

Payback Obligation Use Case 4

New Project with two possible configurations:
CCGT or 2 OCGT on a site



DISCLAIMER



This document provides different fictive examples, so-called use cases, related to the Capacity Remuneration Mechanism being developed in Belgium. It has, as sole purpose, to explain the Functioning Rules and its annexes by means of examples.

Given that the CRM process consists of several steps, and for each of these steps, several layers of information and details are relevant, it is to be understood that this document focuses on most pertinent Payback Obligation aspects.

By no means, the use cases replace the rules in the relevant Laws, Royal Decrees, and regulatory approved documents.

The choices in the examples are only made for illustrative purposes and do not imply any judgement. All the figures and numbers used for these use cases are purely fictive. These numbers nor the use cases presented should be interpreted as representing a concrete case or a concrete situation of the Belgian capacity market or an implied proposal for any CRM parameter.

The use cases developed in this document are based on the chapter *Payback Obligation* of the Functioning Rules as known at the moment of writing and shared with market parties on 28/08/2020. It also obviously follows the context set by the Electricity Law.

Use case structure



1. Capacity Provider and CMUs



2. Payback Obligation parameters

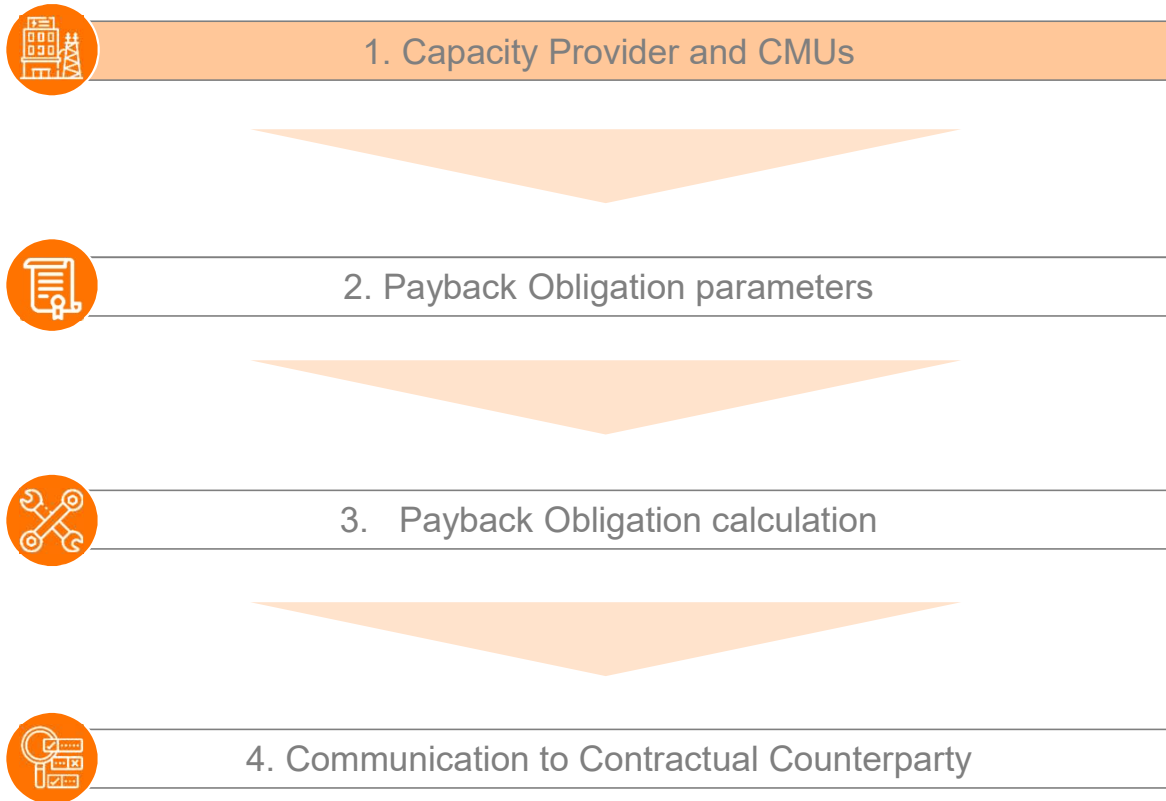


3. Payback Obligation calculation



4. Communication to Contractual Counterparty

Use case structure





1. Capacity Provider and CMUs

- **EnergyProducer.SA/NA is owner of a site** (located in Belgium) having successfully secured a project in the CRM auction
- **New built exclusive CCGT / OCGT project** that has successfully passed to existing in the pre-delivery period monitoring
- After pre-delivery, the following parameters relevant for Availability Monitoring were confirmed:

	CMU parameters		
	CMU 1	CMU 2	CMU 3
<i>Nominal Reference Power</i>	349 MW	352 MW	305 MW
<i>Derating Factor</i>	0,9	0,9	0,9

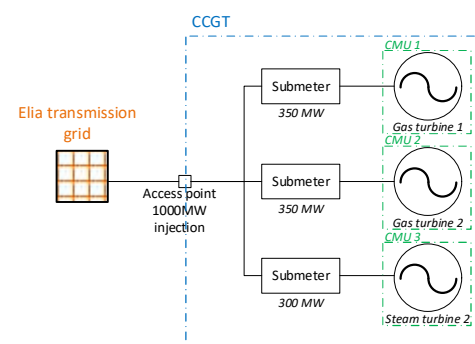
- All CMUs are **non-energy constrained** with a **daily schedule obligation**



1. Detailed view: Capacity Provider and CMUs

Name of the company:	EnergyProducer.SA/NA
Geographical site:	<ul style="list-style-type: none"> Owner: EnergyProducer.SA/NA Location: Belgium Connection: Electricity TSO grid & Gas TSO grid

3 CMUs:
 CMU 1
 = GT1
 CMU 2
 = GT2
 CMU3
 = ST1



	CMU parameters		
	CMU 1	CMU 2	CMU 3
<i>Nominal Reference Power</i>	349 MW	352 MW	305 MW
<i>Derating Factor</i>	0,9	0,9	0,9



1. Capacity Provider and CMUs – Contracted Capacity : Transaction overview

Primary Market Transactions

- After its participation to a **Y-4 Auction** in October 2021, the following bid of the CMU has been

Auction results		
Selected bids		
	Selected Bid volumes	CMU1: 315MW CMU2: 315MW CMU3: 270MW
	Related Price	50€/kW/year
	Capacity contract duration	15 year

- No bid was selected for the **Y-1 auction** as the Remaining Eligible Volume of the CMU is 0 MW

CMU	Contracted Capacity	Transaction Period	Timing	Calibrated Strike Price	Remuneration	Derating Factor
CMU 1	5 MW	Dec 2025	Ex-ante	500 €/MWh	27 k€/y/MW	0,93
CMU 2	5 MW	Dec 2025	Ex-ante	500 €/MWh	27 k€/y/MW	0,93
CMU 3	3 MW	Dec 2025	Ex-ante	500 €/MWh	27 k€/y/MW	0,93
CMU 1	4 MW	March 2026	Ex-ante	500 €/MWh	27 k€/y/MW	0,93
CMU 1	4,2 MW	[14/02/2026 17:00 to 14/02/2026 21:00 [Ex-post	500 €/MWh	27 k€/y/MW	0,93

Use case structure



1. Capacity Provider and CMUs



2. Payback Obligation parameters



3. Payback Obligation calculation



4. Communication to Contractual Counterparty



2. Payback Obligation parameters

For the Delivery Period:

- The AMT Price is set at **120 €/MWh** by Elia and published on its website by the May 15 prior the delivery period
- As it is the first year of Delivery Period, **no indexation is foreseen of the Calibrated Strike Price in the Delivery Period 2025**

For the CMU on the Delivery Period:

- The CMUs are considered as **Non Energy Constrained CMU**
- The CMU Transactions have a **Derating Factor of 0,9 for the Transaction of the Primary Market and 0,93 for the Secondary Market ones.**
- The CMUs are considered as **with Daily Schedule**
 - ➔ **The Strike Price is the Calibrated Strike Price of 500€/MWh for an hour of Payback Obligation**
- The Reference Price of the CMU is the **Day-Ahead EPEX Market**



2. Payback Obligation parameters

For the CMU on the Delivery Period:

- Once a year prior the Delivery Period, a Stop Loss Amount is calculated for each Transaction of the Primary Market or ex-ante Transaction of the Secondary Market having one or several Delivery Periods as Transaction Period.

$$\begin{aligned}
 & \text{StopLoss}(CMU_{id}, \text{Transaction}_{id}, \text{Delivery Period}) \\
 &= \sum_{t=1}^w \left(\text{Contracted Capacity}(CMU_{id}, \text{Transaction}_{id}, t) * \frac{\text{Capacity Remuneration}(CMU_{id}, \text{Transaction}_{id})}{w} \right)
 \end{aligned}$$

With w as the number of hours on the Delivery Period

- If applicable, the sum on all the Transaction Payback Obligations of the Delivery Period could not exceed the Transaction Stop Loss Amount.
- For EnergyProducer Primary Market Transaction of 10MW, the Stop Loss Amount is applicable solely on the Primary Market Transactions because the other ex-ante Secondary Market Transactions are not covering entire Delivery Periods:**

Stop Loss CMU 1 Transaction 1 = 315MW * 50 k€/MW/Delivery Period = **15 750k€ / Delivery Period 2025**

Stop Loss CMU 2 Transaction 2 = 315MW * 50 k€/MW/Delivery Period = **15 750k€ / Delivery Period 2025**

Stop Loss CMU 3 Transaction 3 = 270MW * 50 k€/MW/Delivery Period = **13 500k€ / Delivery Period 2025**

Use case structure



1. Capacity Provider and CMUs



2. Payback Obligation parameters



3. Payback Obligation calculation



4. Communication to Contractual Counterparty

January 2026:

The presentation will iterate on the parts 3 and 4 for both the months of January 2026 and February 2026 of the Delivery Period 2025



3. Payback Obligation calculation 10/01/2026

On **10/01/2026**, the system was stressed due to **two peaks of consumption**, one in the morning and one in the evening. The Day-Ahead prices have risen to very high levels, demonstrating that the Belgian electricity market is facing an **adequacy issue moment**.

As the CRM implemented is a CRM with Reliability Option, the Payback Obligation applies to all CMUs and their Transactions at any moment of their Transaction Periods and especially at this kind of moment where it may lead to a re-imbursement to society.

The Payback Obligation is calculated for each Transaction.

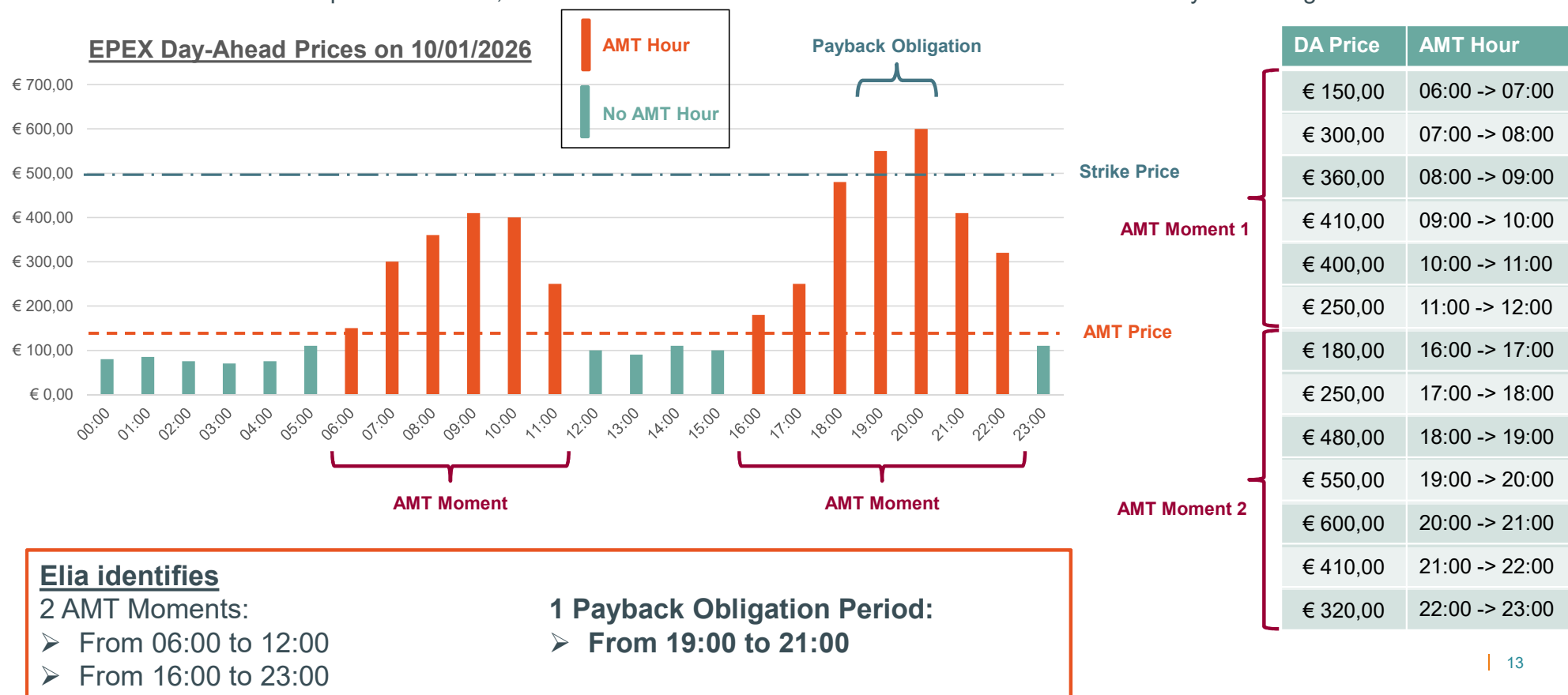
To perform the calculation of the Payback Obligation, Elia will gather for all Transactions having a Transaction Period including the hours for which the Reference Price exceeds the Strike Price and a Payback Obligation applies, the following hourly elements:

- The Reference Price of the CMU on which the Transaction relies
- The Strike Price of the CMU's Transaction for that hour
- The Availability Ratio for the considered AMT Hours
- The Transaction's Contracted Capacity for that hour



3. Payback Obligation 10/01 – Reference Price are the Day-ahead Market revenues

- The CMU selected in its Prequalification File, EPEX as the NEMO for the Reference Price definition in the Payback Obligation





3. Payback Obligation – Availability Ratio CMU 1

- An Availability Ratio applies in the Payback Obligation to take into account the duly communicated unavailability of the CMU.
- The Obligated Capacity and the Maximum Remaining Capacity DA are obtained in the Availability Obligations and Penalties Use Case 1 and according to the Functioning Rules.
- It equals $Availability\ Ratio\ (CMU_{id}, t) = \frac{Min(Obligated\ Capacity\ (CMU_{id}, t); Maximum\ Remaining\ Capacity\ DA\ (CMU_{id}, t))}{Obligated\ Capacity\ (CMU_{id}, t)}$

	DA Price	AMT Hour	SLA Hour	Obligated Capacity (MW)	Maximum Remaining Capacity DA (MW)	Availability Ratio
AMT Moment 1	€ 150,00	06:00 -> 07:00	NA	315	349	1
	€ 300,00	07:00 -> 08:00	NA	315	349	1
	€ 360,00	08:00 -> 09:00	NA	315	349	1
	€ 410,00	09:00 -> 10:00	NA	315	349	1
	€ 400,00	10:00 -> 11:00	NA	315	349	1
	€ 250,00	11:00 -> 12:00	NA	315	349	1
AMT Moment 2	€ 180,00	16:00 -> 17:00	NA	315	349	1
	€ 250,00	17:00 -> 18:00	NA	315	349	1
	€ 480,00	18:00 -> 19:00	NA	315	349	1
	€ 550,00	19:00 -> 20:00	NA	315	349	1
	€ 600,00	20:00 -> 21:00	NA	315	349	1
	€ 410,00	21:00 -> 22:00	NA	315	349	1
	€ 320,00	22:00 -> 23:00	NA	315	349	1

Payback
Obligation
period

3. Payback Obligation – Availability Ratio CMU 2

- An Availability Ratio applies in the Payback Obligation to take into account the duly communicated unavailability of the CMU.
- The Obligated Capacity and the Maximum Remaining Capacity DA are obtained in the Availability Obligations and Penalties Use Case 1 and according to the Functioning Rules.
- It equals $Availability\ Ratio\ (CMU_{id}, t) = \frac{Min(Obligated\ Capacity\ (CMU_{id}, t); Maximum\ Remaining\ Capacity\ DA\ (CMU_{id}, t))}{Obligated\ Capacity\ (CMU_{id}, t)}$

	DA Price	AMT Hour	SLA Hour	Obligated Capacity (MW)	Maximum Remaining Capacity DA (MW)	Availability Ratio
AMT Moment 1	€ 150,00	06:00 -> 07:00	NA	315	352	1
	€ 300,00	07:00 -> 08:00	NA	315	352	1
	€ 360,00	08:00 -> 09:00	NA	315	352	1
	€ 410,00	09:00 -> 10:00	NA	315	352	1
	€ 400,00	10:00 -> 11:00	NA	315	352	1
	€ 250,00	11:00 -> 12:00	NA	315	352	1
AMT Moment 2	€ 180,00	16:00 -> 17:00	NA	315	352	1
	€ 250,00	17:00 -> 18:00	NA	315	352	1
	€ 480,00	18:00 -> 19:00	NA	315	352	1
	€ 550,00	19:00 -> 20:00	NA	315	352	1
	€ 600,00	20:00 -> 21:00	NA	315	352	1
	€ 410,00	21:00 -> 22:00	NA	315	352	1
	€ 320,00	22:00 -> 23:00	NA	315	352	1

Payback
Obligation
period

3. Payback Obligation – Availability Ratio CMU 3

- An Availability Ratio applies in the Payback Obligation to take into account the duly communicated unavailability of the CMU.
- The Obligated Capacity and the Maximum Remaining Capacity DA are obtained in the Availability Obligations and Penalties Use Case 1 and according to the Functioning Rules.
- It equals $Availability\ Ratio\ (CMU_{id},t) = \frac{Min(Obligated\ Capacity\ (CMU_{id},t); Maximum\ Remaining\ Capacity\ DA\ (CMU_{id},t))}{Obligated\ Capacity\ (CMU_{id},t)}$

	DA Price	AMT Hour	SLA Hour	Obligated Capacity (MW)	Maximum Remaining Capacity DA	Availability Ratio	
AMT Moment 1	€ 150,00	06:00 -> 07:00	NA	270	0	0	
	€ 300,00	07:00 -> 08:00	NA	270	0	0	
	€ 360,00	08:00 -> 09:00	NA	270	0	0	
	€ 410,00	09:00 -> 10:00	NA	270	0	0	
	€ 400,00	10:00 -> 11:00	NA	270	0	0	
AMT Moment 2	€ 250,00	11:00 -> 12:00	NA	270	0	0	
	€ 180,00	16:00 -> 17:00	NA	270	0	0	
	€ 250,00	17:00 -> 18:00	NA	270	0	0	
	€ 480,00	18:00 -> 19:00	NA	270	0	0	
	€ 550,00	19:00 -> 20:00	NA	270	0	0	
	€ 600,00	20:00 -> 21:00	NA	270	0	0	
	€ 410,00	21:00 -> 22:00	NA	270	0	0	
	€ 320,00	22:00 -> 23:00	NA	270	0	0	

Payback
Obligation
period

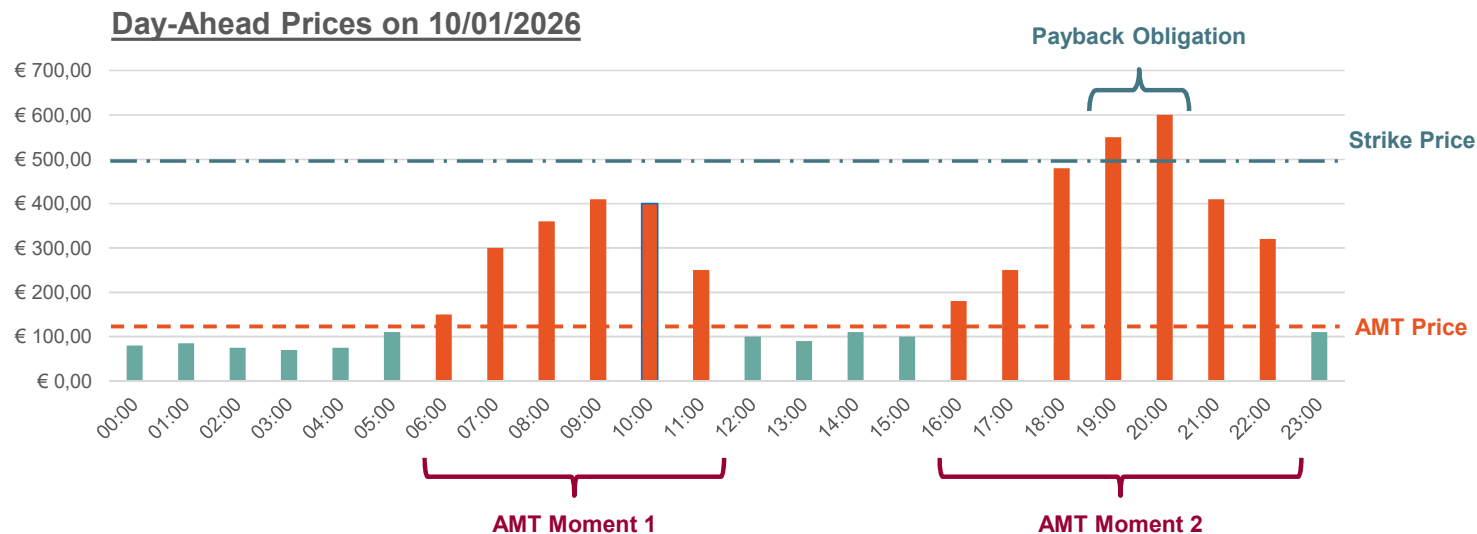


3. Payback Obligation – Strike Price

DMP of the without Daily Schedule CMU

- As EnergyProducer.SA/NA is a CMU with Daily Schedule, the Strike Price is the Calibrated Strike Price (500€/MWh) of the Transaction

$$\text{Strike Price}(CMU_{id}, Transaction_{id}, t) = \text{Calibrated Strike Price}(CMU_{id}, Transaction_{id}, t)$$
- According to UC4 of Availability Obligation & Penalties, **the Strike Price is 500€/MWh** for the each CMU Primary Market Transaction active in January 2026 on all Payback Obligation hours H19 and H20





3. Payback Obligation formula

For each ex-ante Transaction of the Energy Constrained CMU:

The formula of the Payback Obligation is applied on each of the two hours for which the Reference Price exceed the Strike Price:

$$\text{Payback Obligation (CMU}_{id}, \text{ Transaction}_{id}, t) = \text{Max}(0 ; \text{Reference Price (CMU}_{id}, t) - \text{Strike Price (CMU}_{id}, \text{ Transaction}_{id}, t)) * \text{Contracted Capacity (CMU}_{id}, \text{ Transaction}_{id}, t) * \text{Availability Ratio (CMU}_{id}, t)$$

It gives :

CMU	Transaction	Strike Price	Reference Price H19	Reference Price H20	Contracted Capacity H19/H20	Availability Ratio H19/H20	H19 Payback Obligation	H20 Payback Obligation
CMU1	Transaction 1	500 €/MWh	550 €/MWh	600 €/MWh	315 MW	1	15 750 €	31 500€
CMU2	Transaction 2	500 €/MWh	550 €/MWh	600 €/MWh	315 MW	1	15 750 €	31 500€
CMU3	Transaction 3	500 €/MWh	550 €/MWh	600 €/MWh	270 MW	0	0 €	0€

For each ex-post Transaction of the Energy Constrained CMU:

$$\text{Payback Obligation (CMU}_{id}, \text{ Transaction}_{id}, t) = \text{Max}(0 ; \text{Reference Price (CMU}_{id}, t) - \text{Strike Price (CMU}_{id}, \text{ Transaction}_{id}, t)) * \text{Contracted Capacity (CMU}_{id}, \text{ Transaction}_{id}, t) * \text{Availability Ratio (CMU}_{id}, t)$$

No Transaction on the CMUs (on those hours)

Use case structure



1. Capacity Provider and CMUs



2. Payback Obligation parameters



3. Payback Obligation calculation



4. Communication to Contractual Counterparty

January 2026:

The presentation will iterate on the parts 3 and 4 for both the months of January 2026 and February 2026 of the Delivery Period 2025



4. Report to the Contractual Counterparty

Prior the creation of the report (at latest the 15th of the month M+2 (March 2026) for the related month M (January 2026) of the Delivery Period), ELIA checks the Transaction cumulated Payback Obligations already paid for the Transactions on which a Stop Loss principle applies:

For the Transactions of 315, 315 and 270 MW of EnergyProducer, the Stop Loss Amounts are respectively of 15 750k€, 15 750k€ and 13 500k€ / DP 2025.

The Payback Obligation on the Delivery Period up to the month M (January 2026) included doesn't reach the Stop Loss amount of the Transaction, so that:

$$Effective\ Payback\ Obligation\ (CMU_{id},\ Transaction_{id}, M) = \sum_{t=1}^m Payback\ Obligation\ (CMU_{id},\ Transaction_{id}, t)$$

Where m are the hours of the month M.

→ The Capacity Provider has to re-imburse the complete Payback Obligations of the month M (Effective).



4. Report to the Contractual Counterparty

At latest the 15th of the month M+2 (March 2026) for the related month M (January 2026) of the Delivery Period, a report is sent to the Contractual Counterparty and includes:

The Capacity Provider Id

The CMU identification Id

The Transaction identification Id

The Total Payback Obligation of the month M

The Effective Payback Obligation value of the month M (after Stop Loss principle on the Delivery Period if applicable)

And for all hours of the month for which the Reference Price exceeds the Strike Price and a Payback Obligation applies:

- The Availability Ratio
- The Obligated Capacity
- The Reference Price
- The Strike Price value
- The Payback Obligation value

Use case structure



1. Capacity Provider and CMUs



2. Payback Obligation parameters



3. Payback Obligation calculation



4. Communication to Contractual Counterparty

February 2026:
The presentation will iterate on the parts 3 and 4 for both the months of January 2026 and February 2026 of the Delivery Period 2025



3. Payback Obligation calculation 10/01/2026

On **14/02/2026**, due to some forced outages and low temperature, the Belgian network faced price increases on the short term market (Day-Ahead) leading up to a moment of adequacy issue in the evening.

As the CRM implemented is a CRM with Reliability Option, the Payback Obligation applies to all CMUs and their Transactions. For a Non-Energy Constrained CMU ex-ante Transaction, it applies at any moment of their Transaction Periods when the Reference Price exceeds the Strike Price.

The Payback Obligation is calculated for each Transaction.

To perform the calculation of the Payback Obligation, Elia will gather for all Transactions having a Transaction Period including the hours for which the Reference Price exceeds the Strike Price and a Payback Obligation applies, the following hourly elements:

- The Reference Price of the CMU on which the Transaction relies
- The Strike Price of the CMU's Transaction for that hour
- The Availability Ratio for the considered AMT Hours
- The Transaction's Contracted Capacity for that hour



3. Payback Obligation 10/01 – Reference Price are the Day-ahead Market revenues



Elia identifies

1 AMT Moments:

➤ From 17:00 to 21:00

➔ No Payback
Obligation as the Strike
Price remains at
500€/MWh well above
the Reference Price

As EnergyProducer.SA/NA is a with Daily Schedule CMU, the Strike Price with the Calibrated Strike Price (500€/MWh) of the Transaction

$$\text{Strike Price (CMU}_{id}, \text{ Transaction}_{id}, t) = \text{Calibrated Strike Price (CMU}_{id}, \text{ Transaction}_{id}, t)$$

Use case structure



1. Capacity Provider and CMUs



2. Payback Obligation parameters



3. Payback Obligation calculation



4. Communication to Contractual Counterparty

February 2026:
The presentation will iterate on the parts 3 and 4 for both the months of January 2026 and February 2026 of the Delivery Period 2025



4. Report to the Contractual Counterparty

At latest the 15th of the month M+2 (April 2026) for the related month M (February 2026) of the Delivery Period, a report is sent to the Contractual Counterparty and includes:

The Capacity Provider Id

The CMU identification Id

The Transaction identification Id

The Total Payback Obligation of the month M

The Effective Payback Obligation value of the month M (after Stop Loss principle on the Delivery Period if applicable)

And for all hours of the month for which the Reference Price exceeds the Strike Price and a Payback Obligation applies:

- The Availability Ratio
- The Obligated Capacity
- The Reference Price
- The Strike Price value
- The Payback Obligation value

→ The report is sent with 0€ as Payback Obligation for the month M which is February 2026 (without hourly data as not applicable)