

Haulogy

CRM Cost Assessment

DISCLAIMER

The present study has been carried out between 1st December 2020 and 28th January 2021 independently by haulogy S.A., contracted by the FPS Economy to calculate the costs of the mechanism as requested by the Parliament and the Minister

The aim is to provide a detailed CRM cost estimate, basing calculations on (i.) a target volume to be auctioned and (ii.) expected bid prices for each technology category:

- Target volume calculation is based *inter alia* on currently available methodology and parameters provided by ELIA in the framework of the Y-4 auction preparation for delivery in 2025 (report published in November 2020).
- Expected bid prices are based on technology-specific costs data. However, the consultant did not have individual data at its disposal and cannot assess the business cases and financing modalities of the different parties over the course of years. The cost estimate was made based on basic data available to the consultant. In case no usable data was available, the consultant made additional assumptions.

Agenda

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Cost impacting elements of CRM design

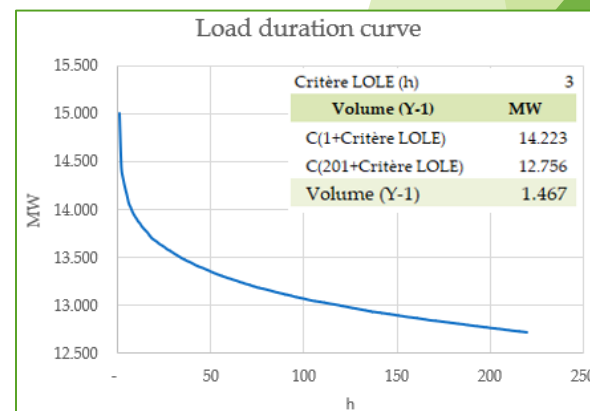
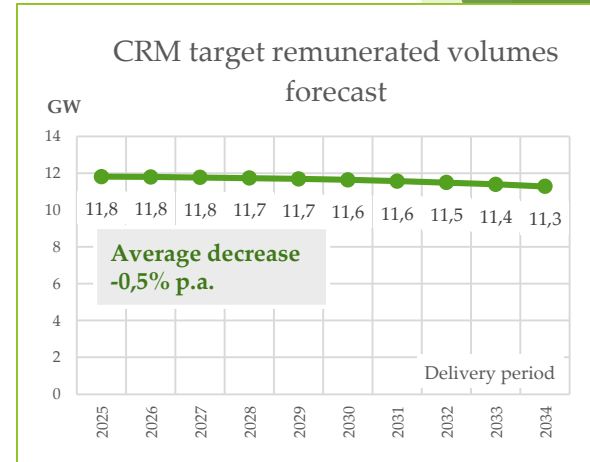
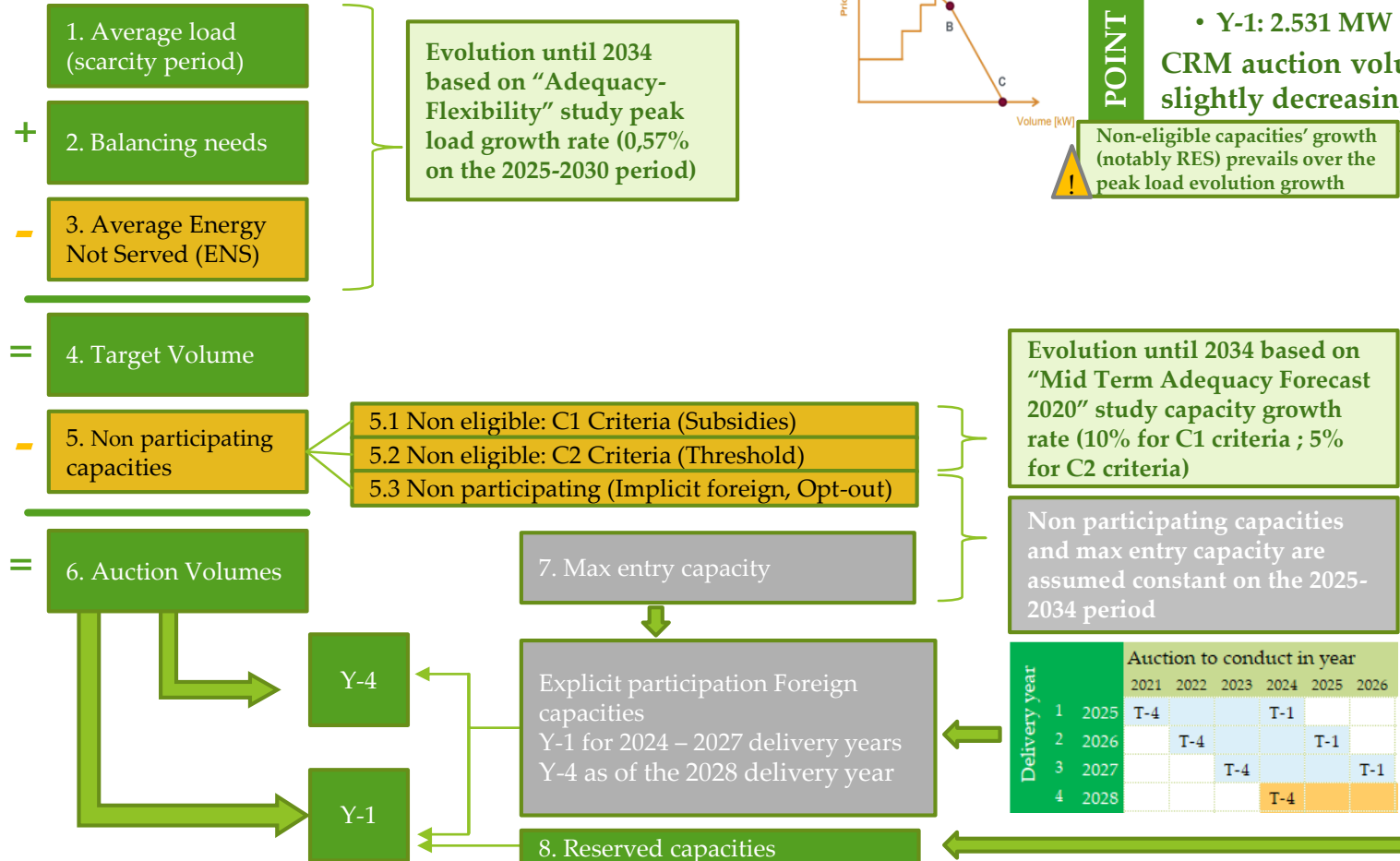
Most impacting elements

- Volumes to contract through auctions
- Clearing mechanism: *Pay-as bid* (possibly *Pay-as-Clear* approach based on an evaluation after the first 2 years)
- Price caps : defined by the Parliament's resolution:
 - 20 EUR/kW/year (inflated) for 1 year contracts
 - 75 EUR/kW/year (inflated) for multiple (3, 8 or 15) years contracts
- Program duration: 10 delivery years (+ possibly delivery years from remaining multiple years contracts)
- 20 auctions:
 - 10 * T-4 auctions
 - 10 * T-1 auctions

		Auction to conduct in year													
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Delivery year	1 2025	T-4			T-1										
	2 2026		T-4			T-1									
	3 2027			T-4			T-1								
	4 2028				T-4			T-1							
	5 2029					T-4			T-1						
	6 2030						T-4			T-1					
	7 2031							T-4			T-1				
	8 2032								T-4			T-1			
	9 2033									T-4			T-1		
	10 2034										T-4			T-1	

Auction volumes targets

Based on ELIA's report providing information for auction volume determination



Source:
 [1] ELIA, Préparation de l'enchère CRM Y-4 pour la période de livraison 2025-26, November 2020
 [2] ELIA, Adequacy and Flexibility study for Belgium 2020-2030, June 2019
 [3] ENTSOE, Mid-term adequacy forecast 2020, November 2020

Auction volumes: projected derated capacities

Projected capacities (delivery 2025)

Thermal	7.465
Nuclear	433
CCGT	3.968
OCGT	294
CHP	1.368
Turbojets	158
Profiled thermal non renewable generation	1.244
Renewable	14.866
Wind onshore	3.747
Wind offshore	2.253
Solar	8.000
Hydro-run	134
Biomass - individually modelled	273
Biomass - profiled	145
Waste - individually modelled	268
Waste - profiled	46
Storage	2.305
PSP	1.305
Batteries	1.000
Market response	1.460
Market response	1.460
Cross Border participation	1.935
France	4
Germany	461
The Netherlands	599
Great Britain	871

➔ Absent (11/12) for the delivery period

➔ 23% not eligible (Threshold criteria)

➔ 100% not eligible (Subsidy criteria)

➔ 23% not eligible (Threshold criteria)

➔ 23% not eligible (Threshold criteria)

Grand total 28.031

Auctions eligible capacities (delivery 2025)

Thermal	6.746
Nuclear	-
CCGT	3.968
OCGT	294
CHP	1.368
Turbojets	158
Profiled thermal non renewable generation	958
Renewable	822
Wind onshore	-
Wind offshore	-
Solar	-
Hydro-run	134
Biomass - individually modelled	273
Biomass - profiled	112
Waste - individually modelled	268
Waste - profiled	35
Storage	2.305
PSP	1.305
Batteries	1.000
Market response	1.460
Market response	1.460
Cross Border participation	1.064
France	4
Germany	461
The Netherlands	599
Great Britain	-

Grand total 12.397

Derating factors

91%
90%
93%
96%
62%
34%
93%
62%
93%
62%
19%
23%
46%
N/A
N/A
N/A
N/A

Auctions eligible (derated) capacities (delivery 2025)

Thermal	5.894
Nuclear	-
CCGT	3.611
OCGT	265
CHP	1.272
Turbojets	152
Profiled thermal non renewable generation	594
Renewable	640
Wind onshore	-
Wind offshore	-
Solar	-
Hydro-run	46
Biomass - individually modelled	254
Biomass - profiled	69
Waste - individually modelled	249
Waste - profiled	22
Storage	473
PSP	248
Batteries	225
Market response	669
Market response	669
Cross Border participation	1.064
France	4
Germany	461
The Netherlands	599
Great Britain	-

Grand total 8.740

Source:

[1] ELIA, Préparation de l'enchère CRM Y-4 pour la période de livraison 2025-26, November 2020

[2] ELIA, Strategic Reserve 2021-22 - input data_final_EN, November 2020

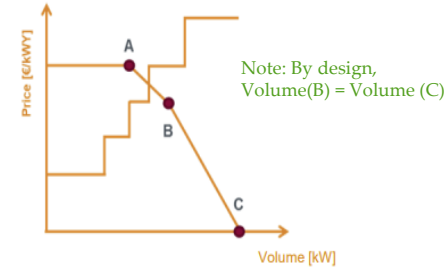
[3] http://transparency.engie.com/REM_REMIT/UMMDetail.aspx?CommodityId=3&IsUMM=False&IsDefault=True

Auction volume targets

Applying [1] methodology and considering only eligible capacities



Auction Volume	Point A [MW]	Point B [MW]
Y-4 Auction	8.305	9.277
Y-1 Auction	2.531	2.531
Total auctions	10.836	11.808
Expected on the market	8.740	8.740
GAP (Additional capacities)	2.096	3.068



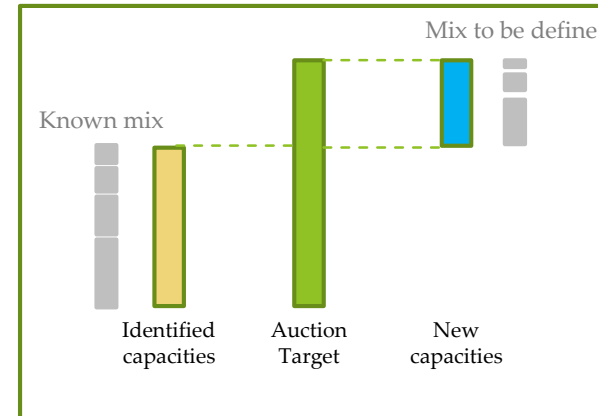
Auctions involve:

1. **Already existing capacities** (when running the auction)
2. **Planned/expected capacities** that do not exist yet when running the auction
3. **New, additional capacities** (possibly required to meet the target volume)



2 types of auction participants

1. **Identified capacities**
 - 1.1. Existing capacities
 - 1.2. Expected capacities
2. **New capacities**



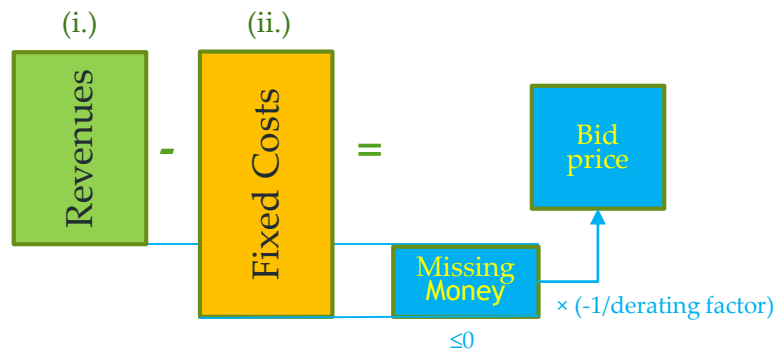
Based on available cost data, **Contract Durations** and **Bid Prices** are calculated

Source:

[1] ELIA, Préparation de l'enchère CRM Y-4 pour la période de livraison 2025-26, November 2020

CRM cost calculation methodology

- The **Contract Duration** is calculated based on:
 1. Investments Thresholds (177/400/600 EUR/kW) proposed by the CREG (leading to 1/3/8/15 years contracts)
 2. The assumption that a part of initial investment costs are not eligible in the contract duration calculation (80% for New capacity and 90% for Refurbishments)
- The **Bid Price** is assumed being strictly based on the « *Missing Money* » on the contract duration
 1. The Missing Money (MM) is the difference between (i.) revenues (ancillary market revenues and inframarginal rent) and (ii.) total annual fixed costs (investment costs and fixed operating and maintenance costs)



Strong assumption:

$$\text{Bid price} = - \text{MM} / \text{derating factor}$$



Note the conventional choices for Missing Money:

- Relates to non-derated capacity
- Is negative when revenues do not cover costs

2 exceptions

1. Missing money ≥ 0 \Rightarrow Bid price = 0
2. Bid price \geq Price cap \Rightarrow Bid price = Price cap

CRM cost calculation methodology

2. By assumption, the bid price exclusively covers the missing money over the CRM contract duration, e.g.:
 - An investment project eligible to a 15 periods CRM contract will bid based on the missing money encountered during this contract, even if other missing money years, outside that contract duration, are expected.
 - An existing CMU being granted a 1-year contract will only include the “money missed” during this one year

3. It is assumed that CMUs will bid on the strict basis of their Missing Money. Therefore, no strategic bidding of any kind is considered:
 - CMUs will not bid more than what they strictly need to cover their missing money. *Bidding more than the exact missing money amount could possibly constitute a bidding behaviour in a low-competition context. Such a context is considered in scenario 2 and 2bis (cf. page 28 and 30), where it is assumed that all existing capacities bid at the intermediate price cap level in all auctions.*
 - CMUs will not bid less than what they strictly need to cover their missing money. *Bidding less than the exact missing money amount could possibly constitute a bidding behaviour in a highly competitive context that is not considered in the present analysis. For instance, in such a context, existing capacities might forego a part of their fixed costs (e.g.: past CAPEX) to ensure their selection in the CRM auction.*

CRM cost calculation methodology

Detailed data for all considered power generation or power market responses technologies are required to assess contract duration and bid prices:

The main sources used are:

- CREG, Consultation publique (PRD)2086 relative au Projet de proposition relative au coût brut d'un nouvel entrant et au facteur de correction X, June 2020
- ELIA, Préparation de l'enchère CRM Y-4 pour la période de livraison 2025-26, November 2020

In case of lack of data in the latter two, other sources and/or assumptions are used

➤ Costs data:

1. **Initial investment** data for new, existing and refurbishment of capacities
2. **Fixed operating and maintenance (FOM)**

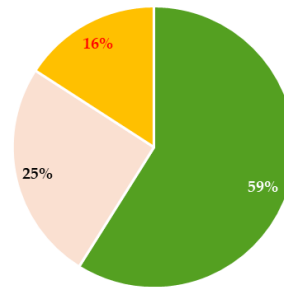
➤ Revenues data:

1. **Ancillary services net revenues**
2. **Infra-marginal rent** data

Detailed costs and revenues data are not (consistently) available for all technologies

➤ 8 categories

1.	CCGT
2.	OCGT
3.	CHP
4.	PSP
5.	Batteries
6.	Market Response
7.	Cross-Border participation
8.	Others*



	Derated MW
Data available	5.148
Substantiated Assumptions	2.207
Estimated/Parametrisation	1.386
Total	8.740

*Turbojets, Profiled thermal non-renewable generation, Hydro-run, Biomass, Waste

CRM cost calculation methodology

Essential assumptions made by the consultant:

- In 2025, 42% of identified CCGTs will undergo a refurbishment (0% for OCGTs and 42% for CHPs)
- 70% of the CCGTs that are not undergoing a refurbishment are still within their economic lifetime (100% for OCGTs and 70% for CHPs)
- 20% of CHPs are opting-out
- The new capacity-mix is made of 70% CCGT, 5% OCGT and 25% CHP in 2025
- The decreasing demand as of 2026 is impacted on the existing capacities bidding at the Intermediate Price Cap

Results are computed for several scenarios around the base case:

Scenario	1-year contracts bidding at the Intermediate Price Cap	New CCGT Efficiency	New CCGT CAPEX [EUR/kW]	Existing CCGT CAPEX [EUR/kW]
1 = base case	No	60%	750	527
2	Yes	60%	750	527
1bis	No	63%	633	445
2bis	Yes	63%	633	445

CRM gross cost results and sensitivities

Scenario 1

Base case scenario: (bidders offer based on Missing Money levels, including when this leads to bidding at 0 EUR/kW/y)

CRM parameters

- WACC = 7,5% ; Inflation = 1,58%
- CAPEX new CCGT = 750 EUR/kW
- CAPEX existing CCGT = 527 EUR/kW
- Competitive market : Bid Price = Missing Money/derating factor (if Missing Money ≥ 0 , Bid Price = 0)
- Existing capacities: 20% opt-out for CHP
- 2025 refurbishment share: 42% for CCGT, 0% OCGT and 42% for CHP
- New Capacity is made of 70% CCGT, 5% OCGT and 25% CHP



Average nominal value:

- Complete period (15 years): 238 MEUR
- First 10 years : 300 MEUR

CRM nominal Gross Cost in MEUR

CRM delivery year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Y-4	271	74	75	83	83	83	83	82	119	118	0	0	0	0	0
Y-1	37	38	39	27	28	28	29	30	30	31	0	0	0	0	0
Previously auctioned	0	197	197	197	197	197	197	197	113	113	113	113	113	113	113
SUM	308	310	311	308	308	309	309	309	263	263	113	113	113	113	113

CRM gross cost results and sensitivities

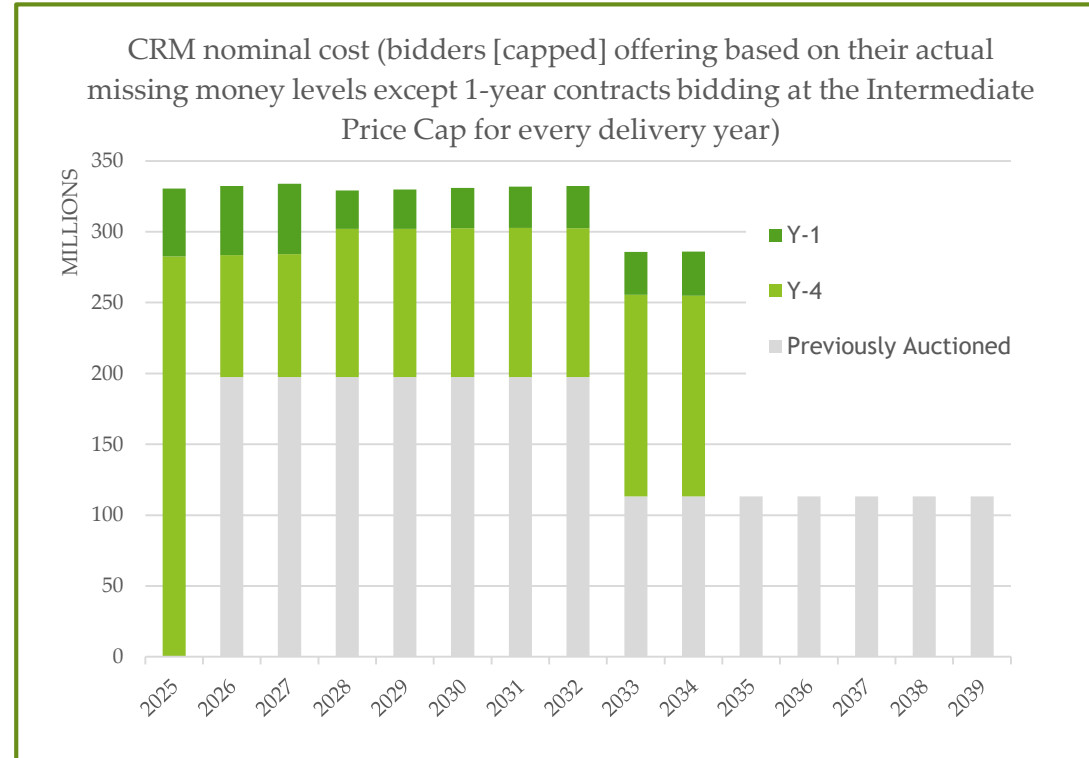
Scenario 2

Mixed situation :

Multi-annual contracts bidders offer based on their missing money and 1-year contract bidders offer at the Intermediate Price Cap in every CRM auction

CRM parameters

- WACC = 7,5% ; Inflation = 1,58%
- CAPEX new CCGT = 750 EUR/kW
- CAPEX existing CCGT = 527 EUR/kW
- Hybrid Market : (3-8-15 years contracts : Bid Price = Missing Money/derating factor; 1-year contracts : Bid Price = Price cap)
- Existing capacities : 20% opt-out for CHP
- 2025 refurbishment share: 42% for CCGT, 0% OCGT and 42% for CHP
- New Capacity is made of 70% CCGT, 5% OCGT and 25% CHP



Average nominal value:

- Complete period (15 years): 253 MEUR
- First 10 years : 322 MEUR

CRM nominal Gross Cost in MEUR

CRM delivery year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Y-4	283	86	87	105	105	105	105	105	142	142	0	0	0	0	0
Y-1	48	49	50	27	28	28	29	30	30	31	0	0	0	0	0
Previously auctioned	0	197	197	197	197	197	197	197	113	113	113	113	113	113	113
SUM	330	332	334	329	330	331	332	332	286	286	113	113	113	113	113

CRM gross cost results and sensitivities

Scenario 1bis

Variation of the base case scenario

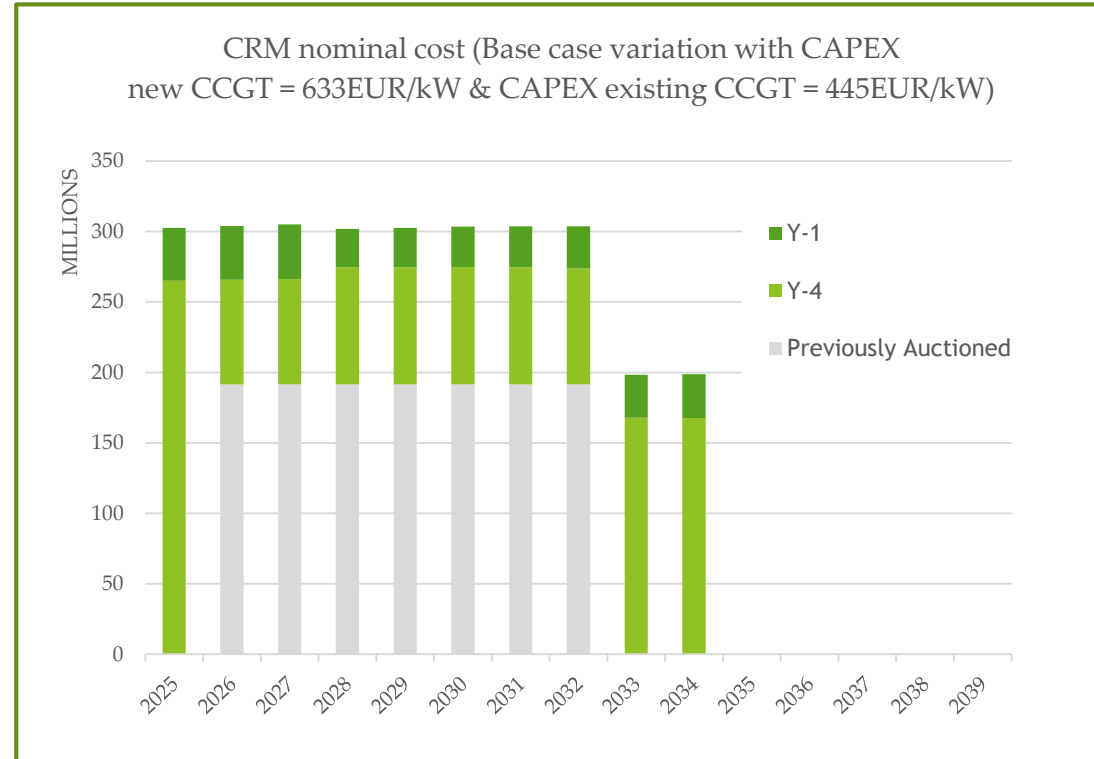
CRM parameters

- WACC = 7,5% ; Inflation = 1,58%
- **CAPEX new CCGT = 633 EUR/kW***
- **CAPEX existing CCGT = 445 EUR/kW**
- Competitive market : Bid Price = Missing Money/derating factor (if Missing Money ≥ 0 , Bid Price = 0)
- Existing capacities: 20% opt-out for CHP
- 2025 refurbishment share: 42% for CCGT, 0% OCGT and 42% for CHP
- New Capacity is made of 70% CCGT, 5% OCGT and 25% CHP

*600 EUR/kW EPC [GTW, Handbook Gas Turbine, Jan 2019]
+ 5,5% grid connection costs [Fichtner]

CRM nominal Gross Cost in MEUR

CRM delivery year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Y-4	265	74	75	83	83	83	83	82	168	168	0	0	0	0	0
Y-1	37	38	39	27	28	28	29	30	30	31	0	0	0	0	0
Previously auctioned	0	192	192	192	192	192	192	192	0	0	0	0	0	0	0
SUM	303	304	305	302	303	303	304	304	198	199	0	0	0	0	0



Average nominal value:

- Complete period (15 years): 188 MEUR
- First 10 years : 282 MEUR

Compared with the base case scenario (scenario 1), the difference is consequent because the new CCGTs contracts [here 8 years compared to 15 years in the reference scenario 1] are not carried along after 2032.

CRM gross cost results and sensitivities

Scenario 2bis

Variation of the "Mixed situation"

CRM parameters

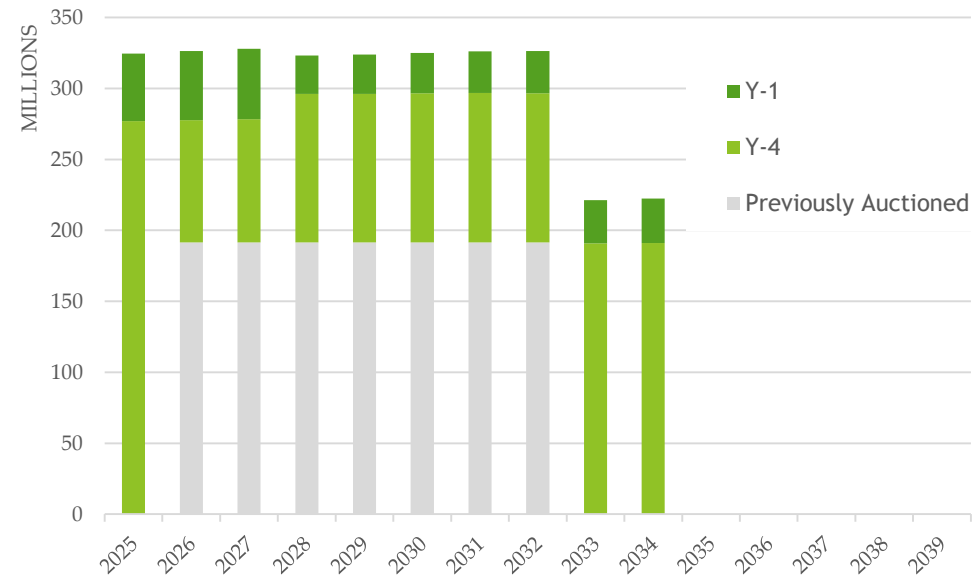
- WACC = 7,5% ; Inflation = 1,58%
- CAPEX new CCGT = 633 EUR/kW*
- CAPEX existing CCGT = 445 EUR/kW
- Hybrid Market : (3-8-15 years contracts : Bid Price = Missing Money/derating factor; 1-year contracts : Bid Price = Price cap)
- Existing capacities: 20% opt-out for CHP
- 2025 refurbishment share: 42% for CCGT, 0% OCGT and 42% for CHP
- New Capacity is made of 70% CCGT, 5% OCGT and 25% CHP

*600 EUR/kW EPC [GTW, Handbook Gas Turbine, Jan 2019]
+ 5,5% grid connection costs [Fichtner]

CRM nominal Gross Cost in MEUR

CRM delivery year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Y-4	277	86	87	105	105	105	105	105	191	191	0	0	0	0	0
Y-1	48	49	50	27	28	28	29	30	30	31	0	0	0	0	0
Previously auctioned	0	192	192	192	192	192	192	192	0	0	0	0	0	0	0
SUM	325	326	328	323	324	325	326	326	221	222	0	0	0	0	0

CRM nominal cost (Scenario n°2 variation with CAPEX new CCGT = 633EUR/kW & CAPEX existing CCGT = 445EUR/kW)



Average nominal value:

- Complete period (15 years): 203 MEUR
- First 10 years : 305 MEUR

Compared with the mixed situation scenario (scenario 2), the difference is consequent because the new CCGTs contracts [here 8 years compared to 15 years in reference scenario 2] are not carried along after 2032.

CRM gross cost results and sensitivities

Scenario comparison (Average nominal value 15/10 years):

Scenario	Average nominal value (15 years) [MEUR]	Average nominal value (10 years) [MEUR]
1 = base case	238	300
2	253	322
1bis	188	282
2bis	203	305

Base case scenario leads to a Gross Cost Estimate of:

CRM nominal Gross Cost in MEUR

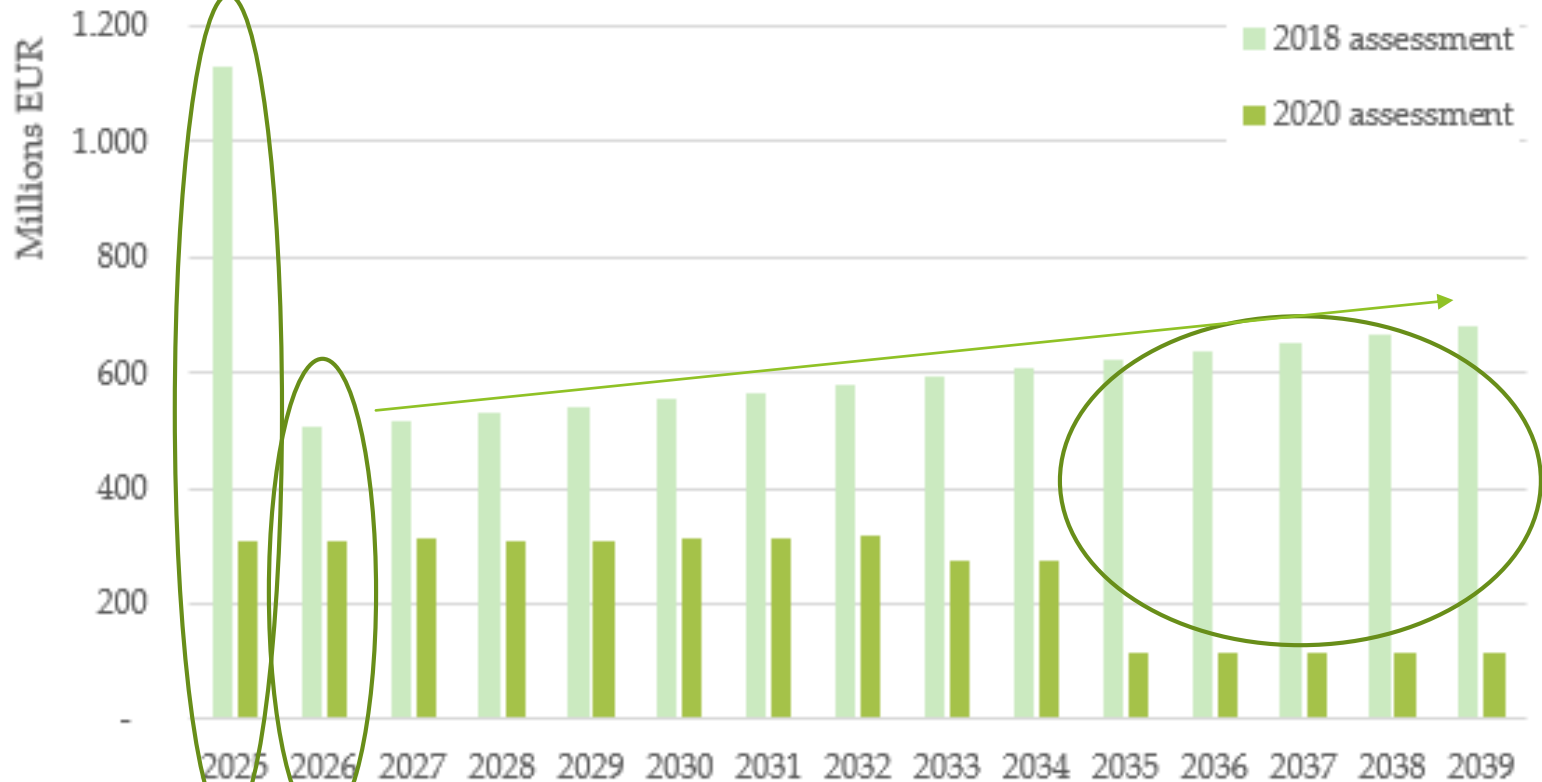
CRM delivery year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Y-4	271	74	75	83	83	83	83	82	119	118	0	0	0	0	0
Y-1	37	38	39	27	28	28	29	30	30	31	0	0	0	0	0
Previously auctioned	0	197	197	197	197	197	197	197	113	113	113	113	113	113	113
SUM	308	310	311	308	308	309	309	309	263	263	113	113	113	113	113

Comparison costs assessments 2018 & 2021

Design elements	PwC (2018): Preliminary CRM design	haulogy (2021): Detailed CRM design
Delivery Duration	Unknown => 15 years	10 years
Auction Volume	Unknown => Peak load (13,6 GW)	Estimated need (11,8 GW)
Volume growth	Unknown => Peak load based : +0,5% p.a.	Supply/demand Forecast based -0,5% p.a.
Clearing	Unknown => Pay-As-Clear (no caps)	Pay-As-Bid (with price caps)
Price caps	Undefined (benchmark based) <ul style="list-style-type: none"> ▪ New: 83 EUR/kW/y (inflated 2%) ▪ Existing: 19,6 EUR/kW/y (inflated 2%) 	Defined (Proposition based) <ul style="list-style-type: none"> ▪ MY-contracts: 75 EUR/kW/y (inflated 1,6%) ▪ 1Y-contracts: 20 EUR/kW/y (inflated 1,6%)
Capacities split	Not detailed: <ul style="list-style-type: none"> ▪ New : 3,6 GW ▪ Existing : 10 GW (2025) 	Forecasted/ scenarios <ul style="list-style-type: none"> ▪ New: ~3 GW (2025) ▪ Refurbished ▪ Existing
Gross cost	Average (15 years) : 625 MEUR/y Average (10 years): 612 MEUR/y	Average (15 years) : 238 MEUR/y Average (10 years): 300 MEUR/y

Comparison costs assessments 2018 & 2021

CRM cost assessment comparison: 2021 vs 2018
(Nominal values)



1. Pay-As-Clear (with no price caps)
=> Pay-As-Bid (with price caps)

2. 15 delivery years
=> 10 delivery years

3. Auction volume: peak (13,6 GW in 2025) => scarcity assessment need and non participating capacities assessment: 11,8 GW

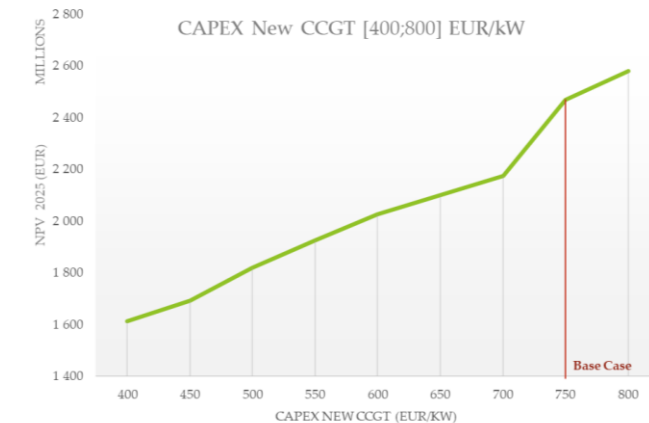
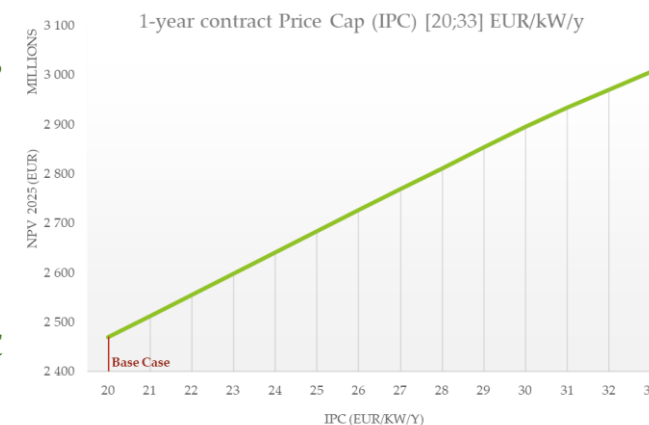
4. Volume: growth (+0,5% p.a.)
=> market evolution based (-0,5%)

CRM gross cost results and sensitivities

Sensitivities were conducted in order to assess the impact of main cost drivers

Amongst the most cost-impacting elements, we find:

- **the “others” category Bid price**
 - Equals to 100% of the IPC in the Base Case
 - Linearisation possible: -10% others category Bid Price (in % of the IPC) leads to -1% on the NPV 2025 compared to the Base Case
- **the CAPEX value of new CCGT**
 - Equals to 750 EUR/kW in the Base Case
 - A 650 EUR/kW new CCGT CAPEX would lead to -15% on the NPV 2025 compared to the Base Case
 - A 550 EUR/kW new CCGT CAPEX would lead to -22% on the NPV 2025 compared to the Base Case
- **the Intermediate Price Cap (IPC)**
 - Equals to 20 EUR/kW/y in 2021 in the Base Case
 - Linearisation possible: +1 EUR/kW/y on the IPC leads to +2% on the NPV 2025



CRM Net Cost - Payback Obligations

The Belgian CRM design includes a Reliability Option System (Payback Obligations)

Principle

A contracted CMU shall pay back the difference between the Reference Price and the Strike Price (assumed at 300 EUR/MWh^[2]) when the Reference Price exceeds the Strike Price

Estimation of Yearly Payback Obligations^[3]

202X Payback Obligations

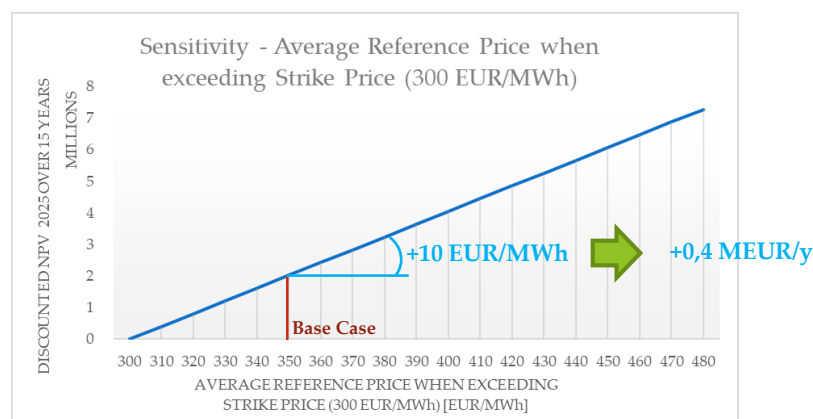
≈ Average nb of occurrences per year × (Average Reference Price when exceeding Strike Price – Strike Price) × Payback obligated capacity

Assumption: ~350 EUR/kW

Payback [MEUR/y]														
2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,2	2,2	2,2	0,5	0,5	0,5	0,5	0,5

Average CRM Gross Cost (15 years):

- Payback Obligations = 2 MEUR/y
- CRM Gross Cost = 238 MEUR/y
- **Limited impact of the Payback Obligations on the CRM Net Cost**



Sources:

[1] Elia, November 2020, Proposition de règles de fonctionnement CRM

[2] ELIA, Préparation de l'enquête CRM Y-4 pour la période de livraison 2025-26, November 2020

[3] PwC, Détermination du mécanisme de rémunération de la capacité belge et préparation du cadre législatif

CRM Net Cost - Unavailability Penalties

Definition^[1]

The availability of a contracted CMU can be tested by Elia. In case of missing capacity, an Unavailability Penalty fee is applied to the CMU. It is proportional to:

- the volume of missing capacity
- the remuneration contract value
- a penalty factor, that depends on
 - whether the outage is announced (Announce Outage, AO) or not (Forced Outage, FO)
 - the time of the year for Announced Outages (01/04 – 31/10 vs 01/11 – 31/03)

Estimation of 2025 Unavailability Penalties

- Using 2018-2019 outage data^[2] from ENTSOE (Unit name, FO/AO, Start, End, Installed Capacity, Available Capacity)
- Assuming the length of tests is 15 Availability Monitoring Trigger (AMT) moments (quarter-hours)
- Extrapolating to align on 2025 technology-mix
- Adapting New and Refurbished yearly contract values by weighting with 2025 Bid Prices

2025 Unavailability Penalties results:

	Existing		
Penalty [EUR/y]	FO 01/01 - 31/12	AO 01/11 - 31/03	AO 01/04 - 31/10
CCGT	413.824	609.360	350.106
PSP Coo	13.622	4.408	9.744
CHP	0	0	0
	New		
Penalty [EUR/y]	FO 01/01 - 31/12	AO 01/11 - 31/03	AO 01/04 - 31/10
CCGT	648.640	955.130	548.767
PSP Coo	0	0	0
CHP	0	0	0
	Refurbished		
Penalty [EUR/y]	FO 01/01 - 31/12	AO 01/11 - 31/03	AO 01/04 - 31/10
CCGT	446.220	657.063	57.275
PSP Coo	0	0	0
CHP	0	0	0

Total 2025 Unavailability Penalties = 4,7 MEUR/y
 ≈ 2025-2039 Yearly Unavailability Penalty estimation (maximum because of Secondary Market possibilities for CMUs)

Average CRM Gross Cost (15 years):

- Unavailability Penalties = 4,7 MEUR/y
- CRM Gross Cost = 238 MEUR/y
- **Limited impact of the Unavailability Penalties on the CRM Net Cost**

Sources:

[1] Elia, November 2020, Proposition de règles de fonctionnement CRM

[2] <https://transparency.entsoe.eu/outage-domain/r2/unavailabilityOfProductionAndGenerationUnits/show>

CRM Total Cost - Associated Costs

Associated Costs are the Investments, Human Resources and “Other costs” borne by Elia, the FPS Economy and the CREG.

Only the Associated Costs borne by Elia are taken into account in the present study

1. **Investments:** Digital auction platform ~2 MEUR (0,23 MEUR/y), plus 25% maintenance charges per year (0,06 MEUR), based on haulogy's (digital solution editing) experience
2. **Human resources:** Assuming 10 FTEs and a 58.400 EUR^{[1]+[2]} total yearly salary cost for the employer, the Human resources cost item represents 0,6 MEUR/y
3. **Other costs (Financing and foreign TSOs):** According a preliminary estimate available to the consultant, the Other costs item represents 0,5 MEUR/y

It can be concluded that the Associated Costs represent 1,4 MEUR/y

- Not significant compared to the CRM Net Cost

Sources:

[1] Statbel, overview of Belgian wages and salaries (updated on 3 September 2020); 2018 value

[2] <https://www.onssrszls.fgov.be/fr/employeurs-et-onss/paiements>

Conclusion

- Payback Obligations
 - Unavailability Penalties
 - Associated costs
- } have a limited impact on the CRM Cost result

Based on the scenarios and sensitivities made around the base case, it can be concluded that the base case scenario is a reasonable estimate for the CRM total cost assessment.

CRM nominal Cost in MEUR

CRM delivery year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Y-4	271	74	75	83	83	83	83	82	119	118	0	0	0	0	0
Y-1	37	38	39	27	28	28	29	30	30	31	0	0	0	0	0
Previously auctioned	0	197	197	197	197	197	197	197	113	113	113	113	113	113	113
CRM Gross Cost	308	310	311	308	308	309	309	309	263	263	113	113	113	113	113
Payback	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-1	-1	-1	-1	-1
Unavailability Penalties	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
CRM Net Cost	301	302	304	301	301	302	302	302	256	255	108	108	108	108	108
Associated Costs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CRM Total Cost	302	303	305	302	302	303	303	303	257	256	109	109	109	109	109

Cost Type	Average nominal value (15 years) [MEUR]	Average nominal value (10 years) [MEUR]
Gross Cost	238	300
Net Cost	231	293
Total Cost	232	294

Thank you - Contacts



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