

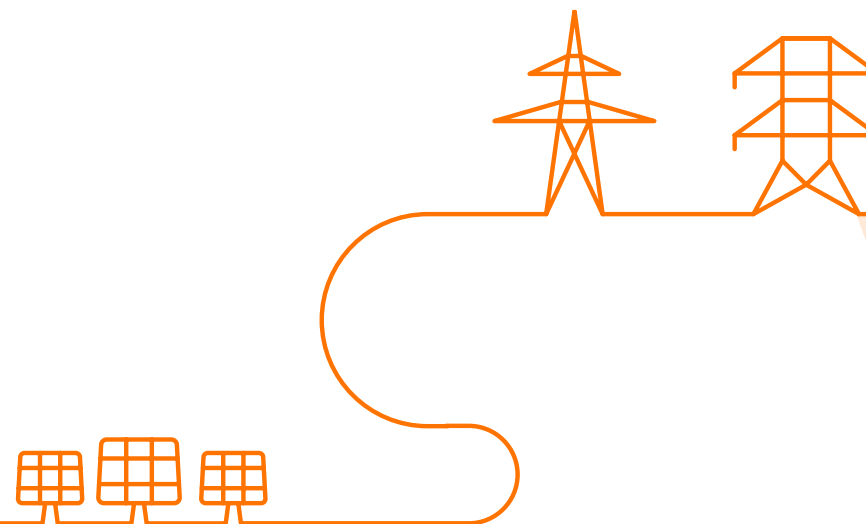


WG Adequacy #23

13/10/2023

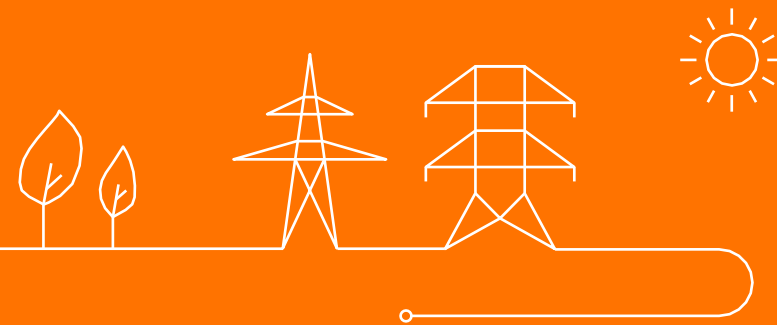
Agenda

- Welcome
- Approval of the Minutes
- Update on Net Balancing study – Compass Lexecon
- Update on Cost of Capacity study – Entras
- Cross-Border CRM
- CRM design updates
 - Functioning rules publication process
 - Additional to existing
 - Proven availability and payback
- Go-to-Market Plan – AM & PB
- Update from Cabinet
- AOB
- Next meetings



Approval of the Minutes

WG Adequacy #21



Approval of the Minutes – WG Adequacy #21

- A single comment to rectify the participants list
- No other comments were received on the Minutes of the WG Adequacy #21 meeting (25/08/2023)



Net Balancing Revenues study (TBC)

Compass Lexecon



Net Balancing Revenues study

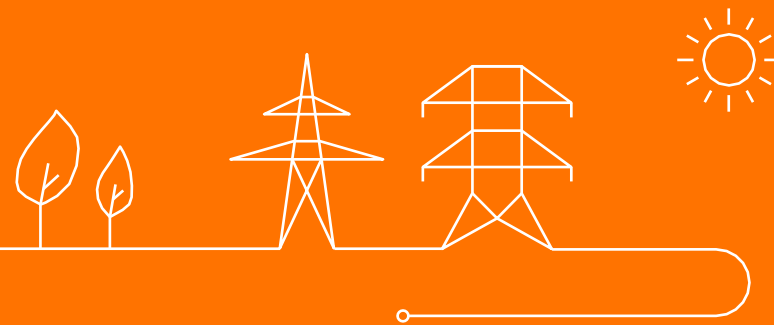
- You can find the presentation of Compass Lexecon through this link:

[20231013 meeting \(elia.be\)](#)



Cost of Capacity study

Entras



Consultancy project on “cost of capacity for calibration of the Belgian CRM”

Presentation for the WG Adequacy - October 13th 2023



Contact information: Jens.Baetens@entras.be

Agenda

- › Scope of the Entras CoC study
- › Shortlisted technologies
- › FOM & VOM values
- › Overview literature

Scope of the Entras CoC study (1/2)

A) Define a longlist of electricity generation technologies

- Shortlist this longlist for the use of Net CONE eligible technologies, based on relevant criteria
- Shortlist this longlist for the use of IPC eligible technologies, based on relevant criteria

B) Define a clear overview of the FOM and VOM costs

- Create an overview of FOM and VOM cost components, to be expressed in €/MW/year or €/MWh respectively
- Provide a value for each of the relevant defined cost components for technologies expected to enter the Belgian energy market, i.e., the technologies as defined under A1
- Provide a low – mid – high value for each of the relevant defined cost components for existing technologies in the Belgian energy market, i.e., the technologies as defined under A2

C) Define a clear overview of the total initial CAPEX costs (for Net CONE)

- Create an overview of the total initial CAPEX cost components for each technology as defined under A1
- Provide a value for each of the CAPEX cost components, for each technology as defined under A1

Scope of the Entras CoC study (1/2)

A) Define a longlist of electricity generation technologies

- Shortlist this longlist for the use of Net CONE eligible technologies, based on relevant criteria
- Shortlist this longlist for the use of IPC eligible technologies, based on relevant criteria

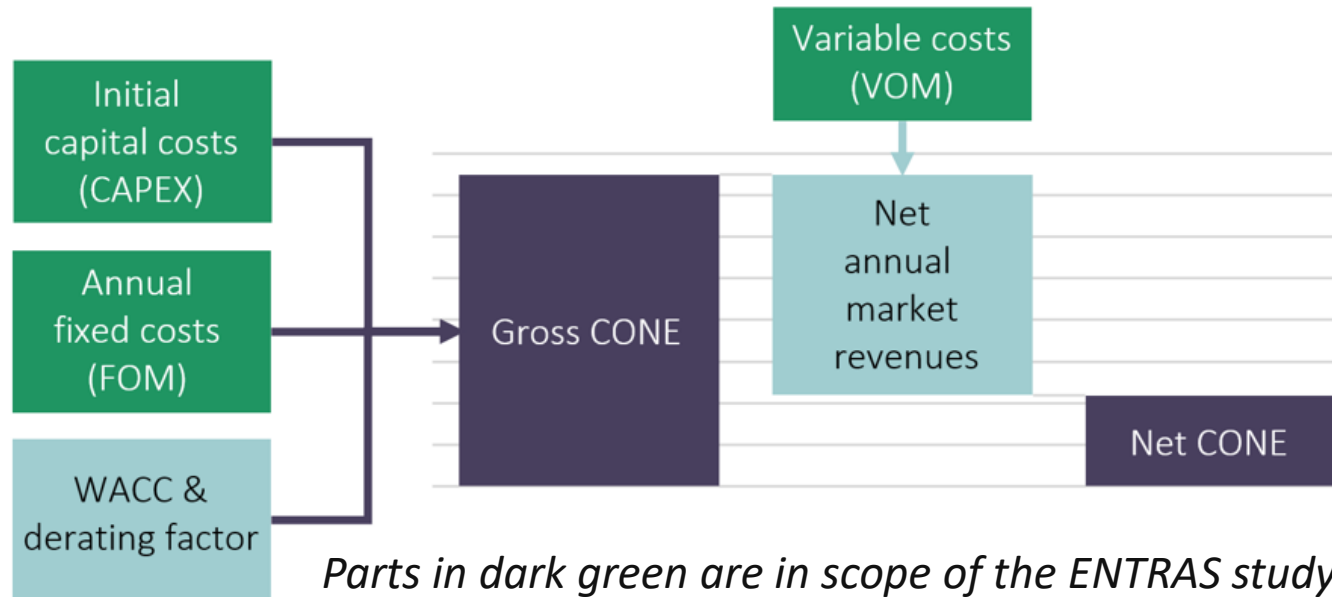
B) Define a clear overview of the FOM and VOM costs

- Create an overview of FOM and VOM cost components, to be expressed in €/MW/year or €/MWh respectively
- Provide a value for each of the relevant defined cost components for technologies expected to enter the Belgian energy market, i.e., the technologies as defined under A1
- Provide a low – mid – high value for each of the relevant defined cost components for existing technologies in the Belgian energy market, i.e., the technologies as defined under A2

C) Define a clear overview of the total initial CAPEX costs (for Net CONE)

- Create an overview of the total initial CAPEX cost components for each technology as defined under A1
- Provide a value for each of the CAPEX cost components, for each technology as defined under A1

Scope of the Entras CoC study (2/2)



| | Auction 2021 (2025-2026) | Auction 2022 (2026-2027) | Auction 2023 (2027-2028) | Auction 2024 (2028-2029) |
|--|--|-----------------------------|--------------------------------|-----------------------------|
| Technology shortlist VOM, FOM & CAPEX | Fichtner 2020 link + AFRY 2020 link | | AFRY 2022 link | ENTRAS |

| | Net-CONE | IPC |
|---|--|---|
| 1. Electricity generation technologies | | |
| 1.1 Thermal technologies | | |
| Combined Cycle Gas Turbine (CCGT) | ✓ | ✓ |
| Open Cycle Gas Turbine (OCGT) | ✓ | ✓ |
| Combustion system & Steam Turbine (ST) | | |
| Nuclear fission | nuclear exit | expected to be excluded from CRM support |
| Coal | not meeting the limit for CO ₂ | no existing operational installations |
| Waste | not fit-for-purpose / limited new capacity | ✓ |
| Biomass | limited new capacity | ✓ |
| Internal Combustion Engines (IC engines) | ✓ | ✓ |
| Turbojets | not meeting the limit for CO ₂ | not meeting the limit for CO ₂ |
| 1.2 Renewable technologies | | |
| Onshore wind turbines | not fit-for-purpose | not fit-for-purpose |
| Offshore wind turbines | not fit-for-purpose | not fit-for-purpose |
| Hydropower (run-of-river) | limited new capacity | not fit-for-purpose |
| Photo Voltaic (PV) | not fit-for-purpose | not fit-for-purpose |
| 1.3 Electrochemical technologies | | |
| Fuel cell (FC) | limited new capacity | no existing operational installations |
| 2. Storage technologies | | |
| 2.1 Pumped Hydro Storage | limited new capacity | ✓ |
| 2.2 Battery Energy Storage Systems | ✓ | ✓ |
| 2.3 Compressed Air Energy Storage | limited new capacity | no existing operational installations |
| 2.4 Flywheel | limited new capacity | no existing operational installations |
| 3. Demand Side Management (DSM) technology | ✓ | ✓ |

Overview FOM values

| New Entrant (Net-CONE) | Literature | | | Entras | Market Parties | | | Consolidated | | |
|---------------------------|------------|-------|-------|--------|----------------|-------|-------|--------------|-------|-------|
| | L | M | H | | L | M | H | L | M | H |
| CCGT | 36,21 | 39,86 | 45,81 | 30,20 | | | | 33,20 | 35,03 | 38,01 |
| OCGT | 22,31 | 28,79 | 33,88 | 32,20 | | | | 27,25 | 30,50 | 33,04 |
| IC engine | 41,64 | 60,24 | 79,18 | | | | | 41,46 | 60,24 | 79,18 |
| BESS | 13,69 | 19,68 | 22,74 | | 29,69 | 30,49 | 31,29 | 21,82 | 25,09 | 27,02 |

| Existing (IPC) | Literature | | | Entras | Market Parties | | | Consolidated | | |
|-------------------|------------|-------|-------|--------|----------------|-------|-------|--------------|-------|--------|
| | L | M | H | | L | M | H | L | M | H |
| CCGT | 40,23 | 44,29 | 50,90 | 36,10 | 30,15 | 32,29 | 47,50 | 35,49 | 37,56 | 44,83 |
| OCGT | 24,79 | 31,99 | 37,64 | | | | | 24,79 | 31,99 | 37,64 |
| Waste | | | | | | | | 67,08 | 76,43 | 112,98 |
| Biomass | | | | | | | | 60,99 | 65,10 | 84,74 |
| IC engine | 41,64 | 60,24 | 79,18 | | 66,00 | 72,50 | 81,25 | 53,82 | 66,37 | 80,22 |
| PHS | 17,57 | 29,94 | 31,92 | | | | | 17,57 | 29,94 | 31,92 |
| BESS | 13,96 | 19,68 | 22,74 | | | | | 13,96 | 19,68 | 22,74 |

Overview VOM values

| New Entrant (Net-CONE) | Literature | | | Entras | Market Parties | | | Consolidated | | |
|---------------------------|------------|------|------|--------|----------------|------|------|--------------|------|------|
| | L | M | H | | L | M | H | L | M | H |
| CCGT | 1,53 | 2,11 | 2,92 | 1,70 | | | | 1,61 | 1,90 | 2,31 |
| OCGT | 2,44 | 3,06 | 3,28 | 1,34 | | | | 1,89 | 2,20 | 2,31 |
| IC engine | 0,10 | 0,79 | 7,92 | | | | | 0,10 | 0,79 | 7,92 |
| BESS | 0,07 | 0,23 | 0,40 | | 0,00 | 0,00 | 0,00 | 0,04 | 0,11 | 0,20 |

| Existing (IPC) | Literature | | | Entras | Market Parties | | | Consolidated | | |
|-------------------|------------|------|------|--------|----------------|------|------|--------------|------|------|
| | L | M | H | | L | M | H | L | M | H |
| CCGT | 1,70 | 2,34 | 3,25 | 1,08 | 0,00 | 0,22 | 2,34 | 0,93 | 1,21 | 2,22 |
| OCGT | 2,71 | 3,40 | 3,56 | | | | | 2,71 | 3,40 | 3,56 |
| Waste | | | | | | | | 1,75 | 2,47 | 5,60 |
| Biomass | | | | | | | | 1,59 | 2,10 | 4,20 |
| IC engine | 0,11 | 0,88 | 8,79 | | 0,00 | 0,00 | 1,19 | 0,06 | 0,44 | 4,99 |
| PHS | 0,07 | 0,07 | 0,69 | | | | | 0,07 | 0,07 | 0,69 |
| BESS | 0,07 | 0,23 | 0,40 | | | | | 0,07 | 0,23 | 0,40 |

Overview FOM values - capabilities

| New Entrant (Net-CONE) | Consolidated | | |
|---------------------------|--------------|-------|-------|
| | L | M | H |
| CCGT | 33,20 | 35,03 | 38,01 |
| CHP | 5,98 | 6,31 | 6,84 |
| CCS | 23,78 | 28,71 | 29,64 |
| 2 nd fuel | 4,98 | 5,25 | 5,70 |
| OCGT | 27,25 | 30,50 | 33,04 |
| CHP | 6,27 | 7,01 | 7,60 |
| CCS | 23,13 | 28,15 | 28,97 |
| 2 nd fuel | 4,09 | 4,57 | 4,96 |
| IC engine | 41,46 | 60,24 | 79,18 |
| CHP | 0,83 | 1,20 | 1,58 |
| 2 nd fuel | 2,08 | 3,01 | 3,96 |

| Existing (IPC) | Consolidated | | |
|----------------------|--------------|-------|-------|
| | L | M | H |
| CCGT | 35,49 | 37,56 | 44,83 |
| CHP | 6,39 | 6,76 | 8,07 |
| CCS | 24,02 | 29,02 | 30,57 |
| 2 nd fuel | 5,32 | 5,63 | 6,73 |
| OCGT | 24,79 | 31,99 | 37,64 |
| CHP | 5,70 | 7,36 | 8,66 |
| CCS | 22,86 | 28,33 | 29,59 |
| 2 nd fuel | 3,72 | 4,80 | 5,65 |
| IC engine | 53,82 | 66,37 | 80,22 |
| CHP | 1,08 | 1,33 | 1,60 |
| 2 nd fuel | 2,69 | 3,32 | 4,01 |

Overview VOM values - capabilities

| New Entrant (Net-CONE) | Consolidated | | |
|---------------------------|--------------|-------|-------|
| | L | M | H |
| CCGT | 1,61 | 1,90 | 2,31 |
| CHP | 0,53 | 0,63 | 0,76 |
| CCS | 13,26 | 15,75 | 21,75 |
| 2 nd fuel | 0,01 | 0,01 | 0,01 |
| OCGT | 1,89 | 2,20 | 2,31 |
| CHP | 0,43 | 0,51 | 0,53 |
| CCS | 13,29 | 15,79 | 21,74 |
| 2 nd fuel | 0,01 | 0,01 | 0,01 |
| IC engine | 0,10 | 0,79 | 7,92 |
| CHP | 0,00 | 0,02 | 0,16 |
| 2 nd fuel | 0,00 | 0,01 | 0,09 |

| Existing (IPC) | Consolidated | | |
|----------------------|--------------|-------|-------|
| | L | M | H |
| CCGT | 0,93 | 1,21 | 2,22 |
| CHP | 0,31 | 0,40 | 0,73 |
| CCS | 13,18 | 15,67 | 21,73 |
| 2 nd fuel | 0,01 | 0,01 | 0,01 |
| OCGT | 2,71 | 3,40 | 3,56 |
| CHP | 0,62 | 0,78 | 0,82 |
| CCS | 13,38 | 15,94 | 21,92 |
| 2 nd fuel | 0,02 | 0,03 | 0,03 |
| IC engine | 0,06 | 0,44 | 4,99 |
| CHP | 0,00 | 0,01 | 0,10 |
| 2 nd fuel | 0,00 | 0,01 | 0,06 |

Overview literature (1/2)

- [51] NREL, “Cost Projections for Utility-Scale Battery Storage: 2021 Update,” June 2021. [Online]. Available: <https://www.nrel.gov/docs/fy21osti/79236.pdf>.
- [52] Brattle, “PJM CONE 2026/2027 Report,” 21 April 2022. [Online]. Available: <https://www.pjm.com/-/media/library/reports-notices/special-reports/2022/20220422-brattle-final-cone-report.ashx>.
- [53] NREL, “Cost Projections for Utility-Scale Battery Storage: 2023 Update,” June 2023. [Online]. Available: <https://www.nrel.gov/docs/fy23osti/85332.pdf>.
- [54] Pacific Northwest National Laboratory, “2022 Grid Energy Storage Technology Cost and Performance Assessment,” August 2022. [Online]. Available: <https://www.pnnl.gov/sites/default/files/media/file/ESGC%20Cost%20Performance%20Report%202022%20PNNL-33283.pdf>.
- [55] DNV GL (KEMA, Inc.), “Battery Energy Storage Study for the 2017 IRP,” August 2016. [Online]. Available: https://www.pacificcorp.com/content/dam/pacorp/documents/en/pacificcorp/energy/integrated-resource-plan/2017-irp/2017-irp-support-and-studies/10018304_R-01-D_PacifiCorp_Battery_Energy_Storage_Study.pdf.
- [56] Platte River Power Authority, “Battery Energy Storage Technology Assessment,” November 2017. [Online]. Available: <https://www.prapa.org/wp-content/uploads/2017/10/HDR-Battery-Energy-Storage-Assessment.pdf>.
- [57] K. Mongird, V. Viswanathan, P. Balducci, J. Alam, V. Fotedar, V. Koritarov and B. Hadjerioua, “An Evaluation of Energy Storage Cost and Performance Characteristics,” 28 June 2020. [Online]. Available: <https://www.mdpi.com/1996-1073/13/13/3307>.
- [58] U.S. Energy Information Administration, “Capital Cost and Performance Characteristic Estimates for Utility Scale Electric Power Generating Technologies,” February 2020. [Online]. Available: https://www.eia.gov/analysis/studies/powerplants/capitalcost/pdf/capital_cost_AEO2020.pdf.
- [59] Ramboll, “Best Nw Entrant Study 2022,” 18 October 2022. [Online]. Available: <https://www.semcommittee.com/sites/semc/files/media-files/SEM-22-076a%20BNE-Net%20CONE%20Report.pdf>.
- [60] Potomac Economics, “2022 State of the Market Report for the New York ISO Markets,” May 2023. [Online]. Available: https://www.potomaceconomics.com/wp-content/uploads/2023/05/NYISO-2022-SOM-Full-Report__5-16-2023-final.pdf.
- [61] GHD Advisory, “Power station and associated costs,” 8 December 2022. [Online]. Available: <https://www.erawa.com.au/cproot/23060/2/-BRCP.2023---Power-Station-and-Associated-Costs-Report---GHD-Advisory---Dec-2022.PDF>.
- [62] The Brattle Group, “AESO Cost of New Entry Analysis,” 4 September 2018. [Online]. Available: <https://www.aeso.ca/assets/Uploads/CONE-Study-2018-09-04.pdf>.

Overview literature (2/2)

- [63] VEKA, “Rapport 2022 Deel 1: Rapport OT/Bf voor projecten met een startdatum vanaf 1 januari 2023,” 2022. [Online]. Available: https://assets.vlaanderen.be/image/upload/v1662990249/2022_deel1_qjlkrl.pdf.
- [64] VEKA, “Rapporten van 2012 tot 2022 - Deel 1: Berekening OT en Bf voor nieuwe projecten,” 2021. [Online]. Available: https://assets.vlaanderen.be/raw/upload/v1672844413/2012-2022_PublicatiesDeel1_n12p9n.zip.
- [65] CAISO, “Variable Operations and Maintenance Cost Review,” 22 October 2020. [Online]. Available: <http://www.caiso.com/InitiativeDocuments/FinalProposal-VariableOperations-MaintenanceCostReview.pdf>.
- [66] Cogen Vlaanderen, “Cogeneration Feasibility Tool,” April 2023. [Online]. Available: cogenvlaanderen.be.
- [67] IEA and NEA, “Projected Costs of Generating Electricity,” 2020. [Online]. Available: <https://iea.blob.core.windows.net/assets/ae17da3d-e8a5-4163-a3ec-2e6fb0b5677d/Projected-Costs-of-Generating-Electricity-2020.pdf>.
- [68] Empresa de Pesquisa Energética, “Power Generation Cost Report 2021,” 24 August 2022. [Online]. Available: https://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublishingImages/pt/publicacoes-dados-abertos/publicacoes/caderno-de-precos-da-geracao/EPE_Power%20Generation%20Costs%20Report%202021.pdf.
- [69] National Energy Technology Laboratory, “Cost and Performance Baseline for Fossil Energy Plants Volume 1: Bituminous Coal and Natural Gas to Electricity,” 14 October 2022. [Online]. Available: <https://www.osti.gov/biblio/1893822>.



ENTRAS

Team



CONTACT DETAILS

Frank.Alaerts@entras.be
+32 494 70 84 74



CONTACT DETAILS

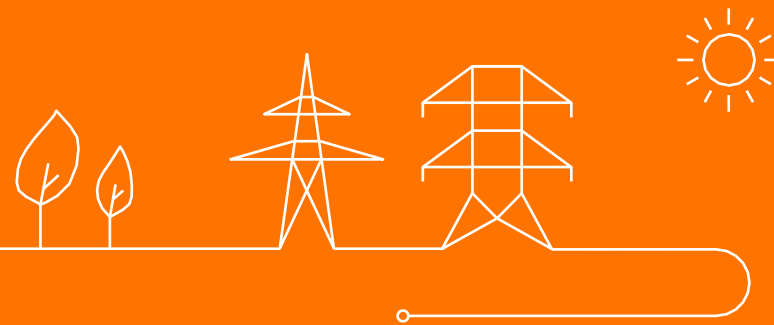
Twan.Bearda@entras.be
+32 499 40 73 29



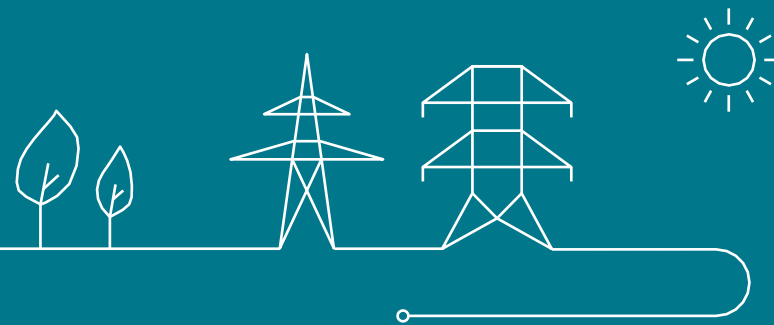
CONTACT DETAILS

Jens.Baetens@entras.be
+32 478 30 54 02

Cross-Border CRM



Introduction



Introduction – Functioning Rules for Cross Border participation

The rules for Foreign CMUs will be set-out in the Functioning Rules of the CRM

Separate Chapter of the Functioning Rules *“Indirect Foreign Capacity Participation”*

- Containing all clauses related to mechanisms specific to CrossBorder participation (Light prequalification and Pre-Auction)

Specificities related to already existing processes (Prequalification, auction, Availability monitoring,...) will be integrated in the **dedicated chapters**.

A Design Note has been written to support the understanding of Cross Border specific rules

Covering all of the Design changes and particularities of Cross Border CRM

- In a more easily digestable, summarized format
- To be published end of October



Similar to the approach used for the Low Carbon Tender

This Chapter and the Functioning Rules in general will cover **all necessary/required information** to enable participation for a Foreign CMU.

Introduction – High-level role of the Foreign TSO

1 First point of contact for

- Awareness of and entry into the Belgian CRM
- Basic information on the Belgian CRM
- Support of Foreign CMUs in certain processes

2 Support & input towards Elia for all country/area-related specific aspects

- e.g. checking permits, connection points, technology, other subsidies, legal aspects of Financial Security
- Support to follow-up on Foreign CMUs (Quarterly reports, ...)

3 Live testing, data procurement essential for operation of the CRM

- e.g. Pre-delivery testing, NRP determination & test, Availability testing & monitoring
- Provide Elia with the metering/daily schedule data

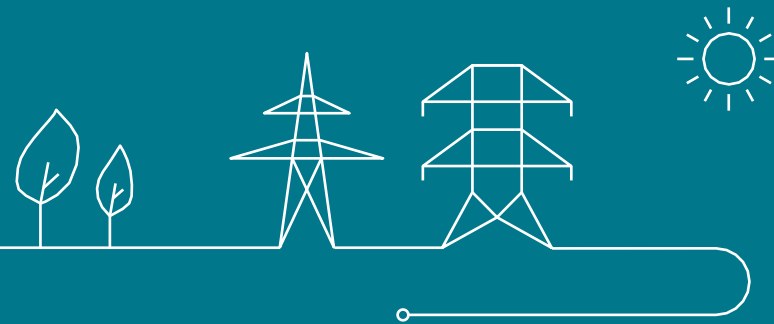


Elia still processes all essential aspects of the CRM centrally

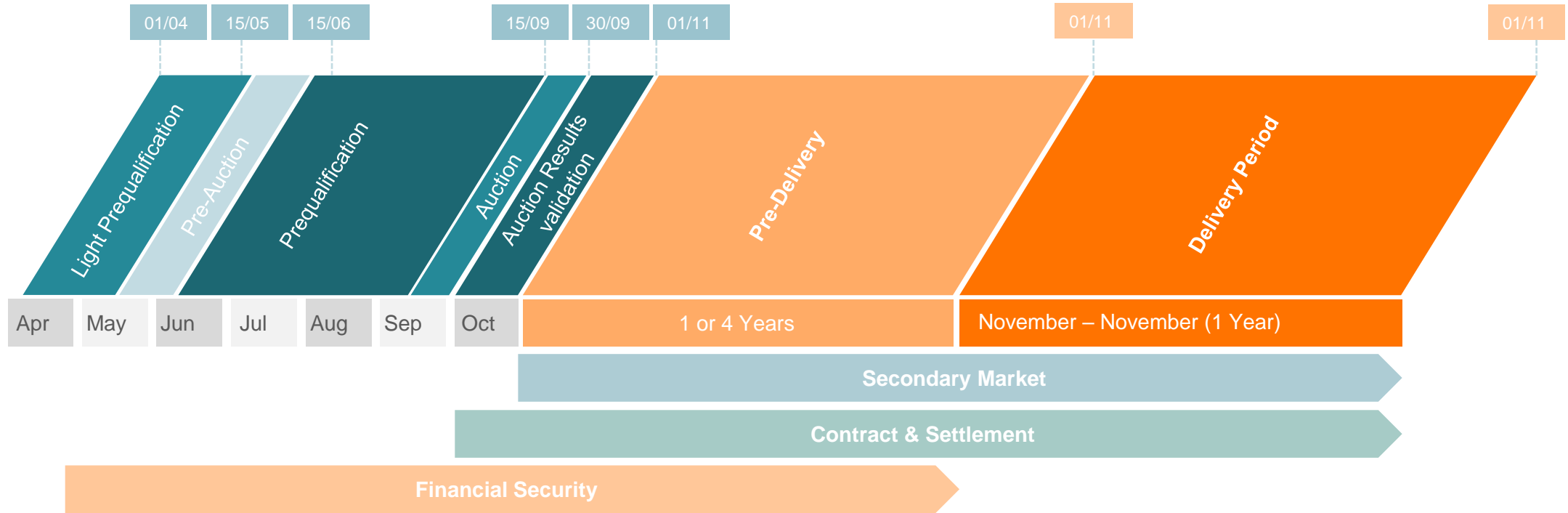
- Single implementation/tool required
- Ease of auditability
- Elia in the driver's seat of all critical processes

XB CRM Design overview

Walkthrough of the major design aspects of Cross Border CRM



XB CRM Design – Timeline for Foreign Participation



Light Prequalification and Pre-Auction are two processes **specifics to Cross border participation**. Once the Foreign CMU is selected after the Pre-Auction, it follows the normal processes as a “normal CMU.”

XB CRM Design – Additional Processes Light PQ & Pre-Auction

For each border (DE, NL, FR)

Light PreQ

All interested **Foreign** capacities go through Light Prequalification.

Declarative basis

- NRP declaration
- Permits, renunciation of operating aid, CO2 emissions
- Technology

→ Only a light “sanity” check performed by Elia & Foreign TSO

Pre-Auction

For each border, a **Pre-Auction** is held to select the most promising CMUs, limited to the MEC

The **bid** during **Pre-Auction** is **binding for the Auction** as well. The Foreign CMU is obligated to bid in at the same price and volume as they were selected.

Financial Security

Financial Security to be provided before bidding in the Pre-Auction

For all selected Foreign capacities & interested Belgian ones

Prequalification

The CMUs selected in Pre-Auction go through the regular Prequalification Process.
... together with all interested **Belgian** capacities

If **after selection in Pre-Auction** a Foreign CMU

- Fails to Prequalify
- Has been determined to have a lower NRP than their bid Volume

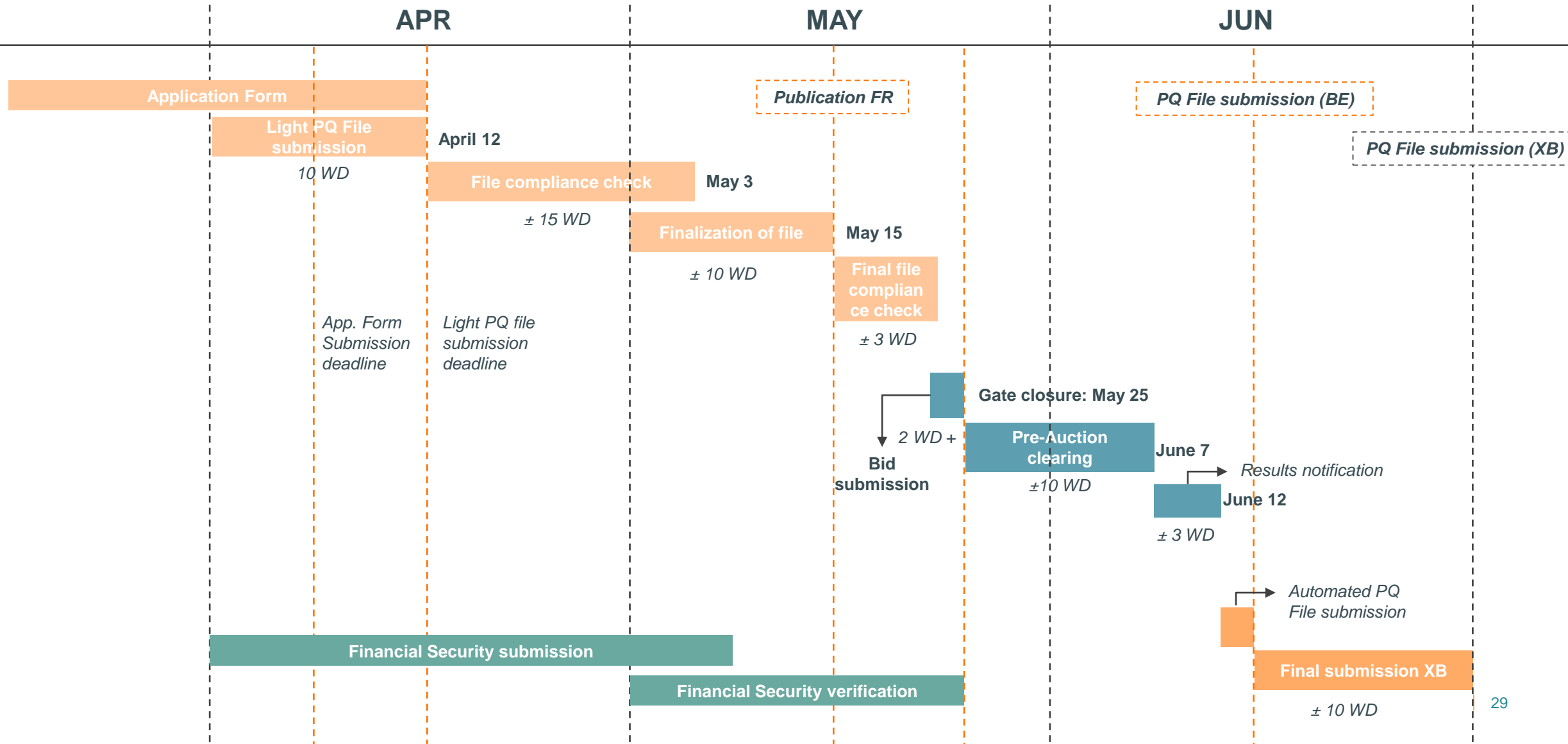
The CMU is **penalized** and potentially **excluded**.

Auction

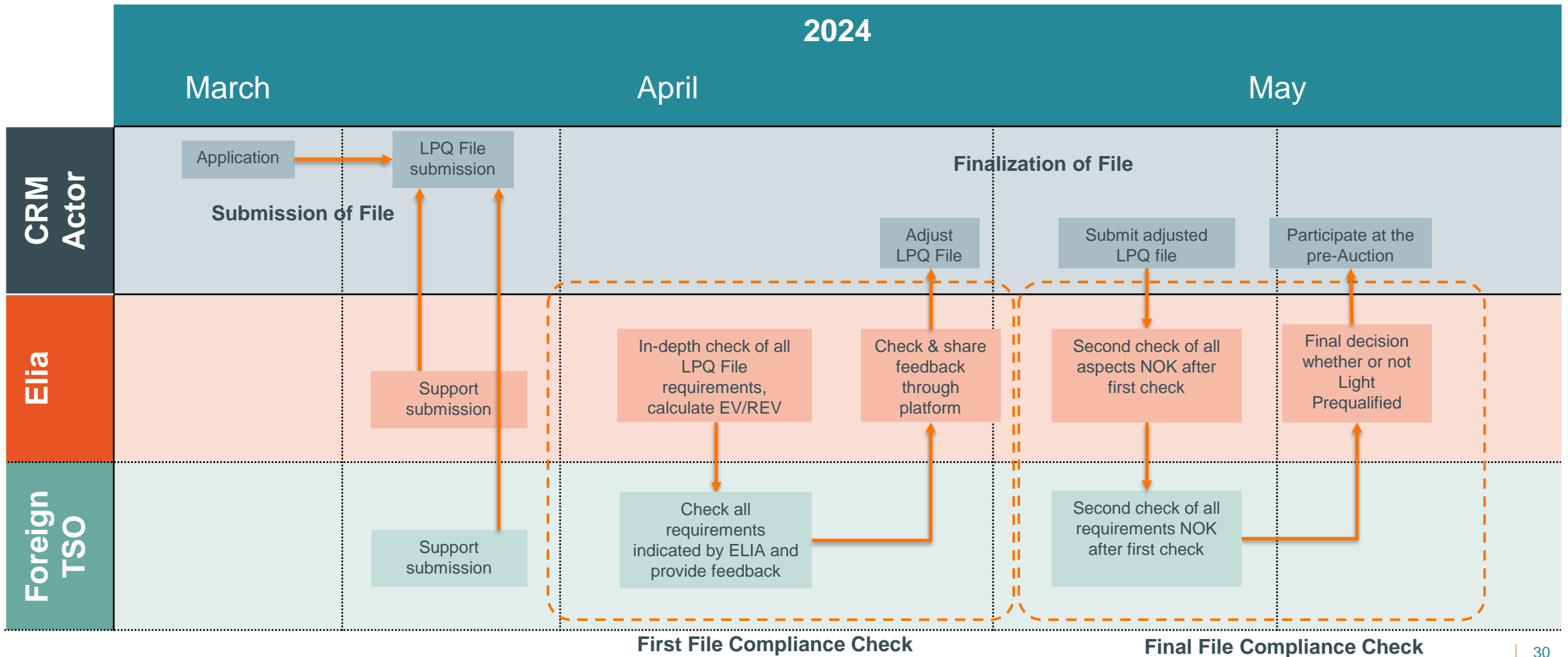
The CMUs enter into the regular Auction.

Auction is cleared limiting the **Foreign participation to the MEC for each border**.

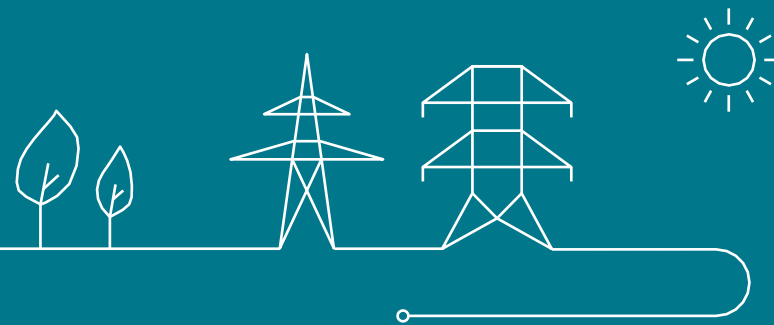
XB CRM - Proposed Operational Timeline Light Prequalification, Pre-Auction and Financial Security



Light Prequalification Process – Flowchart



Light Prequalification



XB CRM Design – Light Prequalification

Light Prequalification aims to make sure that the capacities understand what is required during Full Prequalification, as well as giving us comfort that their bids are solid

Key points

Elia performs “Admissibility Conditions” check with support from Foreign TSO

- **TSO-connected**
- **CO2 limits (declaration)**
- **Permits (declaration)**
- ...
- No specific or fast-track processes
- (Declarative) check of all other aspects required for Prequalification
- Declarative Volume Determination
- Financial Security required before Pre-Auction (see Financial Security)

XB CRM Design – Light Prequalification Volume Determination

For Foreign CMUs, the Volume Determination is slightly different due to the fact that an Opt-OUT is not necessary in this context.

1. Nominal Reference Power (declared)



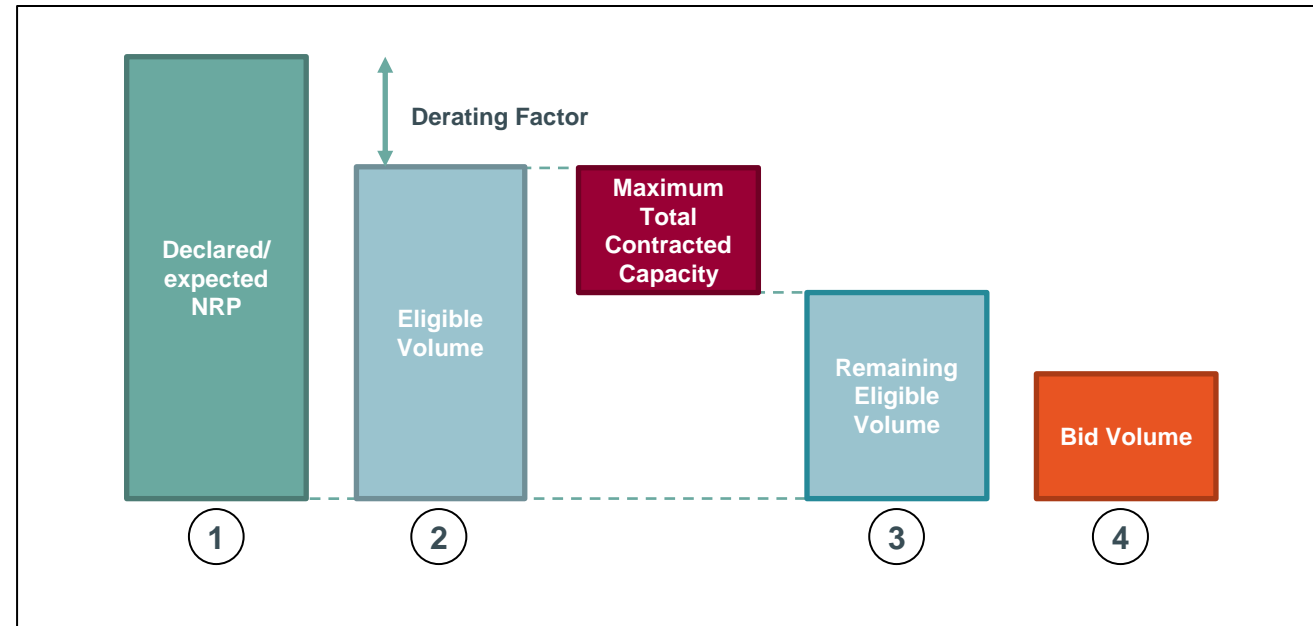
2. Eligible Volume



3. Remaining Eligible Volume

Finally,

4. $Bid\ Volume \leq Remaining\ Eligible\ Volume$



XB CRM Design – Light Prequalification other topics

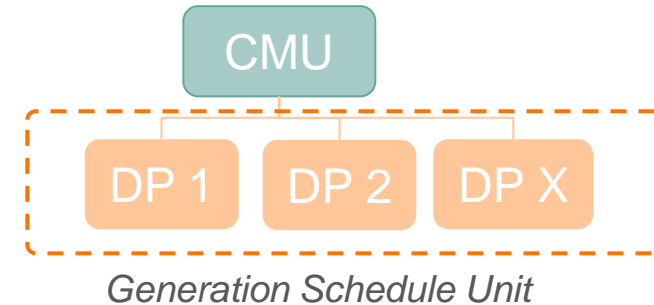
An equivalent to the Daily Schedule for Foreign CMUs is also applicable according to the local definition and availability of schedule data

According to the SOGL: “Generation schedule” definition

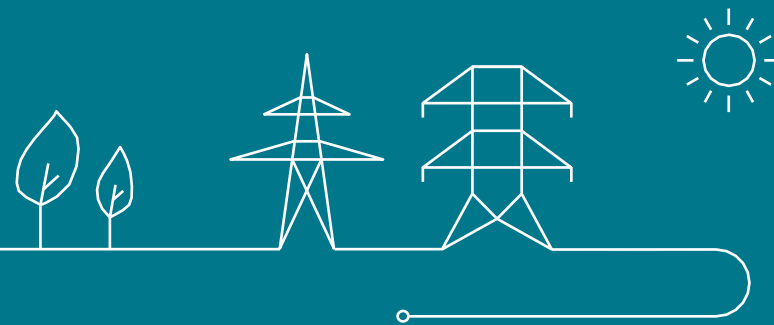
- Local equivalent of this “Generation schedule” is applicable

As in Belgium:

- CMU can only contain a single “Generation schedule”
- CMU should contain the same Delivery Points as the “Generation schedule unit” in the foreign country
- *Basically: CMU = Generation Schedule Unit*

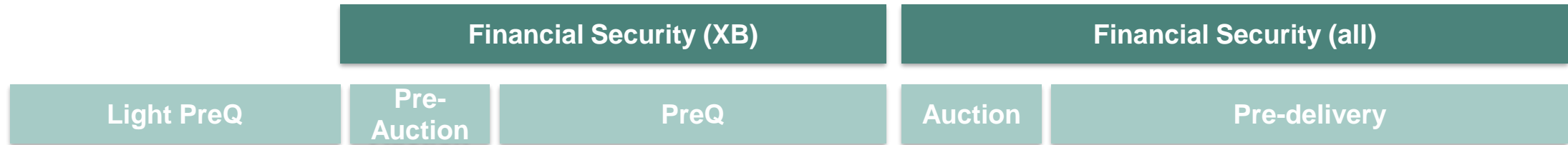


Financial Security



XB CRM Design – Financial Security

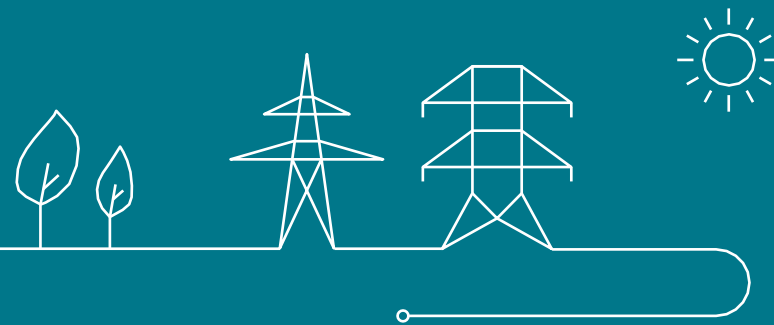
Financial Security required to be provided before bidding in the Pre-Auction to provide certainty and to fall back on in the case of penalties, aligned with Financial Security for Belgian CMUs



Key points

- ✓ Same types of Financial Security valid: *Bank Guarantee, Affiliate Guarantee, cash payment*
- ✓ Same secured amounts (= height of Financial Security) for Foreign CMUs
- ✓ Templates reviewed and adapted by the Foreign TSOs
- ✓ Additional **moments of release**
 - Partial release @Pre-Auction due to lower bid volume being selected than their maximum bid
 - Full release @Pre-Auction due to the Foreign CMU not being selected in the Pre-Auction

Pre-Auction



XB CRM Design – Pre-Auction overview

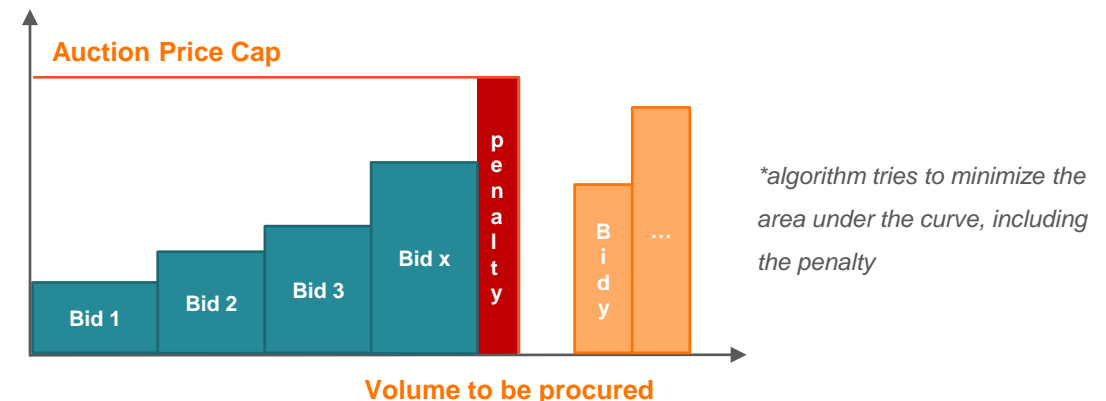
Pre-Auction functions to select the most interesting Foreign bids per border and clears according to a cost minimization principle

Key points

- ✓ **Y-1 only for first year** (to be reviewed after 2024 Auction)
- ✓ **No division of MEC** between Y-1 and Y-4 needed
- ✓ **Only 1y contracts** available due to MEC limitation (unknown MEC for year X)
- ✓ **No Opt-OUT required**, rather a free bid as long as they bid under their Remaining Eligible Volume
- ✓ One Pre-Auction per border (DE, NL, FR)

Pre-Auction clearing

- **Limited** to the **MEC**
- **Including grid constraints** by Foreign TSOs for new connections
- **Cost minimization clearing*** with a **penalty @ Auction Price Cap + €1** built in to get as close to the “Volume to be procured”



XB CRM Design – Pre-Auction binding commitment

! When bidding in to the Pre-Auction, the Foreign CRM Actor binds himself unconditionally to provide the same bid volume and bid price in the Auction, if he is selected.

*If bid is not binding, Pre-Auction has no value and gaming can easily occur

*e.g. bidding in to the Pre-Auction at different price **or** without any intention to further bid in the Auction*

If not the case: penalty is incurred

- Penalty (€/MW) per missing MW
- Excluded if not at same bid price (€/MW)

Due to...

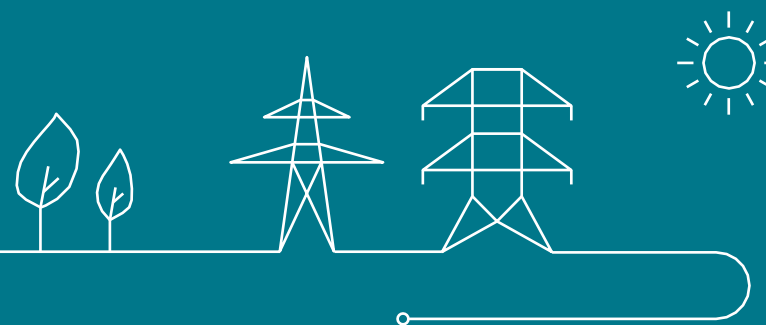
- not bidding in to the Auction
- not being able to Prequalify/a lower NRP during PQ (see further)



Penalty should be

- Sufficiently high to **discourage gaming**
- Not too high, as this would discourage CMUs from participating due to **risk**

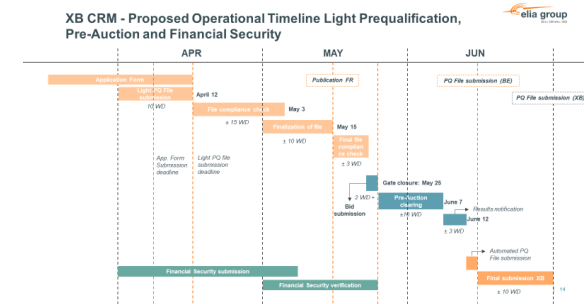
Prequalification



XB CRM Design – Prequalification

Regular Prequalification for both Foreign and Belgian CMUs, with a full check of all declared requirements

- Overall same timeline as for Belgian CMUs
- Slightly longer deadline for update of Prequalification File after the Pre-Auction



Prequalification Design

- Single process: **“standard”** process
- **Requirements adapted** to the Foreign country
 - Required permits
 - ID and structure of Delivery Points, Access Points, ...
- **Volume determination** according to same principles as Light PQ, but based on 1) historical data or 2) an NRP test

Prequalification Operations

- Support requested from Foreign TSO in verification of certain aspects
- Data required from Foreign TSO for NRP determination

XB CRM Design – Prequalification Volume Determination

Volume determination according to same principles as Light PQ, but based on

- Historical Data delivered by Foreign TSOs; or
- data from an NRP test coordinated by Foreign TSOs

What in the case of incorrect declared/expected NRP?

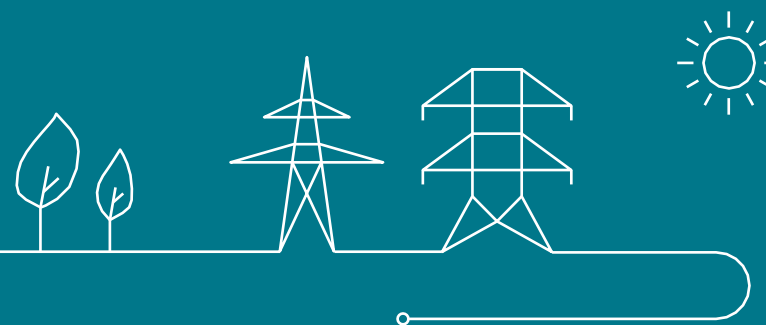
- Adaptation of NRP
- Adaptation of Remaining Eligible Volume according to Volume Determination
 1. Bid Volume that was selected in Pre-Auction \leq REV_{new} → **OK**
 2. Bid Volume that was selected in Pre-Auction \geq REV_{new} → **NOK**

If NOK:

- Bid Volume will need to be revised for Auction, Bid Price (€/MW) remains the same
- Penalty is incurred for every missing MW (if >10% difference)

?

Auction



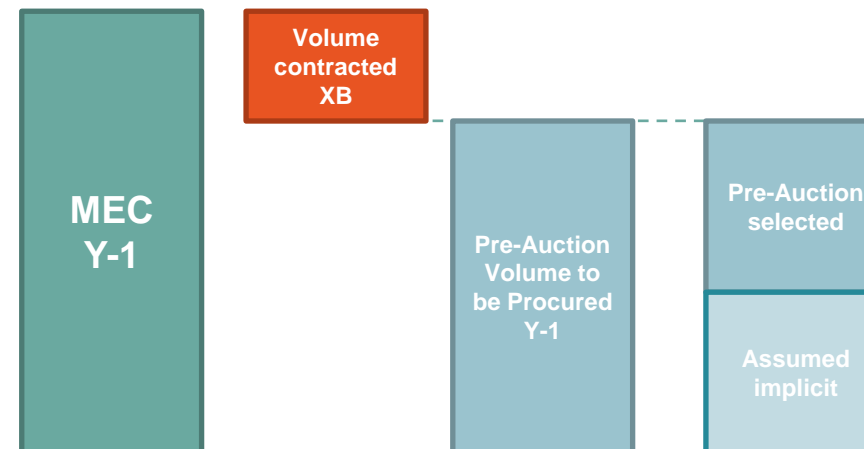
XB CRM Design – Auction

Regular Auction with full competition between BE and Foreign capacities

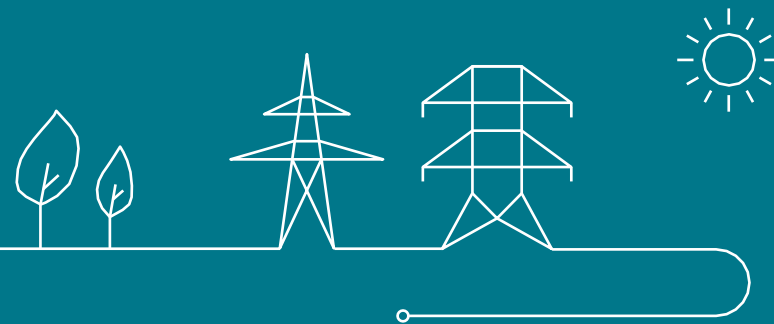
Key points

- **Correction of Demand Curve** with implicit volume
- Volume constraints: limit to the “Maximum Entry Capacity”/”Volume to be procured” during Pre-Auction
- **Fully competitive Auction** between BE and Foreign capacities, for the total volume

Y-1



Pre-delivery



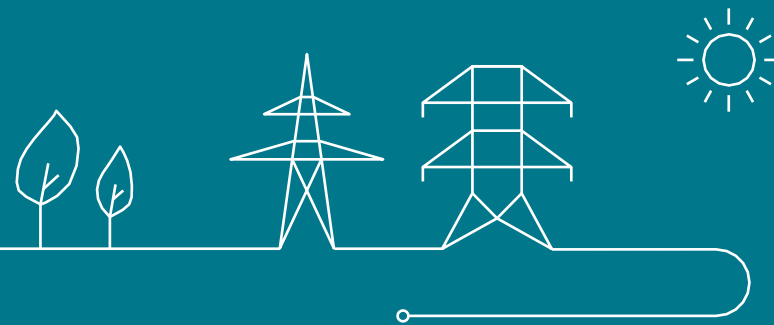
Pre-Delivery Design

- No significant changes
- CMUs **only** contracted for **Y-1** in the first year, so modalities before not yet applicable

Pre-Delivery Operations

- Verification of Permit Reports, Quarterly Reports, Delays in Infrastructure works, ... by the Foreign TSO.
- Data required from Foreign TSO for Pre-delivery moments of control

Secondary Market



Secondary Market Design

- **Full Secondary Market**
- Limitations related to **procured volume & MEC**
(see further)

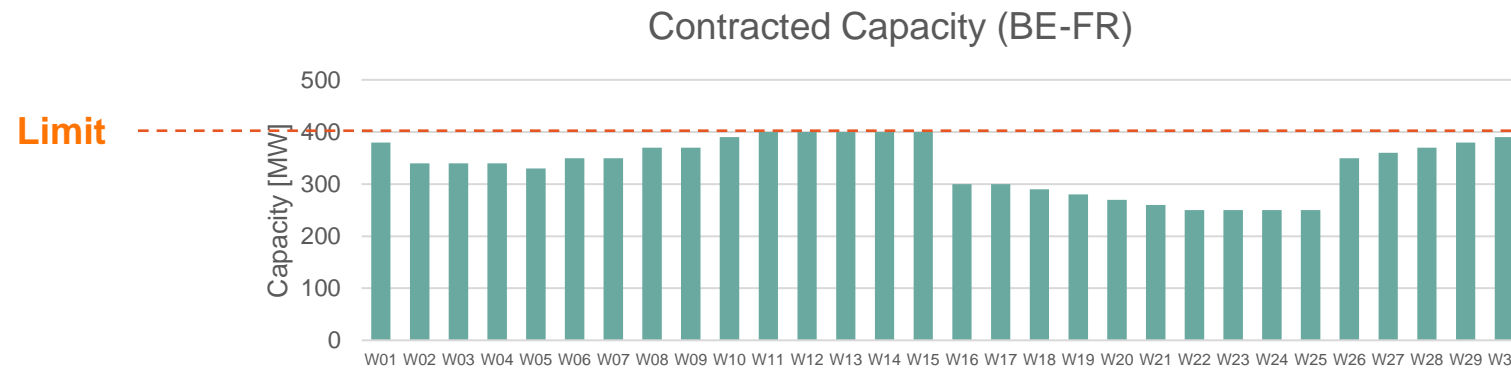
Secondary Market Operations

- Verification of transactions by ELIA
- Support from Foreign TSO/NRA in
case of gaming

XB CRM Design – Secondary Market

All Prequalified CMUs (including Foreign CMUs) are allowed to trade on the Secondary Market in all directions

- ✓ Trade possible in **all directions** (Domestic – Domestic, Domestic – Foreign, Foreign – Foreign)
- ✓ All capacities have access to the **full Secondary Market** (restricted to at most the MEC, but with further restrictions)
 - Increased liquidity on Secondary Market
 - Allow for all CMUs to manage their risk

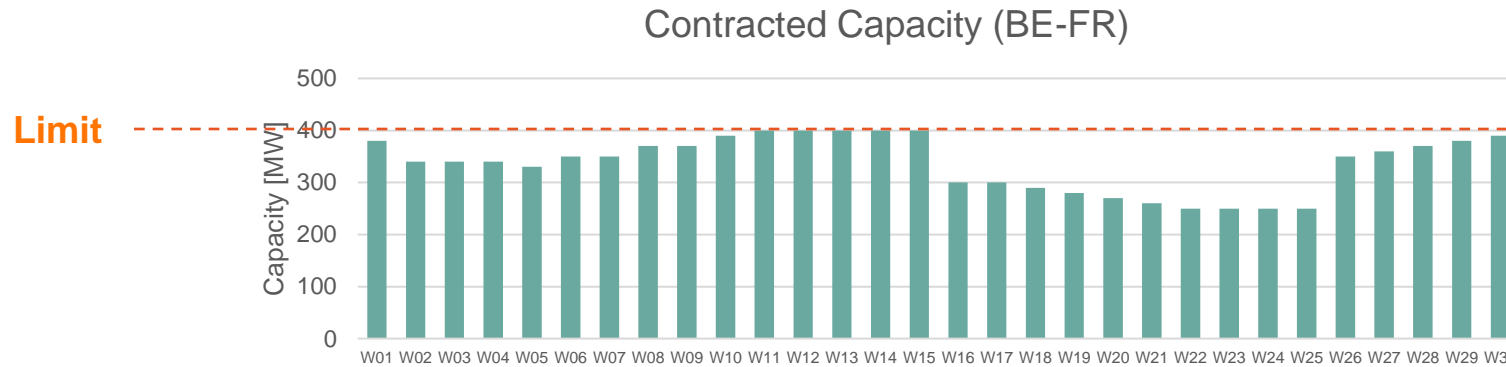


However, **additional restrictions** are required to make sure no distortion, gaming or a is possible

- 1) Limit Total Contracted Capacity for a single border between Y-4 and Y-1 and after Y-1
- 2) Restrict time period of trades between Y-4 and Y-1 to a full Delivery Period

XB CRM Design – Secondary Market limitations

For every Transaction, care must be taken that a certain threshold of contracted capacity over a border is not breached



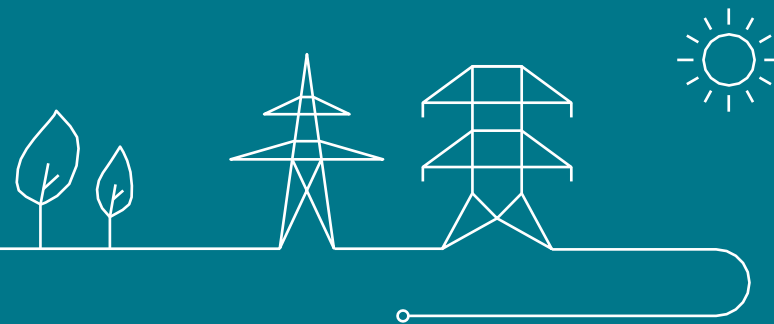
From Y-1 and onwards

$$Total\ Contracted\ Capacity_{border,TP} \leq Total\ Pre - Auctioned\ Volume_{border,TP} \leq MEC_{border,TP}$$

- ✓ No double counting of Implicit Volume
- ✓ Never more contracted than the MEC

Implies that if no Pre-Auction occurred or no volume was selected during the Pre-Auction, no Secondary Market transactions can occur for that Delivery Period

Availability Obligation



XB CRM Design – Availability Obligation

Availability Monitoring Design

For Declared Market price, the reference price is based on a chosen NEMO of the bidding zone where the CMU is located or local hub price

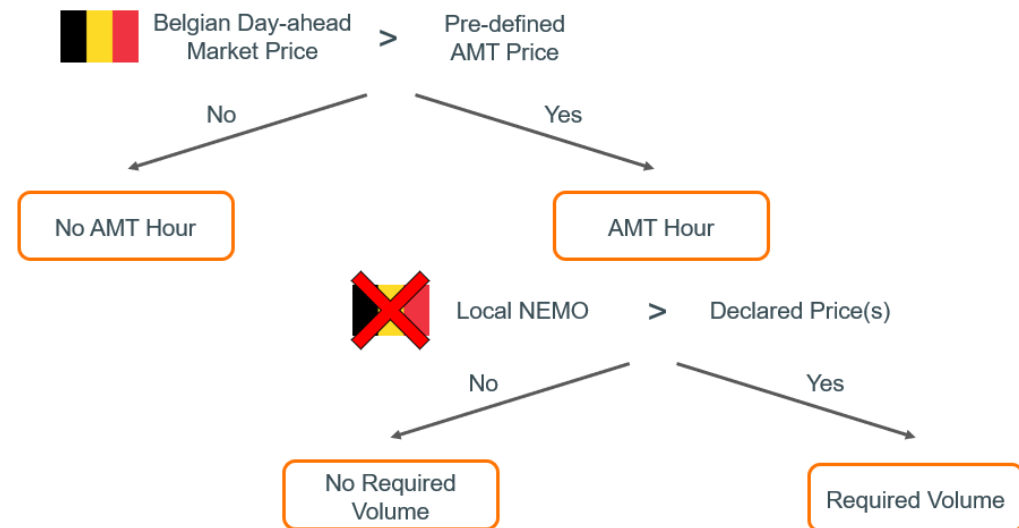
- ✓ Can be a NEMO not active in the Belgian market

AMT Moment still when the Belgian Day-ahead Market Price exceeds the AMT price, regardless of country and/or bidding zone of the Foreign CMU

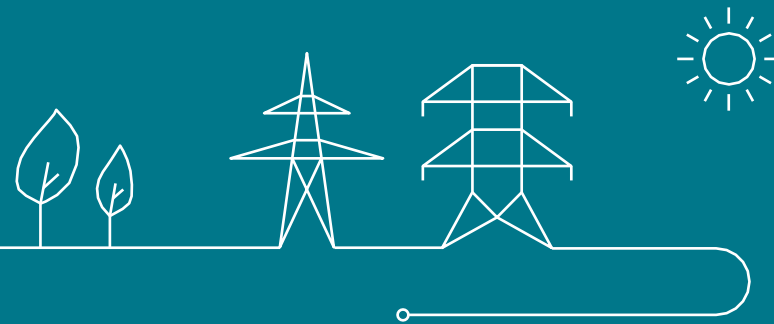
→ **Required volume** based on both chosen NEMO and Belgian Day-ahead Market Price

Availability Monitoring Operations

Foreign TSO to provide **Monthly Data Packages** with all of the data required by Elia to perform all calculations for both Availability Monitoring and Payback Obligation



Payback Obligation



XB CRM Design – Payback Obligation

Payback Obligation Design

Day Ahead Reference price for Payback Obligation calculations is based on a **chosen NEMO** of the bidding zone where the CMU is located

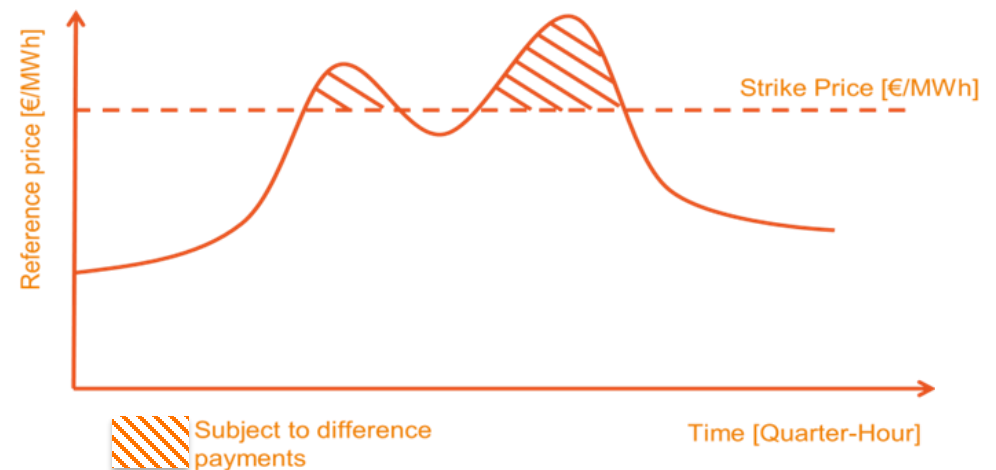
- ✓ Can be a NEMO not active in the Belgian market

Strike price is the same for both BE and Foreign capacities for a specific Auction

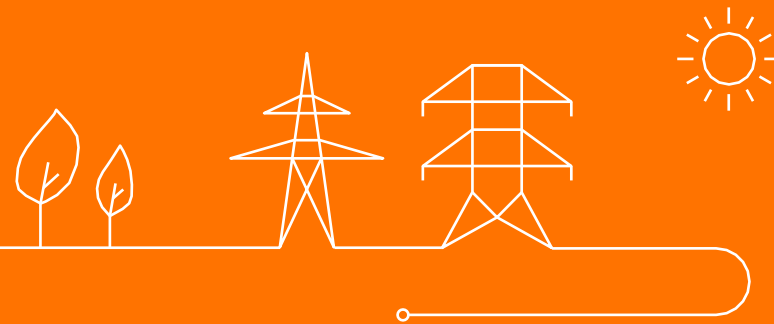
→ Payback Obligation calculation based on both parameters

Payback Obligation Operations

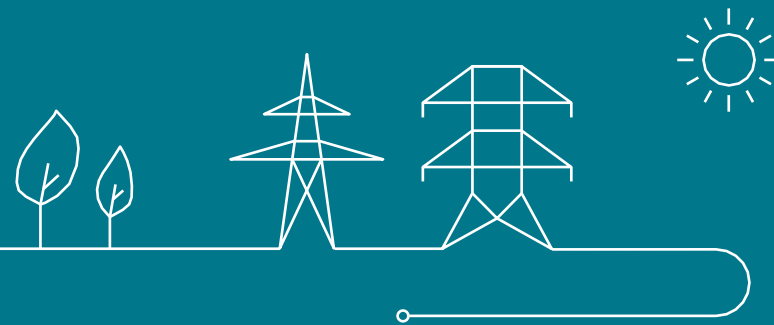
Foreign TSO to provide **Data Packages** with all of the data required by Elia to perform all calculations for both Availability Monitoring and Payback Obligation



CRM design update



Functioning rules publication process



Timeline for the coordination of the Functioning rules (FR)

| | 2023 | | | 2024 | | | | |
|---|---------|----------|----------|---------|----------|-------|-------|-----------------------------|
| | October | November | December | January | February | March | April | May |
| INTERNAL: Drafting Functioning rules | ●—————● | | | | | | | |
| Public consultation | | | 1/12 ● | 5/01 ● | | | | |
| Functioning rules publication | | | | | | | | ★ 15/05 – FR Publication |



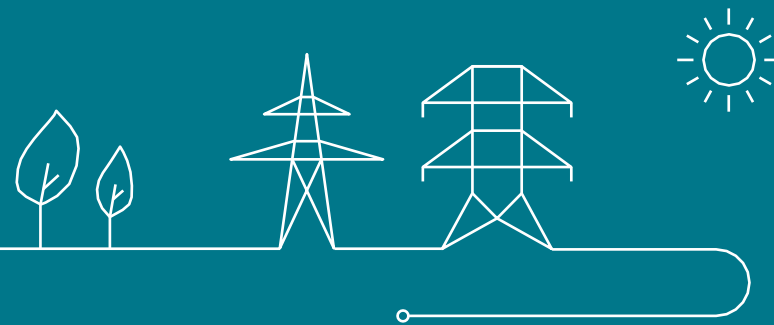
The public consultation will run from **December 1st to January 5th**. In order to identify the major changes, a **cover note** will also be provided during the public consultation.

After processing the comments from the public consultation and approval by CREG, the Functioning rules will be published on the **Elia website on May 15**.



Additional to existing

Prequalification & Pre-Delivery Monitoring



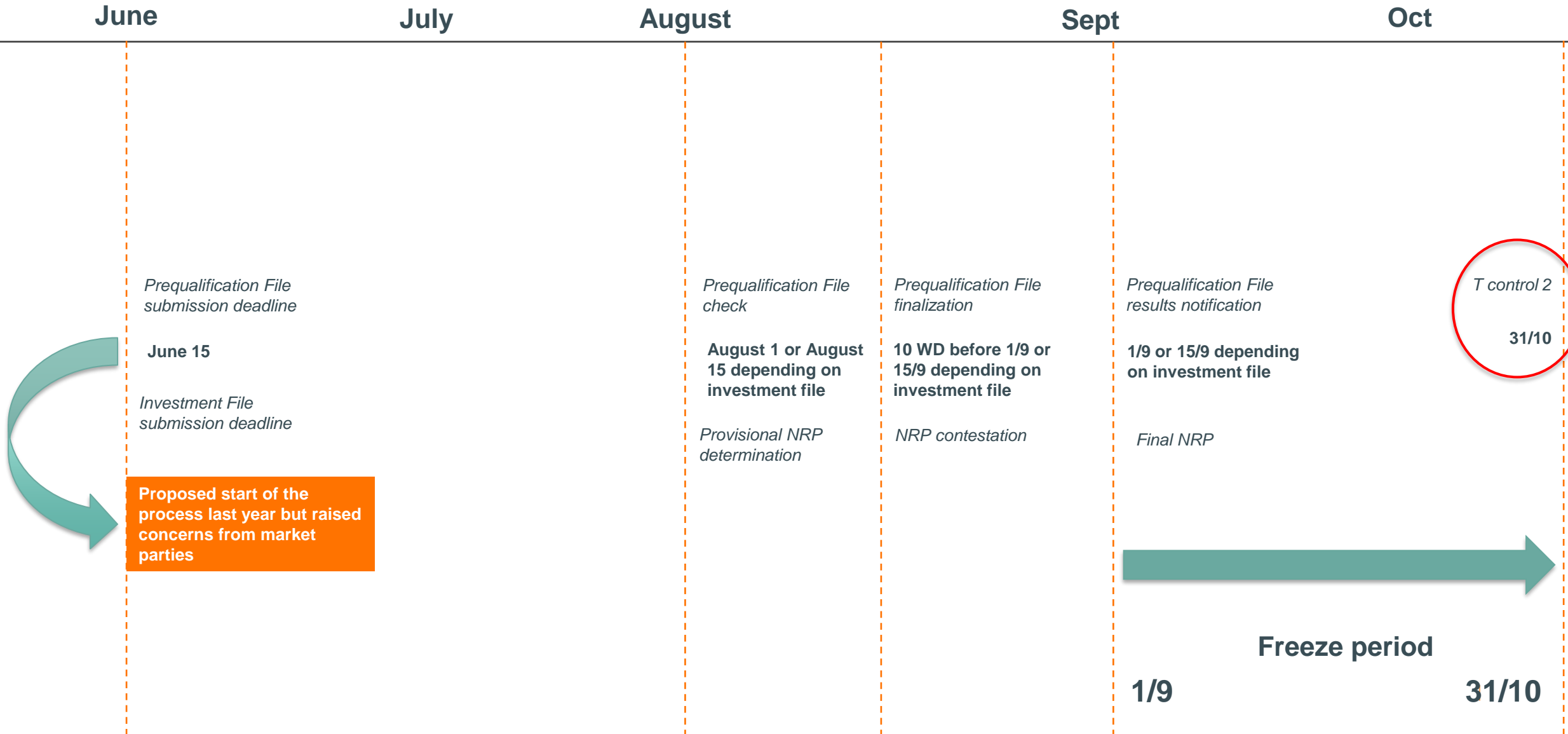
From Additional to Existing

Reminder on the current issues of the 'as is' process

- Elia initially proposed to launch the process to go from Additional to Existing against the PQ File submission deadline (15/6).
- It would have allowed to take care of this process smoothly during PQ but it raised concerns from market parties:
 - It would imply that these units would have to be running **too soon compared to the official deadline of t control 2 (31/10)**.
- CREG asked Elia to reconsider this proposal towards the future.
- An alternative timing has to be considered while taking several elements into account :
 - A freeze period takes place between September 1 and October 31 during which PQ Files cannot usually be amended to **not interfere** with Auction clearing.
 - CMUs have to become Existing before t control 2 (31/10) before the start of the Delivery Period.

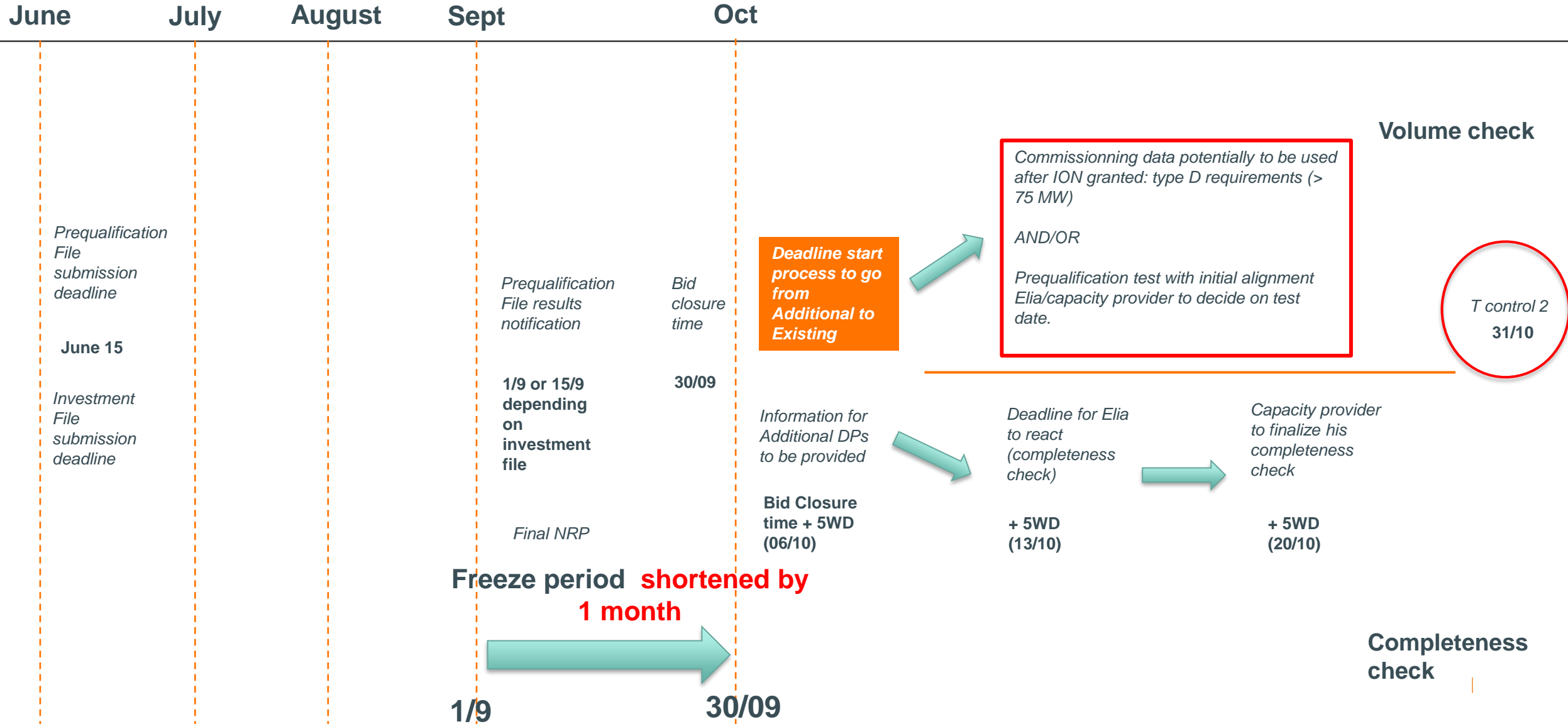
Timeline for PQ : from Additional to Existing

As is process



Timeline for PQ : from Additional to Existing

Alternative timing : proposal

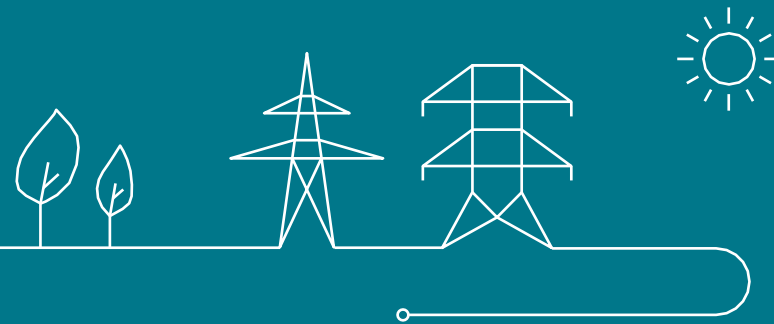


From Additional to Existing

Alternative in October

- The completeness check of all information to be provided for Additional DP(s) and the volume check will be done **simultaneously**
 - Timing is rather **challenging** in such case.
- The validation of the data will only occur after the test has taken place since validated data are only available:
 - At TSO level, on 10th day of M+1;
 - At DSO level, by the end of M+1.
 - This does not seem to represent an issue since settlement of month M only occurs in M+2 in any case.
- A **mixed option** offers different possibilities in function of market actors' abilities:
 - For early arrivers : ready before or during the PQ Process, we could launch the process already during PQ to finalize it before the freeze period.
 - For late arrivers (read October):
 - The NRP determination can only be done via a PQ test; and
 - Test is performed before t control 2 but potential penalties are delivered afterwards.

Alignment of Payback obligation with proposed availability monitoring evolutions



Update on Payback Obligation

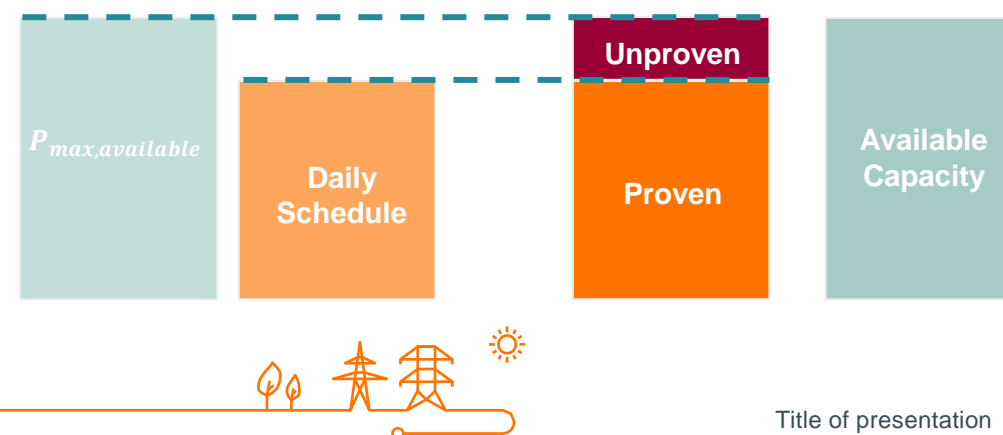
- The current design of the Payback Obligation does – in some cases - not accurately determine the windfall profits
 - Both for Daily Schedule and Non-daily Schedule CMUs
- The previous introduction of Proven and Unproven Availability allows for rectifying this
- The proposal in the following slide is linked with the evolutions on the availability monitoring and is presented today as a proposal for discussion
- This proposal does not interfere with the discussion on DSM exemption for the payback obligation (cfr. Feedback of Cabinet during last WG).



Proven and Unproven Availability for Daily Schedule CMUs

- On top of the Daily Schedule, these CMUs also need to provide their **Availability Plan**
- The Outage Planning includes the $P_{max,available}$

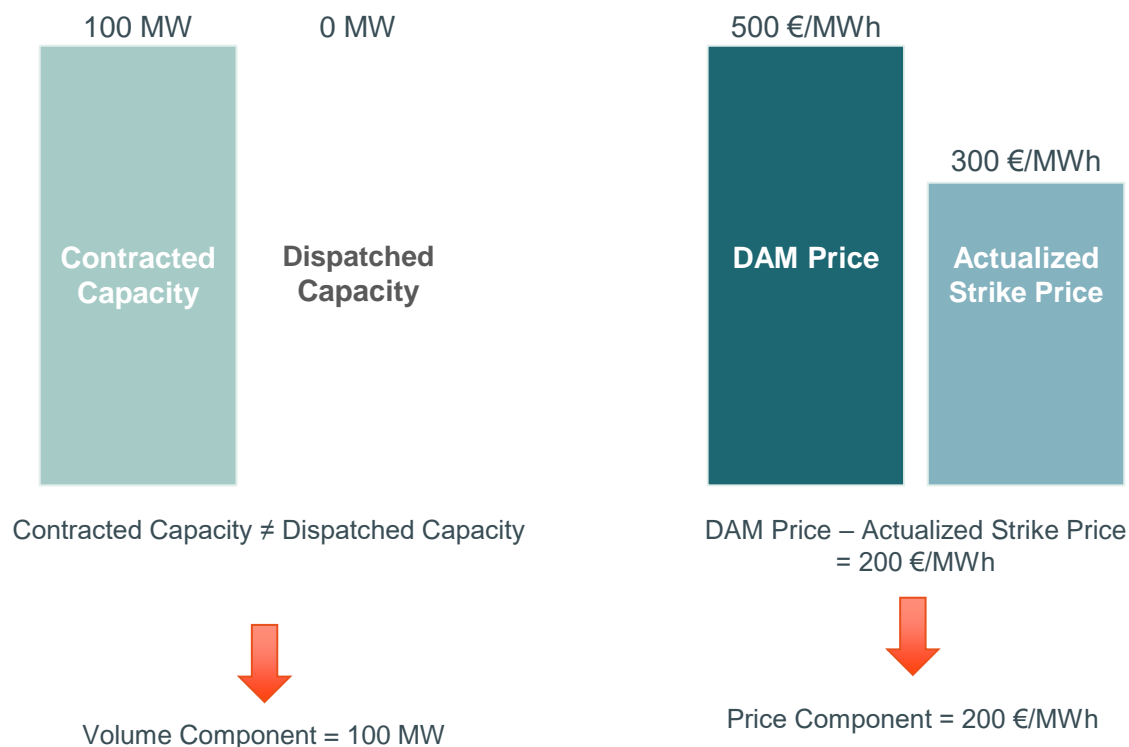
“The maximum instantaneous value of the power, expressed in MW, that the Technical Unit can inject into the Elia Grid for a certain quarter hour, taking into account all technical, operational, meteorological or other restrictions known at the time of notification to Elia of the Pmax Available value, without taking into account any participation of the Technical Unit in the provision of balancing services”
- The $P_{max,available}$ can serve to represent the Available Capacity, and in combination with the Daily Schedule a distinction can be made between **Proven and Unproven Availability**



Example - OCGT

High running cost, no design change

- Contracted Capacity = 100 MW
- An older CCGT does not run yet at 500 €/MWh
 - Proven Availability = 0 MW
- No Announced Unavailabilities
 - Availability Ratio = 1
- The unit did not capture any windfall profits
- **The CMU needs to pay back profits it never made**



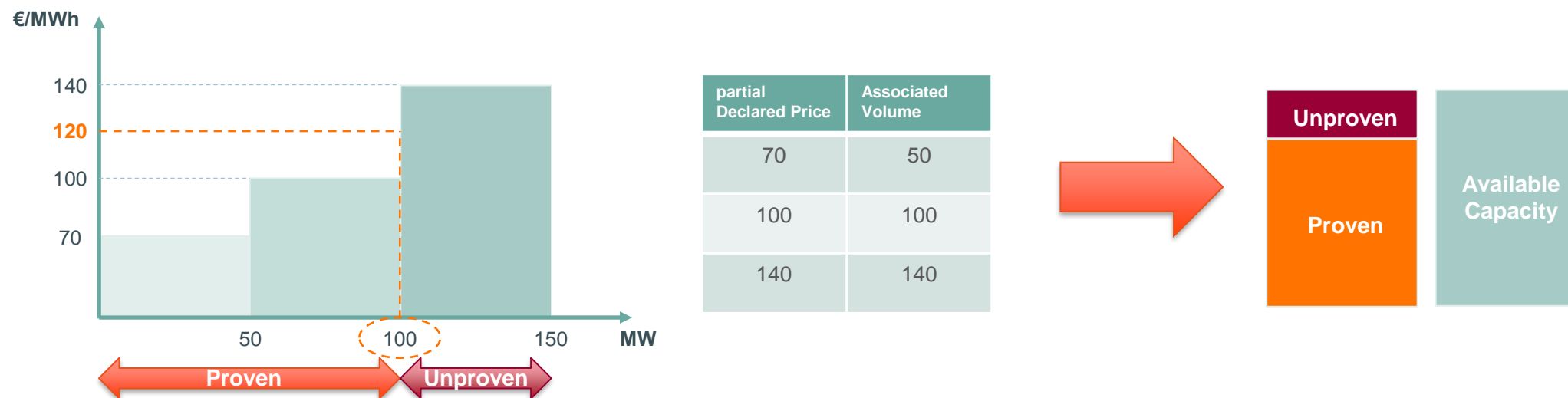
$$\text{Windfall Profits} = 0 \times 200 = 0 \text{ €}$$

$$\text{Payback} = 100 \times 200 = 20,000 \text{ €}$$



Proven and Unproven Availability for Non-daily Schedule CMUs

- Declared Prices reflect a CMU's price threshold above which it starts dispatching (part of) its capacity
 - The capacity that is expected to dispatch can be measured and is counted as **Proven Availability**
 - The capacity that is not expected to dispatch is considered as **Unproven Availability**



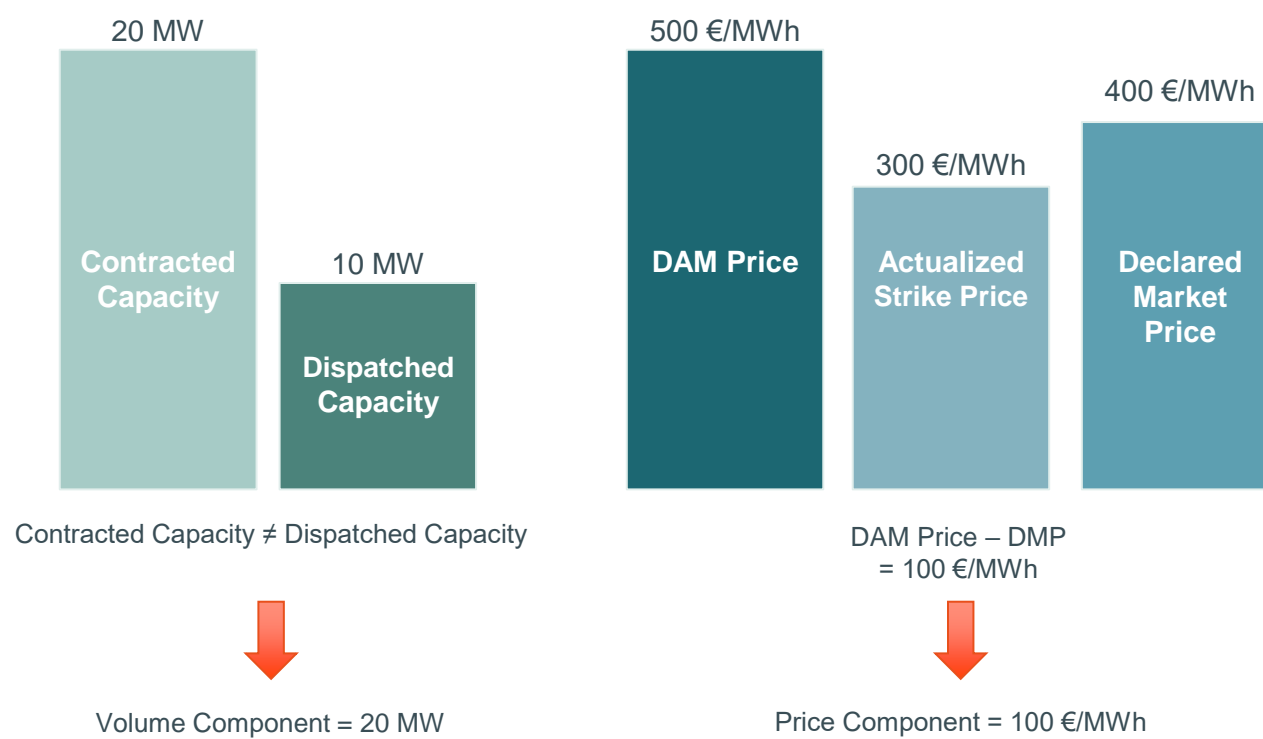
- High amounts of Unproven Availability lead to an **Availability Test**



Turbojet

Partial activation

- Contracted Capacity = 20 MW
- The CMU partially activated at a price of 400 €/MWh
 - DMP = 400 €/MWh
- **Partially dispatched** during Payback Event
 - Measured Power = Required Volume = 10 MW
- The unit only partially captured windfall profits
- **The unit still needs to payback as if it fully activated**

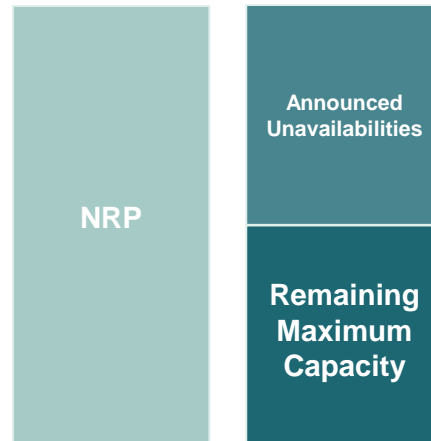


Windfall Profits = $10 \times 100 = 1,000 \text{ €}$
 Payback = $20 \times 100 = 2,000 \text{ €}$



The problem can be solved via the Availability Ratio

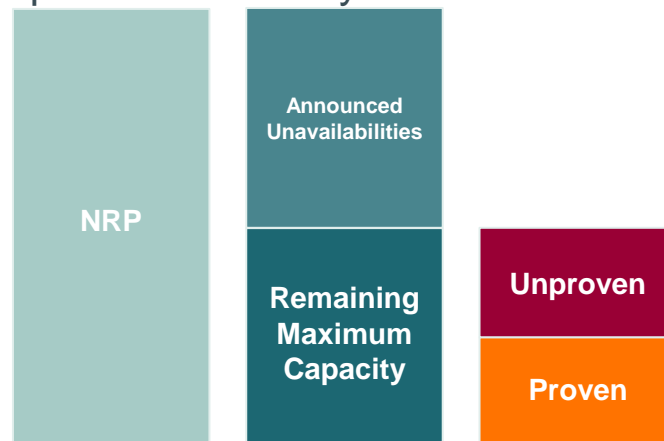
- For a Non-daily Schedule CMU The Availability Ratio is equal to
$$\frac{\text{Min}(\text{Total Contracted Capacity}; \text{Remaining Maximum Capacity})}{\text{Total Contracted Capacity}}$$



In case of 50% Announced Unavailabilities this will be reflected in the Availability Ratio, which will also amount to 50%

The Payback then totals only 50% of the initial amount, correctly reflecting that only 50% of the capacity captured windfall profits

- The proposal is to modify this to



$$\frac{\text{Min}(\text{Total Contracted Capacity}; \text{Remaining Maximum Capacity}; \text{Proven Availability})}{\text{Total Contracted Capacity}}$$

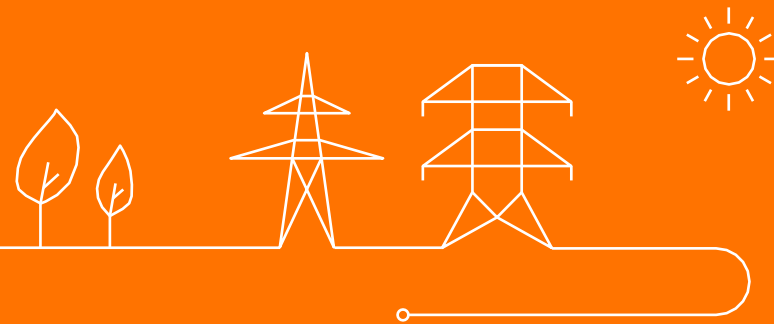


If from the aforementioned 50% Remaining Maximum Capacity only one half actually captured windfall profits, this needs to be taken into account

The adapted Availability Ratio makes it so that only 25% of the "full" Payback is applied

Go-to-Market Plan

Availability Monitoring & Payback



Implementation of Availability Monitoring and Payback Obligation

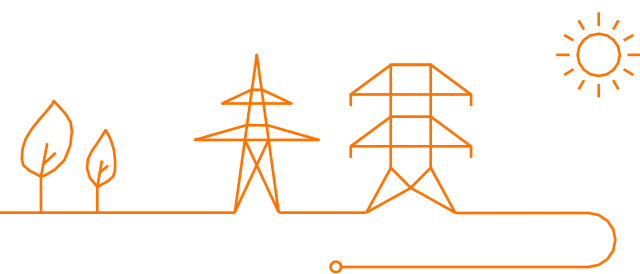
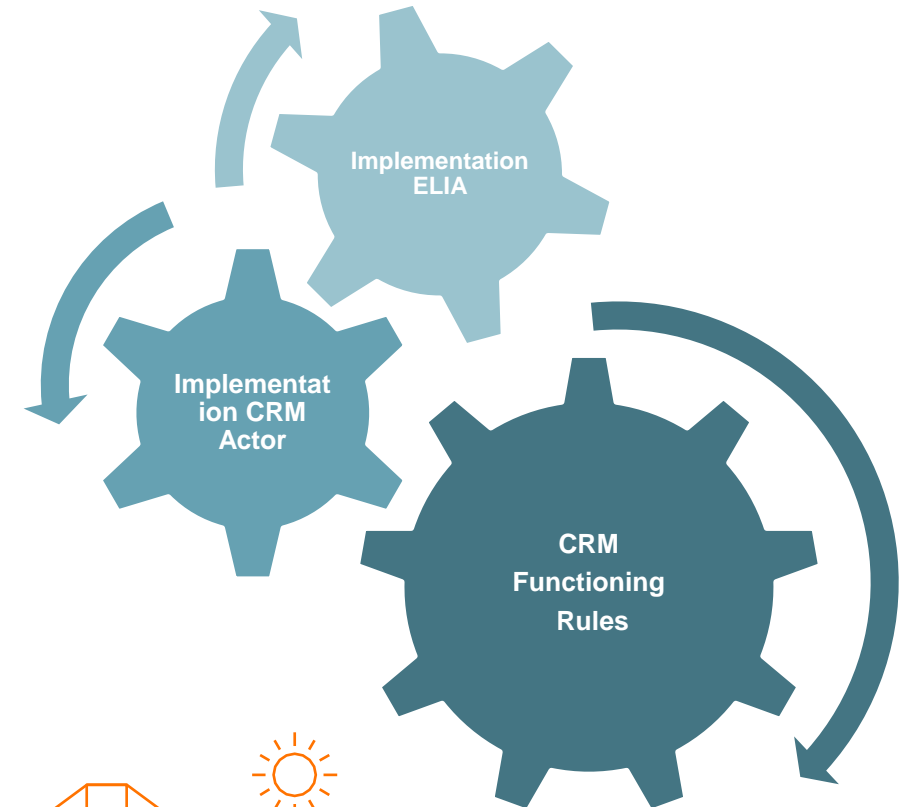


Objectives

- Provide outlook on the implementation roadmap
- Involve & onboard CRM actors
- Deliver the CRM actors with an integrated business process

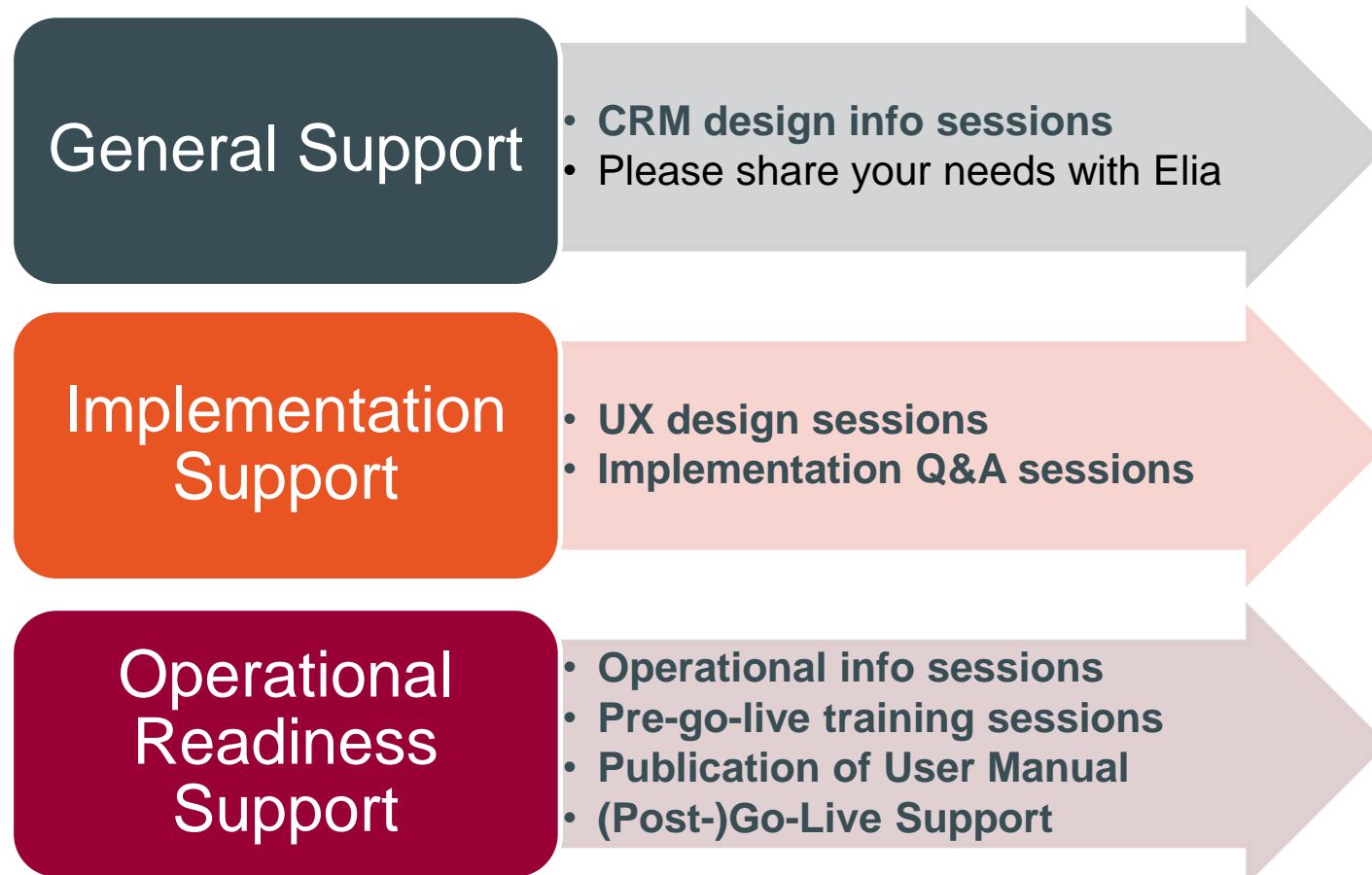
Agenda

1. On the menu to support your implementations
2. Go-to-Market-planning
3. Involvement of your experts



On the Menu to Support Your Implementations of Availability Monitoring and Payback Obligation

While Elia also launched its implementation track, we aim to involve & support the CRM actors along the path



On the Menu to Support Your Implementations of Availability Monitoring and Payback Obligation

General Support

- **CRM design info sessions**
 - Presentation of current version CRM Functioning Rules and of design evolutions.
 - Split up per CRM process with detailed information (*same format as in April 2023*)
- Please share additional needs with you have via your KAM or customer.crm@elia.be



On the Menu to Support Your Implementations of Availability Monitoring and Payback Obligation

Implementation Support

- **UX design sessions**
 - Lookback at results after 1st UX design session 17/03/23
 - Availability Monitoring & Payback Obligation output data visualization (reports & screens)
- **Monthly implementation Q&A session** (*online sessions*)
 - Content of the Q&A driven by the needs of the CRM actors
 - Aiming to facilitate the CRM actor in its implementation
 - Upfront sharing of questions to Elia recommended



On the Menu to Support Your Implementations of Availability Monitoring and Payback Obligation

Operational Readiness Support

- **Operational info sessions** (*combination of on-site and online sessions*)

More sessions possible, based on CRM actor needs

- **Session 1: Zoom on Daily Processes per Type of CMU:**

- Remaining Maximum Capacity; Declared (Partial) Prices (& Associated Volume), Select/Change Nemo, AMT Publication, Availability Test

- **Session 2: Zoom on Monthly Processes linked to**

- Delivery Activity Report, Monthly Statement and (Ex-ante) Invoices for Remuneration, Penalties & Payback Obligation; Data sources.

- **Session 3: Zoom on Special Events**

- Downwards Revision, Contestation, Reinstatement, Fallback procedures, Link with Secondary Market & Prequalification

- **Pre-go-live Training Session** (*on-site session*)

- IT Application-oriented

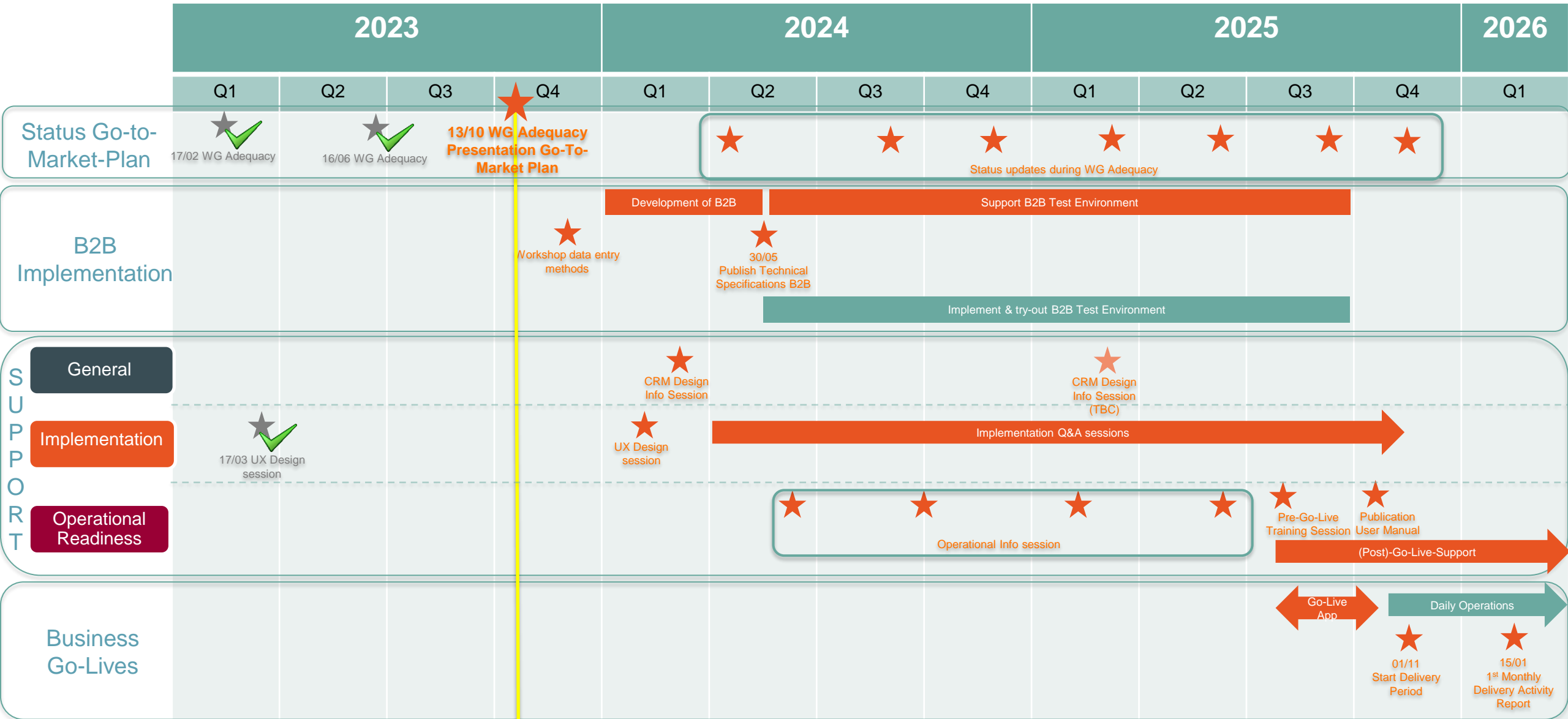
- **Publication of User Manual**

- **(Post)-Go-Live Support**

- First period after go-live: reinforced support from Elia's operations team
- Your Key Account Manager remains available for additional support



Availability Monitoring & Payback – Go-to-Market Planning



Towards a community of your experts working on implementing Availability Monitoring & Payback Obligation Processes

→ CRM actors are invited to share before 27/10 the names & contact details of their experts

- As we will operate together an integrated business process, **participation of your company's experts** in the discussions with Elia is key for a **good implementation and operation**
- **Profile of the experts** (*depending on the subject of the session*)
 - **Department & Roles**
 - **Business (implementation / operations):** Asset optimizer and operation agent (supported by your regulation experts)
 - **IT:** (Business) Analyst
- **Contribution of your experts**
 - **Participate in workshops** organized by Elia (combination of online & on-site @ Elia HQ)
 - **Feedback via email** on requests from Elia
 - **Collect & distribute** the relevant information **within your company** concerning the implementation

The first topic for which Elia requires input already on the shorter term

Which Data Entry Methods fitting Your Business Needs? (1)

- **Scope:** Data submitted by CRM actor for individual delivery days subject to operational deadlines & validation rules
 - [All type of CMU's] Remaining Maximum Capacity
 - [CMU's without Daily Schedule] Declaration of Declared (Partial) Prices (& Associated Volume)
- **How :** Elia can support multiple data entry methods

| Data entry methods | Remaining maximum capacity | Declaration of (Partial) Prices (& Associated Volume) |
|--|---|---|
| 1) Via web-application | Yes | Yes |
| 2) Via Excel Upload in web-application | No | Yes |
| 3) Via B2B implementation (*) | Yes | Yes |
| 4) Import iCAROS (**) data | Yes (only if CMU subject to OPA contract) | No |

(*) Elia will decide about implementing this data entry method after receiving feedback from the CRM actor ([see next slide](#))

(**) As presented in WG Adequacy of 14/09: Import of OPA data (cf. go-live phase 1 iCAROS project) in CRM is in investigation and could mean a re-usage of the OPA data by which the CRM actor doesn't need to duplicate the same data for Remaining Maximum Capacity.



The first topic for which Elia requires input already on the shorter term

Which Data Entry Methods are fitting Your Business Needs ? (2)


Call for Participation of your Expert to the first sessions

- CRM actor invited to

- Consider the different data entry methods (cf. previous slide) in the view of the respective business process
- Be conscient about the obligations to provide up-to-date CMU data as described in the CRM functioning rules
- Discuss internally between IT and business if a B2B implementation is relevant
- Analyze for which other scope B2B implementation is relevant (publication of AMT hours, sufficient via the Elia and CRM website?)

- Planning B2B implementation

- Kick-off workshop: December 2023
- Publish technical specifications: June 2024
- Availability B2B test environment: > June 2024



→ Experts are invited to join the kick-off workshop to onboard your company's view (invitation will follow soon)

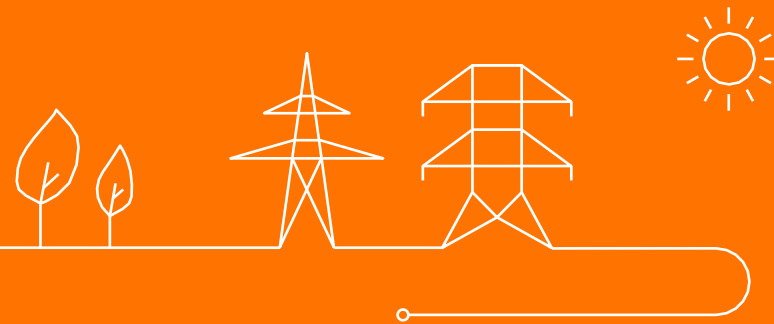


Your input about the implementation of Availability Monitoring and Payback Obligation

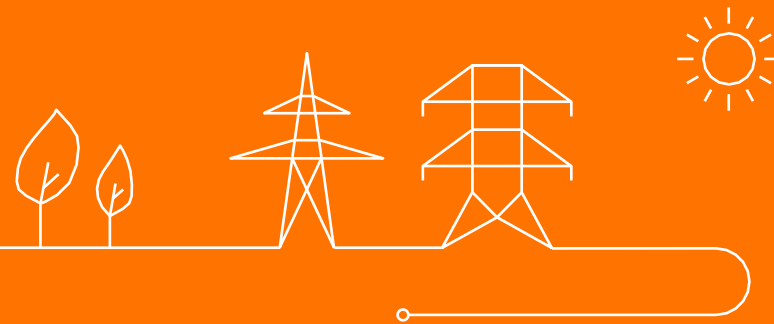
- We would appreciate your feedback about:
 - If any, additional needs for general support
 - If any, additional needs to support your implementation roadmap internally
 - If any, additional needs to support your operational readiness towards the go-live
- Call for a Community of experts
 - Can you share before 27/10 the names of the business & IT experts who will be part of the Community “Implementation Availability Monitoring & Payback Obligation”?
 - Can you ask your experts to analyze slide 8 & 9 as preparation of the kick-off workshop Elia will organize concerning the “data entry methods” ?
- For any additional question or feedback regarding the design and/or implementation of Availability Monitoring and Payback Obligation, please contact your KAM or send an email to customer.crm@elia.be



Update from Cabinet



Next meetings



Foreseen timeslots for next meetings

- **Thursday 26th of October – PM – CRM Design Workshop**
- Wednesday 8th of November 2023 – AM
- Friday 1st of December 2023 – AM
- Wednesday 31st of January 2024 – AM
- Tuesday 22nd of February 2024 - AM

Users Group Calendar: <https://www.elia.be/en/users-group>



Thank you.

