



Trading on the Czech Gas Market according to NC BAL

OTE, a.s.
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Legal notice

This presentation represents a legally not binding simplistic interpretation of the binding legal regulations.

Relevant legal regulations and other sources

- The Energy Act no. 458/2000 Coll. as amended
- Decree on Gas Market Rules no. 365/2015
- OTE contract, including business terms

- The Civil Code no. 89/2012 Coll.
- The relevant tax legislation

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Content

- 1, Agenda and evaluation versions
- 2, Imbalance settlement
- 3, C,CM Evaluation and "Clearing"

1, Agenda and evaluation versions

Metering types

Continuous metering: A, B

Non-continuous metering: C, CM

Metering types

Continuous metering: A, B

Daily resolution over a longer period

Non-continuous metering: C, CM

One reading at the end of the period.

Daily resolution is approximated according to the methodology TDD.

Agenda

Activity	Agenda
	Description
Data for	The relevant period
Receiving data to	Values for PDT are available in CS OTE
Evaluation to	Imbalances for BRPs are available in CS OTE
Settlement to	Issuing invoices

Agenda according to settlement

Activity	Agenda		
	Daily, version 0	Monthly, version 1	Final monthly, version 2
Data for	D-1	M-1	M-4
Receiving data to	D 12:00	Earlier from 6th working day M or 9th calendar day M until 12:00	
Evaluation to	Without UF market D 13:00	Including UF market D 13:55	11th cal. den M 12:00
Settlement to	D 16:00	13th cal. den 17:00	16th cal. den 17:00

Agenda according the metering

Metering	Agenda		
	Daily, version 0	Monthly, version 1	Final monthly, version 2
A	Preliminary value	real value	Corrective value
B	Substitute value	real value	Corrective value
C	Substitute value by load profiles ver. 0	Substitute value by load profiles ver. 1	Substitute value by load profiles ver. 2
CM			
Settlement price	Applicable Price	Index OTE	Index OTE

Agenda according the metering

Metering	Agenda		
	Daily, version 0	Monthly, version 1	Final monthly, version 2
A	Provided by DSO	Provided by DSO	Provided by DSO
B	OTE calculates	Provided by DSO	Provided by DSO
C	OTE calculates	OTE calculates	OTE calculates
CM			
Settlement price	Applicable Price	Index OTE	Index OTE

Substitute value – „B“

Priority subject to availability:

1. Scheduled monthly share of gas consumption and the number of days in a calendar month.
2. The diameter of the real values for the last known four gas days by the same name stored in the market operator.
3. 66% booked distribution capacity converted to energy unit value of combustion heat 10,647 kWh / m³.

Substitute value „C,CM“

- 3th part of this presentation
- Link: [3, C,CM Evaluation and "Clearing"](#)

Financial settlement

Process	Financially settled
DE	Balance account over flexibility for Applicable price
ME	$(ME-DE) * \text{Index OTE}$
Clearing ₁	$(\text{Real}_1 - \text{Substitute}_1) * \text{Monthly price}$
FME	$(FME-ME) * \text{Index OTE}$
Clearing ₂	$(\text{Real}_2 - \text{Substitute}_2) * \text{Monthly price}$ $- \text{Clearing}_1$

2, Imbalance settlement

DE, ME, FME

DE - Daily Evaluation

ME - Monthly Evaluation

FME - Final Monthly Evaluation

DE, ME, FME

- Imbalances evaluation,
- Imbalances settlement,
- Nominations,

are in daily resolution at OTE.

Daily Evaluation – DE, principle of financial settlement

- Financially is settled part of the balance account out of the flexibility margin, for Applicable price
- Balance account is cumulative part of **imbalance** in the **flexibility** margin

Imbalance and Flexibility

- **Imbalance** is calculated from entry/exit allocations and obligations to take/to supply

- **Flexibility**
 - Is calculated for each entry/exit PDT
 - Allocation regime OBA means zero flexibility
 - Market with Unused Flexibility -> buy/sell UF

Flexibility

$$\text{Flexibility} = K_1 * RC * GCV + K_2 * (RC * GCV - A)$$

- K_1 – 0,04979 for supply point (approx. 5% RC)
- K_2 – 0 for supply point
- RC – Reserved Capacity
- GCV - Gross Caloric Value
- A – Allocation of transport or distribution

Market with Unused Flexibility (Market with UF)

13:00

13:45

13:55



- **Opening of market with UF**
- Preliminary values
 - Flexibility (+,-)
 - UF (+, -)
 - Balance account
 - Daily Imbalance Quantity (+, -)
- **Closing of market with UF**
- **Results of Market with UF**
- Closing values
 - Flexibility (+,-)
 - UF (+, -)
 - Balance account
 - Daily Imbalance Quantity (+, -)

Market with UF

- The positive and negative UF is trading separately.
- Principle:
Supply and demand curves crosses according the matching algorithm.

DE – Example

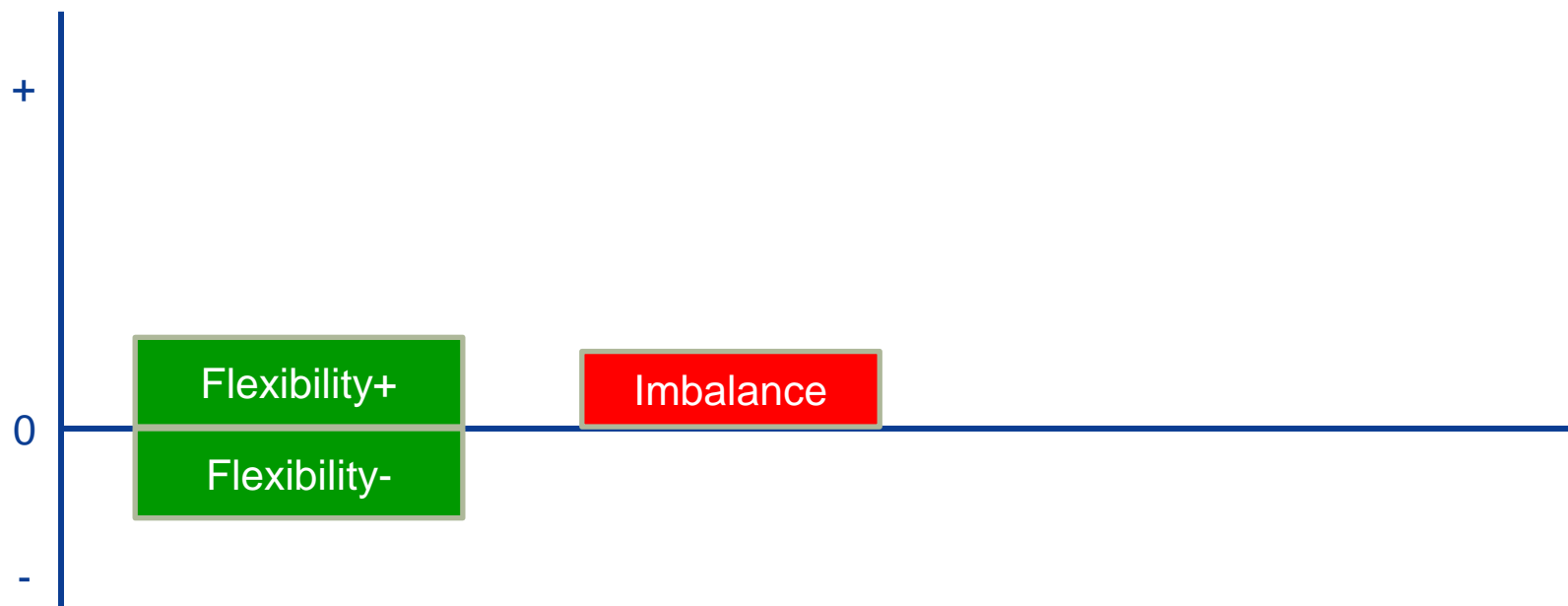
Example where:

D -1 is **first day** of trading

D is second day, the day following the D-1

D+1 is third day, the day after the day D

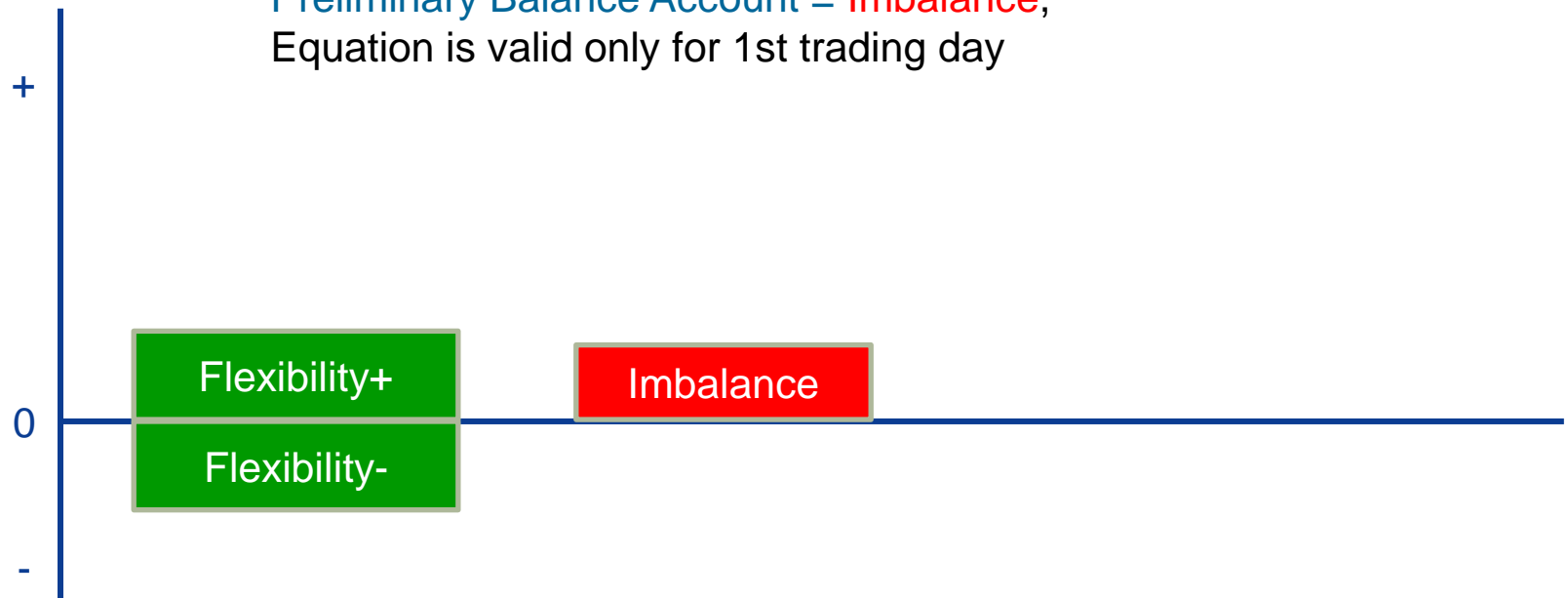
DE of the day D-1 in D 13:00



$$|\text{Flexibility-}| = |\text{Flexibility+}|$$

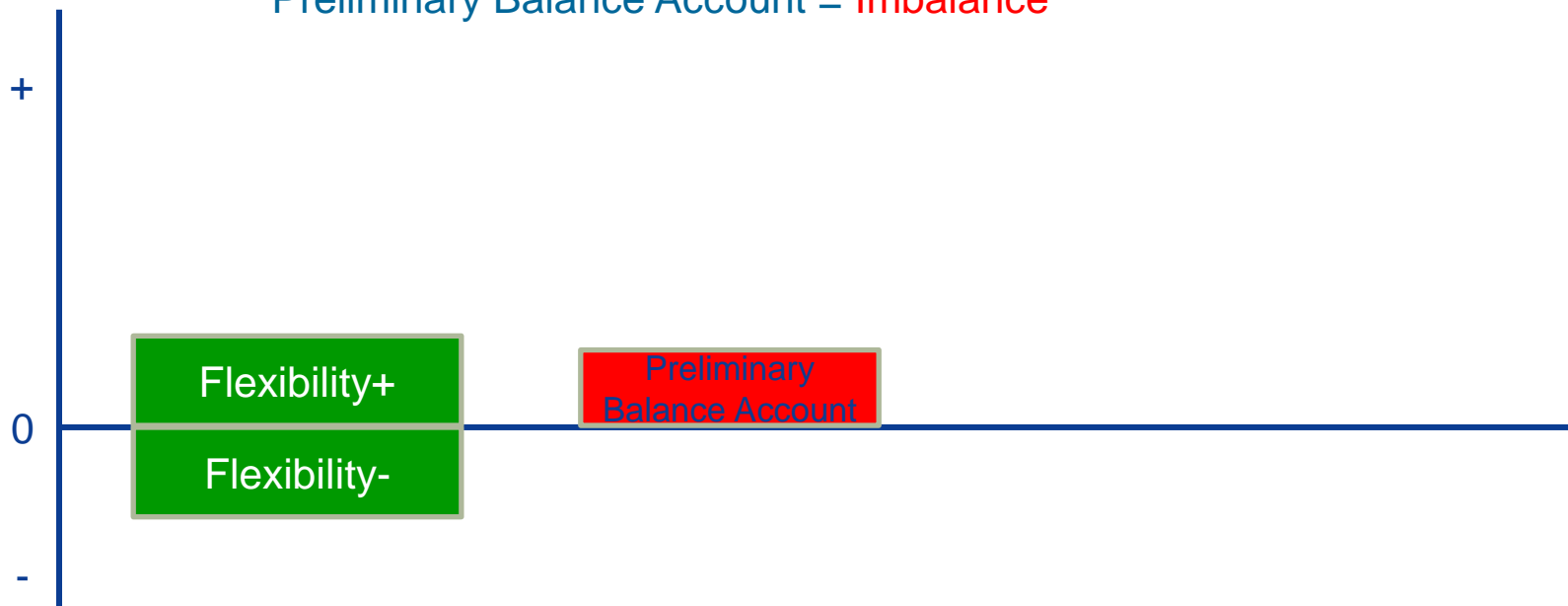
DE of the day D-1 in D 13:00

Preliminary Balance Account = **Imbalance**,
Equation is valid only for 1st trading day



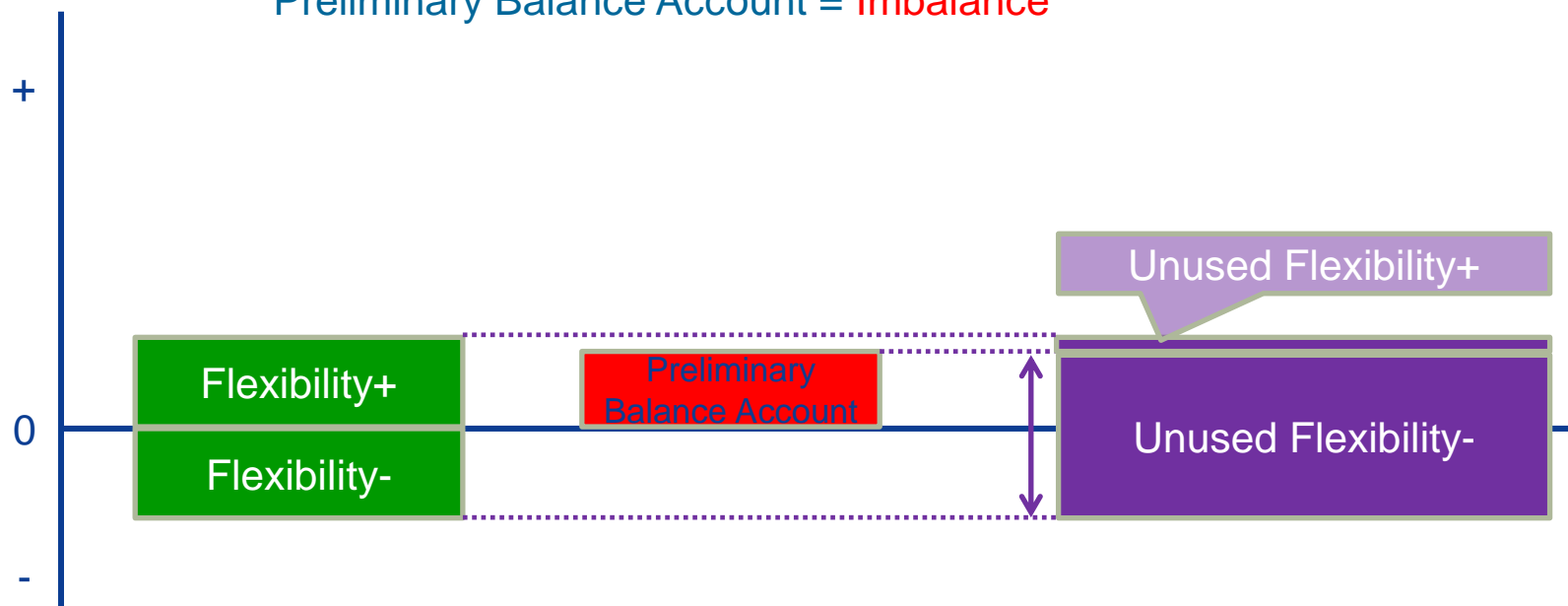
DE of the day D-1 in D 13:00

Preliminary Balance Account = Imbalance



DE of the day D-1 in D 13:00

Preliminary Balance Account = Imbalance



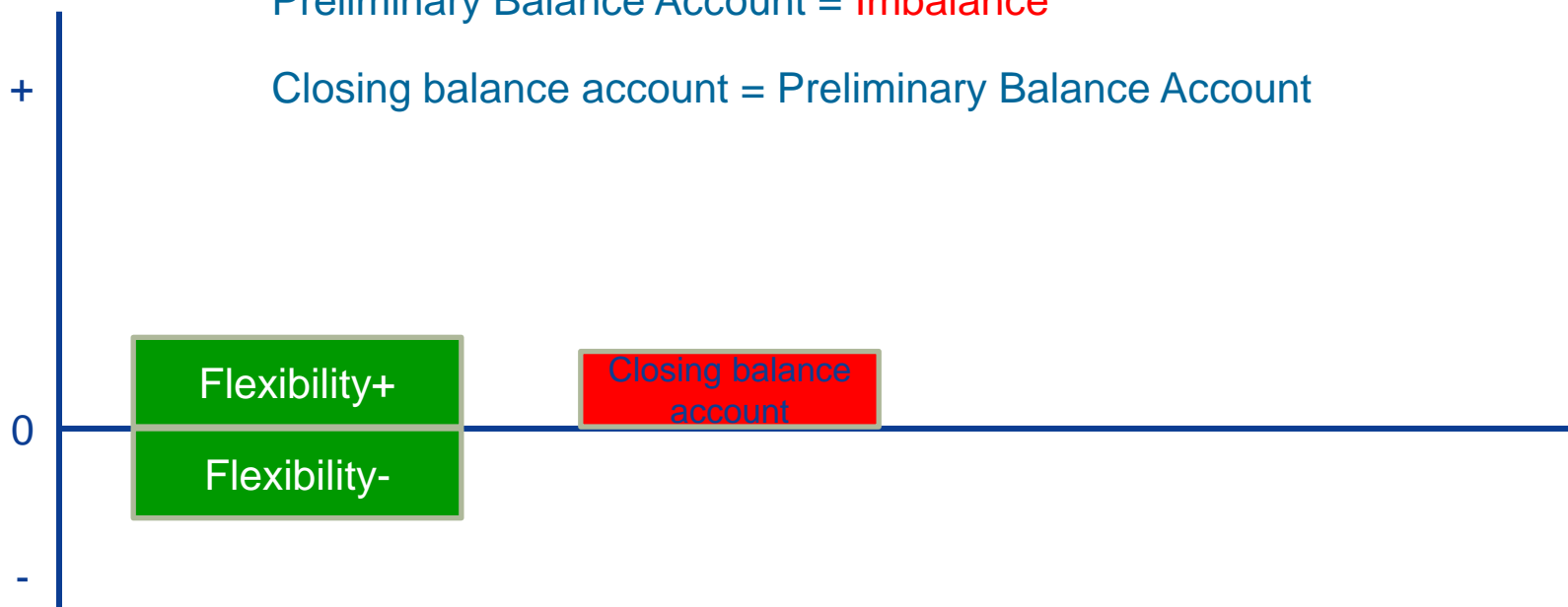
$$\text{Unused Flexibility+} = |\text{Flexibility+}| - \text{Preliminary Balance Account}$$

$$\text{Unused Flexibility-} = \text{Preliminary Balance Account} + |\text{Flexibility-}|$$

DE of the day D-1 in D 13:00

Preliminary Balance Account = **Imbalance**

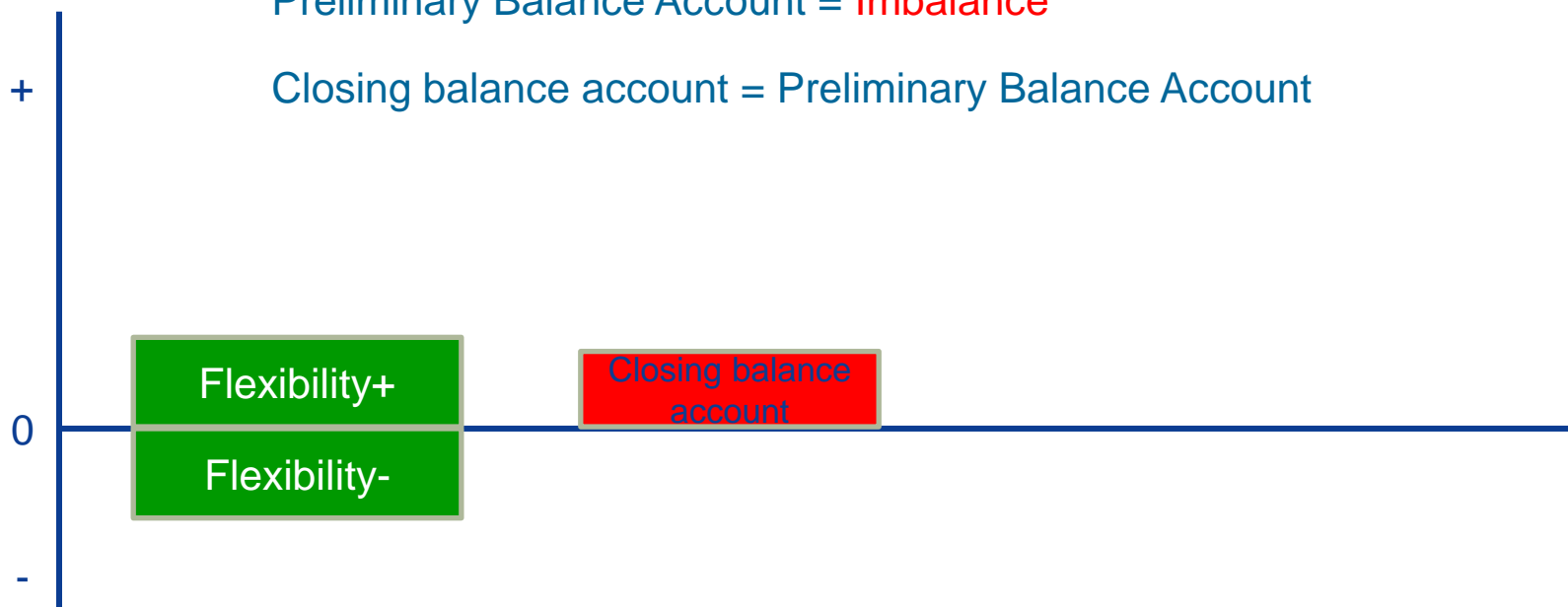
Closing balance account = Preliminary Balance Account



DE of the day D-1 in D 13:00

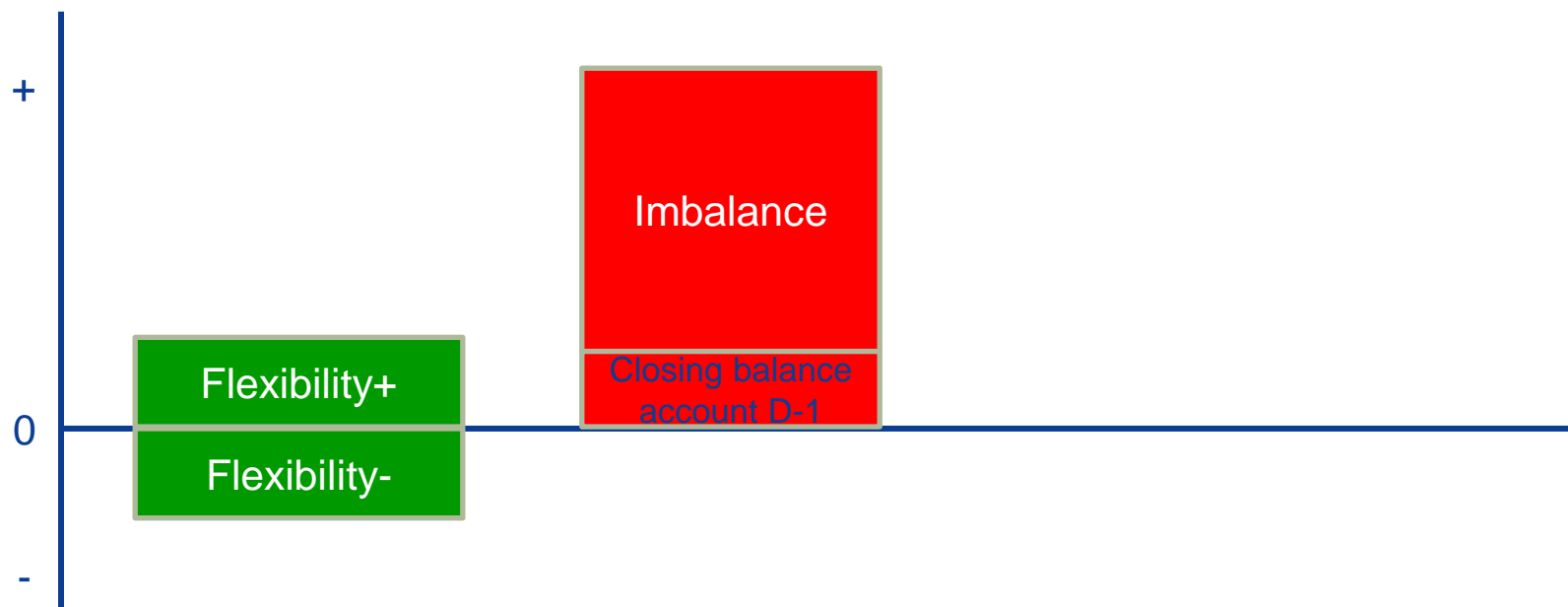
Preliminary Balance Account = **Imbalance**

Closing balance account = Preliminary Balance Account

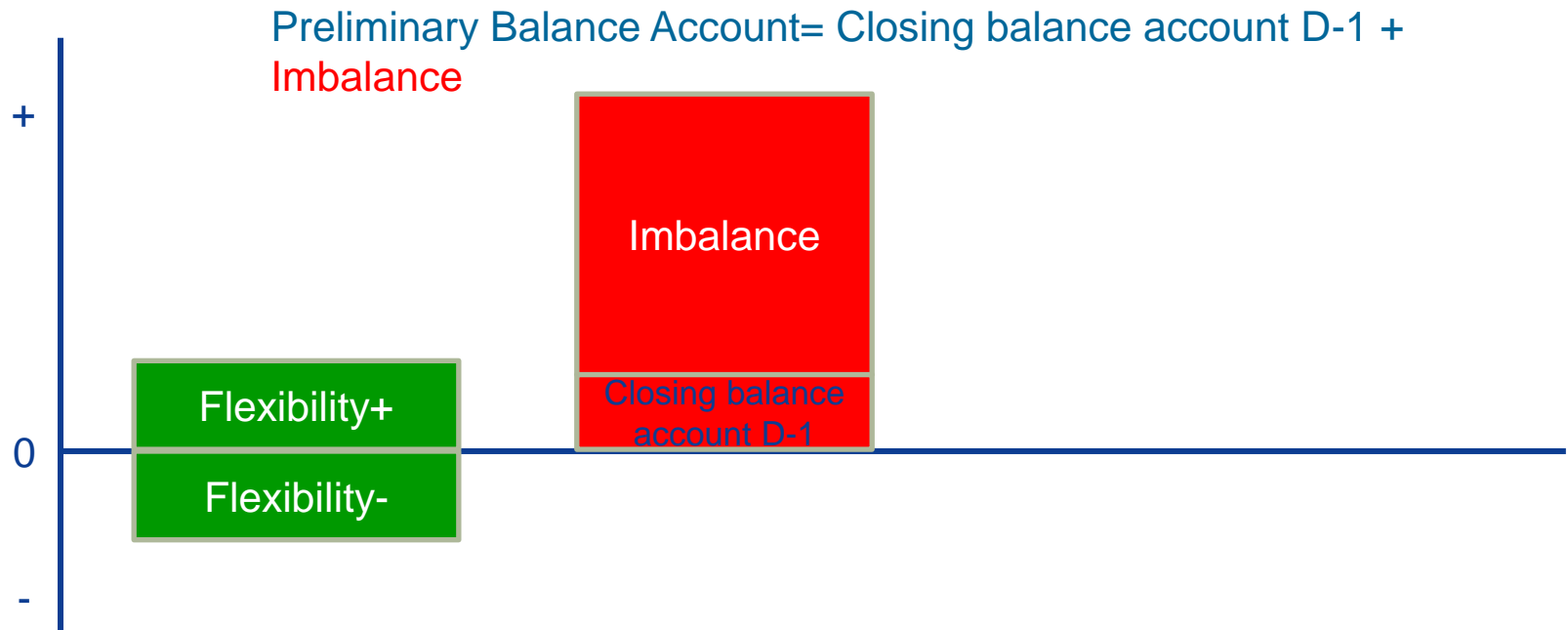


Closing Daily Imbalance Quantity (+, -) = 0

DE of the day D in D+1 13:00

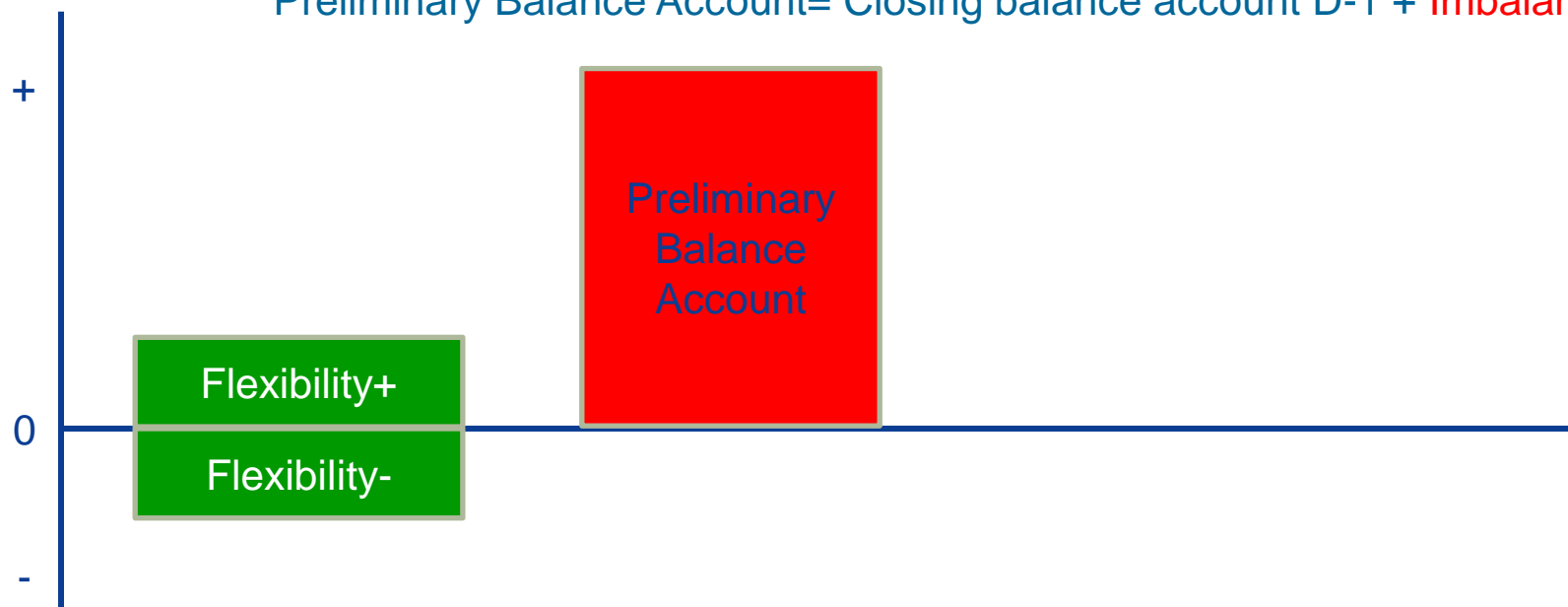


DE of the day D in D+1 13:00

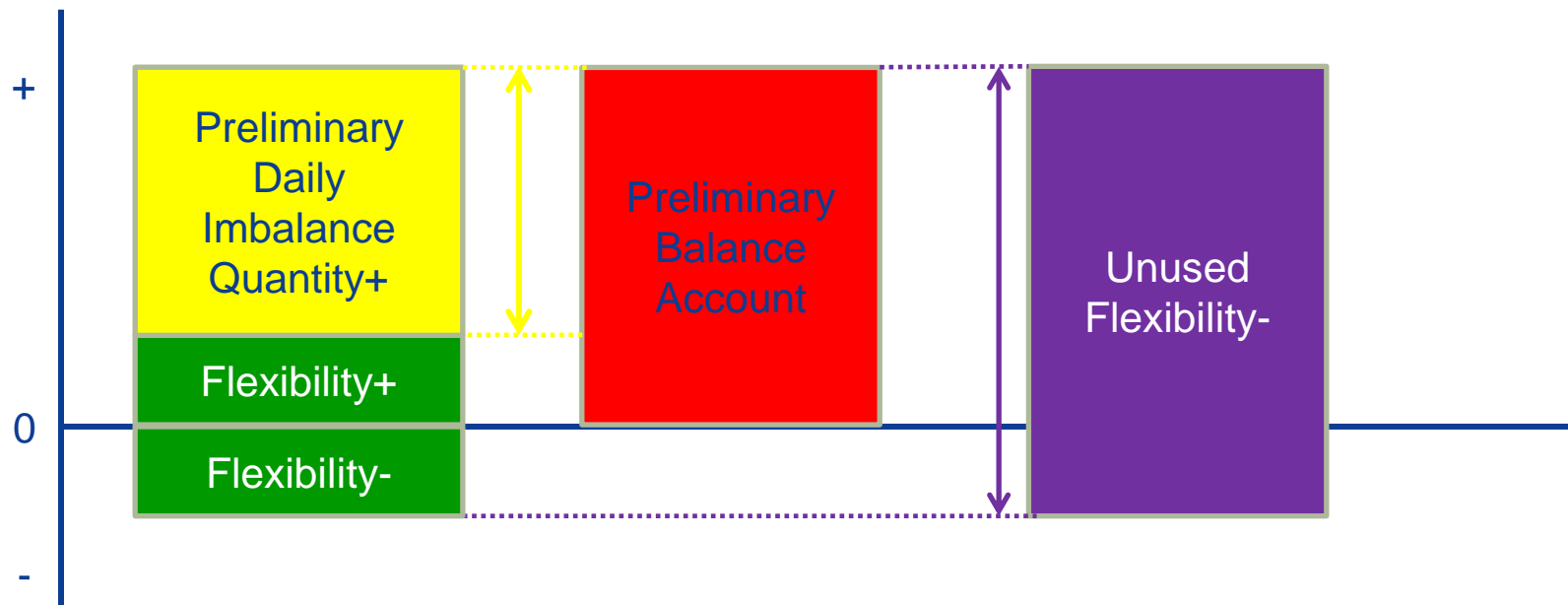


DE of the day D in D+1 13:00

Preliminary Balance Account = Closing balance account D-1 + Imbalance



DE of the day D in D+1 13:00



$$\text{Unused Flexibility+} = 0$$

$$\text{Unused Flexibility-} = \text{Preliminary Balance Account} + |\text{Flexibility-}|$$

$$\text{Preliminary Daily Imbalance Quantity -} = 0$$

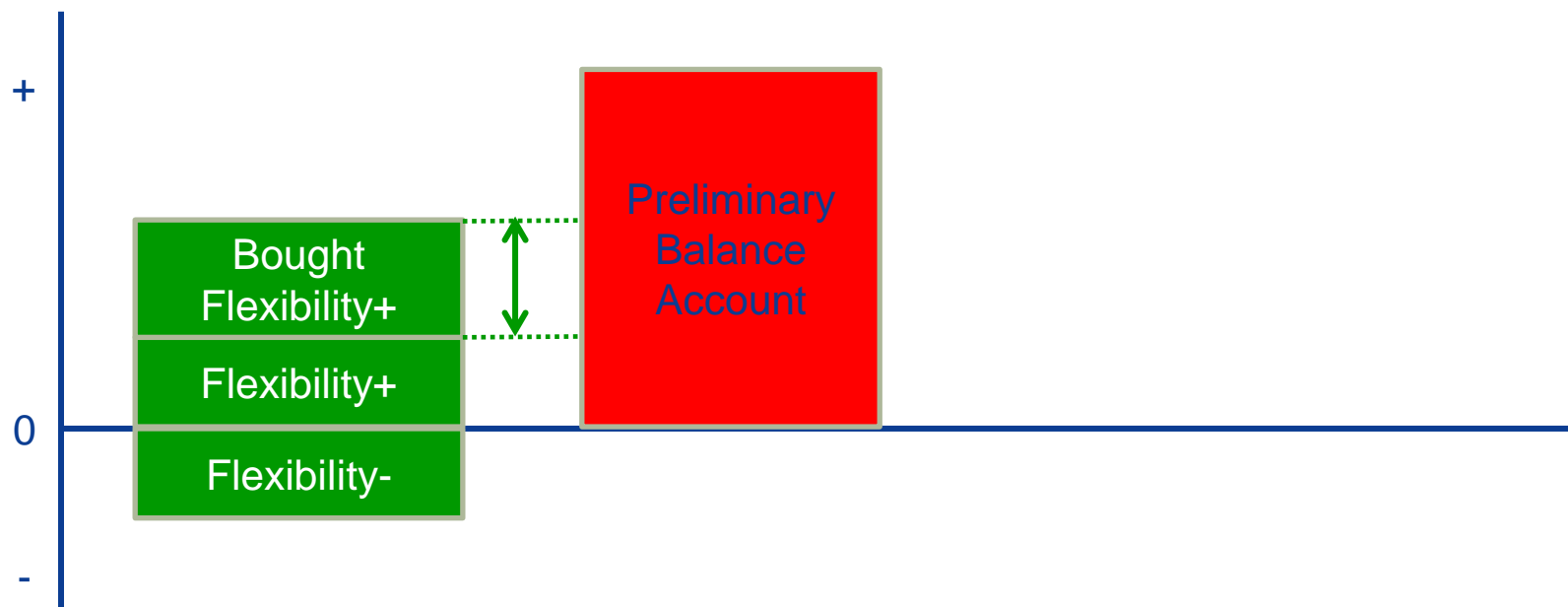
Options

- a) Buy (positive) flexibility
- b) Financial settlement
- c) Combination of a) b)

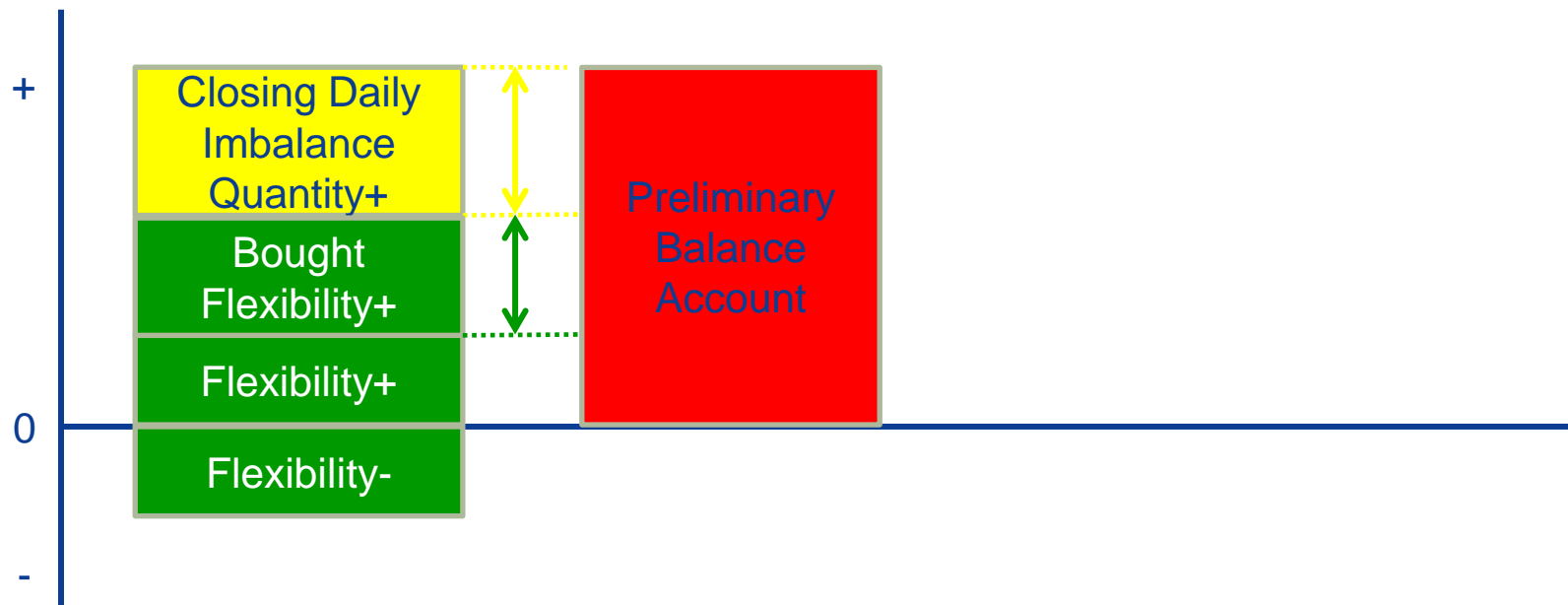
Options

- a) Buy (positive) flexibility
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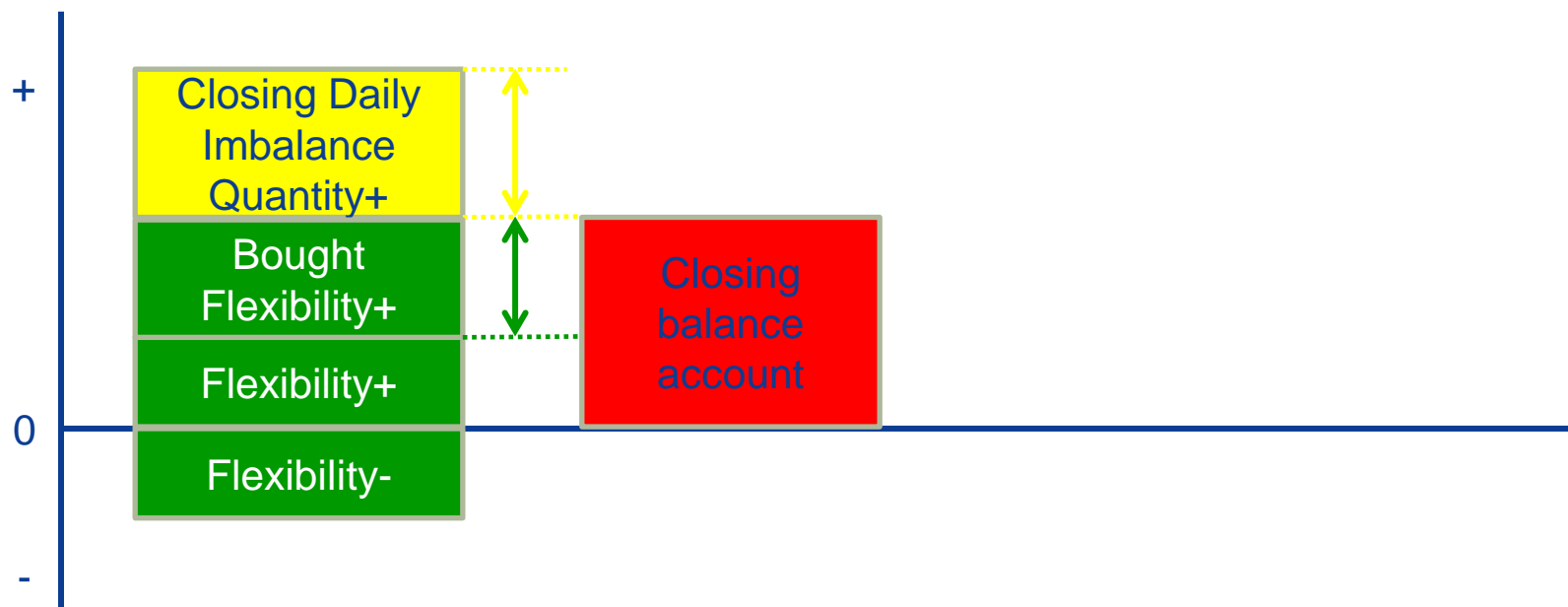
DE of the day D in D+1 13:00



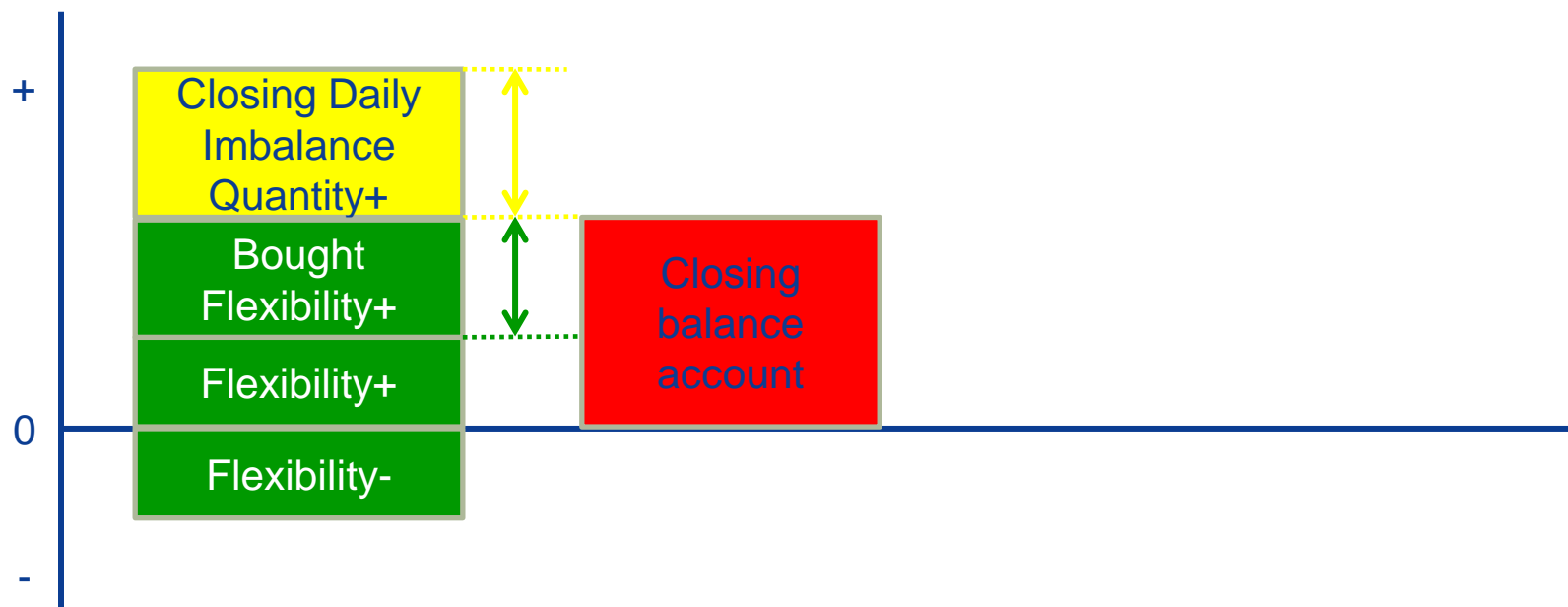
DE of the day D in D+1 13:00



DE of the day D in D+1 13:55



DE of the day D in D+1 13:55



Closing Daily Imbalance Quantity (+) is financially settled for Applicable price for positive Daily Imbalance Quantity

Closing Daily Imbalance Quantity (-) = 0

Applicable Price

- The determination of applicable price is described in Appendix No. 10 of Decree on Gas Market Rules no. 365/2015

Monthly Evaluation - ME

Final Monthly Evaluation - FME

- **Imbalance** is calculated from allocations input/output and obligations to supply/take
The difference compared to the DE might be in underlying values of allocations.
- $\text{Settlement}_{\text{ME}} = \text{Imbalance}_{\text{ME}} - \text{Imbalance}_{\text{DE}}$
- $\text{Settlement}_{\text{FME}} = \text{Imbalance}_{\text{FME}} - \text{Imbalance}_{\text{ME}}$

for price of Index OTE

3, C,CM Evaluation and „Clearing“

C, CM - Processes

Process	Input	When	Evaluated period
DE	Substitute value	D+1	D
ME	Substitute value	M+1	M
Clearing ₁	Reading	M	Reading period
FME	Substitute value	M+4	M
Clearing ₂	Amending reading	M+4	Reading period

C, CM - Processes

Process	Input	When	Evaluated period
DE	Substitute value	D+1	D
ME	Substitute value	M+1	M
Clearing ₁	Reading	M	Reading period
FME	Substitute value	M+4	M
Clearing ₂	Amending reading	M+4	Reading period

Evaluation C,CM

Substitute value for C,CM

$$= PAC_{\text{version}} * LP_{\text{real temperature,class}} * cRD_{\text{version,network}}$$

PAC – Planned Annual Consumption [kWh]

LP – Load Profiles coefficient [-]

cRD – coefficient of Residual Diagram [-]

Evaluation C,CM

Substitute value for C,CM

$$= PAC_{\text{version}} * LP_{\text{real temperature,class}} * cRD_{\text{version,network}}$$

PAC – versions DE, ME, FME

LP – 12 class computed for real temperature in the Czech Republic

cRD – versions DE, ME, FME for each network

Evaluation C,CM

Substitute value for C,CM

$$= PAC_{\text{version}} * LP_{\text{real temperature,class}} * cRD_{\text{version,network}}$$

PAC – versions DE, ME, FME

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Evaluation C,CM

Substitute value for C,CM

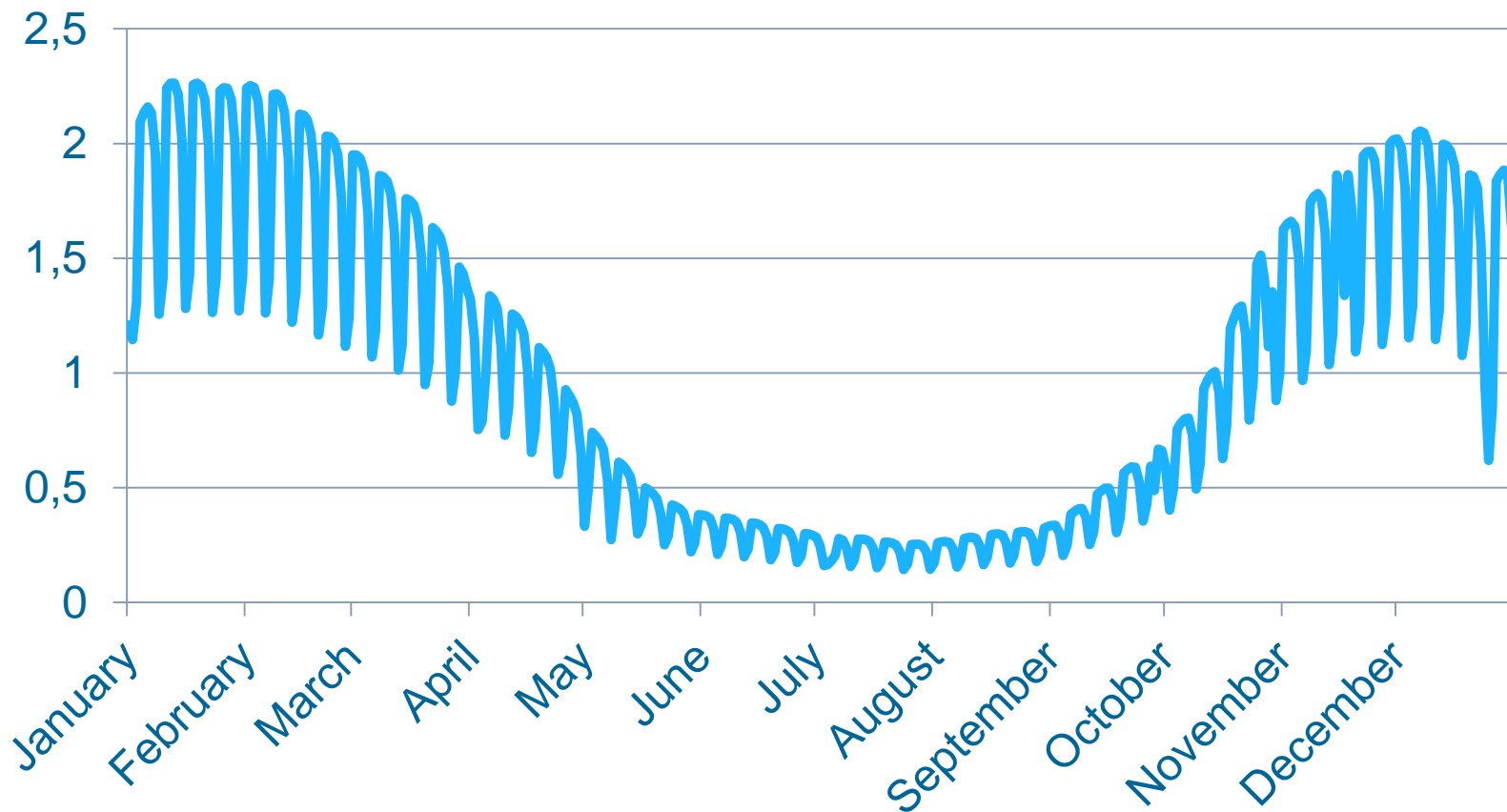
$$= PAC_{\text{version}} * LP_{\text{real temperature,class}} * cRD_{\text{version,network}}$$

PAC – versions DE, ME, FME

LP – 12 class computed for real temperature in the Czech Republic

cRD – versions DE, ME, FME for each network

Evaluation C,CM – LP example



Evaluation C,CM

Substitute value for C,CM

$$= PAC_{\text{version}} * LP_{\text{real temperature,class}} * cRD_{\text{version,network}}$$

PAC – versions DE, ME, FME

LP – 12 classes computed for real temperature
in the Czech Republic

cRD – versions DE, ME, FME for each network

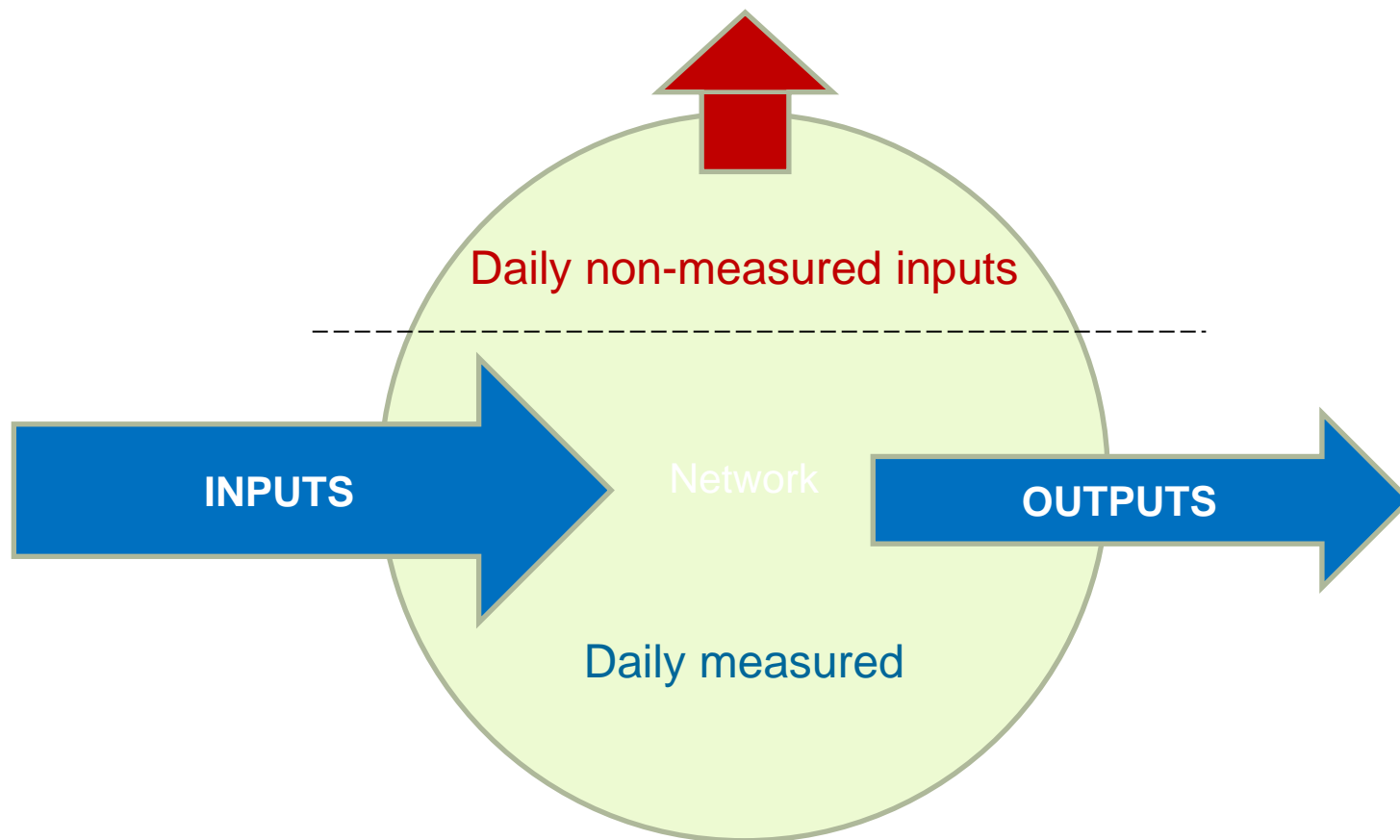
Evaluation C,CM - cRD

$$cRD = \frac{\text{Estimated consumption of all C,CM as a single non-measured value in a network}}{\text{Estimated consumption of all C,CM based on APC and load profiles in a network}}$$

Evaluation C,CM - cRD

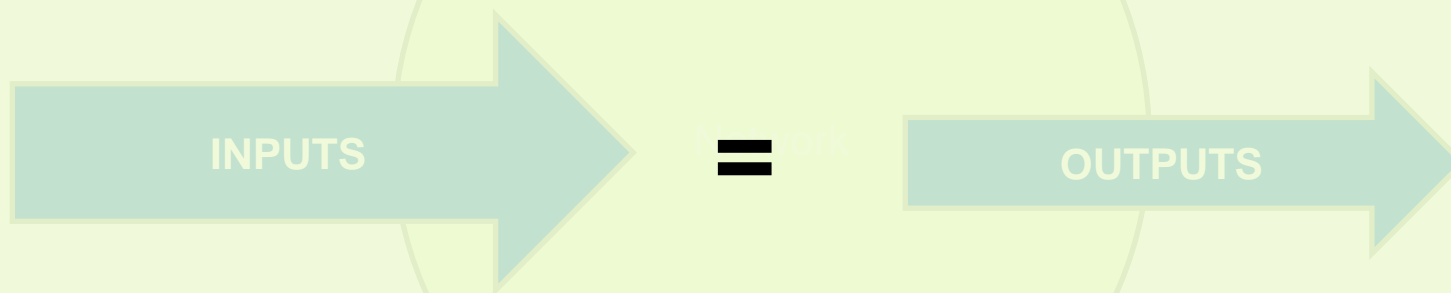
$$cRD = \frac{\text{Estimated consumption of all C,CM as a single non-measured value in a network}}{\text{Estimated consumption of all C,CM based on APC and load profiles in a network}}$$

Evaluation C,CM - cRD



Evaluation C,CM - cRD

**Estimated consumption of all C,CM
as a single non-measured value in
a network**



INPUTS – OUTPUTS

Evaluation C,CM - cRD

$$cRD = \frac{\text{Estimated consumption of all C,CM as a single non-measured value in a network}}{\text{Estimated consumption of all C,CM based on APC and load profiles in a network}}$$

Evaluation C,CM - cRD

Estimated consumption of all C,CM
as a single non-measured value in a network

cRD =

Estimated consumption of all C,CM
based on APC and load profiles in a network

Total PDT in a network

$$= \sum_{i=0} APC_i * TDD_{real_temp_ , Class}$$

Evaluation C,CM - cRD

$$cRD = \frac{\text{Estimated consumption of all C,CM as a single non-measured value in a network}}{\text{Estimated consumption of all C,CM based on APC and load profiles in a network}}$$

Evaluation C,CM – example

Substitute value for C,CM

$$= PAC_{\text{version}} * LP_{\text{real temperature,class}} * cRD_{\text{version,network}}$$

$$= 1\ 000 * 0,004 * 1,25 = 5 \text{ [kWh/day]}$$

Evaluation C,CM – relevancy

Substitute value for C,CM

$$= PAC_{\text{version}} * LP_{\text{real temperature,class}} * cRD_{\text{version,network}}$$

PAC – updates DSP

LP – OTE calculates

cRD – OTE calculates

C, CM - Processes

Process	Input	When	Evaluated period
DE	Substitute value	D+1	D
ME	Substitute value	M+1	M
Clearing ₁	Reading	M	Reading period
FME	Substitute value	M+4	M
Clearing ₂	Amending reading	M+4	Reading period

C, CM - Processes

Process	Input	When	Evaluated period
DE	Substitute value	D+1	D
ME	Substitute value	M+1	M
Clearing₁	Reading	M	Reading period
FME	Substitute value	M+4	M
Clearing₂	Amending reading	M+4	Reading period

Clearing - in general

- Calculation of **the Amount** per day is the difference between the Real value (**Real**) and Substitute value (**Substitute**).
- Calculation of **the price amount** per day:
(**Real** – **Substitute**) * Monthly price

Amount

* Monthly price

Clearing – Monthly price

- Until 30. 6. 2016 is Monthly price average of prices of balancing gas for given month
- From 1.7.2016 is Monthly price average of prices of Index OTE for given month

Clearing – Real

Real value for C,CM

$$= \text{Reading} * LP_{\text{real_temperature}}$$

Example:

$$= 1\,500 * 0,004 = 6 \text{ [kWh/day]}$$

Clearing – Substitute

Substitute value for C,CM

$$= P_{\text{version}} * TDD_{\text{real.temp.}} * cRD_{\text{version,network}}$$

Example:

$$= 1\ 000 * 0,004 * 1,25 = 5 \text{ [kWh/den]}$$

Clearing - Example

$$= (\text{Real} - \text{Substitute}) * \text{Monthly price}$$

$$= (6 - 5) * 432 / 1000$$

(kWh kWh) * Kč/MWh / -

$$= 0,432 \text{ [Kč/day]}$$

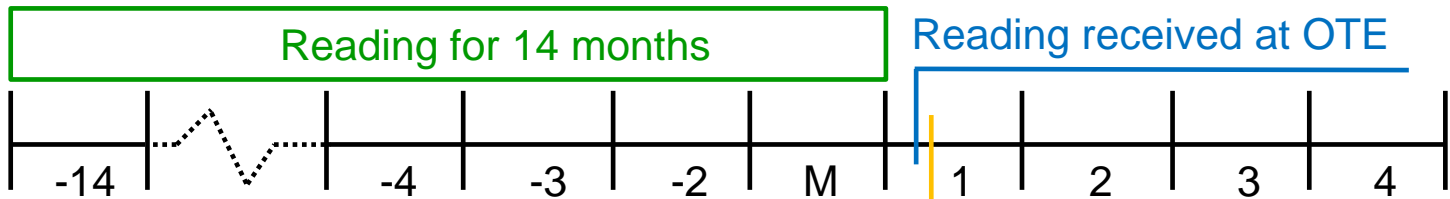
C, CM - Processes

Process	Input	When	Evaluated period
DE	Substitute value	D+1	D
ME	Substitute value	M+1	M
Clearing₁	Reading	M	Reading period
FME	Substitute value	M+4	M
Clearing₂	Amending reading	M+4	Reading period

Clearing₁

End of **Reading** period in M and **Reading received at OTE** in M+1

Real₁

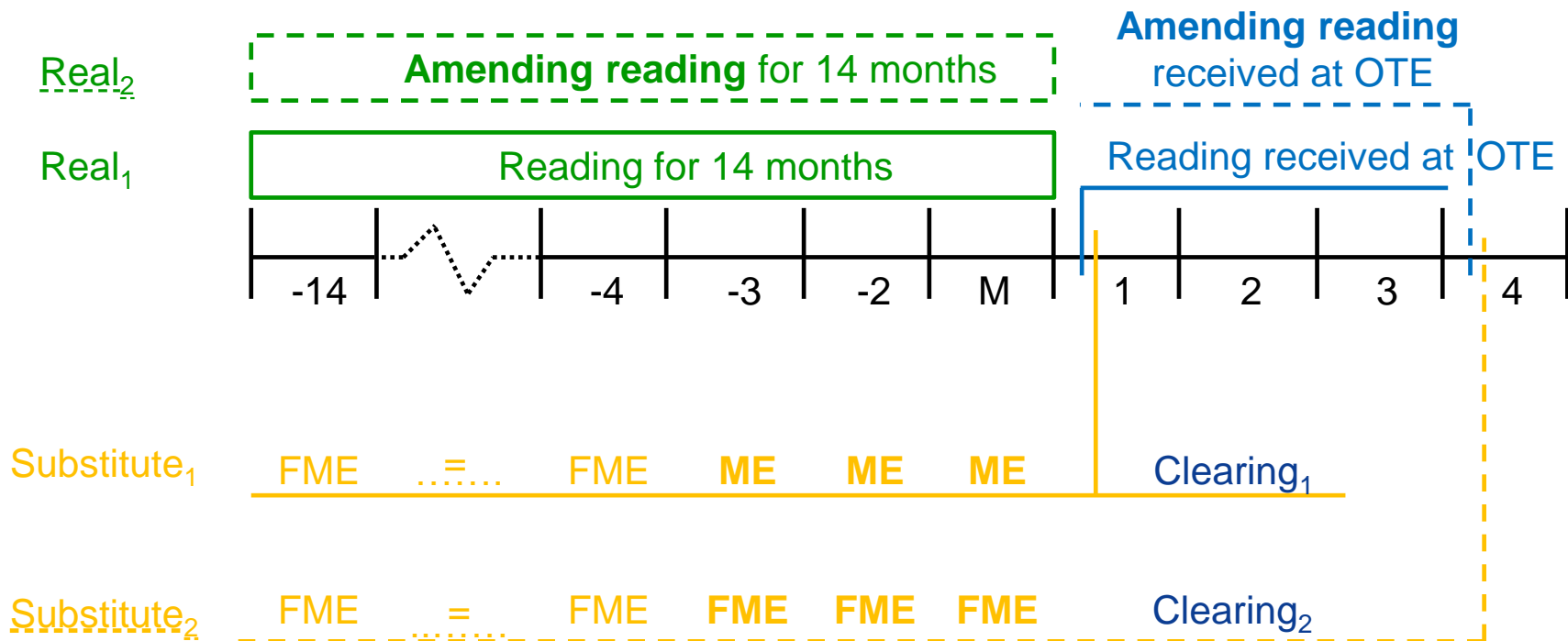


Substitute₁



Clearing₁ vs. Clearing₂

End of **Amending reading** in M and reading **received at OTE** in M+4



Clearing₁ vs. Clearing₂

- Clearing₁, financial settlement of the difference between real values and substitute values
- Clearing₂, financial settlement of the difference between Clearing₂ and Clearing₁.

	Clearing ₁	Clearing ₂
Amount _{verze} [kWh]	Real ₁ – Substitute ₁	Real ₂ - Substitute ₂
Financial settlement [Kč]	Amount ₁ * Monthly price	(Amount ₂ - Amount ₁) * Monthly price

C, CM – Financial settlement

Process	Financially is settled
DE	Balance account over Flexibility for an Applicable price
ME	$(ME-DE) * \text{Index OTE}$
Clearing ₁	$(\text{Real}_1 - \text{Substitute}_1) * \text{Monthly price}$
FME	$(FME-ME) * \text{Index OTE}$
Clearing ₂	$(\text{Real}_2 - \text{Substitute}_2) * \text{Monthly price} - \text{Clearing}_1$

Abbreviations

NC BAL	– Balancing Network Code
BRP	– Balance Responsibility Party
UF	– Unused Flexibility
PDT	– Point of Delivery/Transfer
DSO	– Distribution System Operator
DE	– Daily Evaluation
ME	– Monthly Evaluation
FME	– Final Monthly Evaluation
A,B,C,CM	– metering types
APC	– Annual Planned Consumption