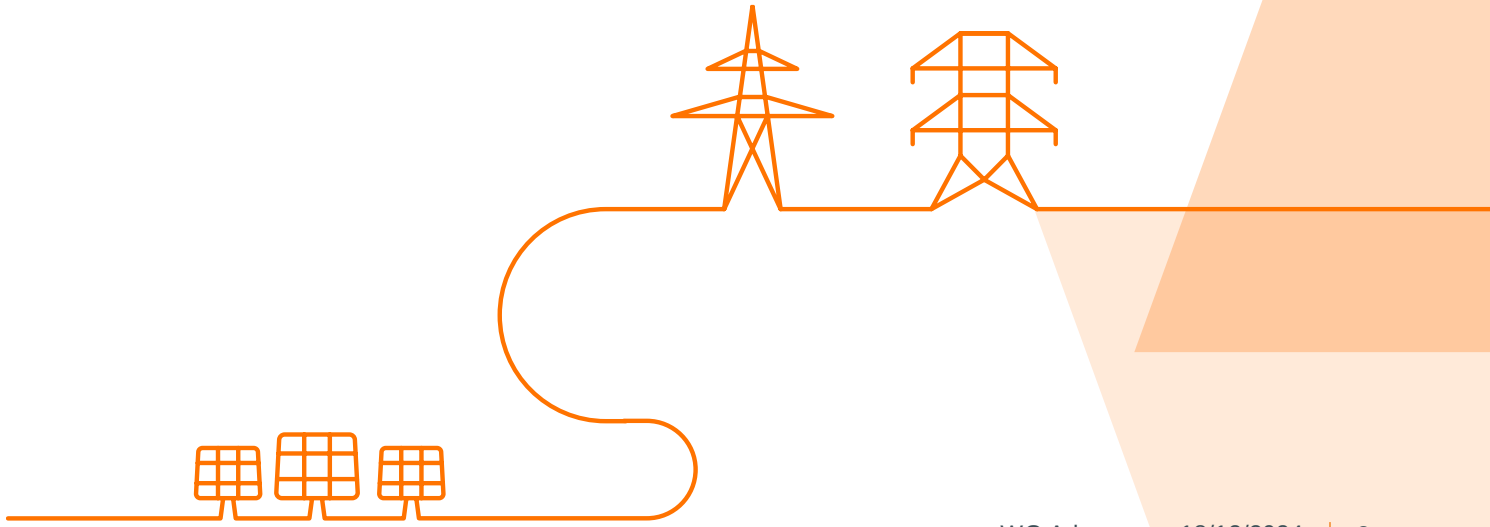
WG Adequacy #36

18/12/2024

Agenda

- Welcome
- Validation Meeting Minutes
- Calibration report
- Opt-out clarification
- Update of 25-26 Delivery Period Operational Readiness Plan
- Info sessions 2025
- AOB & Next meetings



Welcome

Validation meeting minutes

Meeting minutes WG #35 - Comments

- No comments received

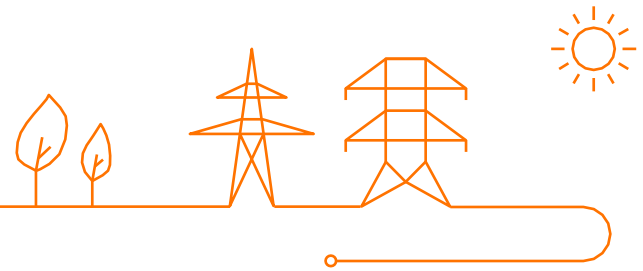
Calibration Report

Calibration Report

Y-1 Auction for Delivery Period 2026-27
Y-2 Auction for Delivery Period 2027-28
Y-4 Auction for Delivery Period 2029-30

Agenda

- Introduction
- Regulatory Context & Ministerial Decrees
- Overview of the CRM calibration report
  - Part I : Reference scenario and intermediate values selected by the Minister
  - Part II : Information and input for the establishment of the demand curve
  - Part III : Proposals for the other auction parameters



Introduction

- The report contains the input and parameters for the Y-1 auction for Delivery Period 2026-27, the Y-2 auction for Delivery Period 2027-28, and the Y-4 auction for Delivery Period 2029-30, that will take place in October 2025.
- The legal & regulatory framework is the Royal Decree determining the methodology to calculate the CRM auction volume and parameters.
- The report has been transmitted to the cabinet of Minister Van der Straeten, FPS Economy and CREG on the 29th of November 2024 and has also been published on Elia's website on the same day.
- The purpose of this presentation is to provide an overview of the CRM calibration report.
- In order to ease the reading the following acronyms will be used:
  - 2025-26/Y-1: refers to the Y-1 auction for the DP 2025-26;
  - 2026-27/Y-1: refers to the Y-1 auction for the DP 2026-27;
  - 2027-28/Y-2: refers to the Y-2 auction for the DP 2027-28;
  - 2028-29/Y-4: refers to the Y-4 auction for the DP 2028-29;
  - 2029-30/Y-4: refers to the Y-4 auction for the DP 2029-30

Overview of the documents published by Elia

Content of the publication:

- CRM Calibration Report
  - Information and data for the demand curve building
  - Proposals for auction parameters (deratings, IPC, Strike Price)
- Appendix to provide additional insights to stakeholders on the CRM calibration report.
- Assumptions Workbook
  - Excel document updated after feedback from the public consultation and Ministerial Decrees in order to provide the final dataset used in the simulations.

Regulatory Context

The CRM calibration report for 2026-27/Y-1, 2027-28/Y-2, and 2029-30/Y-4 is based on Chapter 3 of the Royal Decree Methodology and on the CRM law.

On basis of the reference scenario selected by the Minister, Elia's report should at least contain :

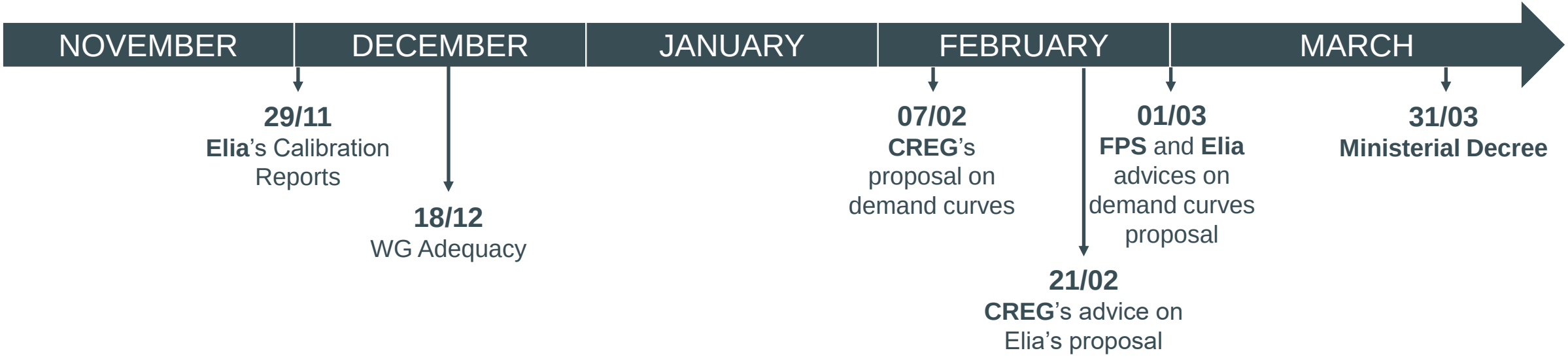
Requested Input from Elia

1. the load duration curve required to determine the 200h reserved capacity for Y-1 and Y-2 auctions
2. the available information from Elia regarding the non-eligible volume
3. the max entry capacity for indirect cross-border participation for each neighboring European Member State
4. the revenues from the energy market for each technology required for the net-CONE calculation
5. the average load during simulated scarcity hours
6. the upward balancing need
7. the average energy not served during simulated scarcity hours

Proposal from Elia

8. a proposal for the derating factors
9. a proposal for the intermediate price cap
10. a proposal for the reference price
11. a proposal for the strike price

Planning until Ministerial Decree

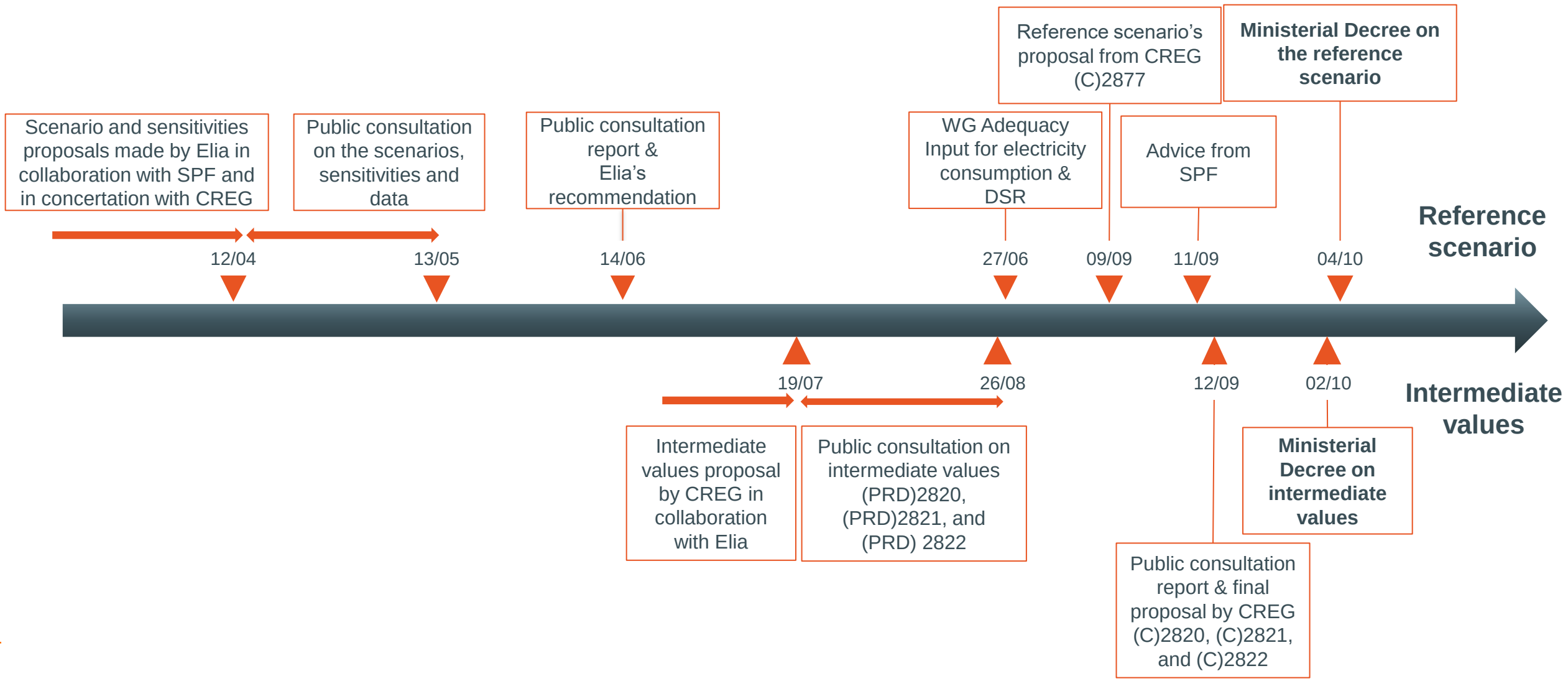


- A proposal from CREG on the demand curves is expected by 07/02/2025;
- An advice from CREG on other auction parameters proposal is expected by 21/02/2025;
- An advice from Elia and SPF Economy on CREG's demand curve proposals is expected by 1/03/2024;
- A decision by the Minister on the volumes to auction (demand curves), the Y-1 reserved volume and other parameters (strike price, reference price, derating factors and intermediate price cap) is foreseen by 31/03/2024.

Overview of the CRM calibration report

Part I : Reference scenario and intermediate values selected by the Minister

Reference scenario and intermediate values selected by the Minister



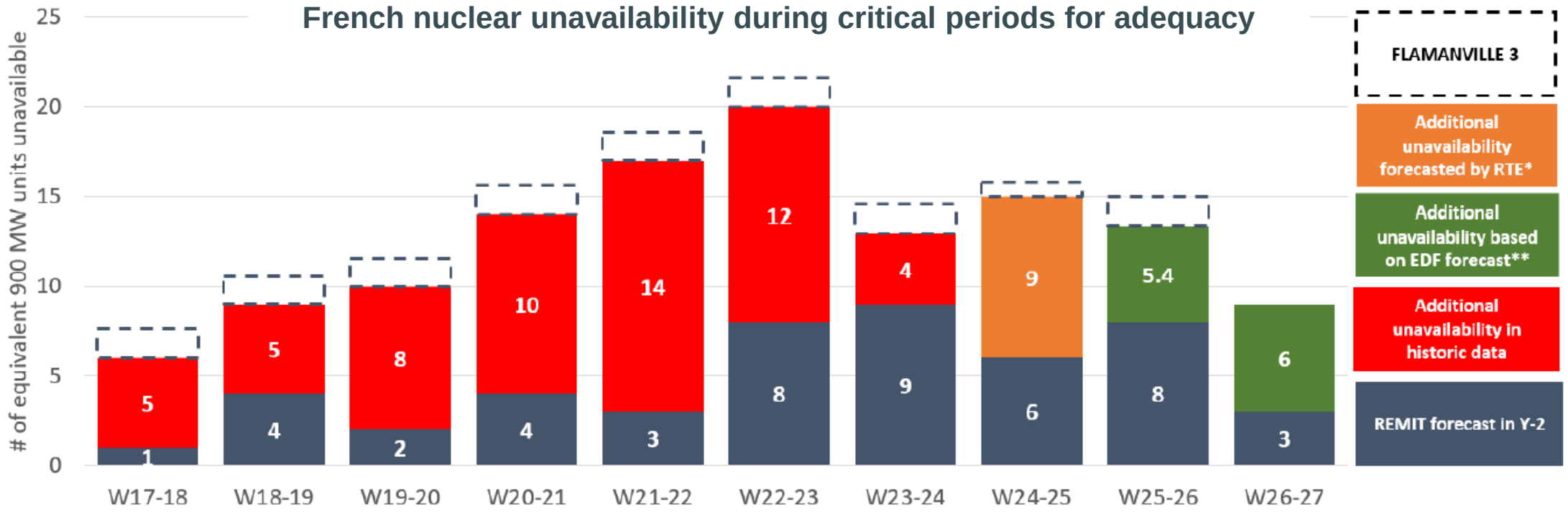
Overview of the scenario's updates with biggest impact on results

- Compared to last year, a delay of the electrification is considered in the reference scenario :
  - Total electricity consumption 2026-27/Y-1 : 87.7 TWh
  - Total electricity consumption 2027-28/Y-2 : 90.7 TWh
  - Total electricity consumption 2029-30/Y-4 : 98.1 TWh
- Decrease in DSR capacity compared to last year's auctions
- Based on ERAA23:
  - Updated with latest national studies for Belgium and other countries (listed in the Assumptions Workbook)
  - High RES and battery penetration in 2029 in the EU (also 700 MW of offshore in Belgium)
- Lower fuel **prices** compared to 2025-26/Y-1 and 2028-29/Y-4 based on futures and the World Energy Outlook 2023
- Unavailability of French nuclear fleet :
  - **2026-27/Y-1**: 6 additional nuclear units of 900 MW unavailable in France during winter on top of REMIT information, calculated as the difference between the minimum EDF forecast and REMIT on the winter
  - **2027-28/Y-2 and 2029-30/Y-4** : 4 additional nuclear units of 900 MW unavailable in France on top of the French nuclear unavailability considered in ERAA 23.

Note that all assumptions and input data are summarized in the "Assumptions Workbook" published with the CRM calibration report. Among others, it contains all the data from the Ministerial Decree on the reference scenario

Higher availability of the French nuclear power plants during most critical periods for adequacy (Jan. & Feb.)

- Information from REMIT leads to a particularly optimistic view of the French nuclear availability in critical periods for adequacy
- Higher availability of the French nuclear power plants has an important impact on the adequacy in Belgium, as in short-term, the correlation between the scarcity situations in Belgium and France is high.
- Consequently, the cross-border contribution during scarcity will be much higher based on this input data



* based on RTE's winter outlook (50 GW available for critical period winter) - RTE-synthese-passage-hiver-2024-2025.pdf
** Estimation de production nucléaire en France en 2026 - 21/12/2023 | EDF FR

Once the reference scenario has been defined by the Minister, Elia ensure that it is compliant with the reliability standard criterium

Reference scenario defined by the Minister

Calibration of the reference scenario

Determination of the CRM volume & parameters

This scenario does not necessarily meet the legal reliability standard criterium, as defined in article 7undecies, 3 of the electricity law.

As long as the reliability standard criterium is not reached, capacity will be iteratively added based on an economic optimization loop. (Art. 6 §1 of the RD Methodology)

The output from the model ensures to be compliant with the legal reliability standard criterium.

No additional capacities added in 2026-27/Y-1 & 2027-28/Y-2
1000 MW added in 2029-30/Y-4 to reach the reliability standard criterium

- No additional capacities was needed in 2026-27/Y-1 and 2027-28/Y-2 based on the reference scenario selected by the Minister in order to ensure compliancy with the reliability standard criterium, as described in Art. 6 §1 of the Royal Decree Methodology.
- However, 100 MW of large-scale batteries were added based on auction results for 2025-26/Y-1 (1 CMU with 1 year contract, also contracted in 2027-28/Y-4 with a 15-year contract).
- Additional capacity added for 2029-30/Y-4 to obtain a scenario compliant with the reliability criterium.
  - Reference scenario filled:
    - ✓ by adding the results of 2028-29/Y-4:
      - 188 MWd of batteries*
    - ✓ by adding additional capacities from the preselected capacity types, based on an iterative economic loop, as described in Art. 6 §1 of the Royal Decree Methodology:
      - 600 MWd of 24h DSR
      - 400 MWd of OCGT

* Additional large-scale battery and small-scale storage, considering the derating factors applied in 2028-29/Y-4.

Intermediate values selected by the Minister on 04/10

- A list of technology and a gross-CONE for each technology and for each auction as presented in the tables below
- Minimal risk premium of 4.4 % on top of which a technology specific risk premium is added to calculate the WACC
- A correction factor X equal to 1.1 for 2026-27/Y-1 and 1.5 for 2027-28/Y-2, and 2029-30/Y-4

2027-28/Y-2

Technology	EAC [€/kW/an]	Derating factor [%]	CONEfixed,RT [€/kW/an]	WACC [%]
OCGT (>100 MW)	95.05	92	103.32	7.7
CHP (<100 MW)	146.35	94	155.69	6.6
Photovoltaics	88.7	1	8870.19	4.8
Onshore wind	166.75	7	2382.18	5.7
Battery storage (4h)	110.65	57	194.13	4.7
DSR (0<300MW)	25.34	57	44.45	6.0
DSR (300<600MW)	50.68	57	88.9	6.0
DSR (600<900MW)	76.01	57	133.36	6.0
DSR (900<1200MW)	101.35	57	177.81	6.0

2026-27/Y-1

Technology	EAC [€/kW/an]	Derating factor [%]	CONEfixed,RT [€/kW/an]	WACC [%]
Photovoltaics	88.7	2	4435.09	4.8
Onshore wind	166.75	9	1852.8	5.7
Battery storage (4h)	110.65	63	175.64	4.7
DSR (0<300MW)	25.34	59	42.94	6.0
DSR (300<600MW)	50.68	59	85.89	6.0
DSR (600<900MW)	76.01	59	128.83	6.0
DSR (900<1200MW)	101.35	59	171.78	6.0

2029-30/Y-4

Technology	EAC [€/kW/an]	Derating factor [%]	CONEfixed,RT [€/kW/an]	WACC [%]
OCGT (>100 MW)	95.05	92	103.32	7.7
CCGT (>800 MW)	114.16	94	121.44	6.6
CHP (<100 MW)	146.35	94	155.69	6.6
Photovoltaics	88.7	1	8870.19	4.8
Onshore wind	166.75	7	2382.18	5.7
Offshore wind	271.41	9	3015.64	4.9
Battery storage (4h)	110.65	57	194.13	4.7
DSR (0<300MW)	25.34	57	44.45	6.0
DSR (300<600MW)	50.68	57	88.9	6.0
DSR (600<900MW)	76.01	57	133.36	6.0
DSR (900<1200MW)	101.35	57	177.81	6.0

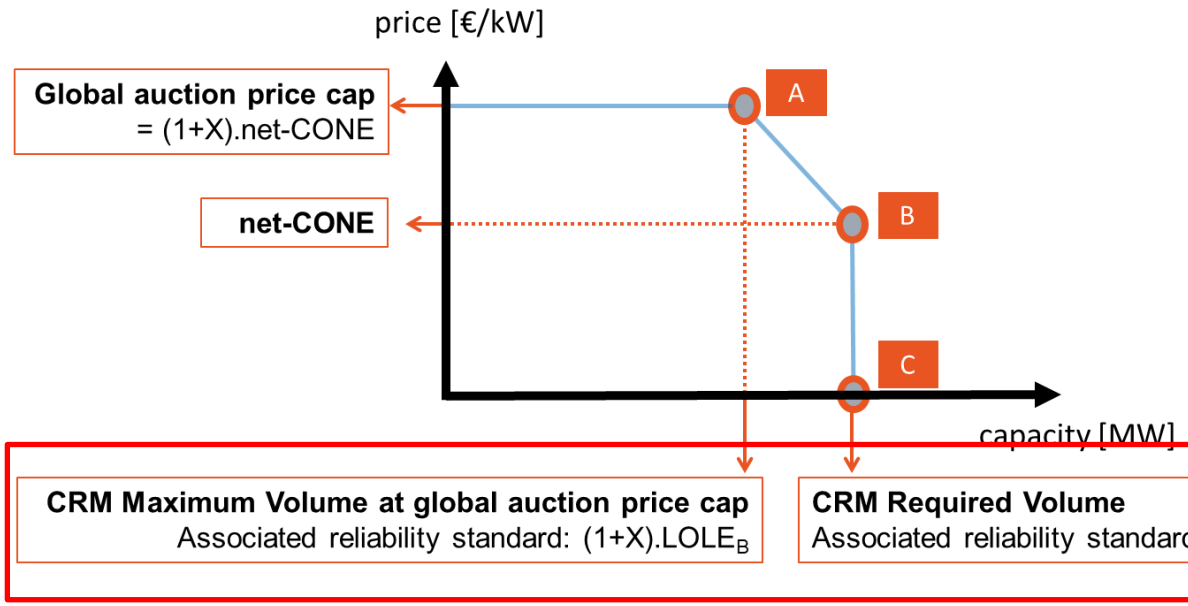
Overview of the CRM calibration report

Part II : Information and input for the establishment of the demand curve

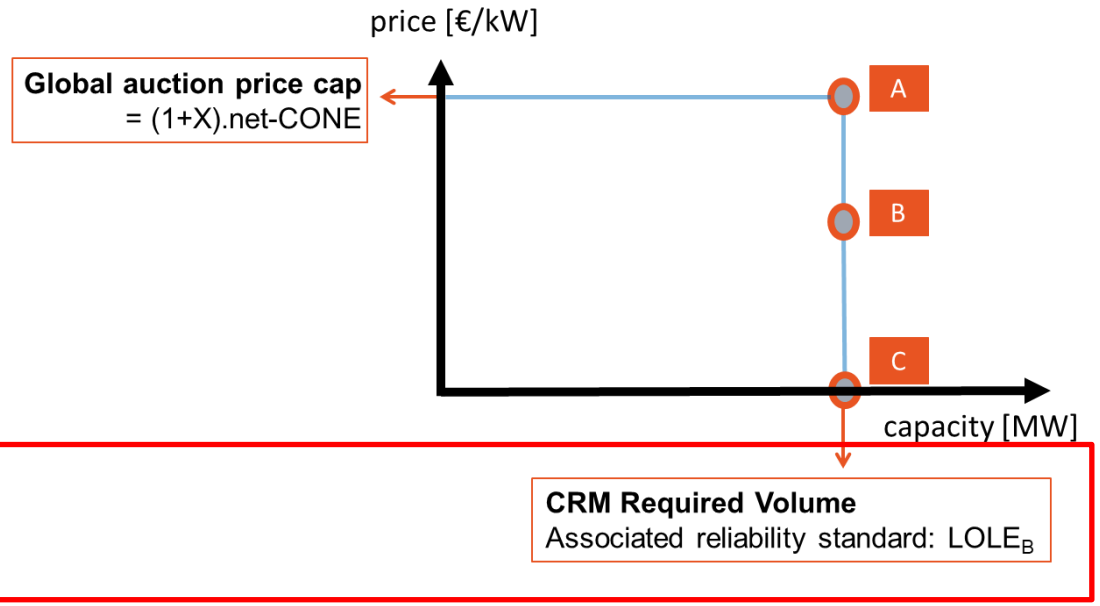
Part II : Information and input for the establishment of the demand curve

Volume parameters

Y-4/Y-2 demand curve



Y-1 demand curve



Remark :
LOLE$_B$ corresponds to the Belgian reliability standard as defined in the CRM Law (Article 7undecies, §3)
X parameter has been defined by the Minister. X=1.1 in 2026-27/Y-1 and X=1.5 in 2027-28/Y-2 and 2029-30/Y-4

Overview of the volume parameters required according to the Royal Decree

Parameters calculated in Elia's report in order for CREG to establish the volume parameters of the demand curve :

- Average load during simulated scarcity hours from the calibrated reference scenario (for points A and B&C);
- Average energy not served during simulated scarcity hours from the calibrated reference scenario (for points A and B&C);
- Upward balancing need;
- Information available regarding the non-eligible capacity;
- Max-entry capacity for indirect cross-border participation of neighboring European Member State;
- Load duration curve (only for Y-2 and Y-4 auction).

Overview of the volume parameters requited according to the Royal Decree

Parameters calculated in Elia's report in order for CREG to establish the volume parameters of the demand curve :

- **Average load during simulated scarcity hours from the calibrated reference scenario (for points A and B&C)**
- **Average energy not served during simulated scarcity hours from the calibrated reference scenario (for points A and B&C)**
- **Upward balancing need**
- Information available regarding the non-eligible capacity
- Max-entry capacity for indirect cross-border participation of neighboring European Member State
- Load duration curve (only for Y-4 auction).

Volume Parameters – Average consumption and energy not served during scarcity situations

Average electricity consumption during scarcity is the main factor determining the target volumes

Delivery Period	Point	Average consumption during scarcity [MW]	Energy Not Served during scarcity [MW]	Balancing needs* [MW]
2026-27/Y-1	A+B	13719	930	1127
2027-28/Y-2	A	14042	671	1127
	B	14201	438	1127
2029-30/Y-4	A	15033	837	1127
	B	15268	687	1127

*The balancing needs are defined as the sum of the needs of FCR and FRR, where the FRR needs are equal to the dimensioning incident during scarcity periods.

→The evolution of the average consumption during scarcity is in line with the evolution of the total yearly load over the years.

Volume Parameters – How the flexibility is taken into account in the average load during scarcity in 2024 CRM Calibration Report

		2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
DSR from existing industry (N-Side)		Not removed from the average electricity consumption during scarcity	Not removed from the average electricity consumption during scarcity	Not removed from the average electricity consumption during scarcity
End-user flexibility	Electric vehicles	Removed from the average electricity consumption during scarcity	Removed from the average electricity consumption during scarcity	Removed from the average electricity consumption during scarcity
	Heating			
	Residential batteries			
DSR from additional electrification in industry	Electrolysers	78% removed from the average electricity consumption during scarcity*	82% removed from the average electricity consumption during scarcity*	78% removed from the average electricity consumption during scarcity*
	E-boilers			
	Data centres			
	Indust. HP			
	Steel			
	CCS			

Certain types of flexibility are not expected to participate to the CRM under the assumptions considered for this CRM calibration report, whilst nevertheless being present in the system.

→ These volumes are removed from the average load during scarcity

Those assumptions can evolve in the future based on return of experience from next auctions.

* considering that 100% of the flexibility reacting to low prices won't be able to participate to the CRM and that respectively 100% (Y-1), 75% (Y-2) and 50% (Y-4) of the flexbility reacting to high prices are expected to participate to the CRM.

Overview of the volume parameters requited according to the Royal Decree

Parameters calculated in Elia's report in order for CREG to establish the volume parameters of the demand curve :

- Average load during simulated scarcity hours from the calibrated reference scenario (for points A and B&C)
- Average energy not served during simulated scarcity hours from the calibrated reference scenario (for points A and B&C)
- Upward balancing need
- **Information available regarding the non-eligible capacity**
- Max-entry capacity for indirect cross-border participation of neighboring European Member State
- Load duration curve (only for Y-4 auction).

Volume Parameters – Derated non-eligible capacity

- As mentioned in article 11, §2 of the RD Methodology, the volumes that are considered as non-eligible need to be subtracted from the required volume.

- The eligibility criteria are introduced in article 4 of the CRM Law and developed in the Royal Decree related. More in particular and based on the aforementioned laws, capacities are considered non-eligible if either:
  - They benefit from state aid in the course of the Delivery Period; or
  - Their installed capacity multiplied with the appropriate derating factor defined in part III of this report is lower than the threshold of 1 MW.

Volume Parameters – RES non-eligible capacity is lower in 2027-28/Y-2 and 2029-30/Y-4 due to lower deratings

Criteria 1 : RES Capacities that already received subsidies

Assumption :

- All the RES capacities (solar, onshore wind, offshore wind, hydro run-of-river) are considered as already receiving subsidies
- Derating factors applied as calculated in the framework of the CRM calibration report (cf. later slides)

	2026-27/Y-1			2027-28/Y-2			2029-30/Y-4		
Category	**Installed Capacity [MW]**	**Derating Factor [%]**	**Non-eligible Capacity [MWd]**	**Installed Capacity [MW]**	**Derating Factor [%]**	**Non-eligible Capacity [MWd]**	**Installed Capacity [MW]**	**Derating Factor [%]**	**Non-eligible Capacity [MWd]**
Offshore wind	2261	11	249	2261	10	226	2961	8	237
Onshore wind	4258	9	383	4588	8	367	5248	7	368
PV	12723	2	254	13923	1	139	16323	1	163
Hydro RoR	140	50	70	143	51	73	148	52	77
TOTAL			**956**			**805**			**845**

Volume Parameters – Different capacities and deratings for thermal non-eligible capacity

Criteria 2 : Thermal capacities that already received subsidies

Assumption :

- For profiled units, the installed capacity corresponds to the aggregated units in the reference scenario.
- The list of individually modelled units which do benefit from state-aid is based on the most up-to-date information received from the regions
- Derating factors applied as calculated in the framework of the CRM calibration report (cf. later slides)

	2026-27/Y-1			2027-28/Y-2			2029-30/Y-4		
Category	Installed Capacity [MW]	Derating Factor [%]	Non-eligible Capacity [MWd]	Installed Capacity [MW]	Derating Factor [%]	Non-eligible Capacity [MWd]	Installed Capacity [MW]	Derating Factor [%]	Non-eligible Capacity [MWd]
Agg. of thermal technologies without daily schedule	2077	65	1350	2084	65	1355	2098	66	1384
Individually modelled units	281	65 or 94	230	251	65 or 94	210	251	66 or 94	211

Overview of the volume parameters requited according to the Royal Decree

Parameters calculated in Elia's report in order for CREG to establish the volume parameters of the demand curve :

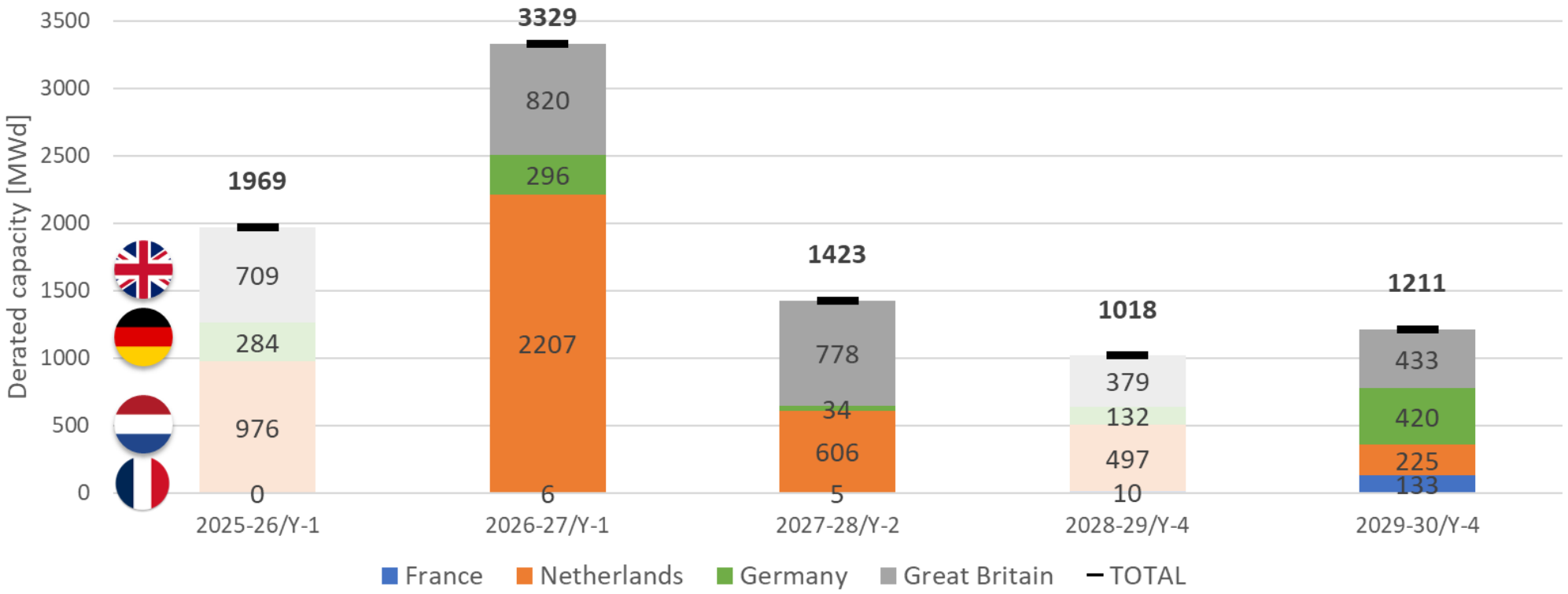
- Average load during simulated scarcity hours from the calibrated reference scenario (for points A and B&C)
- Average energy not served during simulated scarcity hours from the calibrated reference scenario (for points A and B&C)
- Upward balancing need
- Information available regarding the non-eligible capacity
- **Max entry capacity for indirect cross-border participation of neighboring European Member State**
- Load duration curve (only for Y-4 auction).

Maximum entry capacity – General trend is a decrease of the MEC

The max-entry capacity for indirect cross-border participation is significantly higher in 2026-27/Y-1

- Scarcity situations in Belgium are highly correlated to France.
- However, as France requires less imports, the capacity abroad is more available for Belgian scarcity situations.

- Lower MEC in later delivery periods because of increasing simultaneous scarcity events with other countries, leading to lower imports during scarcity moments in Belgium.



Overview of the volume parameters requited according to the Royal Decree

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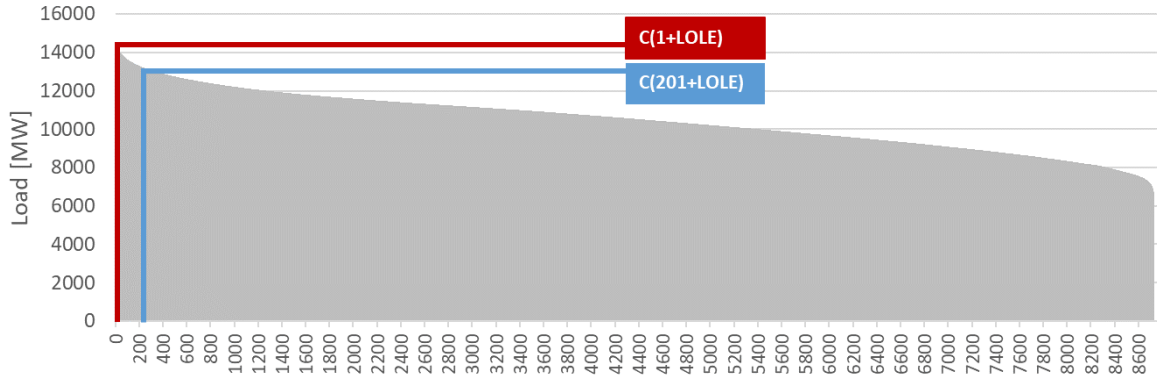
- Average energy not served during simulated scarcity hours from the calibrated reference scenario (for points A and B&C)
- Upward balancing need
- Information available regarding the non-eligible capacity
- Max entry capacity for indirect cross-border participation of neighboring European Member State
- **Load duration curve (only for Y-2 and Y-4 auction).**

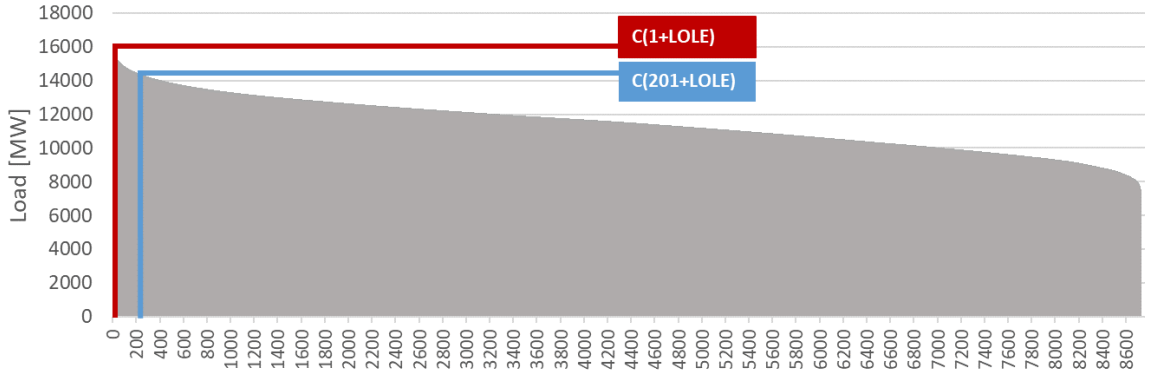
Volume Parameters – Load Duration Curve for 2027-28/Y-2 and 2029-30/Y-4

- Elia's responsibility is to provide the "load duration curve" for 2027-28/Y-2 and 2029-30/Y-4 necessary for the CREG to calculate the 200h reserved capacity for Y-1 auction
- This curve is based on the electricity consumptions profiles integrated in the Monte-Carlo simulation.
- This curve is noted C(h), which represents the consumption to be covered at least during at least h hours by year.

Load Duration Curve - 2027-28/Y-2



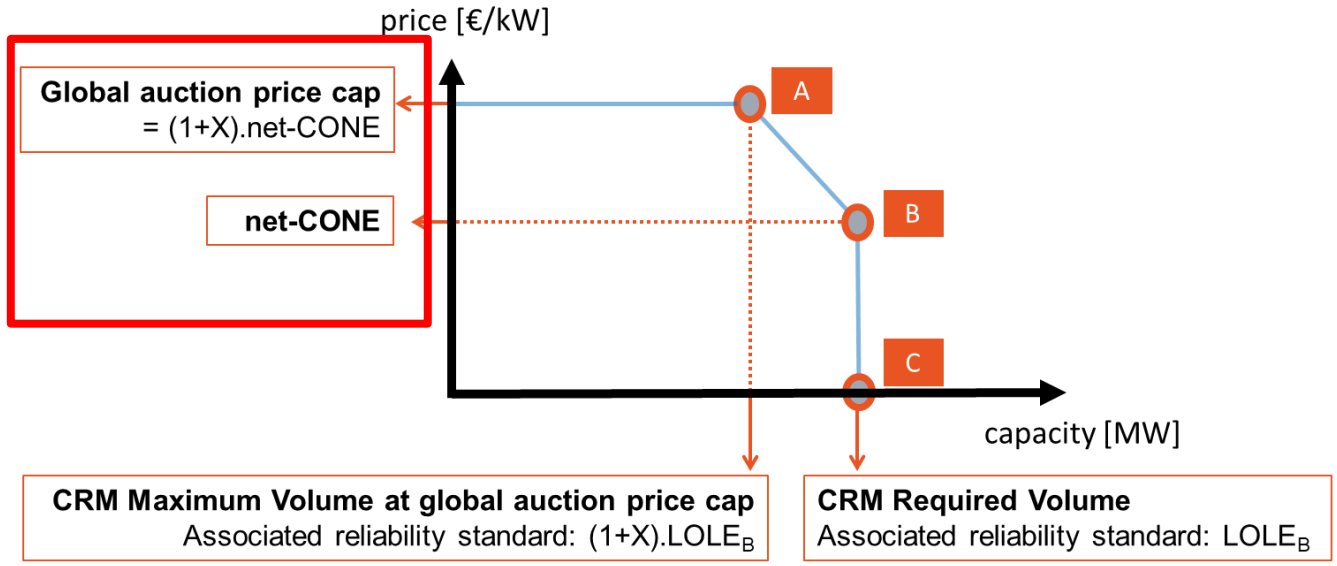
Load Duration Curve - 2029-30/Y-4



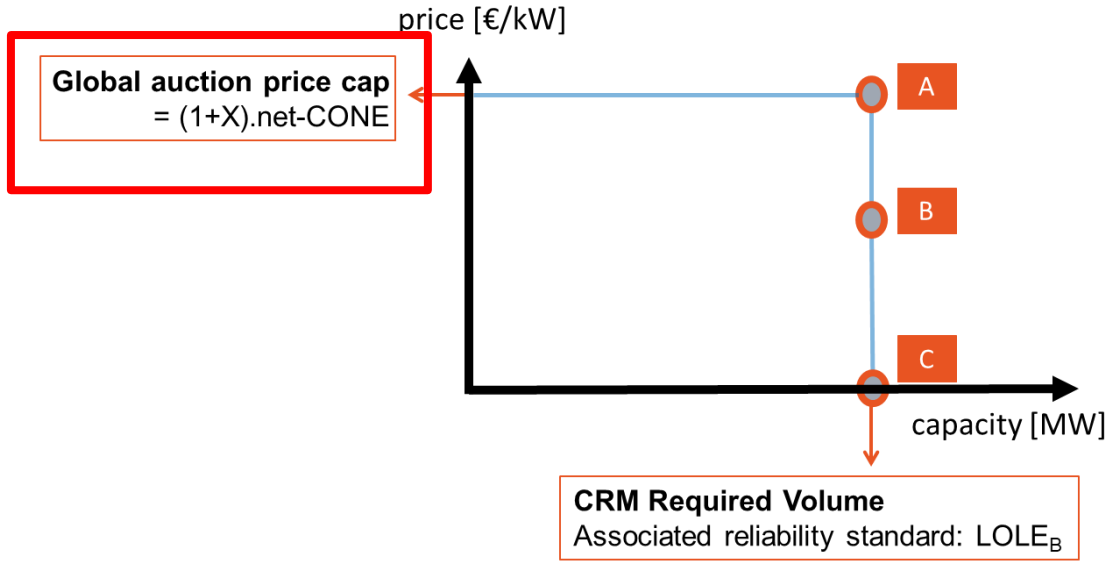
Part II : Information and input for the establishment of the demand curve

Price parameters

Y-4/Y-2 demand curve



Y-1 demand curve



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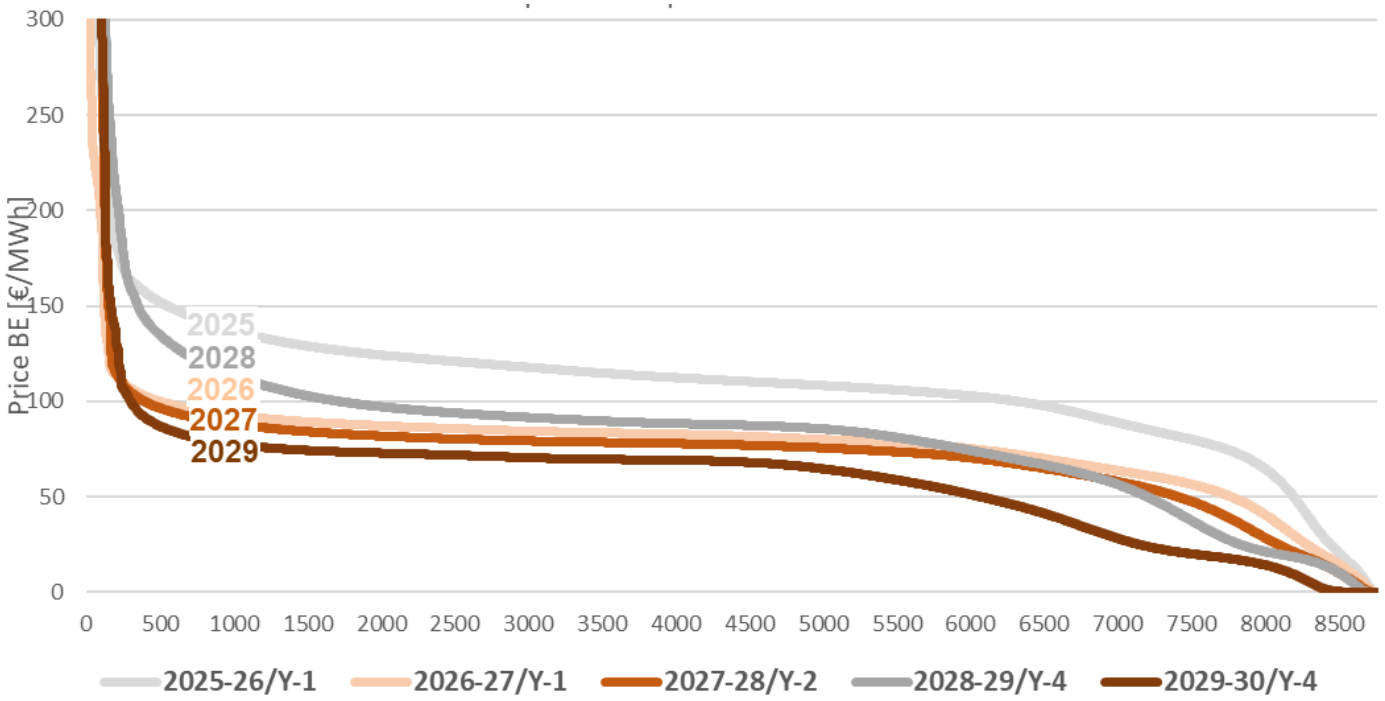
X parameter has been defined by the Minister. X=1.1 in 2026-27/Y-1 and X=1.5 in 2027-28/Y-2 and 2029-30/Y-4

Price parameters - Determination of the missing money

Net-CONE = missing money of the technology with the lowest missing money
Missing money = gross-CONE - Revenues

Price duration curves are lower compared to last year's auction

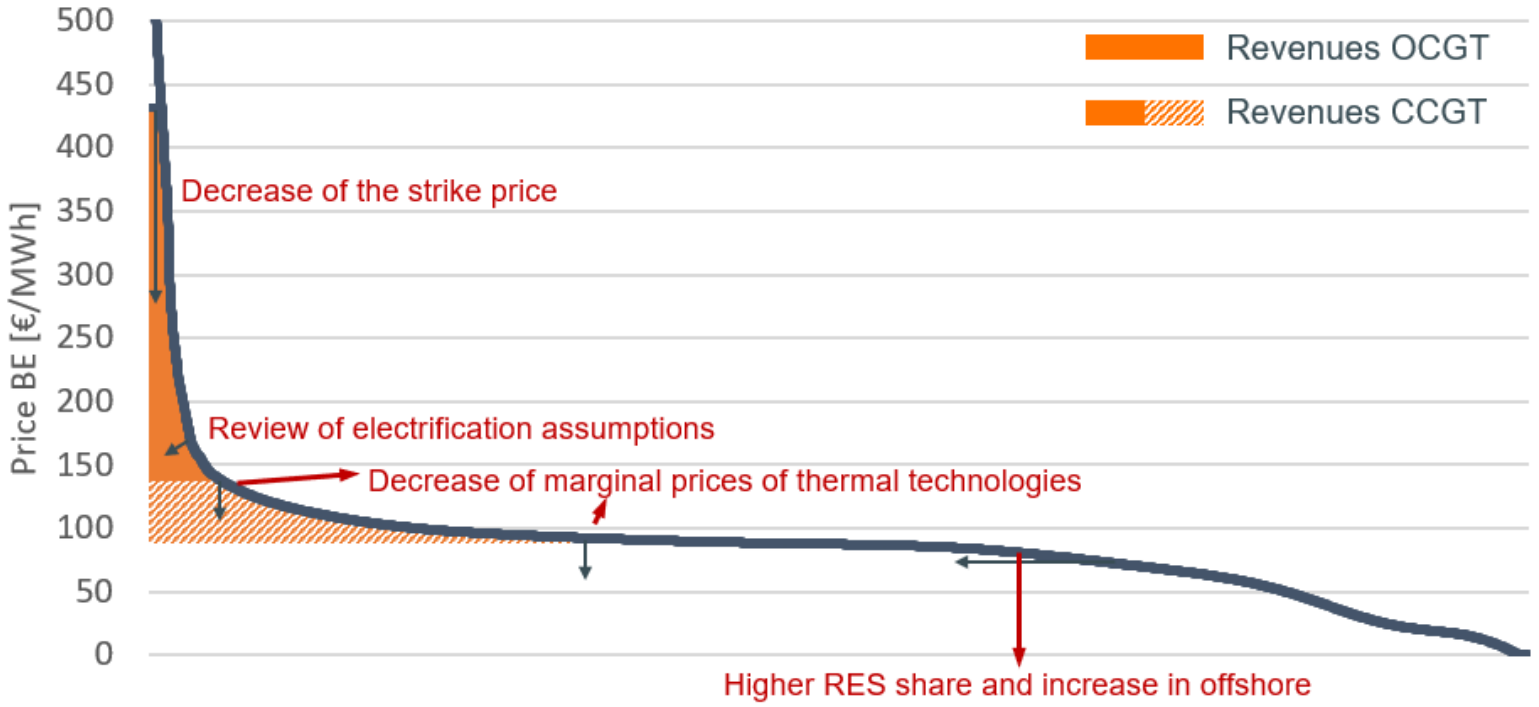


- The curves get lower with time due to higher penetration of RES in Europe, especially on the lower prices end.
- The prices decrease compared to last year due to a decrease of fuel prices.
- On the next slide, more detail is given on the general evolution of the shape of the curves.

OCGT and especially CCGT revenues have decreased

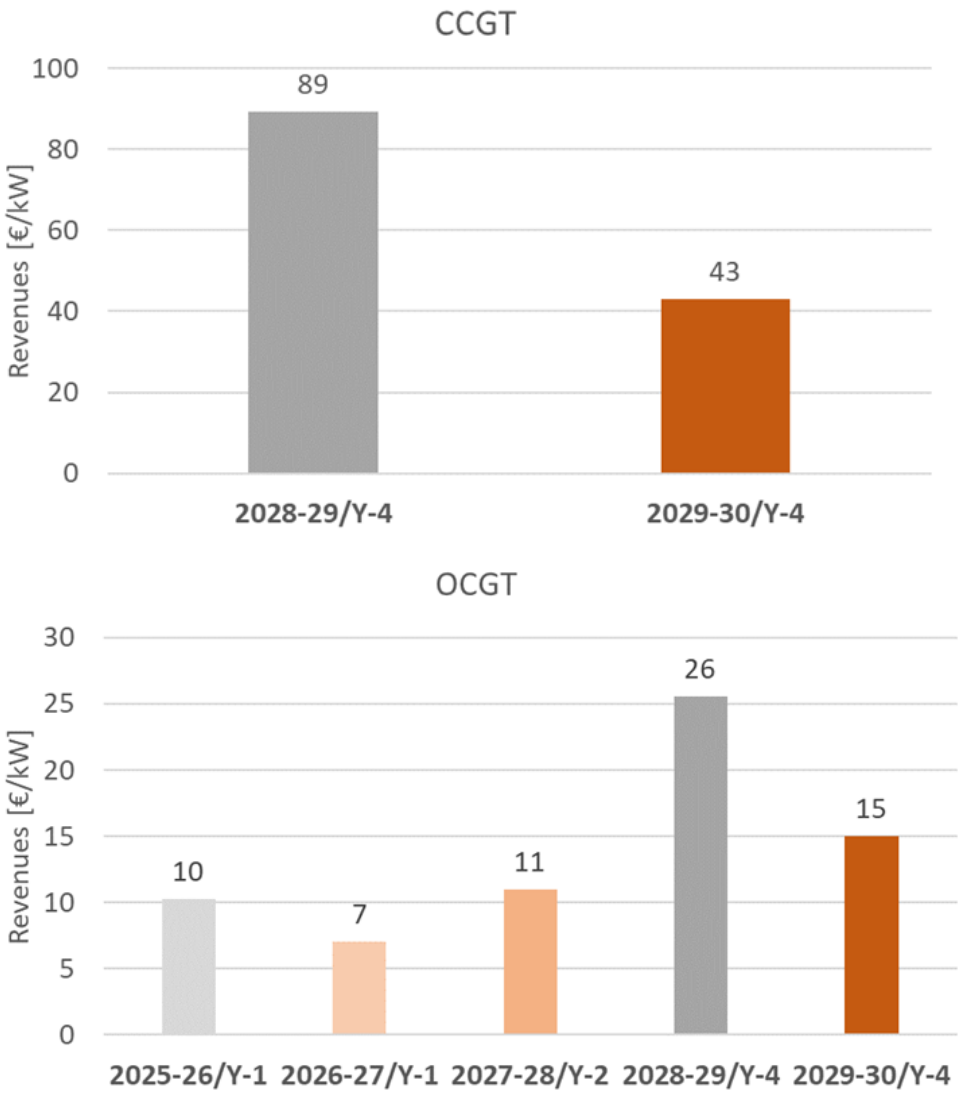
Main Drivers :

- Decrease of the strike price
- Decrease of the marginal price of thermal technologies, which tends to flattening the price curves
- Increase of the RES penetration in the EU, which leads to higher occurrence of low prices



Price duration curve of 2028-29/Y-4 and the changes for this year's auctions

Energy Market Revenues of OCGT's and CCGT decrease compared to last year's auction

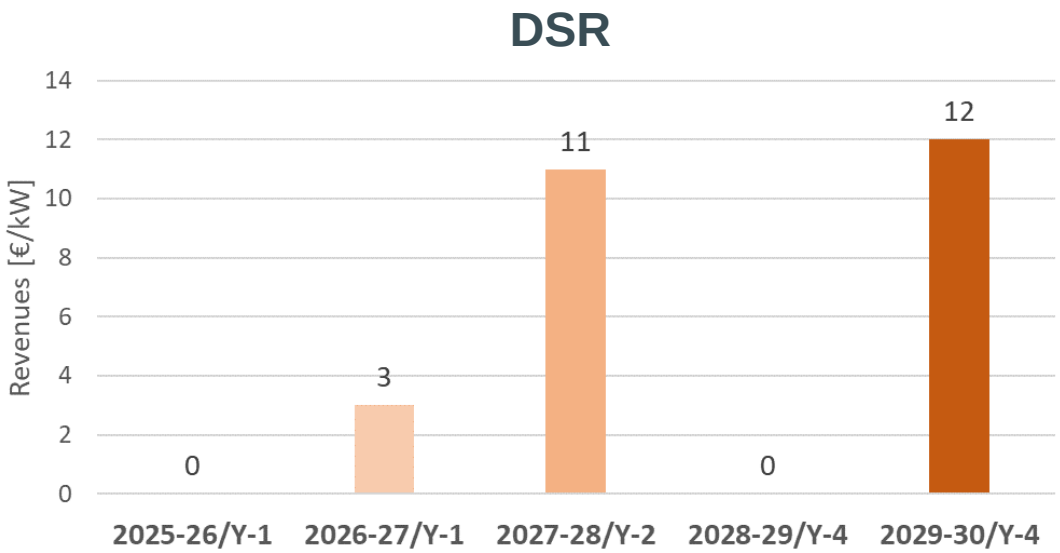


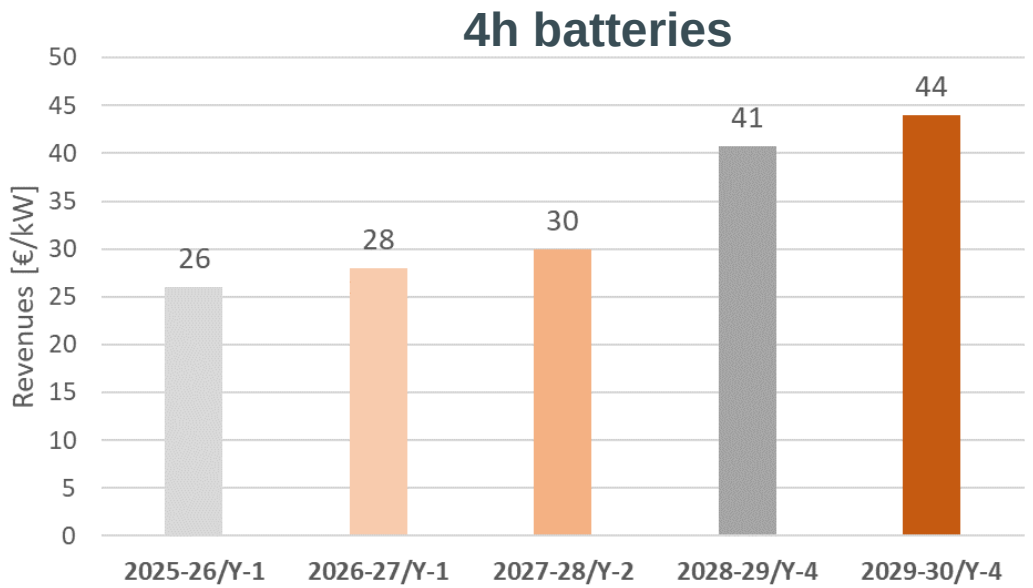
Reasons for the decrease

- Lower strike price
- Decrease in the marginal price of thermal technologies which tends to flatten the price curves, due to lower fuel prices
- High RES in the EU penetration in 2029-30/Y-4 and commissioning of 700 MW of offshore in Belgium. This leads to more occurrences of low prices

Energy Market Revenues of batteries are in line with last year while DSR revenues have increased

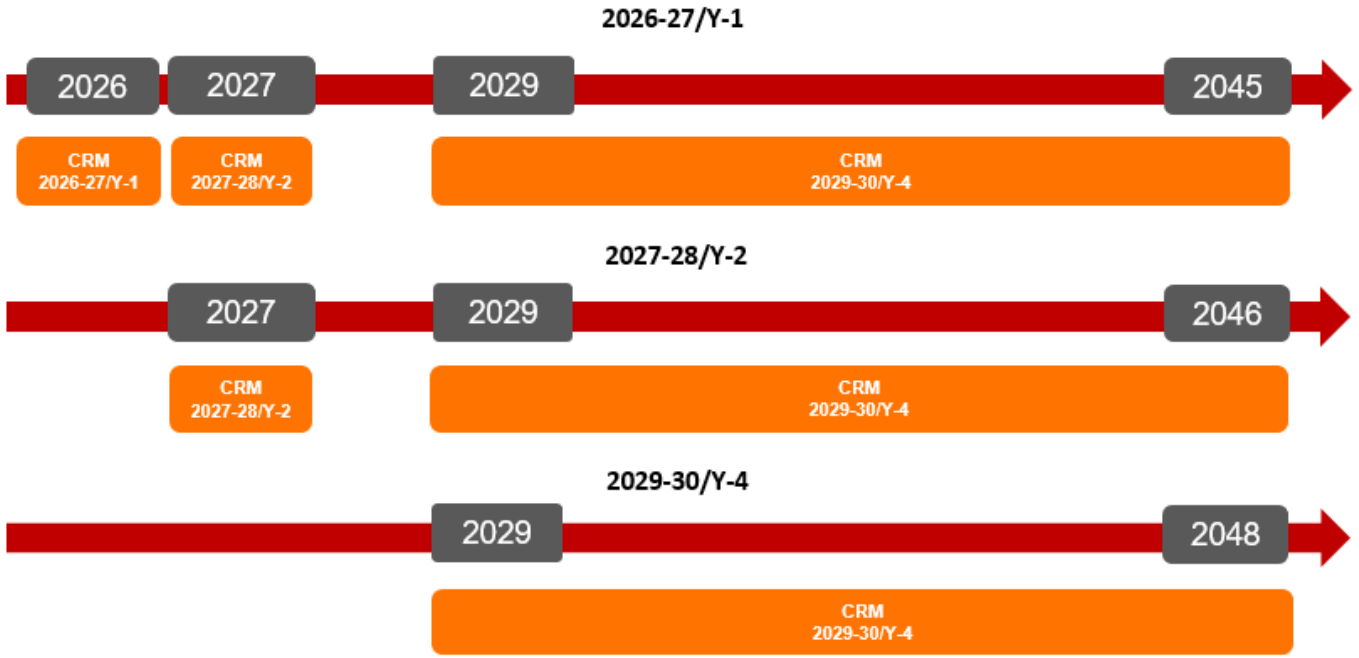
- DSR now generates revenues due to strike price exemption
- Batteries revenues confirm the increasing trend of the revenues due to higher price variations resulting from higher RES penetration in Europe and electrification





Price Parameters – Energy Market Revenues

- Market revenues have to be determined on the whole economic lifetime of the technologies
- Reference scenarios selected by the Minister are used for the respective Delivery Periods
- 2029-30/Y-4 values are proposed to be used for the years from 2029 onwards.
- For years for which no value is available, a linear interpolation is taken.



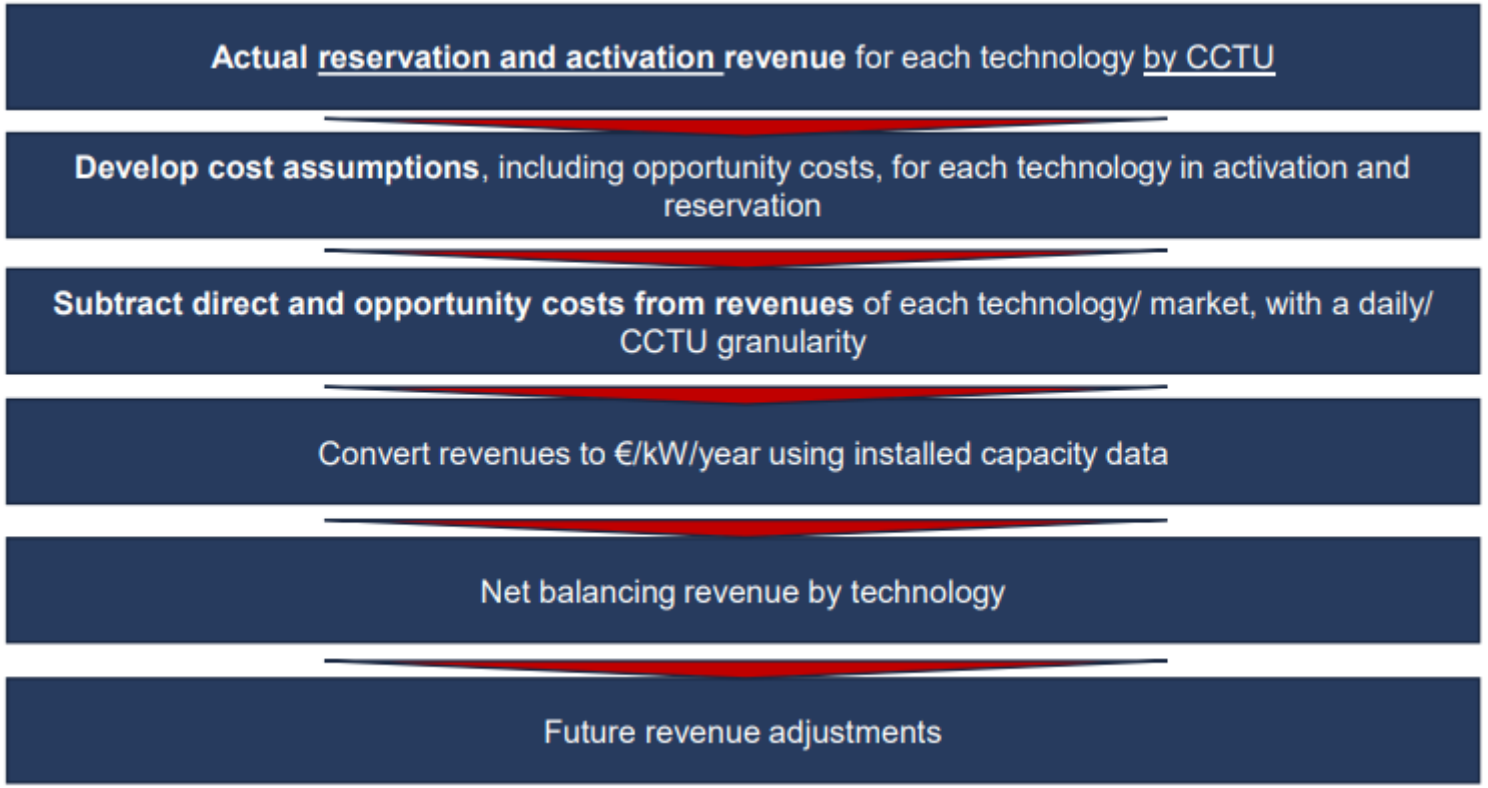
Price Parameters – net ancillary services revenues

- The estimation of these net revenues must be provided for the technologies listed earlier.

- They are calculated in accordance with the Royal Decree Methodology : based on the net revenues arising from the reservation of frequency-related balancing services.

- The retained value for these revenues is equal to a percentage of the average historical reservation fee of balancing services, based on the last 36 months data
  - The application of this percentage takes into account the arbitrage being made by these technologies between the energy and balancing markets (including the opportunity cost).
  - Different corrections are applied to take into account evolutions per technology and balancing product (see next slide)

Price Parameters – net ancillary services revenues



- In collaboration with Compass Lexecon, the same methodology as last year was used

Price Parameters – net ancillary services revenues

Technologies	2026-27/Y-1	2027-28/Y-2	2029/30/Y-4
OCGT	Not in the list	21 €/kW	20 €/kW
CCGT	Not in the list	Not in the list	1 €/kW
PV	0	0	0
Batteries	21 €/kW	14 €/kW	13 €/kW
Onshore wind	0	0	0
Offshore Wind	Not in the list	Not in the list	0
CHPs	Not in the list	0	0
DSR (0-300 MW)	15 €/kW	14 €/kW	13 €/kW
DSR (300-600 MW)	15 €/kW	14 €/kW	13 €/kW
DSR (600-900 MW)	15 €/kW	14 €/kW	13 €/kW
DSR (900-1200 MW)	15 €/kW	14 €/kW	13 €/kW

Overview of the CRM calibration report

Part III : Proposals for the other auction parameters

Part III : Proposals for the other auction parameters

- In addition to the inputs for the determination of the demand curve, it is up to Elia to provide concrete proposals for several other parameters for the auction, according to article 6, §2° of the draft amendment to the Royal Decree on Methodology
- Elia's proposals concern :
  - Derating Factors (Chapter 5 of the Royal Decree on Methodology)
  - Intermediate Price Cap (Chapter 6 of the Royal Decree on Methodology)
  - Strike Price & Reference Price (Chapter 8 of the Royal Decree on Methodology)

A specific focus on scarcity situations is relevant as most of CRM parameters and calculation are derived from that

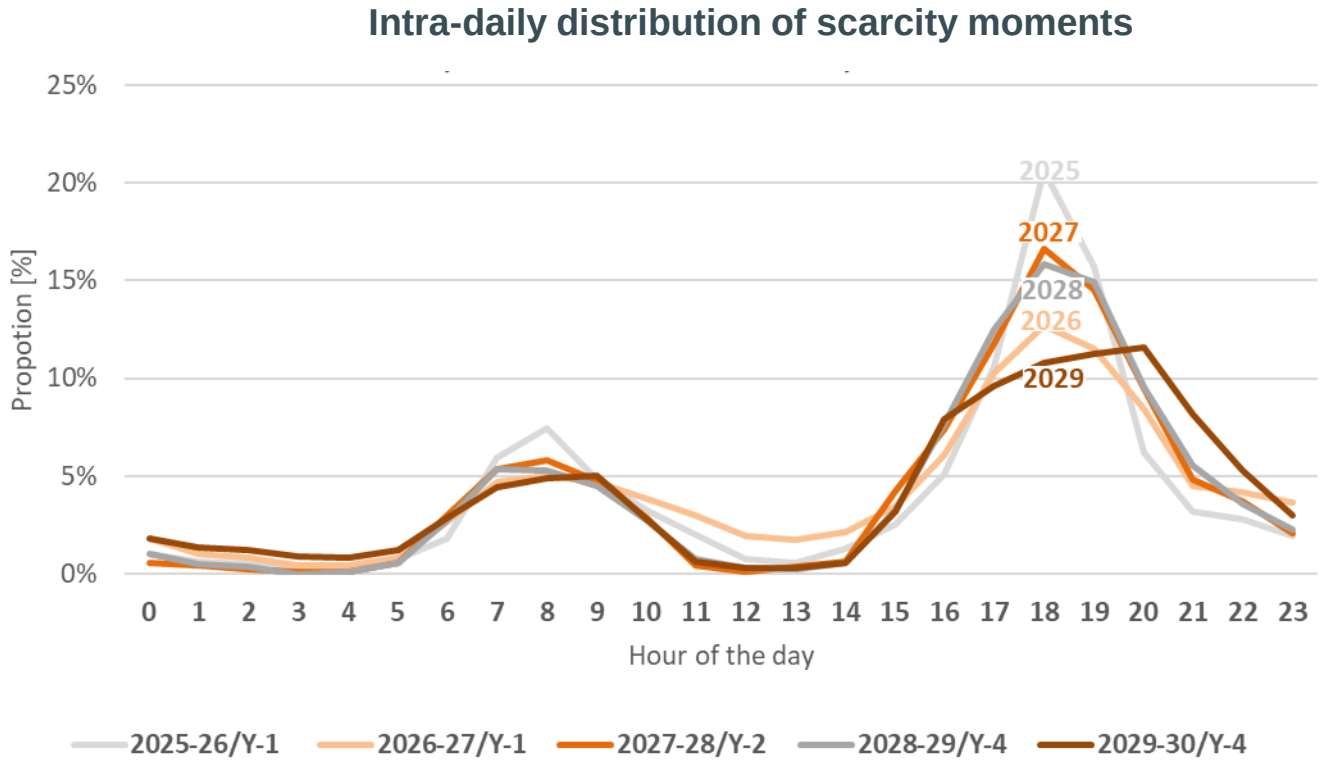
- Simulated scarcity situations are one of the main drivers for the calculation of CRM parameters
- Some volume parameters are calculated during these periods :
  - Average load during simulated scarcity hours
  - Average energy not served during simulated scarcity hours
  - Max-entry capacity for indirect cross-border participation
- Some parameters proposed by Elia are also calculated during those periods :
  - Derating Factors for SLA's and energy-limited technologies (market response, batteries, psp)
  - Derating Factors for RES (solar, onshore wind, offshore wind, hydro ror)
  - Derating Factors for aggregated thermal technologies

For these reasons, it seems relevant to have a close look to the evolution of those simulated scarcity situations. All information presented here is available in the "Appendix: Complementary analysis on results", published on Elia's website.

Scarcity situations in 2026-27/Y-1 and 2029-30/Y-4 are less concentrated around the evening peak

- In 2026-27/Y-1 a significant amount of scarcity moments lasts from morning until the evening as events in Belgium are correlated to the most impactful scarcity events in France, leading to longer scarcity situations

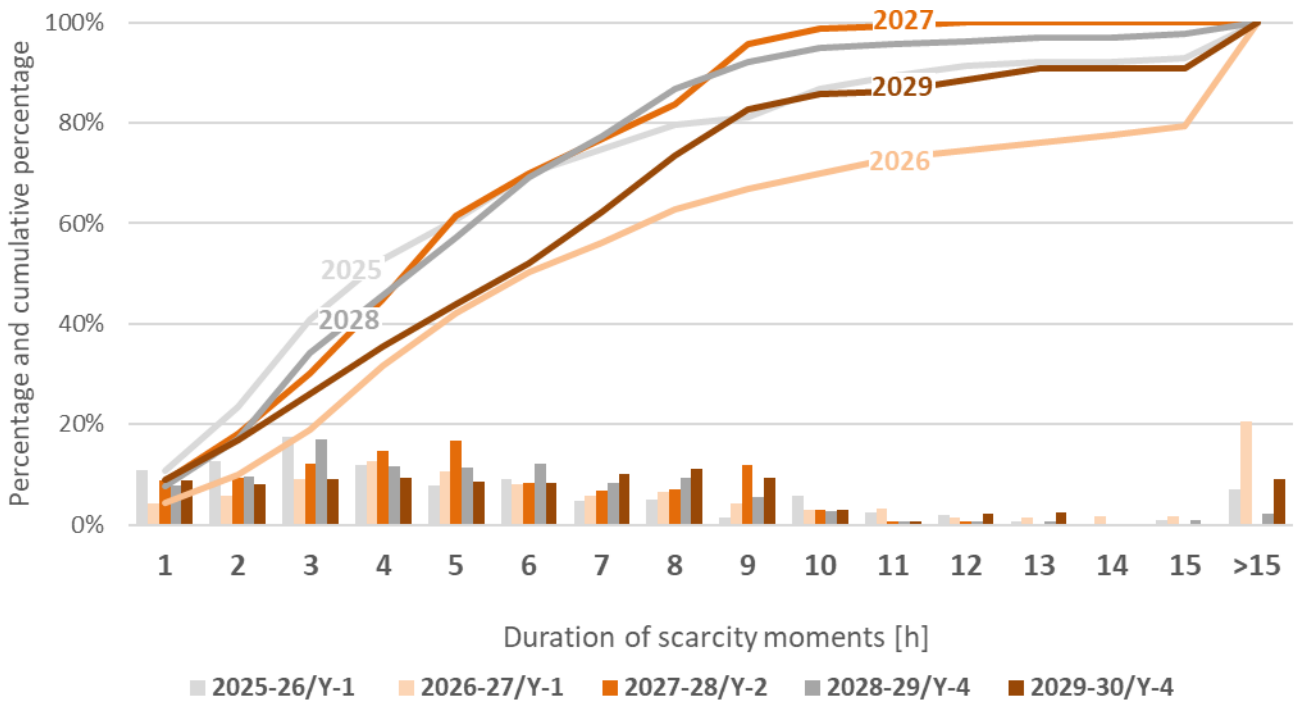
- In 2029-30/Y-4 the scarcity situations are more spread around the evening peak which results from higher RES penetration and flexibility both in Belgium and at EU-level.



Distribution of scarcity according to duration provides a good overview of expected derating factors

- In 2026-27/Y-1, the scarcity events are expected to be longer as they are correlated to the most impactful scarcity events in France. This results in lower derating factors for energy-limited technologies
- In 2029-30/Y-4, the derating factors are also expected to be lower due to higher RES volume and flexibility at EU level

Distribution of scarcity moments according to duration weighted by duration



Purpose of the derating factors

CRM Law

« facteur de réduction: le facteur de pondération d'une capacité considérée, déterminant sa contribution à la sécurité d'approvisionnement afin de fixer le volume éligible à participer à la mise aux enchères »

“reductiefactor: de wegingsfactor van een bepaalde capaciteit, die diens bijdrage aan de bevoorradingszekerheid bepaalt, teneinde het volume vast te leggen dat in aanmerking komt om deel te nemen aan de veiling”

⇨ Evaluation of the contribution to security of supply of each technology

Each technology does not contribute the same way to adequacy

Derating Factors : Calculation methodology

Derating factors are determined based the methodology set in the Royal Decree on Methodology

Categories	Calculation methodology
Thermal technologies with daily schedule	100 – FOR
Energy-limited technologies with daily schedule	Average contribution of each category of technology during simulated scarcity situations based on a fictive unit of 1 MW.
SLA (Service Level Agreement)	
Weather-dependent technologies	Average contribution of each category of technology during simulated scarcity situations / Aggregated Nominal Reference Power of the technology
Thermal technologies without daily schedule	Average contribution of each category of technology during simulated scarcity situations / Aggregated Nominal Reference Power of the technology

Derating Factors - Thermal technologies with daily schedule

- Thermal technologies with daily schedules are determined based on the forced outage rate.
- The derating factors are the identical for 2026-27/Y-1, 2027-28/Y-2, and 2029-30/Y-4
- The forced outage rate are in line with the values provided in the Ministerial Decree.

DRF [%] = 100 [%] - Forced Outage Rate [%]

Category II : Thermal technologies with daily schedule			
Sub-Category	Derating Factor [%]		
	2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
CCGT	94	94	94
OCGT	92	92	92
Turbojets	90	90	90
IC Gas Engines	92	92	92
IC Diesel Engines	90	90	90
CHP/Biomass/Waste	94	94	94
Nuclear	90	90	90
Coal	90	90	90

Derating Factors – SLA's

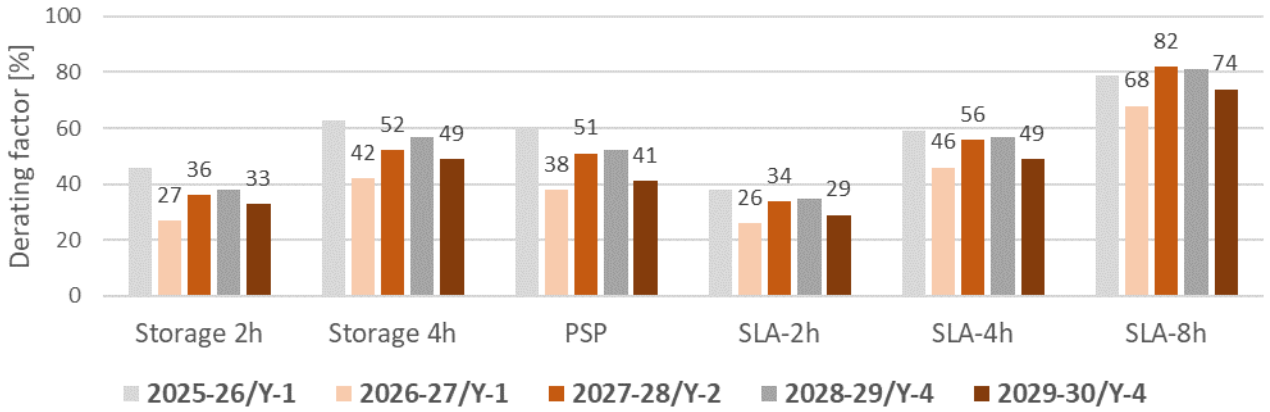
- The deratings for 2026-27/Y-1 and 2029-30/Y-4 are lower due to French nuclear unavailability and high RES & flexibility at European level respectively

Category I : SLA			
Sub-Category	Derating Factor [%]		
	2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
SLA-1h	14	19	16
SLA-2h	26	34	29
SLA-3h	37	47	40
SLA-4h	46	56	49
SLA-5h	53	65	56
SLA-6h	58	72	63
SLA-7h	63	77	69
SLA-8h	68	82	74
SLA-9h	72	87	79
SLA-10h	76	90	83
SLA-11h	80	94	86
SLA-12h	84	96	89
SLA unlimited	100	100	100

Derating factors for energy-limited technologies are lower than last year

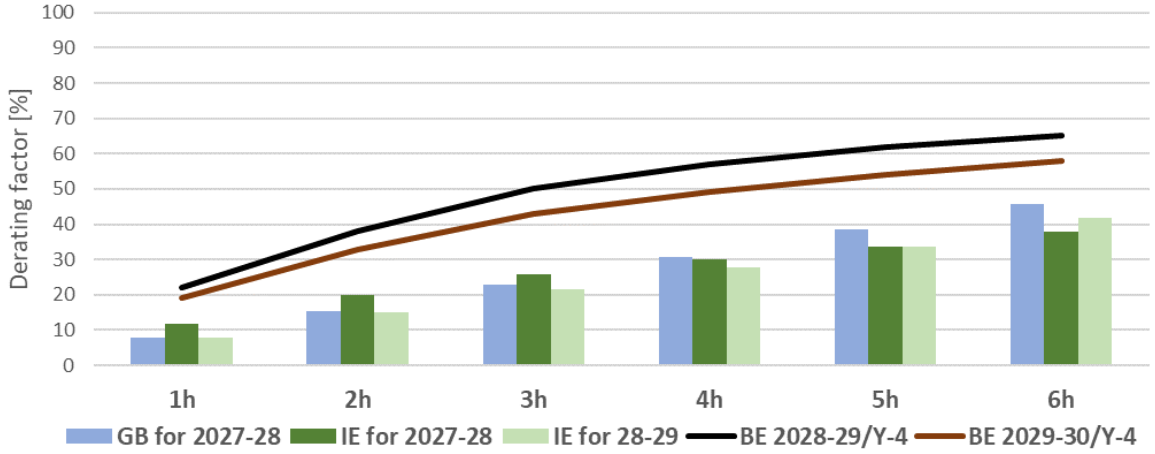
- Derating factors for energy limited technologies decreases compared to last year for the reasons given previously

Comparison of derating factors for energy limited technologies



- This is in line with evolutions on foreign CRM
- Belgian derating factors still high compared to other countries

Comparison of storage derating factors with other CRM in other

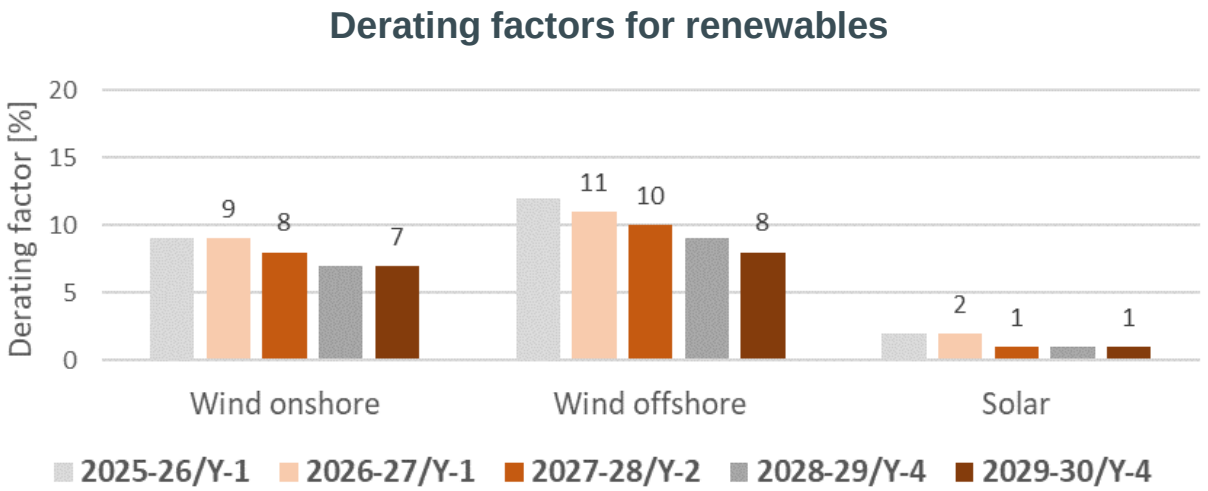


Derating Factors – Weather-dependent technologies

- Weather-dependent technologies categories are calculated based on the average contribution of each sub-category during simulated scarcity situations from the Monte-Carlo simulation's output of the calibrated reference scenario.

$$\text{DRF [\%]} = \frac{\text{Average contribution during simulated scarcity situations [MW]}}{\text{Nominal reference power [MW]}}$$

Category IV : Weather-dependent technologies			
Sub-Category	Derating Factor [%]		
	2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
Offshore Wind	11	10	8
Onshore Wind	9	8	7
Solar	2	1	1
Hydro Run-of-River	50	51	52



Thermal DSO- or CDS-connected technologies DRF remain consistent over time

- Derating factors for thermal technologies without daily schedule are calculated based on the average contribution of each sub-category during simulated scarcity situations from the Monte-Carlo simulation's output of the calibrated reference scenario.

Category V : Thermal technologies without daily schedule			
Sub-Category	Derating Factor [%]		
	2026-27/Y-1	2027-28/Y-2	2029-30/Y-4
Aggregated thermal technologies	65	65	66

Intermediate Price Cap : cost components

- In line with the RD methodology the cost components are based on the Entras study
  - Small update compared to the Public Consultation: newer version of the Entras study aligns with IPC derogation cost categories
  - ➢ Slightly different numbers
  - ➢ The updated Entras Cost of Capacity study is added as an addendum to the calibration report

	FOM [€/kw/y]			VOM [€/MWh]		
Technology	**Low**	**Mid**	**High**	**Low**	**Mid**	**High**
OCGT	20	23	29	2	3	3,6
CCGT	33	35	39	0,9	1,2	2,1
DSR (4h activation)	8	13	19	/	/	/
Batteries	14	20	24	0,1	0,2	0,4

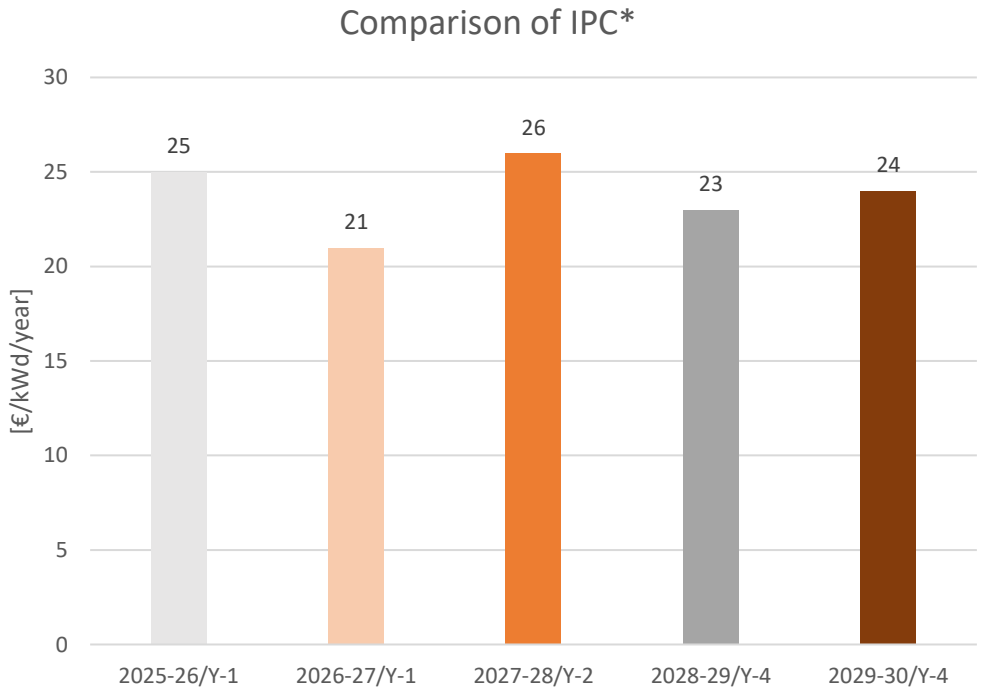
Intermediate Price Cap : revenues and other parameters

- Revenues from **inframarginal rents** are based on Elia's simulations
  - A [low – mid - high] range is estimated
- Revenues from **ancillary services** are based on Compass Lexecon's study
  - Same methodology as for Net-CONE revenues
  - For batteries and DSM the same revenues are estimated compared to Net-CONE units, seeing as there is no noteworthy difference between new and existing units
- Other parameters
  - WACCs are based on the MD
  - Derating Factors are based on the aforementioned values

	Net AS revenues		
Technologies	**2026-27/Y-1 [€/kW/year]**	**2027-28/Y-2 [€/kW/year]**	**2029-30/Y-4 [€/kW/year]**
OCGT	15	15	14
CCGT	2	1	0
DSR (4h activation)	15	14	13
Batteries	21	14	13

Elia proposes an Intermediate Price Cap in line with the values of last year

- For 2026-27/Y-1, the IPC is calculated based on the “Mid Costs – Low Revenues”-permutation
  - Short lead time until Delivery Period: lower probability that costs will be higher than expected
  - An IPC of **21 €/kW/y** is proposed
- For 2027-28/Y-2 and 2029-30/Y-4 is calculated based on the “High Costs – Low Revenues”-permutation
  - Similar to last years
  - An IPC of **26 €/kW/y** for 2027-28/Y-2 and **24 €/kW/y** for 2029-30/Y-4 is proposed



* As proposed by Elia in the respective calibration reports

Reference price

- The **reference price** is defined in the Electricity Act as “the price reflecting the price that is supposed to be obtained by the capacity provider on the electricity market”.
  - It must be observed for every single hour of the Payback Obligation in the spot Day Ahead market on a NEMO active in the Belgian bidding zone (EPEX or Nord Pool spot)
  - It must be expressed in €/MWh
  - The modalities related to such reference for indirect XB capacities are described in the draft Royal Decree Cross-Border and will be specified further in a future version of the Functioning Rules
  - All other practical related details are provided in the Functioning Rules (choice, modification, …)

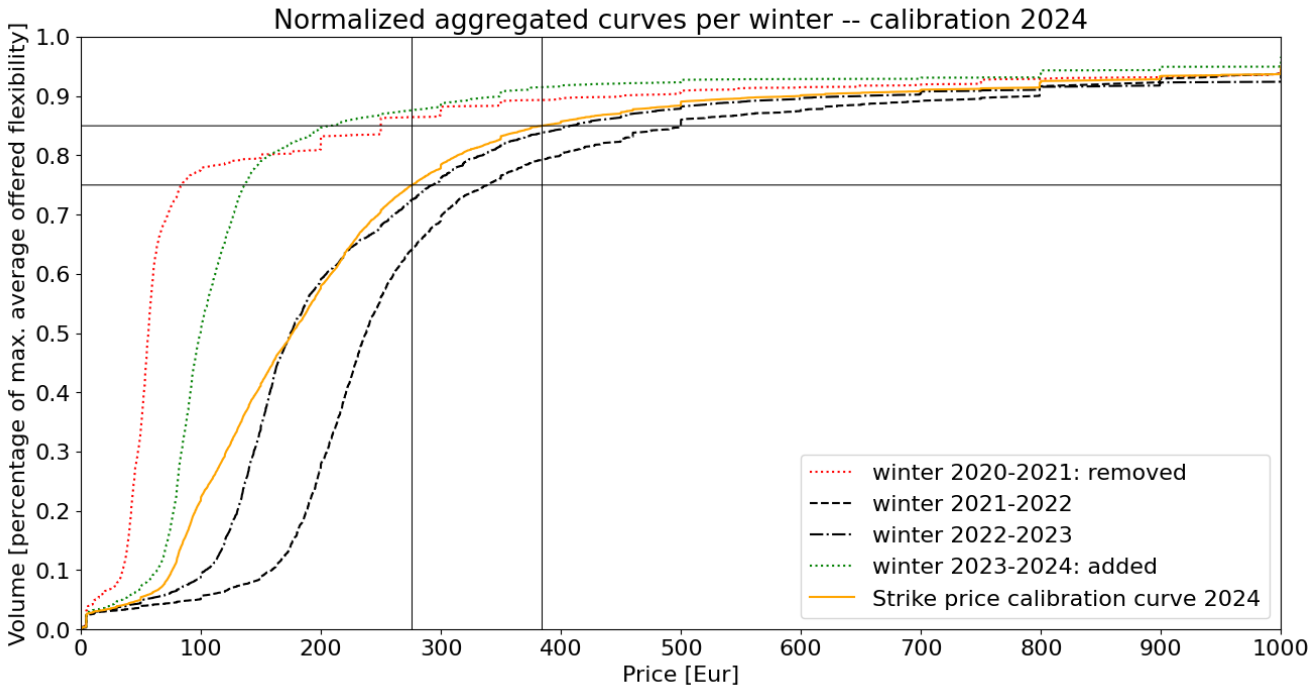
Elia proposes EPEX or Nord Pool Spot for the reference price*, or any other NEMO that becomes active before the start of the Delivery Period

* For foreign capacities, the NEMOs for France, Germany and The Netherlands are also included in the calibration report

Strike Price

determination of the calibration curve and strike price range

- To construct the calibration curve used for the calibration of the strike price, Elia analyzed the data of EPEX and Nord Pool Spot for the **peak hours of the winter weekdays** for the 3 previous years :
  - 2021-22
  - 2022-23
  - 2023-24
- This analysis is based on both aggregated curves and (complex) block orders
- As detailed in the Royal Decree on Methodology, the strike price must be calibrated in a range equivalent to a volume of elastic reaction from the market of (75 -85) % from the constructed calibration curve corresponding to a price range of **(276 - 384) €/MWh** for all auctions.



Strike Price

Considerations for the calibration

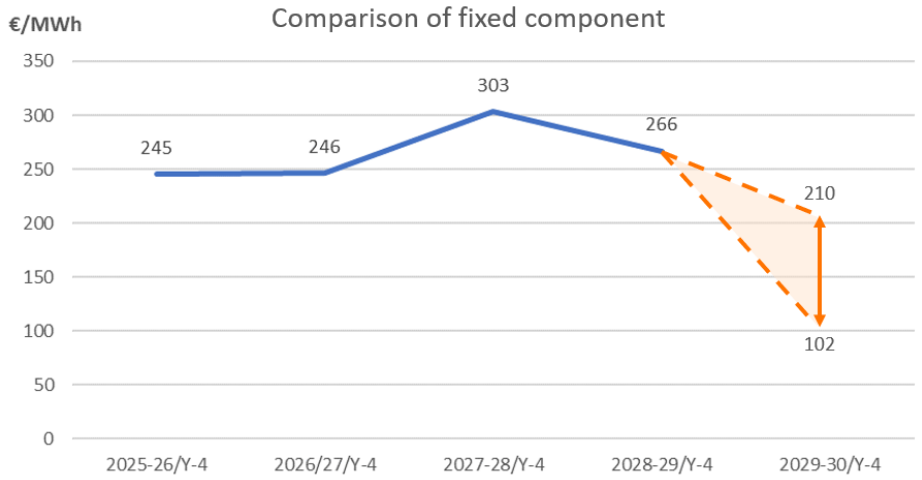
- Elia has taken into account these evolutions in the calibration process of the Strike Price for the **5 criteria** listed in the RD Methodology
  - **The variable costs of daily schedule units must be covered by the strike price**: set by Turbojets, the Strike Price must exceed 337.6 €/MWh for 2026-27/Y-1, 337,5 €/MWh for delivery year 2027-28/Y-2, and 342 €/MWh for delivery year 2029-30/Y-4.
  - **Shape of the calibration curve**: the calibration curve only starts to display asymptotic behaviour towards to upper range of the calibration window, indicating that the Strike Price must be considered there
  - **Evolutions on the energy market**: lower prices have been observed last winter compared to previous year. However, it is hard to say whether this drop is structural. Hence, this criteria according to Elia does not provide a strong indication
  - **Stability in time**: see next slide
  - **Reasonable probability of being reached**: compared to 2022, excessively high prices have not been reached in 2023 and 2024. Be that as it may, the actualization mechanism makes this criterion less impactful

Strike Price

Results

Elia proposes the following Strike Prices:

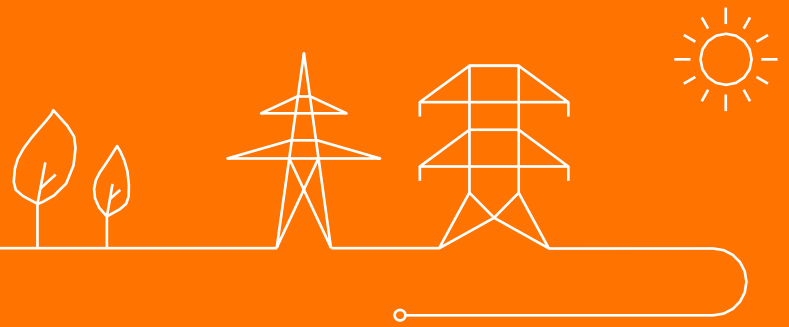
	Strike Price	Fixed Component
2026-27 Y-1	384 €/MWh	210 €/MWh
2027-28 Y-2	384 €/MWh	210 €/MWh
2029-30 Y-4	384 €/MWh	210 €/MWh



- 2029-30/Y-4:
  - As the price range is significantly lower than for previous auctions, the highest possible value must be selected (i.e. 384 €/MWh) to fulfill criterion 4.
- 2026-27/Y-1:
  - Only one Y-1 auction took place in the past and the strike price was 409 €/MWh (fixed component being 245 €/MWh). The price range is significantly lower this year, strongly suggesting that the highest possible value for the strike price must be selected (i.e. 384 €/MWh) to fulfill criterion 4
- 2027-28/Y-2
  - This is the first Y-2 auction, hence no comparison can be made with previous values. Elia believes that it is advantageous to have consistency across the three different auctions and to choose the same value as for the Y-1 and Y-4 auction (i.e. 384 €/MWh)

PQ obligation, Opt-out and Art 4bis

overview



Certain capacities have the obligation to prequalify in the CRM

The obligation to submit a prequalification file stems from the electricity law (7undecies § 8 al. 2).

No obligation to prequalify:

- Non-eligible capacity, i.e., capacity that already benefits from other operating aid (green certificates, etc.)
- Demand side management
- Unproven capacity
- Emergency generators that can work in island mode

→ These capacities are still allowed to participate to the Standard Prequalification process

Obligation to prequalify:

For **existing** units:

- Derated capacity > 1MW
- Production or storage capacity

For **additional** units:

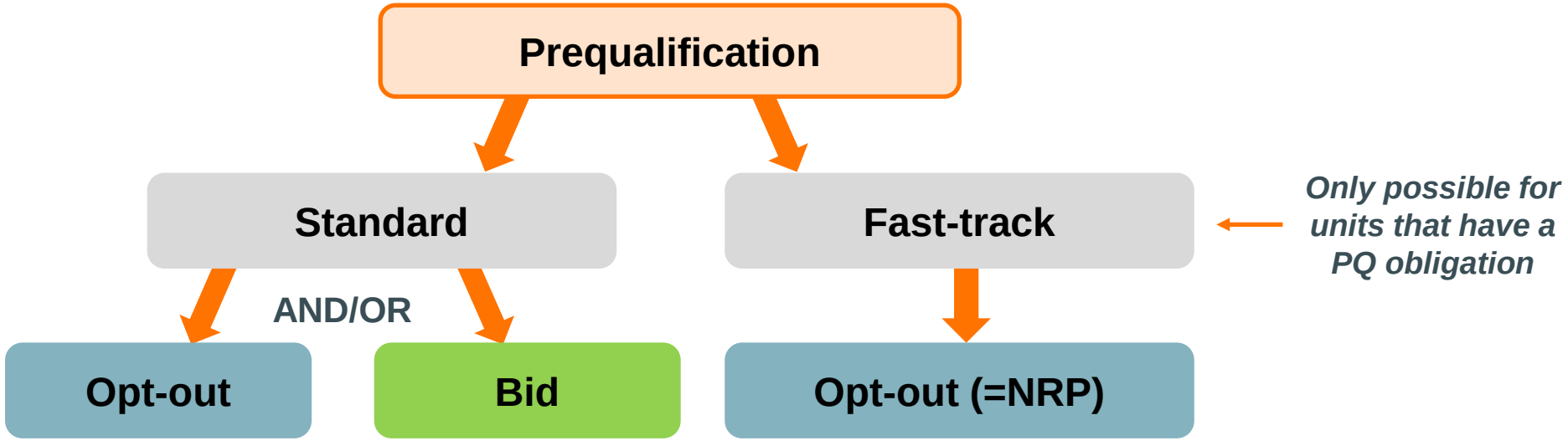
- Signed Technical Agreement
- Production or energy storage permit

OR

- Signed Connection Contract

Submission of an Opt-out notification

- Each time an auction is organized for a delivery period, the obligation to prequalify for this delivery period applies and the Opt-out notification is renewed



→ **Elia classifies the Opt-out volume as either "IN" or "OUT"**

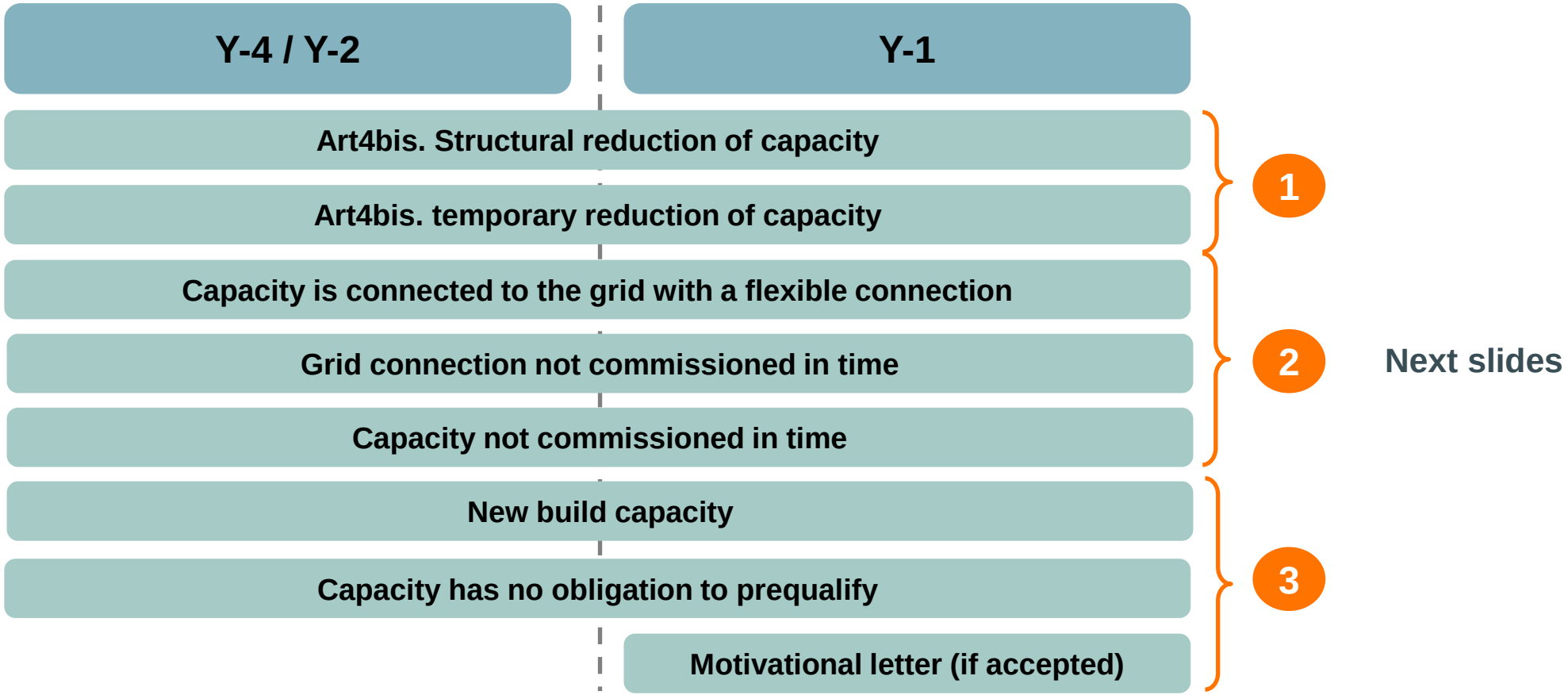
- Opt-out **IN**: the volume of the capacity is contributing to security of supply
- Opt-out **OUT**: the volume of the capacity is **not** contributing to security of supply

Classification of the Opt-out Volume

The capacity provider includes the reason behind the Opt-out notification

- Elia will classify the Opt-out volume based on this reason, accompanied by other information when relevant.

Volumes are **only considered as "OUT" when linked to very specific reasons**:



→ Opt-out volumes related to **any other reason** are **classified as "IN"**

1 Opt-out notifications linked to Article 4bis notifications

Article 4bis (Electricity law)

Who?

- Production and storage capacities
- Nominal power $\geq 25\ MW$

What?

- Temporary reduction of $\geq 25\ MW$
- Structural reduction of $\geq 25\ MW$

When?

- 15/01 Y-1 for a reduction after 31/03 Y
  - Exceptionally, if the unit is obliged to close due to other legal obligations (environmental reasons, etc.) the timing can be shortened.

Opt-out – Structural / temporary reduction of capacity

Capacities that have **already submitted an Article 4bis notification** that covers a (temporary) closure during the relevant delivery must include this in their Opt-out notification.

Art. 4bis → Opt-out ✓

Opt-out → Art. 4bis ✗

It is not possible to submit an Art. 4bis notification when the reduction takes place during a delivery period for which an Opt-out notification has already been submitted

2 Flexible connection, grid & capacity commissioning date

Capacity is connected to the grid with a flexible connection

- Capacity that is connected to the Elia grid with a flexible connection can link an Opt-out notification to the part of their connection capacity that is flexible.
- **Capacity providers indicate this** in their notification

Grid connection not commissioned in time

- Opt-out volumes of additional capacity for which it is appears that based on either the Technical Agreement or the Connection Contract, the grid connection of the capacity is not commissioned in time
- **Elia performs an evaluation** of the grid connection commissioning date

Capacity not commissioned in time

- In case a new build capacity itself (not the grid connection) is not commissioned in time
- **Capacity providers provide the commissioning date** of their capacity in their PQ file

3 New build capacity, capacity without obligation to PQ and motivational letter

New build capacity

- In case a New Build capacity submits an Opt-out notification for its entire capacity
- **Elia considers this** in its classification of the Opt-out notification

Capacity has no obligation to prequalify

- In case a capacity that did not have the obligation to prequalify (see first slide) submits an Opt-out notification for any volume
- **Elia considers this** in its classification of the Opt-out notification

Motivational letter

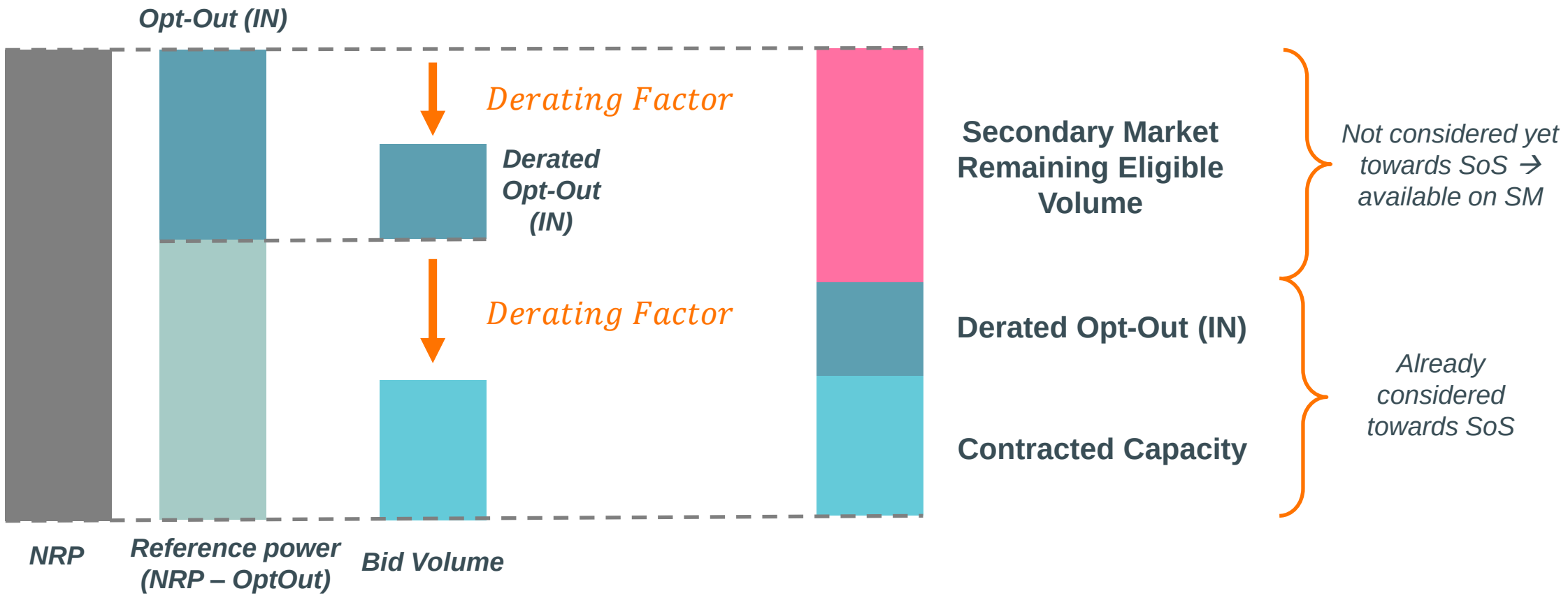
- **Only possible towards a Y-1 auction (!)**
- Capacity providers can submit a motivational letter in which they justify why (a part of) their capacity should be classified as “OUT”
- **Elia considers** the volume as “OUT” **after the letter has been approved**

Link between Opt-out notification and Secondary Market

Volumes which have already been considered towards adequacy, i.e., Opt-out IN volumes, cannot be used anymore on the Secondary Market

- However, any volume beyond the derated Opt-out IN and contracted capacity is still available to be traded

Example: Non-energy constrained CMU with an Opt-out IN notification & contracted capacity



Example 1 – CHP

CHP
- 20MW
- Operating aid until 31/12/2027

	Y-1 – 2027-2028	Y-4 – 2030-2031
PQ obligation?	The CHP receives operating aid during (part of) the delivery period → The CHP is non-eligible and decides not to participate	The CHP does not receive operating aid during the delivery period → The CHP is **not** non-eligible → The CHP is a production unit > 1MW → obligation to PQ
PQ & auction	N/A	An NRP = 20 MW is calculated, Derating factor = 50% • Opt-out (IN) of 10MW • Bid volume of 5MW → bid of 5MW contracted
Secondary Market	N/A	After subtracting the derated Opt-out IN and the contracted capacity, the CHP still has 10 MW available on the SM SMREV = NRP – OptOut IN*DF – Contracted Capacity = 10MW

Update of 25-26 Delivery Period Operational Readiness Plan

Starting Point…

- Starting from Q4 2025 several new process will go-live in anticipation of the start of the first CRM delivery period. This constitutes the most challenging Go-Live since 2021 first Auctions
- The go-live will impact a very broad range of stakeholders. To guarantee its success a transversal effort will be needed and not only within Elia but also with the Capacity Providers
- The following slides aim to present our plan to make this Go-Live a success

Key Principle to Ensure Operational Readiness

- Operational Readiness aims to ensure that all is Implemented/Organized/Communicated to ensure fluent Operations for the start of the Delivery Period 2025-2026.
- Ensuring Operational Readiness is key for Elia, but also for the Capacity Providers. It spans several processes, Availability Monitoring and Payback Obligation (AMPBO), Secondary market (SM) and Settlement.
- Through the different actions that we will launch in the coming weeks/months we want to support you in being ready to operate these processes in the best possible conditions.

Focus of the Presentation - Capacity Provider Readiness Track

Goal – Ensure that the Capacity Providers master AMPBO/settlement /Secondary Market rules and are ready to operate the processes

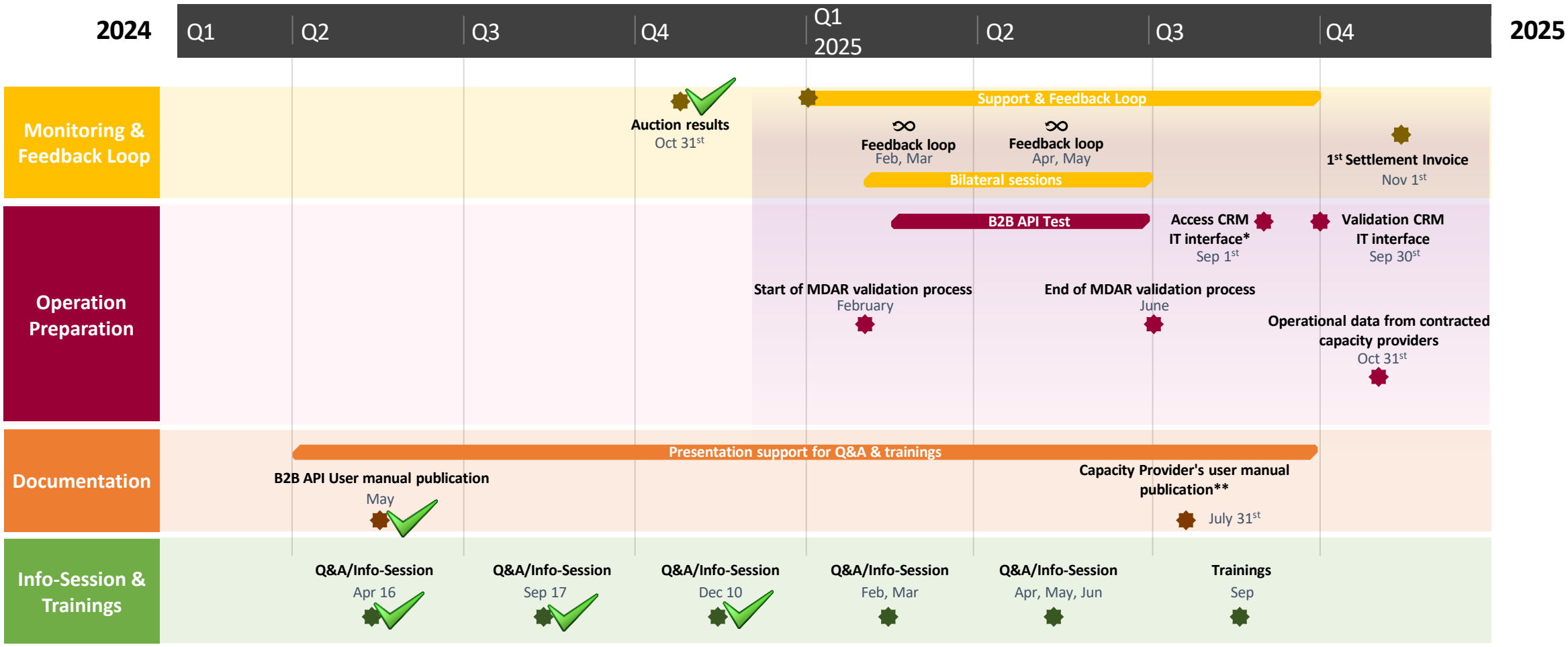
Documentation & Use Cases (Elia website)

Info Sessions & Trainings

Operation Preparation

Support & Feedback Loop

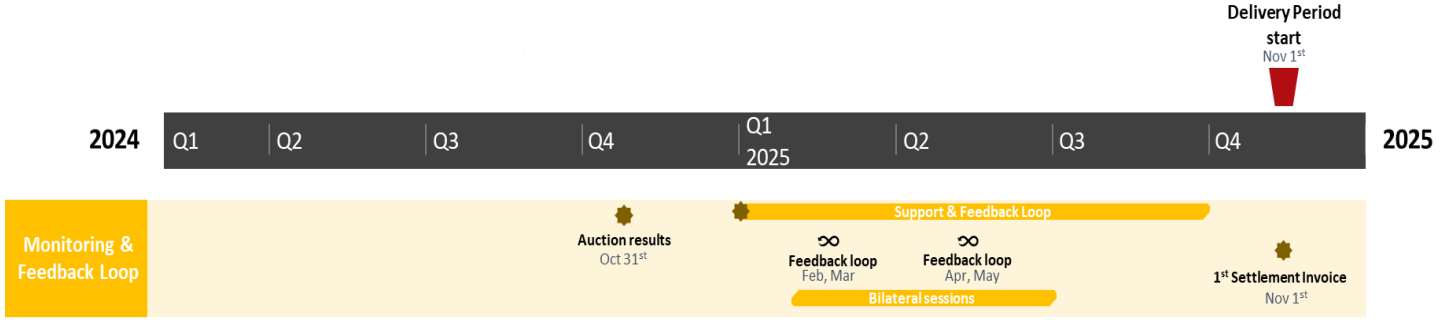
Timeline – Capacity Provider Track : General Overview



Timeline – Support & Feedback Loop Zoom in (1/4)

Summary

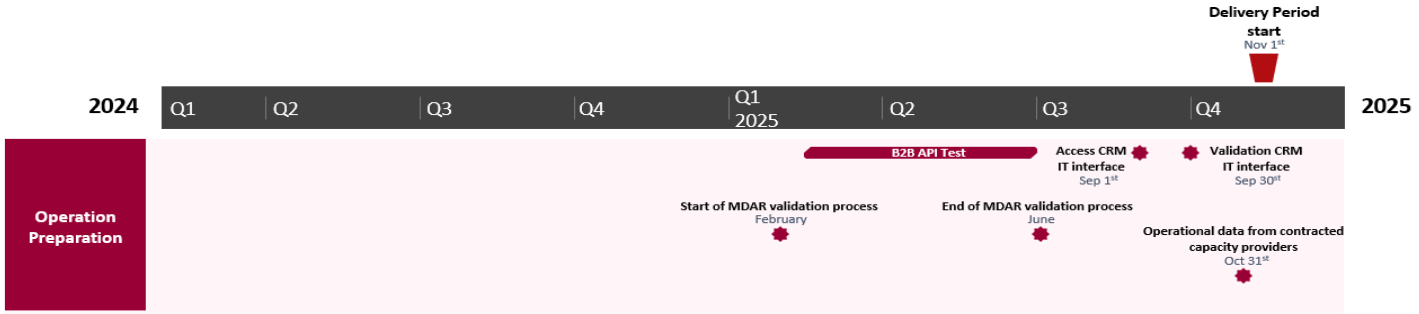
- **End Goal** – Ensure that the **Capacity Providers will be ready to operate** the processes by providing them **personalized support**
- As from February 2025, **bilateral sessions** between Elia and the contracted capacity providers will be organized to:
  - ✓ Discuss and **assess the Operational Readiness needs of the Capacity Providers**
  - ✓ **Present & Review** the Monthly Delivery Activity Report (MDAR), the settlement invoice, and the Monthly Statement (with mocked-up data)
  - ✓ Discuss with the relevant participant about the status of their **connection to the B2B API**
  - ✓ Demo the interface for **Secondary Market** transactions (already in production since 2023)
  - ✓ Review any other operational topic that the capacity provider would like to discuss with Elia



Timeline – Operation Preparation Zoom in (2/4)

Summary

- The capacity provider will get access to the **CRM IT interface in September 2025**
- Consequently, Elia will prepare upfront a **Monthly Delivery Activity Report (MDAR), a Monthly Statement and a Settlement Invoice with mocked-up data** for review with each contracted capacity provider during the bilateral session starting in February 2025
- The capacity providers must provide their **operational data (NEMO, Declared Prices) at the latest on the 31st October** via the CRM IT Interface
- Each capacity provider could ask for a **remote test** with Elia to confirm that their connection to our **B2B API is working properly**



Timeline – Documentation Zoom in (3/4)

Summary

- For each trainings/Q&A info-sessions, we prepare the **presentation support including mock-ups** of the CRM IT interface
- We will upload the Availability Monitoring & Payback Obligations and the Settlement **user manual on Elia's website for end of July 2025**
- We will create design dedicated **quick reference cards for the processes** (AMPBO & Settlement) – including differences between the different types of capacity providers (daily schedule or not, energy constrained or not..)
- We already published on Elia's website the **B2B API user manual** mid-2024 and the **Secondary Market user manual** in June 2023

Timeline – Info-Session & Trainings Zoom in (4/4)

Summary

- We started our first **Q&A/Info-Session in April 2024** to:
  - ✓ Answer any questions from contracted capacity providers
  - ✓ Review key operational topics of AMPBO/Settlement/SM processes
  - ✓ Present the progress of ELIA Implementations of the ADEMAR IT Platform
- We will plan in **September 2025 physical and online trainings** to go the key operational topics of AMPBO/Settlement/SM processes
- We will create **voice-over videos** accessible to all contracted capacity providers

Next Steps & Contact Information

- You will receive in the course of January the invitations to participate to the various sessions, like the bilateral meetings, the Q&A sessions,…
- We will contact you where relevant through the:
  - Expert group contact list
  - Ademar Platform contact information
- As a reminder, last year an Expert Group (implementation, operation, IT experts) has been created in order interact and discuss with you about the implementation of the delivery period related processes → If you are not yet part of it but want to participate, feel free to contact us via: taskforce.CRM@elia.be

- In the meantime, for any additional question or feedback regarding the design and/or implementation of Availability Monitoring and Payback Obligation, please contact taskforce.CRM@elia.be

Info sessions 2025

General info session:

- February 13th from 13h-15h
- March 3rd from 13h-15h

Detailed info session:

- March 24th from 13h-17h
- April 10th from 13h-17h

Cross border info session:

- March 3rd from 15h-17h30

Next meetings

Next meetings

- **Monday 27/01/2025 : WG Adequacy** (from 13:30 to 16:30)
- **Thursday 13/02/2025 : General info session** (from 13:00 to 15:00)
- **Friday 21/02/2025 : WG Adequacy** (from 09:30 to 12:30)
- **Monday 03/03/2025 : General info session** (from 13:00 to 15:00)
- **Monday 03/03/2025 : XB CRM info session** (from 15:00 to 17:30)

Please find further information on the next meetings through the WG Adequacy webpage

AOB

Thank you.