” for “Angleur TG 31” of Luminus and believe it is incorrect. .ST at TEREOS (5MW) has been put out of service and should not be considered anymore by ELIA. ST is not owned by Electrabel, but TEREOS (and part of their connection agreement).
CREG	Pour la centrale de Rodenhuize 4, la CREG note qu’Elia a bien considéré qu’une capacité de 65 MW est également disponible en parallèle de la centrale de Knippegroen en cas de situation de pénurie.

Elia acknowledges FEBEG's concerns about the economic viability of thermal capacity and the broader uncertainties impacting the 2030 horizon. This concern is dealt with in the framework of the Adequacy and Flexibility studies. Additional risks and uncertainties mentioned by FEBEG are also noted by Elia. Regarding CRM, Elia emphasizes the purpose of the reference scenario, which is to establish key parameters for the auction based on a scenario that ensure Belgium is compliant with its security of supply criterion. If the LOLE in the reference scenario exceeds three hours, a calibration phase is initiated to address any capacity shortfall in Belgium. Consequently, if volume is subtracted due to sensitivity analysis, an equivalent amount will be added to calculate the necessary parameters. However, Elia recommends closely monitoring announcements related to Article 4 bis or updates on the renewal of environmental permits. Any related requests should be addressed to the competent authorities.

Elia highlights that CO_2 emissions limits are not within its responsibility and are not part of this public consultation. However, this consultation report and all public responses will be shared with the relevant authorities.

Concerning the comment of ENGIE, Elia apologizes for the error due to incorrect filtering in the published Assumptions Workbook. This will be corrected in the next publication of the Assumptions Workbook associated with this consultation report.

Elia acknowledges the update regarding Tereos unit. The Assumptions Workbook will be adapted accordingly, and it will not be taken into account in the models.

Elia confirms that the 65 MW from Rodenhuize 4 is considered available alongside Knippegroen in scarcity situations.

2.2.3 Storage

Large-scale batteries

ENGIE	ENGIE stresses the need for the extension of the grid cost exemption for batteries post 2027
CREG	Afin d'obtenir une meilleure vue sur les batteries 'large-scale' considérées comme existantes par Elia, la CREG estime que le fichier Excel devrait contenir un onglet reprenant la liste des batteries existantes et des informations concernant le propriétaire, la capacité (en MW), le volume du réservoir (en MWh) ainsi que la date de mise en service de chaque batterie. Les valeurs agrégées en termes de capacités et de volumes de réservoir ne sont pas suffisantes pour vérifier les informations sur ces actifs. La CREG demande ainsi à Elia de fournir la liste des batteries existantes avec les informations mentionnées ci-dessus dans le cadre du rapport de consultation publique.
CREG	Dans la note explicative, Elia indique que la capacité installée des batteries 'large-scale' correspond à la somme des capacités existantes et des volumes contractés dans les enchères CRM précédentes. Elia précise également que des capacités supplémentaires ne sont pas incluses dans le scénario central, mais que des batteries 'large-scale' peuvent être ajoutées dans le scénario lors du processus de calibration. La CREG est d'avis qu'Elia ne devrait pas se limiter à prendre en compte les capacités déjà installées et les nouvelles capacités contractées dans le cadre des précédentes enchères CRM, mais également les projets de batteries en cours de réalisation et qui n'ont pas participé aux enchères CRM. Dans le cadre du rapport de consultation publique, la CREG demande à Elia de mettre à jour la capacité installée des batteries 'large-scale' sur base de cette hypothèse.
FEBEG	Regarding large-scale batteries, FEBEG can not find in the explanatory note how much of the connection requests in EOS/EDS phase are assumed to be realized. Looking at the very large increase in installed capacity assumed, FEBEG believes it is necessary to implement a correction factor to account for a percentage of projects that cannot, or not timely be realized due to delays in connections and other. Elia

	should also include the assumptions that these numbers are based on in the explanatory note and the assumptions workbook.
Aboubacar	Les solutions décentralisées comme les batteries domestiques, l'effacement résidentiel ou l'autoconsommation collective mériteraient d'être mieux prises en compte comme options complémentaires.

Elia takes note of Engie's comment on grid cost exemption. However, this point is out-of-scope of this public consultation.

Regarding CREG's comments, Elia would like to note that all batteries projects are closely followed-up, including the (expected) in service date. 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.

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.

Regarding the possibility to share more detailed information on large-scale batteries, Elia did an update of the assumptions workbook to include an additional sheet on detailed information on batteries. Elia however cannot publicly share all detailed information on large-scale batteries due to confidentiality restrictions. It's also important to note that individual client data is treated confidentially. This confidentiality is requested by clients because some of their plans are not yet public or are part of their strategic projects. This agreement ensures that clients provide the most up-to-date and accurate information to Elia. Consequently, some information is aggregated across different dimensions.

Regarding FEBEG's comment, Elia would like to mention that only the existing and already contracted batteries are considered in the scenario. By consequent, the projects that do not already have a CRM contract are not taken into account until their realization. No mention of projects in EOS/EDS phase is therefore done in the explanatory note.

Small-scale batteries

ENGIE	ENGIE recommends cross-checking with TSO for connection possibilities before entering the capacity into the calibration exercise, and suggests using a correction factor to account for a percentage of projects that will not be realized
FEBEG	FEBEG does not believe the assumption regarding the amount of small-scale batteries that will be in the market is realistic. Looking at the slow adoption of dynamic price contracts and the fact that many of the existing batteries only serve the goal of increasing self-consumption, it is hard to believe that these will be adapted to be in the market. In an adequacy context (winter), due to very low solar it would require a battery to charge on moments with low prices. The adoption of dynamic contracts thus is a crucial factor and we see a very slow uptake of those contracts in the market.

On calibrating the realization of small-scale batteries, Elia assumes ENGIE meant DSO instead of TSO, to check for connection.

Note that the trajectory starts from realized data at the end of 2024 and was discussed with DSOs at the end of 2024 for the AdeqFlex'25 study, up to 2036. Input from Fluvius were considered, which operates the Flemish distribution grid, where more than 90% of today's small-scale batteries are located.

On small-scale batteries being in the market, the development of dynamic contract is highly uncertain indeed, which is why several trajectories were put to consultation. There were in 2024, 11 thousands dynamic contracts, nearly 3 times as much as the year before (4 thousands end-2023). The range in 2030 assumed by Elia goes from 0.5 to 1.5 million dynamic contracts.

Small-scale batteries are expected to be between 175 and 305 thousand in 2030. Hence even the lowest estimation could cover all small-scale batteries installed in 2030.

Out of all low-voltage assets, small-scale batteries are the easiest to flexibilise as: (i) flexibilising them does not impact consumer comfort (ii) they are made to be operated by external signals, and (iii) they have opportunities to maximise revenues in such a way.

For example, large-scale batteries business plan is based on stacking revenues across different market. Financially speaking, the most rational decision for a consumer, would be to use their battery to minimise cost of their regional tariff, but also increase revenue (eg: through price spread, or use of negative prices).

In conclusion, even in the most pessimistic perspective for dynamic contracts, Elia assumes there will be more dynamic contracts than small-scale batteries. As small-scale batteries are easily steerable, do not impact consumer comfort, and can lower cost while increasing revenues for consumer through market dispatch, Elia maintains that small-scale batteries are expected to follow market prices in the future.

2.2.4 RES capacities

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	FEBEG supports an on-time development of MOGII. It should however be noted that, for the offshore wind growth ambitions, the execution of these projects will also depend on the timely execution of important infrastructure projects like Ventilus and Boucle-du-Hainaut. Experience has taught the sector that such large-scale projects will face the necessary challenges before they can be realized. FEBEG therefore welcomes the sensitivity that includes a delay in the offshore trajectory because this assures that the calculations are already performed and the impact on the necessary volumes in the CRM is known. This way, the volume can be adjusted in a later stage if necessary.
FEBEG	FEBEG wants to mention that very recently there have been some legislative changes that can have a negative impact on both solar and onshore wind in Flanders. For wind, a distancing rule is introduced that could severely restrict the potential to almost zero. This will have a very high impact on the installed capacity. This effect should be taken into account in the reference scenario as wind has a non-negligible contribution to SoS. Regarding solar, there is a delay in the legislation that obligates large offtakers to install solar (or alternatives) to provide in a part of their energy use. Together with ever declining capture rates for solar, more prudent reference scenario seems advisable even though FEBEG acknowledges that the impact on SoS could be rather limited.
ENGIE	ENGIE is deeply concerned about the recent legislative announcements that could adversely affect onshore wind development in Flanders. In particular, the proposed introduction of a distancing requirement for wind turbines—potentially mandating a minimum distance of three times the turbine height from residential areas—could drastically limit the available space for new wind projects. This would significantly reduce the region's wind energy potential, potentially bringing new developments close to a standstill. Such a measure would have a major impact on the installed wind capacity. Given the important role of wind energy in ensuring security of supply (SoS), this potential reduction should be explicitly reflected in a sensitivity analysis.
CREG	Dans le cadre de la consultation publique sur l'étude Adequacy & Flexibility 2026-2036, la CREG avait formulé plusieurs remarques sur l'évolution de la capacité éolienne terrestre. La CREG considérait que les estimations d'Elia pouvaient être trop conservatrices, en particulier

	pour la Flandre. La CREG avait également demandé à Elia de clarifier ses hypothèses concernant le 'repowering' des parcs existants. La CREG note qu'Elia a tenu compte de ses remarques concernant l'évolution de l'éolien terrestre après 2030. Ainsi, le scénario 'Prosumer Power' de l'étude Adequacy & Flexibility 2026-2036 (et qui est repris comme sensibilité dans le cadre de cette consultation publique) considère un taux de croissance annuel constant pour la Flandre, même après 2030. Cette hypothèse n'a cependant pas d'impact sur les périodes de livraison étudiées dans le cadre de la présente consultation publique. Le scénario 'Constrained Transition' prévoit une adoption plus lente, sans atteindre les objectifs régionaux pour 2030 en raison de problèmes liés à la chaine d'approvisionnement et de l'effet 'NIMBY', par exemple. Le scénario 'Current Commitments & Policies' (qui correspond au scénario central) suit les objectifs officiels régionaux pour 2030. Concernant le 'repowering', Elia a indiqué dans le rapport de consultation publique que le 'repowering' fait déjà partie de la solution pour atteindre les objectifs annoncés par la Flandre et la Wallonie (objectifs qui sont pris en compte dans le scénario central)

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 the NIMBY-effect, wind and solar energy are still the cheapest forms of electricity production[9]. There is still enough space on buildings for additional solar capacity.

Elia proposes to follow the trajectory of the Current Commitments scenario, as it is based on the current regional targets, although Elia will closely monitor the impact of the new measure adopted in Flanders (see next comment).

Elia takes note of ENGIE and FEBEG concerns regarding the potential impact of new legislative measures on onshore wind development in Flanders. Elia acknowledges the importance of monitoring such developments and their implications for installed capacity.

Elia acknowledges FEBEG's and ENGIE's concerns about potential challenges facing large-scale projects like the first phase of MOG II. Elia proposes to consider it as unavailable, due to the uncertainties around the project. This proposal is justified by the extension of the construction period for wind farms in the Princess Elisabeth Zone from 4 years to 5 years. However, the decision must be based on the most up-to-date

[9] 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

planning information available to the FPS. In its recommendation, Elia suggests that the FPS provides the updated timelines to be incorporated into the scenario within the advice they are required to deliver.

Elia acknowledges CREG's comment.

2.2.5 Profiled thermal capacities

COGEN	Analoog aan de eerdere reactie van COGEN Vlaanderen op de Elia consultatie omtrent de Adequacy & Flexibility Study 2026-2036 (link, zie hoofdstuk 2.1) achten we – bij ongewijzigd beleid - een stijging van het opgesteld elektrisch vermogen van aardgas-gedreven WKK-installaties als onwaarschijnlijk. Een daling van het geïnstalleerd vermogen behoort tot een realistischer referentie-scenario.
COGEN	De voorgestelde daling (-99 MWe) in 2030 ten opzichte van het referentie-scenario resulteert nog steeds in een opgesteld vermogen van 1.468 MWe in 2030, hetgeen hoger ligt dan de 1.435 MWe die Elia in 2024 veronderstelt. Gelet op het feit dat er reeds tussen 2022 en 2023 een daling van circa 70 MWe werd vastgesteld omtrent het operationeel geïnstalleerd vermogen in Vlaanderen, is een sterkere daling aangewezen in het kader van de sensitiviteitsanalyse.
COGEN	Op dit ogenblik zijn er verschillende tendensen in het Vlaams energiebeleid die een daling impliceren: • Vlaamse certificatensteun: Het schrappen van verschillende representatieve projectcategorieën voor nieuwe of ingrijpend gewijzigde biomassa cogeneratie-installaties met startdatum vanaf 1 januari 2023. • VEKP: Vorige regeerperiode kende het Vlaams beleid een shift omtrent de toepassing van (biomassa-)afval in de richting van warmte-productie en minder op elektriciteitsproductie, ondanks de energie-/exergie-efficiëntere toepassing door middel van cogeneratie • Biomethaan: De opkomst van biomethaan-projecten, waarbij het rationeel energiegebruik van biomethaan door middel van cogeneratie op dit ogenblik echter nog niet wordt gestimuleerd om Vlaams niveau. Berichtgevingen duiden aan dat sommige nieuwe biomethanisatie-projecten ter vervanging komen van biogas-WKK's waarvoor, onder meer omwille van de afbouw in certificatensteun, de businesscase financieel minder interessant is geworden.
FEBEG	FEBEG notices that there is an increase in CHP capacity in the scenario. This seems contradictory to the signals from the sector itself that warns for a decline in the installed capacity. It might therefore be better to assume a decreasing or steady installed capacity. FEBEG supports the inclusion of a sensitivity that simulates a further decrease in installed CHP capacity.

In response to concerns from FEBEG and COGEN about the increase in CHP capacity, Elia recognizes that the cessation of the support mechanism in Flanders for gas combined heat and power units (warmte-krachtcertificaten) may affect future capacity development in Belgium. Considering the uncertain situation, Elia will adhere to the following approach:

- Existing Capacity: Unless official closures are reported by DSOs, existing capacity is assumed to remain, with potential participation in the CRM which could compensate for financial gaps. These units may also opt for an SLA derating factor or participate in flexibility services like mFRR for industrial CHP.
- New Capacity: For new capacity, Elia will continue using its previous methodology, focusing on anticipated projects based on DSO data and only considering projects that are at an advanced stage.

Elia acknowledges that considering no potential additional decommissioning of the existing capacities is a rather optimistic assumption but considers that those units can still participate in CRM auctions. In any case, Elia will continue closely monitor information from DSO on future profiled thermal capacities.

2.2.6 Forced outage rates

CREG	En ce qui concerne les arrêts forcés des centrales nucléaires, la CREG estime que le risque principal, en termes de durée des arrêts forcés, est lié aux prolongations des maintenances planifiées. Ainsi, la CREG est d'avis qu'il est pertinent de distinguer les taux selon les années de livraison, et en tenant compte des périodes d'indisponibilité planifiées Dans le cadre du LTO, les travaux de maintenance de jouvence sont prévus durant les étés 2026, 2027 et 2028. Ainsi, pour les périodes de livraison Y-1 (2027-2028) et Y-2 (2028-2029), la CREG considère qu'il subsiste un risque d'arrêts forcés de longue durée. Dans ce contexte, un taux de 10 % semble approprié. Electrabel garantissant ce taux (malgré des valeurs historiquement plus élevées), il paraît plus cohérent de conserver le nombre d'arrêts forcés basé sur les données passées, puis d'en déduire la durée moyenne d'un arrêt forcé à partir de ce taux et du nombre estimé d'événements par an. Pour la période de fourniture Y-4 (2030-2031), et étant donné que seuls les arrêts pour rechargement de combustible durant l'été sont prévus au-delà de 2028, la CREG considère qu'il n'y a plus de risque d'arrêts forcés de longue durée. La CREG est d'avis qu'il serait donc pertinent d'estimer, sur base historique pour les deux installations, le nombre d'arrêts forcés annuels et leur durée moyenne en excluant les arrêts forcés de longue durée liés à la prolongation d'un arrêt planifié. Le taux d'arrêts forcés pour cette période serait alors déduit de ces deux estimations.

CREG	La CREG souhaite formuler plusieurs remarques sur la méthodologie de calcul du facteur de réduction pour les technologies thermiques sans programme journalier (technologies thermiques agrégées). L'Appendix C de l'étude *Adequacy & Flexibility 2026-2036* soumise à consultation publique explique la méthodologie de calcul utilisée se basant sur des données historiques observées. Sur base de ces données, un facteur de réduction moyen calculé sur l'ensemble de l'année est appliqué à l'ensemble des technologies thermiques. Étant donné que le CRM a pour objectif de couvrir spécifiquement les situations de pénurie, il semble plus pertinent de calculer le facteur de réduction moyen sur la base des seules périodes hivernales ou de pénurie, plutôt que sur l'ensemble de l'année. Ces périodes sont caractérisées par des facteurs de capacité plus élevés que le reste de l'année. La CREG estime que cette amélioration méthodologique permettrait de calculer des facteurs de réduction plus représentatifs de la contribution réelle des technologies thermiques agrégées lors de situations de pénurie pour lesquelles le CRM est mis en place.

Elia takes note but does not agree with the CREG's comment but proposes to apply a uniform forced outage rate of 10% for each Delivery Period. This approach is supported by examples such as the French nuclear fleet, where even with extensive maintenance planning, unforeseen long outages still occur (e.g. due to stress corrosion) The recent example on Civaux 2 nuclear power plant tends to support this assumption.

Moreover, certain risks are independent of the maintenance schedule and cannot be entirely ruled out—such as the sabotage incident at the Doel nuclear power plant.

Finally, Elia considers the derating factors applied to nuclear capacity in Belgium to be relatively optimistic when compared to international benchmarks. For instance, within the framework of the CRM in Great Britain[10], a significantly more conservative derating factor of 75% is applied.

Regarding the CREG's comment on the derating factor for aggregated thermal technologies, Elia clarifies that the factor is not based on a simple annual average. Instead, Elia first establishes a relationship between historical generation, temperature, and time of day. Elia also assesses the correlation between electricity prices and historical generation, but no clear correlation could be derived. This relationship is then applied to the climate database to simulate hourly production across the year. The final derating factor is calculated based on the contribution during scarcity hours, which

[10] https://nationalenergyso-emr.my.salesforce.com/sfc/p/#8d000002dUGC/a/J70000004CYD/cv3SY3Z5cLuiRsHHJuK5FZcNebxJDmgEeAqjo9ot1oov

typically occur during winter periods. As a result, the derating factor reflects higher availability than an annual average would suggest.

To summarize:

- Step 1: Extract of historical capacity factor of aggregated thermal technologies;
- Step 2: Correlation analysis with daily temperature, load and electricity prices that showed a daily pattern, a weekly pattern and a temperature-dependence;
- Step 3: Application of the historical profile on the characteristics of the climate database;
- Step 4: Identification of simulated scarcity hours and calculation on the average contribution of aggregated thermal technologies considering the profiles defined in Step 3.

2.2.7 Consumption

ENGIE	Elia predicts a significant increase for the average electricity peak consumption. However, it is unclear how Elia will integrate the flexibility activations from EVs/HPs/industry and out-of-the market batteries in that value for the calibration of the CRM demand curve. Given the uncertainty on this flexible potential of industry/EVs/heat pumps 4 years upfront the delivery year, we recommend taking a prudent approach on this flexibility potential, especially in the T-4 auction. Since there is anyway a large volume being reserved for the T-1, an adjustment is still possible had the flexible potential been underestimated. Overall, we ask Elia to be consistent with assumptions taken in the adequacy & flexibility study.
CREG	La note explicative indique que la demande totale d'électricité pour la Belgique est construite avec plusieurs blocs : les usages existants, la nouvelle électrification des transports, la nouvelle électrification de la chaleur des bâtiments, les nouvelles charges 'large-scale' et les pertes. En outre, il est précisé que l'évolution des usages existants de l'électricité considère les projections macroéconomiques, l'efficacité énergétique, l'élasticité prix et la reprise de la demande. Toutefois, la CREG note que, dans l'onglet '2.1 Demand' du fichier Excel, des catégories 'Recovery – residential & tertiary', 'Demand destruction - Industry at risk' et 'Additional losses' sont reprises en plus de la catégorie 'Existing Usages'. La CREG demande ainsi à Elia de clarifier ce qui est exactement considéré dans la catégorie 'Existing usages'.
FEBEG	While on one hand some might put forward that the electricity consumption could be reduced due to the consequences of the high electricity prices and decreased trade because of trade tariffs, 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). FEBEG welcomes the use of different scenarios to model the outcome and to base upon policy decisions. FEBEG would however strongly disagree with the use of the constrained transition scenario to dimension the energy supply upon. This would have a devastating effect on the investment climate for the industry as this would decrease the certainty for companies to be able to count on a sufficient and uninterrupted energy supply in Belgium.
Febeliec	Febeliec is of the opinion that Elia's forecasts of electricity consumption is too high and should be revised downwards. Previous forecasts by Elia have been proven to overestimate the electricity consumption, thereby increasing the need for capacity in the CRM and hence higher costs of the mechanism. Febeliec is of the opinion that the "constrained scenario", a sensitivity that Elia will simulate as well, could well be the most likely scenario. 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.

In response to ENGIE's comment, Elia confirms that the assumptions align with those used in the Adequacy and Flexibility Study for 2026-2036. Elia clarifies that final consumption is a model output; for instance, heat pump consumption is based on assumed profiles and complemented by the associated flexibility of the heat pump. This approach is consistently applied across other components. Assumptions regarding end-user flexibility has also been added to the assumptions workbook as requested by the CREG.

In response to CREG's comment on the categorization of existing usages, existing usages encompass all existing electricity demand. This concerns all sectors: Residential, tertiary, Industry and transport (rail, public transport). This value is expected to change with the following:

- Energy efficiency increase, will reduce consumption, based on CLIMACT's assumptions improved by the PRICED study
- Macro-economic impact, based on Bureau du Plan économique projections from June 2024, inputted in CLIMACT's model (see AdeqFlex public consultation)
- Demographic changes, based on Bureau du Plan économique projections from June 2024, inputted in CLIMACT's model (see AdeqFlex public consultation)
- Recovery in the tertiary and residential sector, following the energy price crisis of 2022 (as studied in the PRICED study)

- Additional losses, computed based on total load changes
- Closures of industry (for the Constrained Transition scenario)

Elia acknowledges the comments from FEBEG and Febeliec regarding their recommendations on selecting the load scenario for the central scenario.

Additional electrification from industry

CREG	Sur base des échanges bilatéraux avec ses clients, Elia a mis à jour la trajectoire d'électrification de l'industrie dans le cadre de l'étude Adequacy & Flexibility 2026-2036. Les valeurs retenues par Elia sont reprises dans le tableau ci-dessous, celles-ci sont sensiblement inférieures aux valeurs initialement mises à consultation publique par Elia en novembre 2024. Toutefois, seul le scénario 'Constrained transition' considère une destruction de la demande au niveau du secteur industriel (-0,5 TWh pour chaque période de livraison).

	2027-28/Y-1	2028-29/Y-2	2030-31/Y-4
Constrained transition	+3,1 TWh	+4,1 TWh	+6,2 TWh
Central scenario	+4,2 TWh	+7,0 TWh	+12,1 TWh
Prosumer power	+4,2 TWh	+7,0 TWh	+12,1 TWh

au 1 – Trajectoires d'évolution de la demande en électricité du secteur industriel (source : Elia)

	Ainsi, la CREG maintient sa recommandation d'adopter une approche plus conservatrice et réaliste qui confronterait les projections obtenues par Elia à la réalité économique à laquelle font face les acteurs industriels, ce qui mènerait à un scénario central prenant en compte la possible non réalisation de certains projets d'électrification (et non un simple report dans le temps).
CREG	Enfin, la CREG note qu'aucune information n'est partagée concernant la méthodologie utilisée par Elia pour déterminer les profils de charge des nouveaux usages liés à l'électrification de l'industrie. La CREG demande ainsi à Elia de fournir, dans le cadre du rapport de consultation publique, plus de détails concernant les profils de ces nouveaux usages et la méthodologie suivie pour leur détermination

Elia takes note of CREG's comment on the recommendation to adopt a conservative projection approach. Elia would like to stress that the economic reality is already taken into account by considering the consumption of the year 2024 as basis to make the projections. This includes the very low capacity utilization (due to the energy crisis) of existing industrial assets and all known closures. It should also be noted that the CC scenario account for both delays and non-realization of several (parts of) projects. This is outlined by the difference to the 'HIGH' value submitted in the public consultation of AdeqFlex'25, not submitted in public consultation for the CRM. The values for this scenario are at 7.4, 10.5 and 16.6 TWh respectively for 2027-28, 2028-29 and 2030-31.

Additionally, the 'Constrained transition' scenario includes not only potential delays in electrification but also the possibility of non-realization or reduced levels of electrification (outlined by the 6 TWh different between Constrained transition and Current Commitments in 2030), and additional demand destruction in existing industry.

In response to CREG's comment about the profile used for new electrification, Elia clarifies that a baseline profile is applied universally to all electrification initiatives. However, since flexibility is linked to industrial electrification, the actual profile becomes known only ex-post.

Additional electrification from EV and HP

CREG	La CREG note que, suite à la consultation publique sur l'étude Adequacy & Flexibility 2026-2036, Elia n'a pas modifié ses hypothèses concernant l'évolution des ventes et du nombre total de véhicules (tous types de carburants confondus). Ces hypothèses sont identiques dans les trois scénarios, à savoir la vente de 260 000 véhicules par an pour les voitures de société et 180 000 véhicules par an pour les véhicules privés. Les trajectoires d'évolution des voitures électriques varient toutefois entre les scénarios, selon la date à laquelle celles-ci atteignent 100% des ventes dans les différents segments (voitures de société et voitures privées). Ainsi, la CREG réitère sa recommandation d'ajuster les prévisions concernant les véhicules électrifiés à un niveau plus réaliste. Pour 2030, afin de tenir compte d'une adoption plus progressive des véhicules électrifiés en raison de délais dans la mise en œuvre des interdictions des véhicules thermiques, la CREG propose une estimation de 1 450 000 véhicules électriques et 280 000 véhicules hybrides rechargeables. De plus, la CREG s'interroge sur la prise en compte de la récente prolongation de la déductibilité des véhicules hybrides. En effet, une période de transition est prévue pour les véhicules hybrides, avec une déductibilité de 75% jusqu'à fin 2027. Elle diminue ensuite progressivement pour devenir nulle à partir de 2030. La CREG demande ainsi à Elia de confirmer, dans le cadre du rapport de consultation publique, si cette mesure a bien été prise en compte dans les projections réalisées.
CREG	La CREG note qu'Elia a tenu compte de sa remarque concernant l'amélioration de l'efficacité énergétique des véhicules électriques, ce qui se traduit par une diminution progressive de la consommation moyenne des véhicules électriques. Elia a retenu une amélioration de l'efficacité énergétique de 6% à l'horizon 2036 pour tous les types de véhicules électriques (voitures, vans, camions et bus). Cependant, cette valeur est différente de celles considérées par RTE dans son Bilan prévisionnel 2023 et auxquelles la CREG avait fait référence dans sa réponse à la consultation publique sur l'étude Adequacy & Flexibility 2026-2036. Les valeurs de RTE suggèrent une diminution de l'ordre de 12% à 15% de la consommation kilométrique moyenne des voitures particulières électriques d'ici 2035, soit

<table>
<tr><td></td><td>environ 16 kWh/100km. La CREG recommande donc d'appliquer une réduction linéaire de 15 % de la consommation électrique moyenne à l'ensemble des véhicules électriques entre 2024 et 2035.
Par ailleurs, comme déjà souligné dans sa réponse à la consultation publique sur l'étude Adequacy & Flexibility 2026-2036, la CREG s'interroge sur la pertinence de l'augmentation de la consommation moyenne de voitures privées électriques à 19 kWh/100 km, telle que retenue dans cette étude, par rapport à l'hypothèse de 18 kWh/100 km utilisée dans le scénario de référence des enchères CRM 2025.</td></tr>
<tr><td>CREG</td><td>La CREG souligne que, sur la base d'une analyse des immatriculations de voitures privées durant les six premiers mois de l'année 2024, combinée aux données de consommation par modèle issues de la base de données Electric Vehicle database 5 , la consommation moyenne des véhicules privés représente environ 93% de celle des véhicules de société. En conséquence, la CREG recommande de distinguer, dans les hypothèses de modélisation, les consommations moyennes applicables aux véhicules de société et aux véhicules privés, respectivement</td></tr>
<tr><td>CREG</td><td>La CREG recommande dès lors d'appliquer aux voitures privées électriques les consommations moyennes suivantes, en tenant compte de (i) une diminution linéaire de 15 % entre 2024 et 2035, et (ii) un ratio de consommation de 93 % entre véhicules privés et véhicules de société :
<table>
<tr><th>Consumption parameters</th><th>Unit</th><th>2024</th><th>2027-28/Y-1</th><th>2028-29/Y-2</th><th>2030-31/Y-4</th></tr>
<tr><td>Consumption - BEV company</td><td>kWh/100km</td><td>19,13</td><td>18,21</td><td>17,95</td><td>17,43</td></tr>
<tr><td>Consumption - BEV private</td><td>kWh/100km</td><td>17,79</td><td>16,94</td><td>16,70</td><td>16,21</td></tr>
<tr><td>Consumption - PHEV company</td><td>kWh/100km</td><td>2,99</td><td>2,84</td><td>2,80</td><td>2,72</td></tr>
<tr><td>Consumption - PHEV private</td><td>kWh/100km</td><td>9,45</td><td>9,00</td><td>8,87</td><td>8,61</td></tr>
</table>
Figure 1 – Recommandation de la CREG pour les consommations moyennes des voitures électriques et hybrides (source : calculs CREG sur base de données Elia et RTE)

32. En appliquant la même logique de réduction linéaire aux autres catégories de véhicules électriques (vans, camions, bus), la CREG obtient les consommations suivantes :
<table>
<tr><th>LDV Freight (Vans)</th><th>Unit</th><th>2024</th><th>2027-28/Y-1</th><th>2028-29/Y-2</th><th>2030-31/Y-4</th></tr>
<tr><td>Efficiency - BEV</td><td>kWh/100km</td><td>30,00</td><td>28,57</td><td>28,16</td><td>27,34</td></tr>
<tr><td>Efficiency - PHEV</td><td>kWh/100km</td><td>15,00</td><td>14,28</td><td>14,08</td><td>13,67</td></tr>
<tr><td>HDV freight (Trucks)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Efficiency (kWh/100km)</td><td>kWh/100km</td><td>119,40</td><td>113,70</td><td>112,07</td><td>108,82</td></tr>
<tr><td>Buses</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Efficiency - BEV (kWh/100km)</td><td>kWh/100km</td><td>124,38</td><td>118,44</td><td>116,74</td><td>113,35</td></tr>
</table>
Figure 2 – Recommandation de la CREG pour les consommations moyennes des véhicules électriques et hybrides (vans, camions et bus) (source : calculs CREG sur base de données Elia et RTE)</td></tr>
<tr><td>CREG</td><td>En réponse à l'observation de la CREG selon laquelle la taille moyenne des véhicules électriques allait diminuer dans le futur, entrainant une baisse de la consommation moyenne, Elia met en avant l'évolution du parc automobile belge dans son ensemble. La CREG précise toutefois que son analyse concerne exclusivement les véhicules électriques (y compris les véhicules hybrides rechargeables). A ce jour, environ 85% des véhicules électriques immatriculés en Belgique sont des véhicules de société. Ceux-ci étant en moyenne plus grands et plus lourds que les véhicules privés, ils présentent logiquement une consommation énergétique plus élevée. La</td></tr>
</table>

	CREG estime ainsi que, à mesure que la part des véhicules électriques privés augmentera dans le parc total, la taille moyenne des véhicules électriques en Belgique devrait diminuer. Cette évolution entrainerait, toutes choses égales par ailleurs, une réduction de la consommation moyenne par kilomètre des véhicules électriques.
CREG	Dans le cadre de la consultation publique sur l'étude Adequacy & Flexibility 2026-2036, la CREG avait formulé un certain nombre de commentaires sur les hypothèses relatives à l'électrification du secteur du chauffage tertiaire et résidentiel.
CREG	Afin de tenir compte de la tendance à la décroissance du nombre de 'nouveaux logements construits' depuis 2021, la CREG avait également recommandé de prendre en compte une diminution du nombre de 'nouveaux logements construits' similaire à celle estimée pour les 'nouveaux logements' sur la période 2026-2036, soit une baisse de 16%. Concrètement, cela se traduit en une hypothèse de 41 000 'nouveaux logements construits' en 2026 et 34 440 en 2036, avec une évolution linéaire entre ces deux années. Les dernières données de Statbel et des perspectives du Bureau Fédéral du Plan confirment un net ralentissement de la construction neuve en Belgique depuis 2021, tant en termes de permis délivrés que de mises en chantier. Ce ralentissement s'explique par la combinaison de plusieurs facteurs : - Le ralentissement de la croissance du nombre de ménages, malgré la diminution de la taille moyenne des ménages ; - La forte pression sur le foncier constructible, particulièrement en Flandre, avec la mise en œuvre du 'bouwshift' visant à réduire l'artificialisation des sols ; - Le contexte économique défavorable (hausse des taux d'intérêt, inflation des coûts de construction), réduisant la capacité d'achat des ménages ; - L'orientation stratégique croissant vers la rénovation du bâti existant dans le cadre des objectifs climatiques et énergétiques belges et européens. En parallèle, une part croissante de l'augmentation du parc de logements s'effectue via des transformations internes (subdivisions de grandes habitations, reconversions de bureaux ou de commerces), ce qui ne se traduit pas toujours par une charge électrique nette équivalente à une construction neuve. Au regard de ces éléments, la CREG maintient sa recommandation de considérer une hypothèse de 41 000 'nouveaux logements construits' en 2026 et 34 440 en 2036, avec une évolution linéaire entre ces deux années.
CREG	Dans sa réponse à la consultation publique sur l'étude Adequacy & Flexibility 2026-2036, la CREG avait recommandé d'adopter des hypothèses plus ambitieuses concernant le pourcentage de consommation journalière qui peut être déplacée au cours de la journée : - 20% de la consommation journalière d'énergie pour le chauffage des bâtiments peuvent être déplacés ; - 100% de la consommation journalière liée à la production d'eau chaude sanitaire peuvent être déplacés, en supposant la présence d'un ballon de stockage adéquat. Dans le rapport de consultation, Elia a indiqué

	conserver l'hypothèse selon laquelle 10% de la consommation quotidienne d'énergie peuvent être déplacés au cours de la journée et qu'elle effectuera une analyse de sensitivité sur la base d'une flexibilité de 20% de la consommation des pompes à chaleur. Cependant, la CREG note que, dans le fichier Excel soumis à consultation publique, les hypothèses concernant la flexibilité associée aux pompes à chaleur sont manquantes (voir également paragraphe 60). La CREG demande ainsi à Elia de clarifier ses hypothèses dans le rapport de consultation publique. Enfin, la CREG suggère d'envisager l'utilisation des données Fluvius pour l'estimation des profils de consommation pour le chauffage avec des pompes à chaleur
CREG	Dans sa réponse à la consultation publique sur l'étude Adequacy & Flexibility 2026-2036, la CREG avait recommandé à Elia de revoir ses hypothèses en faveur de projections plus réalistes suggérant une adoption progressive des pompes à chaleur avec un taux de pénétration de 15-20% d'ici 2030 et de 25-30% d'ici 2035. Ces recommandations se basent sur le constat que la directive sur la Performance Energétique des Bâtiments (EPBD) n'a pas encore été transposée dans les réglementations régionales, qu'il n'existe aujourd'hui pas d'interdiction générale d'installer des chaudières fossiles dans le cadre des rénovations et que le taux d'adoption des pompes à chaleur reste limité dans les bâtiments rénovés en raison de leur rentabilité limitée. Suite à la consultation publique, Elia n'a pas modifié les hypothèses du scénario central concernant le taux d'évolution des pompes à chaleur. La CREG maintient dès lors sa recommandation de réviser les hypothèses retenues en faveur de projections plus réalistes en ce qui concerne l'adoption des pompes à chaleur dans le scénario central. Une montée en puissance progressive, tenant compte des freins économiques, techniques et réglementaires à leur déploiement, paraît plus cohérente avec les tendances observées sur le terrain.
CREG	Elia a également proposé deux trajectoires supplémentaires, qui sont reprises dans les scénarios 'Constrained Transition' et 'Prosumer Power'. La première trajectoire, correspondant au scénario 'Constrained Transition', se base principalement sur l'argumentation de la CREG et prévoit un retard dans l'adoption des pompes à chaleur. Concernant les nouveaux bâtiments, en Wallonie et à Bruxelles, 100% des nouveaux bâtiments seront équipés de pompes à chaleur/chauffage urbain à partir de 2040, et les chaudières à gaz représenteront encore 25% des installations de chauffage en 2035. Pour la Flandre, ce taux de 100% est atteint dès 2025 en raison de l'interdiction de nouveaux raccordements au gaz. Pour les rénovations et les remplacements de chaudières, une distinction est faite entre le secteur résidentiel et le secteur tertiaire. Pour le résidentiel, en 2030, 15% des chaudières en fin de vie et/ou après rénovation sont remplacées par une pompe à chaleur. Ce taux est de 20% en 2035 tandis que le taux de rénovation atteint 2% d'ici 2050 (augmentation linéaire). Pour le tertiaire, en 2030, 50% des chaudières en fin de vie et/ou après rénovation sont remplacées par une pompe à

	chaleur. Ce taux est de 55% en 2035 et le taux de rénovation atteint également 2% d'ici 2050 (augmentation linéaire). En ce qui concerne le scénario 'Constrained Transition', la CREG recommande également une révision à la baisse. En Wallonie, par exemple, l'interdiction d'installer de nouvelles chaudières à mazout, initialement envisagée, a été reportée à une date indéterminée. En Flandre, l'interdiction des chaudières au gaz ne concernera les logements existants qu'à partir de 2035, ce qui limite fortement les perspectives de substitution rapide. Enfin, dans le scénario 'Prosumer Power', Elia a considéré une accélération, par rapport au scénario central, de l'adoption des pompes à chaleur. La CREG considère que le scénario 'Prosumer Power' repose sur des hypothèses excessivement optimistes, voire irréalistes, ce scénario surestimant la capacité et la volonté des consommateurs résidentiels à investir massivement dans des pompes à chaleur dans un laps de temps aussi court

On the EV trajectories

Elia is of the opinion that the scenario and sensitivities sufficiently cover the feedback received from the different stakeholders during the consultation of AdeqFlex'25, which included both higher and lower proposed trajectories compared to the central trajectory proposed at that time. Elia includes now three instead of one trajectory, with the CT scenario assuming (strong) delays in the uptake in EVs and even a very theoretical delay in European legislation (delay of fossil fuel ban from 2035 to 2040). It must be noted that elements such as the prolongation of fiscal deductibility of PHEV until 2029 for company cars and the delay of the Brussels LEZ are explicitly included in the CC and CT trajectories.

Elia would welcome more insight into the underlying assumptions that result into the proposed values from CREG:

- Total amount of cars considered for company/private
- Sales shares and absolute amount of PH/BEV assumed per segment, per region

At current trends, Elia sees no reason to assume even lower uptake in EVs. Early 2025 figures show a continued increase in EV uptake, with BEV % share having increased by ~15% as compared to the same period last year (jan-may)[11]

Elia would like to reiterate some comments made in the context of the public consultation of AdeqFlex'25.:

- Indeed, Belgium is currently one of the frontrunners when it comes to EV uptake, with 28.5% BEV and ~15% PHEV cars sold in 2024. It is currently the 5th largest BEV market in Europe[12].

[11] https://febiac.be/fr/news/immatriculations-de-vehicules-neufs-mai-2025
[12] https://public.flourish.studio/story/2341586/

- It must be noted that as from 2025, more stringent EU emission targets will be in place[13]. To reach these targets, the ICCT and T&E estimate that European BEV shares would need to increase from around 15% in 2024 to around 24-28% in 2025[14][15]. To reach these shares, car manufacturers might bring new and more affordable car models to the EU markets, which could also positively impact the Belgian private car market. In the long term, the ban of sales of fossil fuels cars by 2035 is still applicable and supported by most car manufacturers.
- Already today, the average total cost of ownership of an EV is lower than that of an ICE car, mainly driven by the lower fueling costs[16] . Battery pack prices are the main driver of the purchasing cost of an EV. Prices of batteries stagnated in 2022-2023 following the post-COVID supply chain shortages. In 2024, battery pack prices have dropped again with 20% versus 2023, which is the highest relative decrease since 2017[17]. It can be expected that these cost reductions will trickle down into EV costs in the coming years, as stated as well on the European Commission website[18]:"This price drop accelerates the timeline for achieving price parity between EVs and ICE vehicles. The report forecasts that battery pack prices will fall below the $100/kWh benchmark by 2026—considered a critical tipping point for EV affordability. In China, where battery EV prices have already undercut their gasoline-powered counterparts, this milestone has been achieved ahead of schedule." The new federal government agreement also foresees to study a mechanism which includes the "social lease" of electric vehicles, mainly targeted at low incomes workers[19].

Other elements impacting upwards the uptake of EVs:

- The expansion of the CO_2 allowances system in the form of the ETS2 will add an additional cost to fossil fuel vehicles from 2027 onwards[20].

On the efficiency of EVs

Elia assumes an average BEV efficiency of 19kWh/100km. For this several key points were already mentioned during the public consultation of AdeqFlex'25. The main important factor for Elia concerns that the efficiency value in literature are expressed

[13] https://climate.ec.europa.eu/eu-action/transport/road-transport-reducing-co2-emis-sions-vehicles/co2-emission-performance-standards-cars-and-vans_en#:~:text=The%20targets%20that%20will%20ap-ply,%2Fkm%20(2030%2D2034

[14] https://www.transportenvironment.org/articles/the-drive-to-2025-why-eus-2025-car-co2-target-is-reachable-and-feasible

[15] https://theicct.org/publication/2025-CO2-manufacturers-targets-oct24/

[16]

[17] https://www.bloomberg.com/news/articles/2024-12-10/electric-vehicle-battery-packs-see-biggest-price-drop-since-2017

[18] https://alternative-fuels-observatory.ec.europa.eu/general-information/news/electric-vehicle-battery-packs-experience-record-price-drop-2024

[19] https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uac

[20] https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/ets2-buildings-road-transport-and-additional-sectors_en

from a battery to wheel conversion. However, for the purpose of adequacy and/or grid studies, the relevant metric concerns the efficiency from charging pole to wheels. This includes charging losses in the battery, battery inverter and charging pole. Based on he ICCT[21] these charging losses range between 7% and 17.5% depending on AC or DC charging. For example: applying these factors on 2024 proposed values of CREG, sourced from the EV database[22] (which Elia assumes to be expressed in battery-to-wheel) would lead to values higher than the 19kWh/100km.

Elia has also received comments from other stakeholders that this value would be too low. Furthermore, this value is aligned with other grid operators such as Fluvius.

CREG proposes to apply a linear 15% improvement of the total EV stock (i.e. not new BEV) by 2035. Elia argues that this might be too optimistic as it depends mostly on the size and weight of vehicles. In the RTE[23] report (page 41), it is mentioned that: *"Dans le scénario «A - référence», la baisse de consommation kilométrique moyenne du parc des véhicules électriques légers est estimée à près de 6% ».* Which is alligned with the assumptions taken by Elia. Elia checked bilaterally these assumptions, and RTE confirmed that the 12%-15% reduction referenced by CREG is expressed versus the (small) stock of EVs in 2019, whereas the -6% is expressed versus 2024 (which is the same basis year as taken by Elia).

Regarding the size of EVs, it is true that today most EVs are company owned. As the share of privately owned cars increases, the average size of EVs might decrease. However, the trend of increasing size and weight of cars is not exclusive to company cars and this trend also applies to the private sector. Therefore, the effect of relatively more private cars can be compensated by these units increasing in size. As it is impossible to determine in which direction and to what extent both of these effects will evolve, Elia proposes to keep a prudent approach and not take the car size as an explicit parameter in the efficiency calculations.

Regarding differentiation of EV efficiency for private and company cars

Elia is of the opinion that differentiating the efficiency for both segments adds an additional layer of complexity without added precision in the assumptions. Elia would also want to point out that the proposed values from CREG (19.1 and 17.8 kWh/100km in 2024) do not include charger-to-battery losses of 7%-17.5% (see above). Including the latter would lead to values of around 21 and 20 kWh/100km charger-to-wheel efficiency respectively and therefore a higher consumption than currently assumed.

[21] https://theicct.org/wp-content/uploads/2024/04/ID-80-%E2%80%93-BEVs-size-Re-port-A4-70138-v10.pdf
[22] https://ev-database.org/cheatsheet/energy-consumption-electric-car
[23] https://assets.rte-france.com/prod/public/2024-12/2024-12-16-chap12-volet-mobilite.pdf

On the flexibility from heat pumps,

Elia refers the CREG to the explanatory note for the public consultation to which they are answering. The note specifies that the scenario presented is based on the 'Current Commitment & Ambitions' scenario from the Adequacy and Flexibility study to be published by end of June 2025, presented in the public consultation report. In the latter public consultation report, motives and explanation were already clarified as to why Elia kept the assumption of 10% of flexible energy needs from heat pumps.

For clarity, Elia will repaste here the arguments given in the report to public consultation:

"Elia notes CREG's comment on the % of energy that can be shifted daily. Elia has suggested to assume 10% as a conservative approach for local profiles, to consider all types of heat pumps. The CREG suggests to use a paper from the Centre of Net Zero, that apparently mentions 20% of households with a heat pump to be equipped with a hot water tank, that would allow to fully flexibilize their energy consumption. However, Elia would like to mention that this could only apply to: (i) hydronic heat pump (Air-water, ground-water) where a large share of the heat pump fleet in Belgium are Air-Air heat pump, and (ii) that this represents the English heat pump stock and building stock, which might not be representative for Belgium.

Elia recognizes that there are no studies at this stage for the Belgian heat pump fleet / building stock. There is however one paper studying 20 residential buildings in Denmark being well-cited (+/- 100), which identify to reduce peak consumption 5% with a mean daily shifted energy of 11%[24], with no mention of specific house insulation or type of heat pumps. Hence Elia will keep the 10% figure. The reader should however note, that no scientific paper known to Elia backs this claim for all type of heat pumps, and hence this is similar to making assumptions regarding parameters increasing the flexibility from heat pumps, such as (i) greater insulation levels for building stocks, (ii) greater number of hydronic heat pumps (with a hot water storage tank) compared to air-air heat pump (which are the primary units being installed in Belgium."

Regarding consumption profiles for heat pumps,

Elia agrees with the CREG that heat pump profiles should be updated. Internal exercises are ongoing to gather real-world measurements of heat pumps, as well as analyze Fluvius data as to obtain normalized consumption profiles that could be used in modelling exercises. However, these internal exercises will not be finished in time to consider in the models for this CRM calibration exercise. Hence, the same profiles as AdeqFlex'25 will be used.

[24] IEEE Transactions on Transportation Electrification [IEE-1] https://www.researchgate.net/publication/260509603_Controlling_Electricity_Consumption_by_Forecasting_its_Response_to_Varying_Prices

Regarding the evolution of new dwellings

First, Elia would like to point out that, indeed, a reduction has occurred in new dwellings for 2024 in Belgium. However, there were still 44.2 k new dwellings[25]] added. This is above the 41k proposed. Elia wants to reiterate that the assumption of 41k/y additions is already a raher pessimistic assumption and would be lowest level since 25 years. It is unclear whether this stark reduction is temporary or expected to remain and/or decrease further in the future. However, experts from the building sector have warned that the current new build levels are unsustainable to allow affordable housing in the future[26]. The Flemish government has acknowledged that the recent reduction in the amount of new dwellings could pose problems in the housing sector and has founded a 'taskforce' to overcome this problem[27].

Elia acknowledges that the increase in households slightly decreases in the Plan Bureau [FPB-4] figures, as mentioned by CREG. However, Elia believes that the assumed decrease from ~ 55k new dwellings per year historically to 41k (-25%) over the simulated period more than anticipates such evolution. It must be noted that new dwellings do not necessarily always take up new space, this figure also includes the demolition and rebuild of existing buildings.

Indeed, as can be seen in the Figure 1, taking the projected amount of households (green dotted line) form the Plan Bureau and applying the same historical relation between households and dwellings (black dotted line), this would imply that the values currently proposed by Elia lead to strong underestimation of the associated potential new dwellings, and far above the proposal of CREG. In summary, Elia proposes to keep the current assumption of 41k/y, but want to stress that in combination with the projection of the amount of households from the Plan Bureau this might lead to stress on the housing market.

[25] https://statbel.fgov.be/nl/themas/bouwen-wonen/bouwvergunningen#figures
[26] Open brief | Woonzaak
[27] https://www.vlaanderen.be/lokaal-woonbeleid/nieuws/vlaamse-regering-richt-taskforce-wonen-ruimte-op-om-bijkomend-betaalbaar-en-duurzaam-woonaanbod-mogelijk-te-maken#:~:text=te%20maken%20Nieuws-,Vlaamse%20Regering%20richt%20taskforce%20wonen%2Druimte%20op%20om%20bijkomend%20betaalbaar,duurzaam%20woonaanbod%20mogelijk%20te%20maken&text=De%20Vlaamse%20Regering%20keurde%20op,en%20duurzame%20woningen%20te%20realiseren.

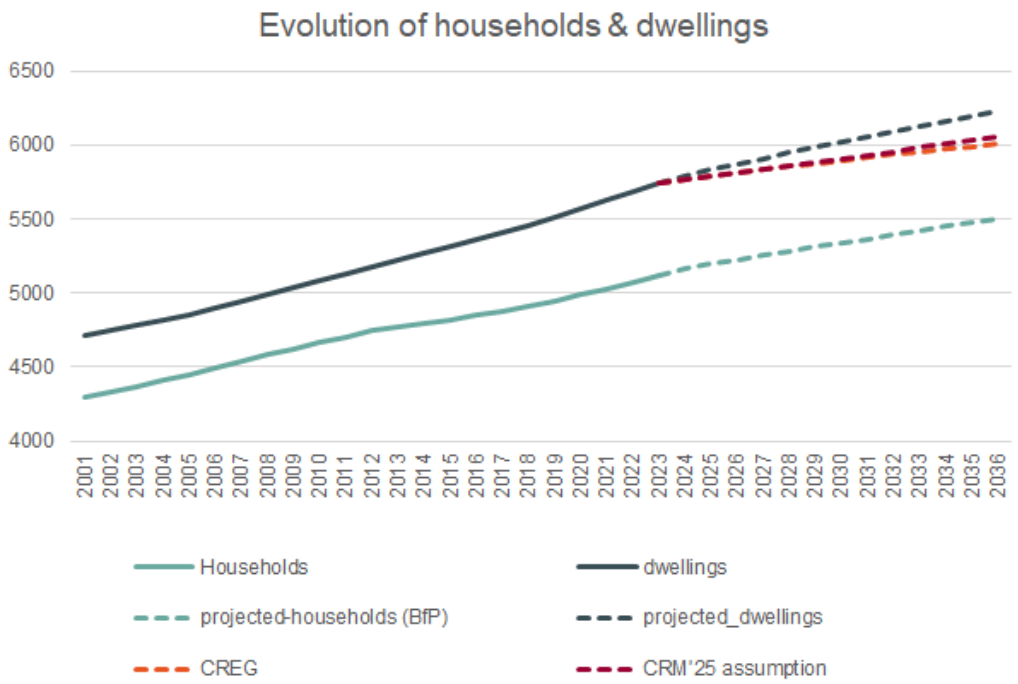

Figure 1 - Evolution of households and dwellings

On the trajectories for heat pumps

Elia is of the opinion that the trajectories cover sufficiently the feedback received from the different stakeholders during the consultation of AdeqFlex'25. The trajectory in the CC scenario would imply a gradual increase in the installed amount of heat pump. Yet, all regions would fall short of their emission reduction targets for the building sector. Elia argues that only looking at historical trends to construct future trajectories is not sufficient as these future changes in the number of HPs across Belgium largely depend on several (new) pieces of legislation and policy. The ones that will likely have the largest impact on the uptake of HPs are listed below (note: this list is non-exhaustive).

European policies

- The Energy Performance of Buildings Directive (EPBD)[28] from the EU needs to be translated into regulation by the regional authorities in Belgium by 30/05/2026. Indeed, to this date this has not been implemented, but the regional authorities are legally bound to do so in the short term, therefore this directive will have an impact on the trajectories. Amongst other elements, this directive aims to increase the amount of renovations and finally to achieve a zero emission building stock by 2050. From 2030, all new buildings in the EU must be zero-emission buildings. For public buildings, this requirement applies from 2028

[28] https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildings-directive_en#:~:text=of%20Buildings%20Directive-,The%20revised%20Energy%20Performance%20of%20Buildings%20Directive%20(EU%2F2024%2F,performing%20buildings%20in%20each%20country.

onwards. Therefore, regional regulations which accelerate the deployment of heat pumps can be expected in the near future.

- The expansion of the CO_2 allowances system in the form of the ETS2[29] will increase the cost of fossil fuel heating systems and vehicles from 2027 onwards, incentivizing a shift towards heat pumps.

Federal policies

- The Federal government agreement[30] foresees a decrease of the VAT on heat pump purchases from 21% to 6% and an increase from 6% to 21% for fossil fuel heating devices, which improves the business case for heat pumps as compared to fossil fuel alternatives.

Regional policies

- In Flanders and the Brussels Capital region, the installation of new oil boilers has been banned respectively in 2021[31] and in 2025[32].
- In Flanders, the installation of new gas connections has been forbidden in new buildings since the start of 2025[33].
- The Flemish government has put forward a tax-shift from electricity to gas in order to incentivize the uptake of heat pumps[34]
- In the Brussels Capital region, no new gas connections have been allowed in new buildings since the start of 2025; this will apply from 2030 onwards in deep renovations[35].

[29] https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/ets2-buildings-road-transport-and-additional-sectors_en
[30] https://www.belgium.be/sites/default/files/resources/publication/files/Regeerakkoord-Bart_De_Wever_nl.pdf
[31] https://www.vlaanderen.be/nieuwe-verwarmingsinstallatie-kiezen/verbod-op-het-plaatsen-en-vervangen-van-stookolieketels
[32] https://environnement.brussels/citoyen/reglementation/obligations-et-autorisations/installer-une-chaudiere-dans-un-logement-quelles-sont-les-exigences-peb
[33] https://www.vlaanderen.be/nieuwe-verwarmingsinstallatie-kiezen/geen-aardgasaansluitingen-meer-bij-nieuwbouw-en-nieuwe-grote-projecten
[34] https://publicaties.vlaanderen.be/view-file/69476
[35] https://environnement.brussels/citoyen/reglementation/obligations-et-autorisations/installer-une-chaudiere-dans-un-logement-quelles-sont-les-exigences-peb

2.2.8 Demand side response

DSR from existing usages

CREG	Elia a indiqué que les résultats concernant la DSR des usages existants, qui seront mis à jour afin de tenir compte de l'hiver 2024-2025, seront présentés lors d'un prochain WG Adequacy. La CREG regrette que ces résultats ne soient pas déjà disponibles pour la consultation publique. Bien que la CREG partage le point de vue d'Elia selon lequel le scénario de référence doit se baser sur les données les plus récentes possibles, la CREG est d'avis que toutes les données et hypothèses, même préliminaires, devraient être soumises à consultation publique pour garantir la plus grande transparence possible.
CREG	Concernant la méthodologie utilisée pour déterminer le volume de DSR des usages existants, la CREG tient à rappeler que celle-ci doit considérer la DSR des usages existants raccordés au réseau de transport et ainsi que des usages existants raccordés aux réseaux de distribution.

Elia would like to point out that it was not possible to update the Market Response Volume to include winter 2024-2025 before the start of the public consultation on 17/04. However, the DSR volume based on previous winters was mentioned in the public consultation in order to ensure a complete and consistent dataset. Elia does therefore not agree with the comment on transparency. As the timing of the study update does not align with the schedule of the public consultation, Elia proposes not to include this update in next year's consultation. Only updates available as of the beginning of April will be considered in future public consultation.

Furthermore, Elia wants to point out that the current methodology does not distinguish between TSO and DSO connected capacities given it relies on the information present in the Day-Ahead market.

End-user flexibility

CREG	Les hypothèses concernant la flexibilité associée aux batteries résidentielles sont reprises dans l'onglet '1.3 Storage' du fichier Excel. Cependant, l'onglet '2.2 Demand-Side Response' reprend uniquement les hypothèses concernant la DSR des usages existants et la flexibilité des nouvelles charges 'large-scale'. Il semble donc que les hypothèses concernant la flexibilité associée aux véhicules électriques et aux pompes à chaleur, bien qu'identiques à celles de l'étude Adequacy & Flexibility 2026- 2036, n'aient pas été reprises par Elia dans le fichier Excel. Dès lors, la CREG considère que ces hypothèses n'ont pas été soumises à consultation publique dans le cadre des scénarios pour le calcul des paramètres des enchères CRM.

Regarding end-user flexibility, Elia took the same assumptions workbook structure as in previous CRM calibration report process in 2024, which is also aligned with the data provided for the reference scenario published in Ministerial Decree. The dataset was also performed in collaboration with FPS and concertation with CREG and the point was not raised at that point. It is regrettable that such remarks were only introduced at this stage of the consultation, rather than during earlier phases where they could have been more effectively addressed and integrated.

Elia takes note of the comment and can commit to put additional resources in future public consultation to ensure that such information is made available in a timely and transparent manner. However, it is important to note that updating the underlying assumptions requires a significant amount of time and effort. For this reason, Elia recommends referring to the most recent Adequacy and Flexibility Study for the latest insights on end-user flexibility assumptions. These types of updates are more appropriately addressed within the scope of the Adequacy and Flexibility framework, rather than during the CRM calibration process.

For this CRM public consultation, Elia integrates the assumptions from the Adequacy and Flexibility, which were also submitted to public consultation, to the updated assumptions workbook that will be published with this consultation report.

DSR volumes from newly electrified industry or new usages

CREG	La détermination du pourcentage de l'électrification additionnelle considérée comme flexible se base sur une revue de la littérature et des données issues du nouvel exercice 'Load Management' mené par Elia. Premièrement, la CREG tient à souligner le manque d'informations disponibles sur les sources utilisées, issues de la revue de littérature, dans la note explicative et le fichier Excel. Ainsi, la CREG recommande de fournir les références utilisées pour la revue de littérature ainsi que, dans la mesure du possible, les données issues de l'exercice 'Load Management' dans le cadre du rapport de consultation publique. Deuxièmement, la CREG s'interroge également sur le pourcentage de flexibilité considéré pour certaines technologies. Plus particulièrement, la CREG s'interroge sur le pourcentage de 0% qui est considéré pour les processus de 'Carbon capture and storage'. La CREG est d'avis que considérer le 'Carbon Capture and Storage' comme un processus inflexible est une hypothèse très conservatrice. De plus, un processus de 'Carbon Capture and Storage' suit généralement la consommation d'un profil industriel qui, elle aussi, est flexible. Un pourcentage de 0% induit que, lorsqu'un processus industriel peut proposer de la flexibilité, le processus de 'Carbon Capture and Storage' associé ne proposerait aucune flexibilité. La CREG demande donc à Elia de fournir plus de détails sur ces valeurs et de confirmer que la flexibilité des processus de 'Carbon Capture and storage' est au minimum corrélée à la flexibilité des processus industriels associés à cette capture de carbone. La CREG demande donc à Elia de confirmer que cette flexibilité n'est pas ignorée

FEBEG	FEBEG notices that compared to last year, Elia adjusted downwards the assumption regarding the flexibility different technologies can deliver. This is more in line with the remarks FEBEG made last year. Specifically for e-boilers, FEBEG still sees a risk that Elia overestimates the flexibility potential. Elia argues that e-boilers are placed in tandem with CHPs but in this regard the CHP sector itself gave the warning that many CHPs will be run till failure and not be replaced due to unfavorable regulatory conditions. This fact, together with the fact that many e-boilers are being installed on all voltage levels it seems appropriate to be conservative on the flexibility these can provide.
ENGIE	ENGIE recommends a prudent approach when estimating the DSR to limit the detrimental impact of an overestimation on the security of supply. This is particularly true for the T-4 auction where uncertainties are still important
Febeliec	Flexibility of e-boilers is now considered to be 75%, whereas Elia and Fluvius consider new e-boilers (up to 900 MW in Flanders by 2030) to be non-critical at least until 2035 (see EnergieGRIP), because of gas-fired backup systems. Febeliec wants to understand why the flexibility is only 75% and not 100%.

Regarding the flexibility of CCS,

Elia acknowledges the point from CREG that ideally the underlying process should be taken into account. However, Elia currently lacks lexact data as to which process the CCS can be associated and has no detailed view on the underlying profile and whether this process already provides flexibility. In any case, most of the CCS is expected to be installed on fossil fuel processes (cement, refineries…) that do not demand a lot of electricity and are typically not flexible. In any case, for the year 2030, only 0.1 TWh is fincluded in the CC scenario meaning that the impact is very limited.

Regarding the flexibility of e-boilers

The flexibility potential for e-boilers indeed comes from the fact that many might be installed next to an existing fossil-based heating supply (boilers, CHPs…). It is difficult to assess the exact extent to which these capacities will have back-up in place, additionally it could be expected that this flexibility decreases over time, as existing fossil heating systems might be phased out, as mentioned by FEBEG.

The ‘Energiegrip’ study mentioned by Febeliec concerned a top-down approach based on the consultants’ expert view where only the DSO sectors where included. Elia enriched these assumptions by collecting information from direct clients who plan to install these assets. It must also be noted that these information from direct clients (TSO grid) and the ‘Energiegrip’ study (DSO grid) concerns mostly different industries with different processes and heating requirements, which could also lead to different levels of flexibility.

2.2.9 Economic parameters

Elia acknowledges CREG's comment and recommends updating the fuel and CO_2 data beginning of September, prior to the Minister's decision.

CREG	Comme envisagé dans le document d'Elia, la CREG recommande que, pour les prix du carburant et du CO_2, une mise à jour soit effectuée sur la base des derniers prix à terme disponibles avant la décision ministérielle
Aboubacar	Si des données publiques servent au calcul des rentes futures, un court résumé des incertitudes associées aiderait à mieux comprendre les hypothèses économiques retenues.

Regarding the comment of Aboubacar Cisse, that kind of analysis is rather performed in the AdeqFlex study.

2.2.10 Flow based domain

CREG	L'estimation de la contribution des capacités de transport transfrontalières est réalisée par Elia à l'aide d'un calcul de capacité basé sur les flux. Les paramètres utilisés sont joints à la note explicative. Conceptuellement, un « modèle de marché parfait » est utilisé, où les marges pour les échanges transfrontaliers correspondent au seuil de 70% pour la MACZT ('Margin Available for Cross-Zonal Trade'). En outre, outre l'augmentation des capacités disponibles, l'efficacité maximale des processus d'attribution (« l'allocation ») de ces capacités est appliquée. Ceci prend en compte, par exemple, la mise en oeuvre prévue de l'Advanced Hybrid Coupling, ou la suppression des contraintes d'allocation en Belgique, aux Pays-Bas, en Pologne et en Italie. Pour la prise en compte des capacités bilatérales aux frontières des zones d'appel d'offres où aucun calcul de capacité basé sur les flux ne s'applique, les valeurs NTC ('net transfer capacities') de l'ERAA 2024 d'ENTSO-E sont utilisées. Une sensitivité supplémentaire concernant les domaines de capacité basés sur les flux disponibles est examinée par Elia à la section 2.2.4, notamment en abaissant le 'minRAM 70%' à un 'minRAM 50%'. La nécessité de cette analyse supplémentaire est justifiée par la référence aux questions de sécurité opérationnelle, au respect tardif de la règle des 70% par un ou plusieurs gestionnaires de réseau de transport, à l'inclusion d'éléments du réseau interne, à la division des zones d'appel d'offres et à la prise en compte des conditions N-1 dans lesquelles les arrêts planifiés et non planifiés mettent en péril la sécurité d'exploitation du réseau. Bien qu'Elia déclare explicitement que ces situations sont difficiles à modéliser, elles sont utilisées pour soutenir la modélisation d'une marge minimale plus faible.

	La CREG est d'avis que la modélisation des capacités d'interconnexion disponibles et utilisées à l'aide d'un « modèle de marché parfait » avec des marges disponibles maximales est le choix approprié pour le scénario central. Cependant, la CREG ne suit pas Elia dans l'analyse d'une sensitivité supplémentaire, en particulier la réduction des marges disponibles inférieures, pour les raisons suivantes : -le seuil de 70% s'applique à la MACZT et non à la RAM ('Remaining Available Margin'), de sorte que toutes les références à 'minRAM 70%' et 'minRAM 50%' sont plus susceptibles de contribuer à la confusion quant aux marges disponibles et à la manière dont les échanges avec les zones d'offre non-Core, en particulier la Grande-Bretagne, y contribueront ; -le respect du 'minMACZT' est une obligation légale non seulement pour Elia, mais aussi pour les autres GRT européens. Actuellement, il n'y a pas d'avis définitif sur la mesure dans laquelle des dérogations (temporaires) peuvent être accordées au-delà de l'échéance légale, qui présuppose le respect du 'minMACZT' de 70% au 1er janvier 2026. Bien que l'argument relatif à la sécurité d'exploitation du réseau de transport soit important, la CREG estime que le non-respect des règles applicables ne doit pas être inclus dans la sensitivité.
FEBEG	FEBEG fully agrees to the sensitivity being introduced that simulates a Fixed RAM of 50%. In line with previous comments by FEBEG, the assumption of MinRam 70% at all times is overly optimistic and proven not to be realistic. The problems with loop flows from Germany are still relevant for now and the foreseeable future. FEBEG even requests Elia to include a sensitivity analysis that models a MinRam of 20% for the Y-1 auctions as these situations have already been observed in the past
ENGIE	ENGIE refers to the comment of FEBEG and shares the concerns on the high risk that the minRAM70% will not be reached in future. Even after the official deadline of 2025 when the national action plans are to come to an end and countries have to comply with the requirement, there is still the possibility to request and obtain derogations. This in order to deal for example with uncontrollable flows like loop and transit flows through cross-zonal CNECs. Elia has requested such derogations over the past years.Based on the data in the E-E bidding zone configuration technical report of this year, you can see that still for 16% of the time units, MACZT (margin available for cross-zonal trade) is below 50%. Hence, we believe that MinRAM20% could also be considered in the sensitivity analysis. The issue of loop flows from Germany is likely to persist over time, as achieving the minimum RAM of 70% would 5 require either substantial investment in networks or the splitting of bidding zones—neither of which is feasible in the short term.

Febeliec	As a sensitivity, a minRAM of 50% is considered by Elia, whereas the legal requirement is a 70% minRAM. The 50% minRAM is thereby a big breach of what is legally binding and should not be accepted, especially not in situations where adequacy of a country is at risk.

Regarding comment on the minRAM 50%, Elia would like to remind that this sensitivity is proposed as cross-border capacity availability is vital for Belgium due to its reliance on imports for security of supply. The flow-based domains are calculated using optimistic assumptions, such as neglecting grid maintenance, assuming internal CNECs do not restrict cross-border exchanges, modelling of all external borders to the CE CCR as Advanced Hybrid Coupling and not having operational security validation steps. Therefore, the sensitivity adjusting the minRAM from 70% to 50% is proposed in order to account for potential deviation from these assumptions and also to take into account the risk of the non-respect of the 'minMACZT'.

For the reference scenario, 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. However, Elia believes it's relevant to add a representative risk to take into account uncertainties abroad. The uncertainties on flow-based is an additional argument to include it.

2.2.11 Balancing capacity

FEBEG	Regarding the reserve capacity needs, FEBEG is of the opinion that assuming the same volume as last year is not sufficient. Elia itself is claiming the need for increased flexibility to cope with the increasing renewables in the system. Assuming the same reserve capacity seems contradictory to those claims and FEBEG is convinced that more reserve capacity should be contracted.

Regarding FEBEG's comment on reserve capacity needs, Elia clarifies that these needs are determined daily using Elia's dynamic dimensioning method, which accounts for prediction error and forced outage risks. However, for CRM auctions, aimed at setting auction parameters during scarcity periods, reserve capacity needs are based on the deterministic incident (the outage of the largest nuclear unit, Tihange 3). This approach is due to scarcity situations being mainly linked to low renewable generation, where renewable generation prediction risks are typically low.

2.2.12 Other countries data

CREG	Selon les données d'EDF, la capacité installée totale des 56 réacteurs nucléaires à eau sous pression est de 61 370 MW et la capacité de l'EPR de Flamanville est de 1620 MW. La puissance installée du parc nucléaire français est donc de 62 990 MW. Cette valeur diffère de celle reprise par Elia dans l'onglet 'Other countries data' du fichier Excel soumis à consultation publique (61,8 GW versus 63,0 GW). La CREG demande à Elia de clarifier ces écarts au niveau de la capacité nucléaire installée et de modifier ces valeurs, si nécessaire.

Regarding the CREG comment concerning the installed capacity of the French nuclear fleet, Elia confirms that the correct value for the installed nuclear capacity in France is 63 GW, as noted by the CREG. The value has been updated accordingly.

2.3 Reactions on proposed sensitivities

2.3.1 General Remark

ENGIE	ENGIE does not recommend being too optimistic on the potential of DSR and/or storage for the calibration of the demand curve, especially in T-4 auction. In addition, counting on too many MW (without clear view on the realization of this potential) will have a negative impact on the derating factors of those technologies. If this volume materializes in the future, it will either participate into the T-4 auction or it can always be considered for the T-1 calibration for the year 2028-29.
ENGIE	ENGIE considers it very important to take into account the risk of the unavailability of foreign capacity into the reference scenario. This is relevant for the French nuclear fleet but also for capacities or projects in neighboring countries which could be stopped, delayed or restricted in terms of export in the future.

Elia takes note on Engie's comment on DSR and storage and also made the point in past report about the impact of too optimistic assumptions of energy-limited technologies for the determination of CRM parameters. The scenario proposed was therefore built using historical data for existing demand-side response and by considering only existing and already contracted large-scale batteries. Regarding residential batteries, the trajectories are more ambitious, in line with regional assumptions for Flanders. However, different trajectories were presented in the CT and PP scenarios to account for this uncertainty. Finally, the assumptions for new industry loads flexibility have also been reviewed based on latest assumptions, as presented for the next AdeqFlex study.

Elia acknowledges ENGIE's comment on the importance of considering sensitivities to ensure the security of supply against external risks beyond Belgium's control. In line with recommendations for the reference scenario, Elia proposes to account for approximately four additional units being unavailable, beyond the availability considered in RTE's 'cas de base' of BP 2023.

2.3.2 Tihange 1 extension

ENGIE	ENGIE does not consider the extension of Tihange 1 and its commissioning by 2030-2031 to be realistic. Tihange 1 does not comply with current international safety standards, as highlighted in the recent AFCN study. The costs of a long-term operation (LTO) have not been studied and remain unknown. Additionally, Elia noted in its consultation on the adequacy and flexibility study (2026-2036) that the local grid is likely to experience congestion, given that two new CCGTs will be operational by then. Finally, ENGIE reiterates that nuclear power is no longer part of its strategy. Making such an assumption for the T-4 auction (DP 2030-2031) could pose a significant risk to the security of supply Overall, ENGIE welcomes the sensitivities proposed, but we strongly urge Elia to exercise particular prudence with assumptions that could underestimate the capacity required for the 2030-2031 delivery period, as the T-4 auction remains the sole mechanism facilitating investments in new capacities or major overhauls of existing assets.
FEBEG	FEBEG further points to the uncertainties due to delays in the offshore capacity as well as the impossibility of a (timely) prolongation of Tihange 1. No LTO has ever been studied for Tihange 1 and the FANC report pointed out that it does not comply with international safety standards. On top of that, there are grid constraints that can not be solved without grid investments that have also proven to be difficult and take many years. Counting on this capacity is irrealistic for FEBEG. To assure sufficient investments FEBEG presses for the need for more longer-term contracts and sufficient capacities to be procured in Y-4 auctions to counter these effects and provide SoS in winter 2030-2031
FEBEG	FEBEG reiterates that the T-4 auction remains the primary mechanism for attracting investments in new capacities or major upgrades on existing assets. Consequently, making overly optimistic assumptions regarding the delivery period covered by the T-4 auction poses a risk to the security of supply during that timeframe. FEBEG therefore urges Elia to adopt conservative, prudent, and realistic assumptions for the T-4 auction. Additionally, FEBEG requests sensitivity analyses for this delivery period, taking into account: (…) 4) the closure of all nuclear tranches except those of Doel 4 and Tihange 3 that are prolonged for 10 years beyond 2025 as per the deal concluded between Engie and the Belgian State
Febeliec	The possible lifetime extension of Tihange 1 is considered to be available the earliest by 2030-2031. Febeliec would want to have more transparency on this. More information should be given on the bottlenecks in the grid: what lines during what periods of time are expected to be saturated and what mitigating measures could be taken.

Elia takes note of the comments of Febeg and Engie regarding Tihange 1. Elia suggests not including its extension in the reference scenario for 2030-31/Y-4 due to current uncertainties. However, Elia is committed to staying informed about official announcements to ensure the most up-to-date reference scenarios for Tihange 1 and other projects. Ultimately, it is the Minister's prerogative to decide whether or not to include it. However, it is important to emphasize that, in the context of the CRM, incorporating a capacity that remains uncertain is not a sound approach and can lead to adequacy issues if it does not materialize. Should the certainty around this capacity improve in the future, it could be considered for inclusion in the Y-2 or Y-1 auctions. If the government decides to include Tihange 1, it's important to note that its effective contribution might be significantly limited due to capacity constraints in the transmission system around the Tihange region.

Although this might seem strange at first given the historical presence of nuclear capacity, one must take into account that when the authorities decide to force by law the closure of specific technology (such as nuclear production capacity), the related "liberated" capacities can and will be assigned to other uses in order to ensure an efficient usage of transmission infrastructure. With relation to the main "other uses" we firstly refer to article 16 from EU Regulation 2019/943, also known as the Clean Energy Package. In summary, it states that bottlenecks in the country-internal transmission grid cannot structurally constrain cross-border trade, and at least 70% of the thermal capacity of grid elements needs to be reserved for cross-border market exchanges. This rule therefore indirectly restricts the number of grid users that can be connected to the backbone grid, as those generate flows competing with these cross-border flows. Derogations to this regulation are only allowed until 2025. Secondly, significant amounts of other grid users (new CCGT's, batteries, ….) have in the meanwhile secured capacity reservation or allocation in the respective regions. If unmitigated, this situation will lead to unacceptable congestions on the transmission system, requiring possibly significant redispatching measures, as already highlighted by Elia at the beginning of 2023. These redispatch measures concern mainly units injecting electrical power in the transmission system what thus effectively would mean on overall reduction of available production capacity in the regions.

To answer to Febeliec's comment, Elia is undertaking grid studies to investigate the necessary boundary conditions in terms of redispatching and required grid reinforcements for the prolonged operation lifetimes of Tihange 1, Doel 1, and Doel 2 in order to manage grid congestion, as requested by the government.

2.3.3 Offshore in Belgium

FEBEG	FEBEG further points to the uncertainties due to delays in the offshore capacity. (...) To assure sufficient investments FEBEG presses for the need for more longer-term contracts and sufficient capacities to be procured in Y-4 auctions to counter these effects and provide SoS in winter 2030-2031
FEBEG	FEBEG reiterates that the T-4 auction remains the primary mechanism for attracting investments in new capacities or major upgrades on existing assets. Consequently, making overly optimistic assumptions regarding the delivery period covered by the T-4 auction poses a risk to the security of supply during that timeframe. FEBEG therefore urges Elia to adopt conservative, prudent, and realistic assumptions for the T-4 auction. Additionally, FEBEG requests sensitivity analyses for this delivery period, taking into account: 1) potential delays in offshore development and interconnections (…)
ENGIE	Sensitivity needed on delays on interconnexions (Nautilus, BdH, Ventilus – all expected by 2030, cf slides on consultation on “adequacy & flexibility study 2024-2034”)
ENGIE	We strongly support an on-time development of PEZ. Due to the latest news, we however recommend foreseeing in the sensitivities the possibility that the 700 MW of PEZ 1 will not be there in 2030, to make sure the volumes of CRM are well calibrated and security of supply is guaranteed

Regarding the commissioning of PEZ I (+700 MW), Elia proposes to align with the latest federal coalition agreement considering an extension of the construction period for wind farms in the Princess Elisabeth Zone from 4 years to 5 years. This leads to not consider the commissioning of PEZ I (+700 MW) for all delivery periods covered in this study. However, the decision must be based on the most up-to-date planning information available to the FPS. In its recommendation, Elia suggests that the FPS provides the updated timelines to be incorporated into the scenario within the advice they are required to deliver.

2.3.4 Uncertainties on Belgian thermal units

CREG	Elia propose, pour les trois périodes de livraison, une sensitivité qui considère la fermeture de tous les turboréacteurs en raison des seuils d'émission de CO2 à appliquer dans le CRM, ce qui entrainerait la suppression d'une capacité nominale de 140 MW. Même si ces unités ne peuvent pas participer au CRM en raison des seuils d'émission de CO2, cela ne signifie pas encore que ces unités quittent le marché belge. La CREG estime que seul un critère objectif (c'est-à-dire, pour les unités dont la capacité est supérieure ou égale à 25 MW, une mise à l'arrêt annoncée conformément à l'article 4bis de la Loi Electricité) doit être utilisé concernant la disponibilité de ces centrales. Ainsi, la CREG est d'avis que cette sensitivité n'est pas justifiée.
FEBEG	FEBEG reiterates that the T-4 auction remains the primary mechanism for attracting investments in new capacities or major upgrades on existing assets. Consequently, making overly optimistic assumptions regarding the delivery period covered by the T-4 auction poses a risk to the security of supply during that timeframe. FEBEG therefore urges Elia to adopt conservative, prudent, and realistic assumptions for the T-4 auction. Additionally, FEBEG requests sensitivity analyses for this delivery period, taking into account: (…) 2) possible closure of thermal plants due to stricter CO2 regulations; 3) possible closure of thermal plants due to regulatory risks related to the non-renewal of environmental permits or too strict requirements in the environmental permits; (…).
ENGIE	ENGIE would also welcome a sensitivity on potential closures of OCGTS or TJ due to the CO2 restriction. Indeed, Engie would also remind that few OCGT's environmental permits will extinguish and will need permit renewal before 2030. Elia takes an assumption that a certain percentage of the existing fleet would leave the market due to obsolescence/run-to-safe failure mode, change in industrial processes and conditions (lower heat demand/end of contract) and no access to the CRM. This sensitivity is relevant.

Elia takes note of the CREG's comment and agrees that, for units with a capacity greater or equal to 25 MW, Article 4bis of the Electricity Law is the appropriate reference to determine market presence. Nonetheless, the purpose of this sensitivity is to reflect the potential risk of future closures, given that these units are no longer eligible to participate in the CRM.

Elia acknowledges ENGIE and Febeg concerns about the economic viability of thermal capacity and the broader uncertainties impacting the 2030 horizon. In particular, Elia recognizes that the issue of permit renewal introduces an additional layer of risk for existing thermal units—an aspect that was not previously identified or addressed in the public consultation.

Elia also recalls the purpose of the reference scenario, which is to establish key parameters for the auction. If the LOLE in the reference scenario exceeds three hours, a calibration phase is initiated to address any capacity shortfall in Belgium. Consequently, if volume is subtracted due to sensitivity analysis, an equivalent amount will be added to calculate the necessary parameters.

By consequent, Elia recommends to not include sensitivity on the thermal fleet. However, it is essential to closely monitor any announcements related to Article 4 bis, as well as updates concerning the renewal of environmental permits. Elia also emphasizes the importance of continued attention to this matter, as the retention of existing units in the market is critical to ensuring Belgium's security of supply.

2.3.5 Nuclear capacity in Great Britain

<table>
<tr><td>ENGIE</td><td>The past winters have shown that UK can face tight grid situations; therefore, the availability or not of these nuclear units will certainly have an impact for Belgium and should therefore be considered</td></tr>
<tr><td>FEBEG</td><td>FEBEG Thinks further delays in the commissioning of Hinkley point C should indeed be taken up in a sensitivity</td></tr>
<tr><td>CREG</td><td>Concernant les centrales AGR, EDF Energy a annoncé la prolongation des centrales Heysham 1 et Hartlepool jusqu'en 2027 et la prolongation des centrales Heysham 2 et Torness jusqu'en 2030 . Selon les données REMIT , la capacité des différentes centrales est la suivante :
- Torness : capacité totale de 1280 MW ;
- Hartlepool : capacité totale de 1240 MW ;
- Heysham 1 : capacité totale de 1195 MW ;
- Heysham 2 : capacité totale de 1320 MW.
Ces prolongations permettent donc la disponibilité de 5035 MW jusqu'en 2027 et 2600 MW jusqu'en 2030, la centrale de Sizewell B (1260 MW) étant considérée disponible pour toutes les années de livraison et celle d'Hinkley Point C (3260 MW) étant considérée comme disponible à partir de l'hiver 2030/2031. En résumé, et sur base des informations d'EDF Energy, les capacités disponibles pour les différentes périodes de livraison sont les suivantes :
<table><tr><th></th><th>Capacité nucléaire disponible</th></tr><tr><td>2027-28/Y-1</td><td>3860 MW - Heysham 2, Torness, Sizewell B</td></tr><tr><td>2028-29/Y-2</td><td>3860 MW - Heysham 2, Torness, Sizewell B</td></tr><tr><td>2030-31/Y-4</td><td>4520 MW - Sizewell B, Hinckley Point C</td></tr></table>Tableau 2 – Capacité nucléaire disponible en Grande-Bretagne (source : données REMIT)
Dans la mesure où ces valeurs s'écartent de celles soumises à consultation publique, la CREG demande à Elia de vérifier les différentes informations et de mettre à jour la capacité disponible pour les différentes périodes de livraison, si nécessaire.</td></tr>
</table>

Elia takes note of ENGIE and FEBEG's comments concerning the choice of a sensitivity considering a sensitivity impacting the availability of the nuclear availability in United Kingdom. Elia also thanks the CREG for its detailed analysis regarding the availability of the UK nuclear fleet. Regarding the installed capacity, Elia took DUKES 5.11[36], which is the official source from the government.

In line with the analysis of the CREG, Elia proposes to consider the decommissioning of Hartlepool and Heysham 1 by the end of 2027, the decommissioning of Torness and Heysham 2 by the end of 2030 and the availability of the first unit of Hinkley Point C (as the second unit is expected to be commissioned later than the first one) for winter 2030-31. The assumptions regarding Hinkley Point C take into account the fact that EDF mentioned that the base case leads to a commissioning of the first unit in 2030, taking into account different uncertainties and risks[37] and that the second unit is expected to be commissioned one year later.

Those assumptions could be re-evaluate if official publication is made available before the decision of the Minister.

2.3.6 French nuclear availability

ENGIE	As already mentioned in previous consultations, there is structurally lower availability of the French nuclear units based on historical values compared to the projections of EDF (REMIT or ERAA view). According to ENGIE, considering the past performance of the French nuclear units (even before 2021) and the more recent issues encountered by the fleet, Elia should certainly include in the reference scenario a sensitivity which reflects an extreme scenario considering the huge impact the French nuclear assets will have on the security of supply in Belgium. The obsolescence of the French nuclear fleet is a fact which must be taken into 7 account; moreover, it is not impossible that other problems generalized to the EDF fleet will be discovered in future years.
CREG	La CREG estime que le 'cas de base' considéré par Elia pour le scénario central est une estimation prudente qui tient déjà compte des incertitudes autour de la disponibilité du parc existant, notamment liées au vieillissement des différentes tranches, des problèmes de corrosion sous contrainte qui sont toujours sous surveillance, et des incertitudes autour de la disponibilité de l'EPR de Flamanville en raison des arrêts pour rechargement du combustible et pour le changement du couvercle de la cuve. RTE a également proposé dans sa consultation publique sur le Bilan prévisionnel 2025 d'étudier des variantes fondées sur des disponibilités plus élevées, permettant des cibles plus ambitieuses en

[36] https://assets.publishing.service.gov.uk/media/66a7daa4fc8e12ac3edb068e/DUKES_5.11.xlsxv
[37] EDF-2024-URD-FR

	termes de productible de l'ordre de 380-400 TWh à l'horizon 2030, reflétant l'ambition affichée par EDF et pouvant notamment s'appuyer sur des augmentations de puissance de certains réacteurs. Ainsi, la CREG est d'avis que les sensitivités proposées par Elia sur la disponibilité du parc nucléaire français, qui consistent à considérer une indisponibilité plus importante des centrales nucléaires françaises, ne sont ni justifiées ni nécessaires. Etant donné les incertitudes autour de la disponibilité de l'EPR de Flamanville et du planning des arrêts pour rechargement du combustible et pour le changement du couvercle de la cuve, la CREG propose de considérer une sensitivité qui prend uniquement en compte une plus faible disponibilité de l'EPR de Flamanville pour les périodes de livraison 2027-28/Y-1 et 2028-29/Y-2. De plus, considérant la proposition de RTE d'étudier des variantes fondées sur des disponibilités plus élevées, permettant ainsi des cibles plus ambitieuses en termes de productible de l'ordre de 380- 400 TWh à l'horizon 2030, la CREG propose de considérer, pour la période de livraison 2030-31/Y-4, trois sensitivités qui prévoient respectivement une production nucléaire de 380 TWh, 390 TWh et 400 TWh.
FEBEG	FEBEG supports the use of the 'Bilan prévisionnel' as a basis for the assumptions instead of the ERAA numbers. Considering the high impact on the Belgian SoS, particular caution needs to be maintained regarding the availability of French nuclear. In that regard, FEBEG also supports the inclusion of sensitivities that simulate the impact of multiple units being unavailable during the winter period. FEBEG notes that RTE even runs stress tests that assess the impact of 12 nuclear units and that an unavailability of 6 units seems not extreme

Elia takes note of ENGIE and Febeg comments regarding the necessity to include a sensitivity on the French nuclear fleet and of CREG about the 'cas de base' already accounting for some risks on French nuclear availability.

In response to CREG's comment on the availability of the French nuclear fleet, Elia emphasizes the importance of selecting sensitivities that account for external risks beyond Belgium's control. Furthermore, historical analysis suggests prudence in accounting for these risks, as demonstrated by 2022 when several independent risks occurred concurrently. The sensitivity that considers 4 units unavailable aligns with RTE's latest 'Bilan Prévisionnel', reflecting the French system's reliance on nuclear availability, the 'variante basse'. Elia respectfully disagrees with CREG's proposal for more ambitious production estimates, cautioning that doing so might underestimate risks abroad and would therefore impact Belgian security of supply.

Elia recommends for each auction to follow the 'variante basse' from the BP2023 of RTE, corresponding to a scenario which consider around 4 units unavailable on top of the

availability foreseen ('cas de base'). 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 and is relevant to keep consistency with previous reference scenario selected by the Minister.
- The French nuclear fleet is undergoing a period of major overhauls which are aimed at extending its life-time beyond 40 years and even beyond 50 years (the first fifth 'decennial visit' is foreseen in 2029 for Tricastin 1[38]). The high number of industrial projects that are due to be undertaken over the next few years calls for caution regarding the scheduled shutdown timetable and changes in yearly nuclear generation patterns.
- 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. Common-mode failures are a major risk on the French nuclear units. Any issue found in a reactor leads to suspicions in others.
- Regarding common-mode failure, the corrosion defects that were found in some welding has greatly impacted the availability of all nuclear reactors over the past few years and could still impact them in the future, since inspections are still being carried out and could lead to possible additional maintenance work in the short-term. Latest news referring to new defects detected on Civaux 2 (confirmed by ASN on the 10th of June 2025), requiring the replacement of damaged sections before restarting, demonstrate that it still impacting the French nuclear units. In general, these events show how vulnerable the nuclear fleet is to generic issues, given that the same technological conception is used in all of its reactors.
- 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), as reported also by Febeg.
- 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.

[38] https://www.edf.fr/sites/groupe/files/2024-04/annual-results-2023-facts-and-figures-en-2024-04-23.pdf

2.3.7 Flow-based CEP rules

CREG	Concernant la proposition d'Elia d'ajouter une sensitivité sur les domaines 'flow-based' qui amènerait à considérer une marge réduite 'minRAM 50%', la CREG renvoie ici aux commentaires déjà formulés. Ainsi, la CREG est d'avis que cette sensitivité n'est pas justifiée.

As mentioned in section 2.2.10, Elia would like to highlight that a sensitivity is proposed given the importance of cross-border availability to Belgium due to its reliance on imports for security of supply. The flow-based domains are calculated using optimistic assumptions, such as neglecting grid maintenance, assuming internal CNECs do not restrict cross-border exchanges, modelling of all external borders to the CE CCR as Advanced Hybrid Coupling and not having operational security validation steps. Therefore, the sensitivity adjusting the minRAM from 70% to 50% is proposed in order to account for potential deviation from these optimistic assumptions.

2.3.8 Additional sensitivities

ENGIE	ENGIE would also welcome the integration of a sensitivity on possible delays on interconnexions, as Elia in its last adequacy&flexibility (2024-2034) pointed out that any delay on future grid infrastructure would result in a significant impact on the GAP as from 2030

Elia thanks Engie for this additional sensitivity proposal. Cross-border transmission capacities are obviously key parameters for assessing the adequacy of an interconnected system.

The base assumption applied throughout the scenario contains the timely realisation of all planned grid projects as communicated to ENTSO-E by all concerned TSOs. Many of these projects have not been confirmed yet, and even in cases when they have, several events could lead to delays, such as permitting issues.

In order to assess the risks that might arise for Belgium's security of supply due to a delay in European cross-border infrastructure only, the 'XB-Delayed' sensitivity is also considered in the next AdeqFlex'25 study.

For the studied delivery periods, the following projects could have a direct impact on the scenario (assuming a three-year delay, with their corresponding TYNDP ID):

- CH-DE: 2027 => 2030: Bickigen - Chippis – (500 MW CH <= DE) (project ID: 1103);
- CH-ITN: 2026 => 2029: Greenconnector – 1,000 MW (project ID: 309);
- CH-ITN: 2027 => 2030: "Merchant line "Castasegna (CH) - Mese (IT) " – 200 MW (project ID: 250);
- DE-UK: 2028 => 2031: NeuConnect – 1,400 MW HVDC (project ID: 309);
- ES-FR: 2028 => 2031: Biscay Gulf – 2,200 MW (project ID: 16);

- IE-UKNI: 2027 => 2030: North South Interconnector – (950MW IE => UKNI, 900MW IE <= UKNI) (project ID: 81);
- ITCN-ITN: 2028 => 2031: Adriatic HVDC link – (1,000MW ITCN => ITN, 600 MW ITCN <= ITN) (project ID: 338);
- IE-FR: 2027 =>2030: Celtic Interconnector - 1000MW (project ID: 107);
- CH-FR: 2030 => 2033: PST romands – 800 MW (project ID: 1153);
- IE-UK: 2030 => 2033 MARES Organic Power Interconnector (OPIC) HVDC – 750 MW (Project | MaresConnect Interconnector) (project ID: 349);
- LT-PL: 2030 => 2033: Harmony Link interconnector & Baltic synchronisation – 700 MW (project ID: 170)

These uncertainties further justify the need to account for risks abroad, beyond Belgium's control which could significantly impact the adequacy situation in Belgium. As mentioned previously, Elia believes that integrating a sensitivity on French nuclear capacity can be considered as representative for that kind of risks.

2.4 IPC

ENGIE	ENGIE insists on the need that all costs supported by capacities are considered for the computation of the IPC. Last year's changes to the regulatory framework (cf. Article 22 of the RD Methodology) were a positive step in the right direction, allowing most of the real costs (including major overhaul) to be taken into consideration. Engie supports this positive development but recalls that derogation files should be accepted by CREG for market players to invest in major overhauls of existing plants
ENGIE	In addition, ENGIE acknowledges the fact that the design of the CRM has lately evolved in a more positive way. We welcome the 2024 enhancements brought to the CRM, including access to multi-year capacity contracts for existing assets and the broadening of the eligible cost base to include all actual costs when applying for an IPC derogation. Though, ENGIE still identifies flaws that may jeopardize the participation of the existing thermal fleet in the market. It remains essential that the estimated market revenues of existing power plants should be correctly assessed and not overestimated, as this would distort the missing money of these assets, which must be covered by the CRM. Revenues computed by Elia for the derogation files submitted by Engie in 2024 are reached less than 40% of the time (of all Montecarlo scenarios simulated). Occurrences of extreme revenue scenarios are extremely rare (flat tail curve) due to hedging by market players, public intervention to cap prices or tax excessive/windfall profits (inframarginal tax) and market reaction (DSM overestimated in Elia's model). Even during the 2022 energy crisis, Engie did not capture the extreme levels of revenues as simulated by Elia in 2024. Investment files are not made by investment committee based on extreme scenarios. Very unlikely extreme revenue scenarios should be more discounted in the calibrated model of Elia or the P50 revenues instead of the average of revenues should be used for the missing money calculation. We once again reiterate our request for a realistic, not overestimated, estimate of the future income, especially for the gas power stations
CREG	L'article 20 de l'Arrêté Royal « Méthodologie » prévoit que le 'missing-money' soit calculé en tenant compte des dépenses d'investissement récurrentes annualisées visées à l'article 18, §2, 1°, sans qu'un facteur multiplicatif du type (1 + coût moyen pondéré du capital) ne soit appliqué. Selon l'article 18, §2, 1°, ces dépenses sont définies comme : « 1° les dépenses d'investissements récurrentes annualisées en utilisant le coût moyen pondéré du capital spécifique à la technologie définis à l'article 19bis, § 3, et à la durée de vie économique de l'investissement ,ainsi que la durée de vie économique de ces investissements, non directement liées à une prolongation de la durée de vie technique de l'installation en fin de vie ou à une augmentation de la puissance de référence nominale (en €/MW/an), y compris les coûts nécessaires pour les entretiens majeurs des

<table>
<tr><td></td><td>installations qui n'ont pas forcément lieu chaque année, le cas échéant . La durée de vie économique associée à ces dépenses d'investissements est établie conformément à l'article 22, § 7/1 »
Pour évaluer l'IPC, il est donc indispensable qu'Elia dispose d'une ventilation claire des dépenses d'investissement récurrentes, distinctes des autres coûts fixes, afin de pouvoir les annualiser à l'aide du coût moyen pondéré du capital spécifique à la technologie, tel que défini à l'article 19bis, §3. 92.</td></tr>
<tr><td>CREG</td><td>Elia précise dans sa note explicative que les coûts fixes annuels d'exploitation et de maintenance (FO&M), visés à l'article 18, §2, 1° et 2°, ont été établis sur base de l'étude d'Entras de 2023. La CREG s'interroge toutefois sur les raisons de ne pas avoir utilisé la mise à jour de cette étude publiée en 2024, qui couvre l'ensemble des coûts fixes prévus à l'article 18, §2, 1° à 4°.
Données soumises à consultation publique
<table><tr><th>Technology (existing units)</th><th>Energy activation duration hours</th><th colspan="3">Yearly Fixed O&M (€2024/kW/year)</th><th>Source</th></tr><tr><td></td><td></td><td>low</td><td>mid</td><td>high</td><td></td></tr><tr><td>CCGT</td><td>/</td><td>35</td><td>37</td><td>41</td><td>Entras 2023 + inflation</td></tr><tr><td>OCGT</td><td>/</td><td>24</td><td>28</td><td>34</td><td>Entras 2023 + inflation</td></tr><tr><td>Batteries</td><td>4</td><td>15</td><td>21</td><td>25</td><td>Entras 2023 + inflation</td></tr><tr><td>Demand Side Response</td><td>4</td><td>12</td><td>12</td><td>12</td><td>AdFlex 2023</td></tr></table>
Données de la dernière étude 2024 d'ENTRAS
<table><tr><th>Technology (existing units)</th><th>Energy activation duration hours</th><th colspan="3">Yearly Fixed O&M (€2024/kW/year)</th><th>Source</th></tr><tr><td></td><td></td><td>low</td><td>mid</td><td>high</td><td></td></tr><tr><td>CCGT</td><td>/</td><td>34</td><td>36</td><td>40</td><td>Entras 2024</td></tr><tr><td>OCGT</td><td>/</td><td>23</td><td>27</td><td>33</td><td>Entras 2024</td></tr><tr><td>Batteries</td><td>4</td><td>14</td><td>20</td><td>24</td><td>Entras 2024</td></tr><tr><td>Demand Side Response</td><td>4</td><td>12</td><td>12</td><td>12</td><td>AdFlex 2025</td></tr></table>
Tableau 3 – FO&M pour les technologies existantes issues des études Entras (source : études Entras 2023 et 2024)
De plus, tant l'étude Entras 2023 que sa mise à jour 2024 ne présentent qu'une valeur agrégée des coûts FO&M en €/kW/an. Or, pour respecter les exigences de l'article 20, il est impératif de pouvoir isoler les investissements récurrents des autres coûts fixes, afin de les annualiser correctement via le coût moyen pondéré du capital spécifique à la technologie. 17/18. Les remarques formulées par la CREG dans son avis sur le rapport de calibration 2025 restent également pleinement d'actualité
En particulier, la CREG relève que l'étude d'Entras précise que certains coûts fixes et variables dépendent d'hypothèses sur les prix de marché des combustibles et de l'électricité. Le tableau 5 de l'étude explicite les hypothèses utilisées. La CREG estime toutefois que les prix du gaz repris dans le scénario de référence, qui sera sélectionné par arrêté ministériel, doivent impérativement être pris en compte. Par conséquent, les coûts FO&M et VO&M devraient dépendre des prix du gaz afin de garantir leur cohérence avec les revenus simulés</td></tr>
<tr><td>CREG</td><td>Dans le cadre de la détermination de l'IPC, la CREG comprend qu'une valeur consolidée doit être définie pour chaque technologie. Elle recommande néanmoins que cette valeur reflète effectivement les coûts cohérents avec les revenus simulés. La méthode actuelle suivie par Elia risque de générer des incohérences.
Selon l'article 18, §2, 1°, « Les dépenses d'investissements récurrentes sont annualisées en utilisant le coût moyen pondéré du capital spécifique à</td></tr>
</table>

<table>
<tr><td></td><td>la technologie, défini à l'article 19bis, § 3, et en fonction de la durée de vie économique des investissements [...] »
De plus, l'article 22, §7/1 stipule : « La durée de vie économique de chaque investissement est fixée à 8 ans. Toutefois, la Commission peut réduire cette durée si des justifications solides sont apportées [...] »
Dans ce contexte, Entras indique que les coûts FO&M et VO&M sont estimés à partir de simulations intégrant différentes hypothèses d'heures de fonctionnement annuelles. La CREG considère que la durée de vie économique des investissements devrait être cohérente avec les résultats des simulations de rentes inframarginales (nombre de démarrages, heures de fonctionnement) et ne pas dépasser 8 ans.
Il en va de même pour l'ensemble des coûts des FO&M. Ils devraient reposer sur les paramètres opérationnels simulés par Elia, tels que le nombre d'heures de fonctionnement et de démarrages annuels. Une telle approche garantirait une meilleure cohérence entre les revenus simulés et les coûts retenus.</td></tr>
<tr><td>CREG</td><td>Enfin, en ce qui concerne la technologie OCGT, l'étude d'Entras suppose que la centrale fonctionne ou est en veille 33 % de l'année, principalement en hiver, et reste arrêtée le reste du temps. La CREG considère que l'état de veille doit être pris en compte sur l'ensemble de l'année afin de refléter de manière réaliste les coûts fixes associés à cette technologie.</td></tr>
<tr><td>CREG</td><td>Dans la mesure où les données de l'étude Entras 2023 et de sa mise à jour en 2024 ne sont pas identiques, la CREG recommande d'utiliser les valeurs les plus récentes et ainsi de considérer les VO&M de l'étude Entras 2024
Données soumises à consultation publique
<table>
<tr><th rowspan="2">Technologies</th><th colspan="3">Efficiency [%]</th><th colspan="3">VOM [€ 2024/MWh]</th><th rowspan="2">Source</th></tr>
<tr><th>low</th><th>mid</th><th>high</th><th>low</th><th>mid</th><th>high</th></tr>
<tr><td>CCGT</td><td>50</td><td>54</td><td>58</td><td>1,0</td><td>1,3</td><td>2,2</td><td>Entras 2023 + inflation</td></tr>
<tr><td>OCGT</td><td>35</td><td>40</td><td>44</td><td>2,1</td><td>3,1</td><td>3,8</td><td>Entras 2023 + inflation</td></tr>
<tr><td>Batteries*</td><td>85</td><td>85</td><td>85</td><td>0,1</td><td>0,2</td><td>0,4</td><td>Entras 2023 + inflation</td></tr>
</table>
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<tr><th rowspan="2">Technologies</th><th colspan="3">Efficiency [%]</th><th colspan="3">VOM [€ 2024/MWh]</th><th rowspan="2">Source</th></tr>
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<tr><td>CCGT</td><td>50</td><td>54</td><td>58</td><td>0,9</td><td>1,2</td><td>2,1</td><td>Entras 2024</td></tr>
<tr><td>OCGT</td><td>35</td><td>40</td><td>44</td><td>2,0</td><td>3,0</td><td>3,6</td><td>Entras 2024</td></tr>
<tr><td>Batteries*</td><td>85</td><td>85</td><td>85</td><td>0,1</td><td>0,2</td><td>0,4</td><td>Entras 2024</td></tr>
</table>
Tableau 4 – VO&M pour les technologies existantes issues des études Entras (source : études Entras 2023 et 2024)
La CREG note également qu'Elia a retenu des valeurs de VO&M exprimées en €/MWh. Cependant, ces coûts ne sont pas constants par MWh, car ils dépendent du nombre d'heures de fonctionnement de l'installation. Conformément à l'article 18, §2, 5°, de l'Arrêté Royal Méthodologie, une réduction des coûts de 'stand-by' doit être appliquée lorsque l'unité est en production.</td></tr>
<tr><td>CREG</td><td>Elia indique avoir l'intention d'actualiser l'étude relative à l'évaluation des revenus de balancing. La CREG est favorable à une actualisation fondée sur les données historiques des 36 derniers mois. Elle estime toutefois que toute modification additionnelle de la méthodologie utilisée doit impérativement faire l'objet d'une consultation publique. En conséquence, la CREG considère que seule l'actualisation basée sur les données</td></tr>
</table>

	historiques peut être prise en compte pour l'élaboration des scénarios des enchères 2026, dès lors que d'éventuelles modifications méthodologiques n'auront pas été soumises à consultation

Elia thanks Engie for the positive feedback regarding the legal framework of the IPC and IPC derogation, and endeavors to continue streamlining the process. Elia understands Engie's concerns regarding the acceptance of derogation requests, but notes that this decision is the CREG's responsibility. Regarding the estimation of the revenues, Elia takes note of Engie's points. However, Elia has to be compliant with the Royal Decree which fix the methodology to be applied to calculate revenues (among others considering the average rather than a P50). Moreover, the revenues calculated by Elia are capped at the strike price and therefore do not account for extreme high price occurrences.

It is worth highlighting that the reference scenario is set up several years ahead of the actual Delivery Period, increasing the possibility that macro-economic events (such as the Ukrainian-Russian war or tariff threats) have a severe impact on the originally made forecasts. Be that as it may, every year Elia continues to strive to set up the reference scenario as accurate as possible. In that context, Elia appreciates the feedback that Engie has already given earlier in this public consultation, which enables Elia to further finetune the input parameters where needed.

Elia thanks the CREG for the elaborate feedback concerning the calculation of the IPC but would like to raise several points.

First and foremost, the CREG refers to article 20 of the RD Methodology for the calculation of the Missing Money for each technology in the IPC list and claims that no correction factor based on the hurdle rate should be applied. However, Elia notes that article 16, § 2 explicitly mentions that this correction factor should be used. In order to comply with the legal framework, Elia shall continue using the hurdle rate.

Secondly, the CREG expresses its desire to have a clear-cut distinction between the different elements that make up the costs used in the IPC calculation. Elia understands that for transparency purposes this can be an improvement. However, the study that is currently used for this calculation is the Entras study, which does not fully allow this differentiation. Following the legal framework, an update of the cost of capacity study is scheduled for 2026. Elia will keep in mind this feedback when developing this study in collaboration with the CREG.

Elia furthermore confirms that the used figures originate from Entras' 2024 update of the cost of capacity study. The tags in the assumptions workbook have been updated accordingly.

Again considering the use of the Entras study, the CREG formulates some reservations with regards to certain assumptions that were taken in the course of this study, and asks whether these can be updated with more recent figures. Elia stresses that updating the cost of capacity study is a matter of great complexity and cannot be done on such an ad-hoc basis, but will take these points into account when updating the study.

The CREG also mentions the use of the economic lifetime in the course of the calculation of the IPC. Even though Elia agrees that this economic lifetime should be considered, Elia wants to point out again that the article 22 that the CREG refers to only applies to IPC derogations and not necessarily to the IPC itself. Indeed, article 22 allows the evaluation of the investments on an individual basis, which is possible in the framework of IPC derogations. This approach is not possible for the IPC itself, which considers technologies as a whole.

As a last point regarding the Entras study, the CREG mentions the necessity to take into account stand-by costs. Elia notes that these costs have been taken into account by Entras, and that these were mapped to the overarching FOM and VOM costs. This approach was also validated by the CREG.

Elia takes note of CREG's comment regarding the update of the net balancing revenues study. Elia considers the current ancillary services market as evolving quickly, notable the recent coupling with Mari and Picasso have changed the market dynamics significantly. In the past market actors have repeatedly asked Elia to ensure that such evolutions are taken into account. Elia has the willingness to deliver a study as accurate as possible and this should thus include the most recent market trends and observations. Elia will present an updated study and in the WG and invite market parties to share their views.

2.5 Revenue parameters

FEBEG	FEBEG requests Elia to take into consideration the FEBEG comment from previous years regarding the assumed revenues from auxillary services being estimated too high by Elia. These estimations have consistently been too high, decreasing the missing money to below what is realistic. The fast-changing market conditions and revenues from auxillary services makes this problem even more relevant this year and in the future. FEBEG therefore asks Elia to revise these downward

Regarding FEBEG's comment on the ancillary services revenues, Elia is continuously updating the methodology and will present an updated assessment in one of the upcoming WG. However, Elia is limited by the legal framework to look at the balancing revenues over the past 36 months.