Future Power Markets

Stakeholder Engagement

Industry Workshop: 11th September 2024

This presentation provides an update on the Future Power Markets Programmes.

Achievable – Valuable – "Simple"

Future Power Markets – Industry Outreach

Why Are We Here?

Inform	We are here is to provide information about the ongoing programmes of work in the Future Power Markets space and the impact on the market participant community. We will provide a view of the programmes' drivers, functional details, structure, timelines, and stakeholder engagement.
Discuss	We will discuss the changes and how this impacts you and your portfolio. We will discuss the functional, technical, and formal arrangement changes, stakeholder engagement, and programme management updates. We are happy to field all questions – and we may not be able to answer all of them today.
Listen	We are here to listen. What are your thoughts on the FPM programmes, the functional, technical, and regulatory details and the impacts to your business? What questions do you need answers to? What clarity do you need?
Ask	We will ask for your participation throughout – we are better together.

EirGrid semo SONI

FPM – Industry Workshop

Setting Expectations

Meeting Rules

1. **Engage**: actively listen and ask questions. This session is for you.

2. **Show Courtesy**: allow everyone the time and space to participate in the discussion. Don't talk over another speaker.

3. **Scope Discipline**: maintain focus on FPM.

FPM: Industry Workshop (11th September 2024)

Agenda for today's workshop

Time	Topic
10:30 - 10:35	Introduction & Housekeeping
10:35 – 10:55	Energy Markets Policy – Status Update
10:55 - 11:15	Future Arrangement System Services – Status Update
11:15 – 11:35	Strategic Markets Programme (SMP) – Status Update
11:35 – 12.00	Scheduling & Dispatch (SDP) – Status Update
12:00 – 13:00	SMP - 1 hour workshop providing a high-level overview on the proposed design for the integration of the SEM with the MARI balancing platform
13:00 – 13:30	Lunch
13:30 – 14:45	SDP – Training session on Balancing Market Bidding

Energy Markets Policy – Status Update
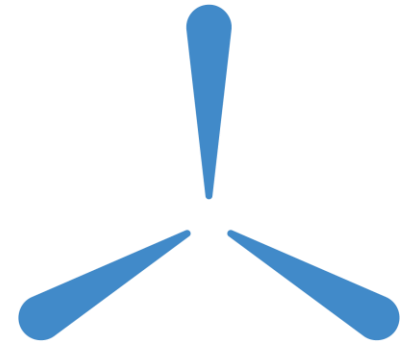
Agenda

1. EC consultation on network priorities
2. Electricity Market Design (EMD)
3. Carbon Border Adjustment Mechanism (CBAM)
4. Net Zero
5. Baringa SEM-GB-MRLVC report
6. Review of Electricity Market Arrangements (REMA)

EU Priority Consultation

- CACM 2.0

- FCA 2.0

- Few changes to Electricity Balancing Regulation

- Grid connection codes

- NC Demand Response adopted during 2025

- Beyond 2027 welcoming feedback

1.2   Priorities beyond 2027

The European Commission welcomes stakeholder input on the need and possible scope of new electricity network codes and guidelines that could be envisaged beyond 2027.

2   Priorities regarding gas networks rules

EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR ENERGY
Directorate C - Green Transition and Energy System Integration

Public Consultation Paper

Priority list for the development of network codes and guidelines on electricity for the period 2024-2027 and on gas for 2024 and beyond

The Third Energy Package created an institutional set-up for developing network codes with a view to harmonising, where necessary, the technical, operational and market rules governing the electricity and gas grids. This institutional set-up has been further improved through the Clean Energy Package, in particular with the adoption of Regulation (EU) 2019/943 ("Electricity Regulation").[1] It sets out a key role for the Agency for the Cooperation of Energy Regulators ("ACER"), for the European Networks of Transmission System Operators ("ENTSOs"), for the European entity for distribution system operators ("EU DSO entity") and for the European Commission to work in close cooperation with all relevant stakeholders on the development of network codes. The process of developing network codes is defined in Articles 58 and 59 of the Electricity Regulation and in Articles 6 and 8 of Regulation (EC) No. 715/2009 ("Gas Regulation"). The areas in which network codes can be developed are set out in Article 59(1) and (2) of the Electricity Regulation and in Article 8(6) of the Gas Regulation.

In addition to the possibility to develop network codes, the European Commission may develop guidelines on its own initiative, launching the adoption procedure to make them legally binding. The areas in which guidelines can be developed are set out in Article 61(2) of the Electricity Regulation and Article 23(1) of the Gas Regulation.

According to Article 59(3) of the Electricity Regulation and Article 6(1) of the Gas Regulation, where there are plans to develop new network codes, the Commission has to establish, after consulting ACER, the ENTSOs, the EU DSO entity and other relevant stakeholders, a priority list identifying the areas to be included in the development of network codes (every three years in electricity and on an annual basis for gas)[2].

The purpose of this document is to have a targeted consultation of relevant stakeholders on the priorities for the development of network codes and guidelines for the period 2024-2027 for electricity and for 2024 and beyond for gas.
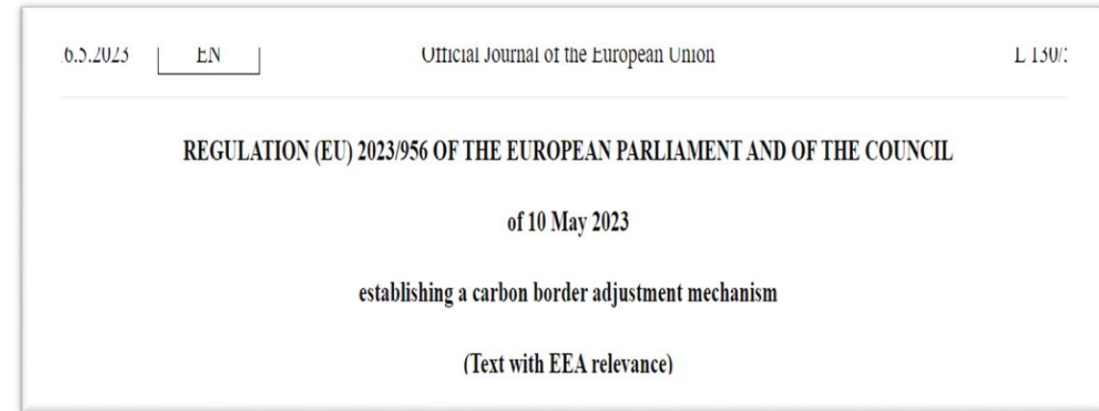
Electricity Market Design (EMD)

- Regulation 1747 entered into force in June

- Directive 1711 entered into force but needs to be transposed by January

Carbon Border Adjustment Mechanism (CBAM)

- Principle behind CBAM is positive

- EirGrid has a number of concerns around its implementation

- Currently working with stakeholders

REGULATION (EU) 2023/956 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 10 May 2023

establishing a carbon border adjustment mechanism

(Text with EEA relevance)

Net Zero – Future Markets Assessment

The DECC Offshore Renewable Energy Future Framework lists an action of Rollout of EirGrid's Grid Implementation Plan

"which considers offshore generation, grid, and **routes to market**"

Net Zero Strategy – Offshore Opportunity
AUGUST 2024
NATALIA NEOCLEOUS, KOSTAS THEODOROPOULOS, DAVID COX, SIMON BRADBURY

AFRY

Baringa SEM-GB-MRLVC report

- **MRLVC is inherently less efficient than full market coupling**

- The potential impact of MRLVC, if applied, **needs to be considered through a wider lens**

- There is **no certainty that MRLVC will improve** on existing coupling arrangements for the SEM-GB border
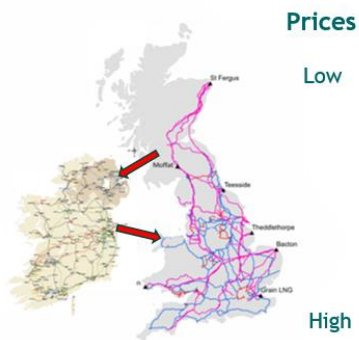
REMA - Main concerns for EirGrid and GB zonal pricing

- Maintaining efficient cross border trading between SEM and GB

- State of play

Scenario 1: Moyle & EWIC

Scenario 2: Moyle, EWIC & Greenlink
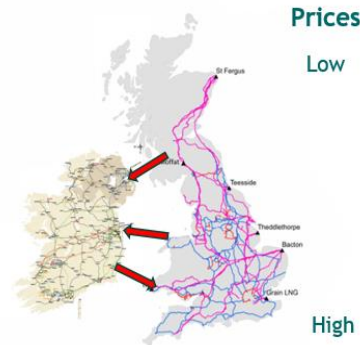
Scenario 3: Moyle, EWIC & Greenlink

1st REMA consultation

Summer 2022

→ Summary of Responses to 1st REMA consultation

March 2023

→ 2nd REMA consultation

March 2024

→ Summary of Responses

Summer 2024

→ REMA Policy Development Phase concludes

Mid-2025

Phased implementation of reforms

FASS Programme Update

FASS: Status Update
(September 2024 Industry Workshop)

🗼 FASS		Summary Status

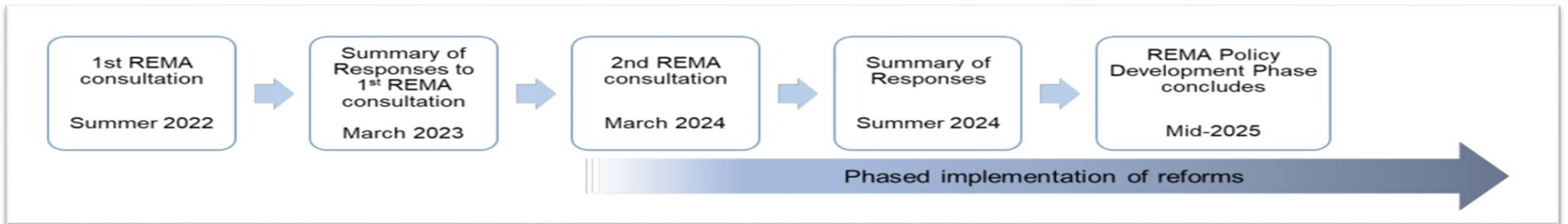| **Overall Status**	➡️	Overall amber programme status reflecting uncertainty of final DASSA Design pending publication of SEMC decision. TSOs understand that RAs are in broad agreement with most elements of the recommended design. However, alternatives may be sought for some design components.
Schedule	➡️	Programme schedule is amber reflecting risk of delay to schedule.
Resourcing	⬆️	Resourcing status moved from amber to green, following notice of approval of programme funding. TSO programme teams are staffed and engaged to continue work at pace, final approval will allow TSOs to secure long term resourcing.
Finances	⬆️	TSOs notified that programme funding has been approved. Formal approval and details expected shortly.

Key Messages

Service Provider Sentiment:.
- TBC. Industry readiness survey to be issued later in calendar year which will inform High Level Readiness Approach (FASS.20).

Key Activities for Immediate Action
- Publication of SEMC DASSA Design Decision
- September SEMC Decision on DASSA Product Review & Locational Methodology Recommendations Paper
- RA/ TSO discussions on interim arrangements between DS3 end and DASSA go-live

Positive Developments (Since Last Report)
- DASSA Product Review & Locational Methodology Recommendations Paper submitted to RAs
- TSOs notified that programme funding has been approved
- Workshop held on System Service charge consultation paper early September

Challenges (Since Last Report)
- Final DASSA Design uncertainty

🟩 As planned, no issues	⬆️ Improving
🟧 Minor - moderate concern	➡️ Steady
🟥 Significant issue / concern	⬇️ Worsening

Phased Implementation Roadmap – Level 1

Legend

■ TSOs Led Activity	■ SEMC Decision	▨ DS3 Activity
■ RAs Led Activity	■ RA TSOs Activity	▨ Depletion of Funds

	Today											**2025**				**2026**			
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Q1 Jan - Mar	Q2 Apr - Jun	Q3 Jul - Sep	Q4 Oct - Dec	Q1 Jan - Mar	Q2 Apr - Jun	Q3 Jul - Sep	Q4 Oct - Dec

Programme Governance
- Code Development Approach & Working Group Terms of Reference (ToR)
- Code Development Working Group
- SEMC Consultation (SS Code Panel ToR)
- SEMC Decision (SS Code Panel ToR)
- Establish SS Code Panel
- Establish Project Panel
- Project Panel Engagement
- Funding Request Review

Auction & Market Arrangements
- Develop DASSA Consultation Paper
- DASSA Con. Period & Recommendation Pap.
- SEMC Decision
- Design Transitional Arrangements & Consultation
- SEMC Decision
- Develop Product Review & Loca. Meth. Con. Paper
- Product Review & Locational Meth. Con. Per. & Rec. Paper
- SEMC Decision
- Non-Reserve Product & Loca. Con. Paper
- Non-Reserve Product & Loca. Con Per & Rec Pa.
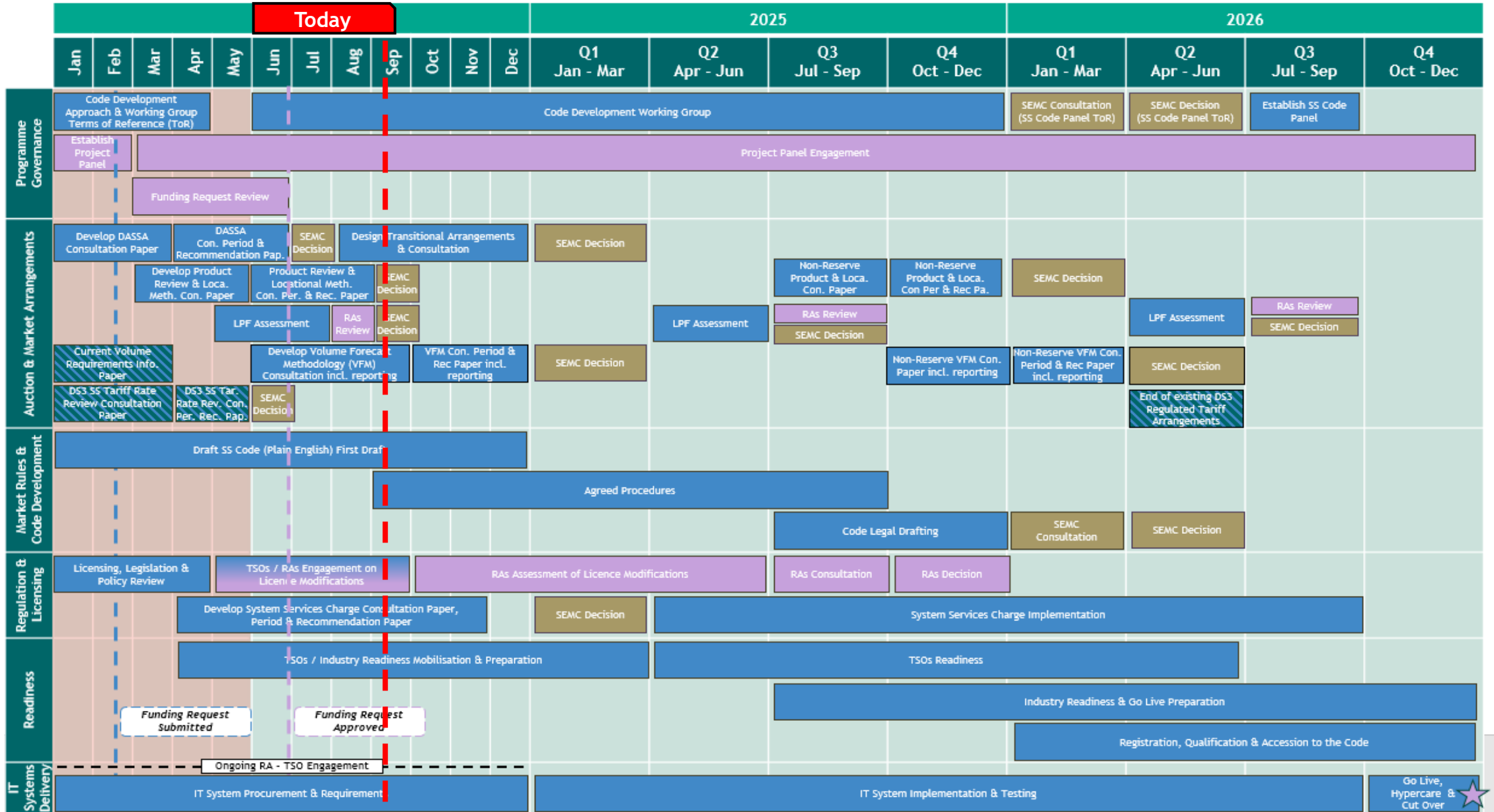- SEMC Decision
- LPF Assessment
- RAs Review
- SEMC Decision
- LPF Assessment
- RAs Review
- SEMC Decision
- LPF Assessment
- RAs Review
- SEMC Decision
- Current Volume Requirements Info. Paper
- Develop Volume Forecast Methodology (VFM) Consultation incl. reporting
- VFM Con. Period & Rec Paper incl. reporting
- SEMC Decision
- Non-Reserve VFM Con. Paper incl. reporting
- Non-Reserve VFM Con. Period & Rec Paper incl. reporting
- SEMC Decision
- DS3 SS Tariff Rate Review Consultation Paper
- DS3 SS Tar. Rate Rev. Con. Per. Rec. Pap.
- SEMC Decision
- End of existing DS3 Regulated Tariff Arrangements

Market Rules & Code Development
- Draft SS Code (Plain English) First Draft
- Agreed Procedures
- Code Legal Drafting
- SEMC Consultation
- SEMC Decision

Regulation & Licensing
- Licensing, Legislation & Policy Review
- TSOs / RAs Engagement on Licence Modifications
- RAs Assessment of Licence Modifications
- RAs Consultation
- RAs Decision
- Develop System Services Charge Consultation Paper, Period & Recommendation Paper
- SEMC Decision
- System Services Charge Implementation

Readiness
- TSOs / Industry Readiness Mobilisation & Preparation
- TSOs Readiness
- Industry Readiness & Go Live Preparation
- Funding Request Submitted
- Funding Request Approved
- Registration, Qualification & Accession to the Code

IT Systems Delivery
- Ongoing RA - TSO Engagement
- IT System Procurement & Requirement
- IT System Implementation & Testing
- Go Live, Hypercare & Cut Over ★

Milestone Reference List

Milestone #	Milestone Description	Milestone Dependencies	Milestone Owner	Milestone Target Date	Status
FASS.01	Establish The Project Panel	-	RAs	February 2024	Complete
FASS.02	SEMC Decision On Phased Implementation Roadmap	-	SEMC	February 2024	Approved
FASS.03	Commence IT Systems Procurement	FASS.02	TSOs	February 2024	Complete
FASS.04	Publish Phased Implementation Roadmap 1	FASS.02	TSOs	March 2024	Complete
FASS.05	Publish FASS Daily Auction/Procurement Design Consultation Paper	FASS.04	TSOs	March 2024	Complete
FASS.06	Commence Detailed Requirements	-	TSOs	March 2024	Complete
FASS.07	Establish System Service Code Development Working Group ToR	FASS.04	TSOs	April 2024	Complete
FASS.08	Issue List of Proposed Licence Modifications to RAs	-	TSOs	April 2024	Closed*
FASS.09	Publish FASS Daily Auction Product Review and Locational Methodology Consultation Paper	-	TSOs	May 2024	Complete
FASS.10	FASS Programme Funding Request Approval	-	RAs	June 2024	Complete
FASS.11	Publish FASS Daily Auction/Procurement Design Recommendation Paper	FASS.05	TSOs	June 2024	Complete
FASS.12	SEMC Decision on FASS Daily Auction/Procurement Design	FASS.11	SEMC	July 2024	Pending
FASS.13	Publish Annual Layered Procurement Assessment Recommendations Paper 2024	-	TSOs	July 2024	Complete
FASS.14	Publish FASS Daily Auction Product Review and Locational Methodology Recommendation Paper	FASS.09	TSOs	August 2024	Complete
FASS.15	Commence Grid Code Review	FASS.14	TSOs	September 2024	
FASS.16	Publish Phased Implementation Roadmap 2	FASS.04	TSOs	September 2024	In Progress
FASS.17	SEMC Decision on FASS Daily Auction Product Review and Locational Methodology	FASS.14	SEMC	September 2024	
FASS.18	SEMC Decision on Annual Layered Procurement Assessment 2024	FASS.13	SEMC	September 2024	Pending
FASS.19	Publish System Services Charge Recommendations Paper	-	TSOs	November 2024	
FASS.20	Publish High Level Readiness Approach	FASS.12	TSOs	November 2024	
FASS.21	Publish Volume Forecasting Methodology Recommendation Paper including Volumes Requirements Reporting	FASS.17	TSOs	December 2024	
FASS.22	Draft Plain English Version of SS Code	FASS.07 FASS.12 FASS.17	TSOs	December 2024	In Progress

Status of Consultations

Consultations	Status
DASSA Design	Final DASSA Design Recommendations Paper submitted to RAs end July. TSOs recommendation paper to be published alongside SEMC Decision, expectation this will be mid-September.
Product Review & Locational Methodology (Reserves)	Product Review & Locational Methodology recommendations paper submitted to RAs end of August. Target SEMC Decision end of September.
System Services Charge	Consultation paper published on EirGrid and SONI consultation portals, 31st of July. The consultation period will be open for 7 weeks, until the 18th of September. An industry workshop was held on the 5th of September.
Volume Forecasting Methodology	Analysis and drafting underway, informed by the Product Review & Locational Methodology workstream. On target to publish consultation paper by end of September.
Transitional Arrangements	Following the SEMC decision on the LPF Annual Assessment, the TSOs will publish a consultation on the Transitional Arrangements by December 2024. The paper will cover the transition of reserve and non-reserve products from DS3 to FASS.

Future Consultations

The TSOs will publish the next iteration of the Phased Implementation Roadmap (PIR No. 2) in September. This will provide further clarity on the timing of future consultations, TSO recommendations and SEMC decisions. The TSOs are engaging with the RAs on the PIR development.

Phased Implementation Roadmap (V2.0)

Update

- FASS Programme Phased Implementation Roadmap is to be published bi-annually.
- PIR V2.0 currently being drafted and is on target for publication End of September.
- PIR V2.0 will include:
  - A monthly granularity view of timelines provided from July 2024 until June 2025.
  - Outline programme milestones and descriptions.
  - Outline programme risks / issues per direction of SEM-23-103.
  - The next iteration of the PIR (V3.0) will be published in March 2025.

Key Changes / Updates

Assessment of the PIR against the SEMC Decision Paper on the DASSA Design required.

Non-Reserve procurement workstream added.

Draft SS Code Plain English extended by one-month, revised target date January 2025. Addition of second draft now included in programme plan.

Additional Parameters & Scalars consultation has been included in PIR V2.0. TSOs to commence work on this before end of calendar year.

Industry engagement and market readiness approach included for publication June 2025.

Detailed Operations Design

Product Design & Locational Methodology Recommendations Paper

Calendar Year	2024								
Business Year	2024								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
			Develop Product Review & Loca. Meth. Con. Paper			Product Review & Locational Meth. Con. Per. & Rec. Paper			SEMC Decision

Key Recommendations

- DASSA Product Review and Locational Methodology Recommendations Paper was submitted to the RAs end August for consideration at the September SEM Committee meeting.

- The introduction of 'downward' reserve products that will mirror the existing 'upward' products across FFR, POR, SOR, TOR1, TOR2 and RR timeframes.

- Faster FFR product with a maximum full activation time 1 second. Subcategories of FFR will incentivise provision as quickly as 150 ms.

- To introduce generic and technology agnostic minimum capability requirements on frequency deadbands, trajectories, reserve step sizes and reserve step triggers

- Replacement reserve to no longer encompass RRS and RRD but to become one Replacement Reserve (RR) product.

- All-Island and jurisdictional requirements for reserves will remain in place.

- Removal of all existing scalars and introduce an Availability scalar and an Event performance scalar. (Subject to a future detailed consultation)

Volume Forecasting Methodology Consultation

Calendar Year	2024											
Business Year	2024									2025		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						Develop Volume Forecast Methodology (VFM) Consultation incl. reporting				VFM Con. Period & Rec Paper incl. reporting		

Main Update

- Volume Forecasting Methodology Consultation Paper on track to be published at the end of September.

- Develop and consult on a methodology for determining reserve services volume requirements.

- Annually publish a ten-year forecast of system service requirements (reserve services for the initial period) and we shall invite comments from stakeholders on the form of this report at least annually.

- Regularly publish short-term forecasts and volume information following public consultation on the form, frequency, and granularity of these reports.

- Publish the volumes to be procured by auction on a daily basis specifying volumes for upward and downward reserve products.

System Service Supplier Charge Workshop

The TSOs held a virtual industry workshop on Thursday 5th September 2024, where the TSOs and our partners Afry presented the All-Island System Services Supplier Charge Consultation Paper and hosted a Q&A session. The workshop slides and Q&A are now available on the EirGrid and SONI websites.

Key Themes

Treatment of storage
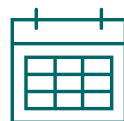
Settlement window

Dynamic charging

Determining the Charge Rate

Move from DS3 to FASS

Key Stats
- 70+ attendees
- 20+ queries raised

Next Steps

- Workshop slides and Q&A published on EirGrid and SONI websites
- Consultation to close on 18th September
- TSOs to begin drafting Recommendations Paper

Thank You

Questions can be submitted to

FASS@Eirgrid.com or
FASSProgramme@soni.ltd.uk

Next Steps:

- The TSOs will publish a recommendations paper alongside SEM Committee Decision Paper.

- System Services Supplier Charge Consultation period open until **18th September**.

- The second sitting of the **Code Development Working Group** will be scheduled upon publication of the SEMC Decision.

- TSOs to publish second iteration of the Phased Implementation Roadmap at the end of September.

Strategic Markets Programme
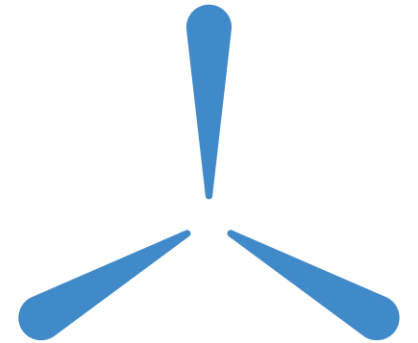
Previous Update

1 Overview of changes to market arrangements including **integration to SDAC, SIDC and implementation of MNA**

2 **Overview of SDAC and SIDC** including an overview of how the markets function at a European level

3 Progress made to date on Local **Implementation Project (LIP)** and **system design requirements**

Previous Market Arrangements

DAM
IDA-1
IDA-2
IDA-3
IDC
Gate Closure
T- 24h
T- 1h

New Market Arrangements

SDAC
EUIDA-1
GBIDA-1
EUIDA-2
GBIDA-2
EUIDA-3
SIDC
Gate Closure
T- 24h
T- 1h

Updated Market   Unchanged Market   New Market
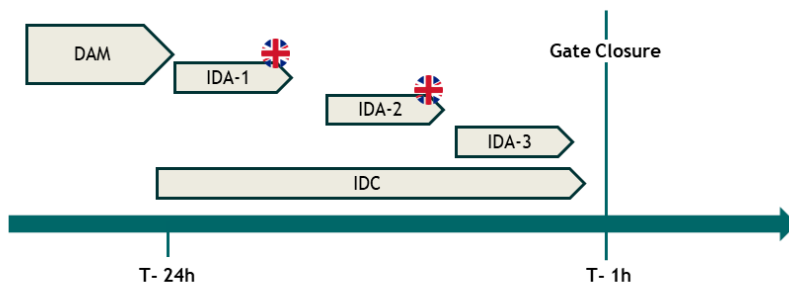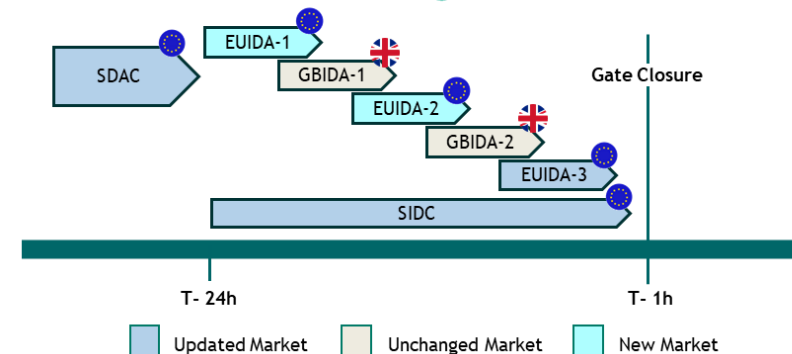
Today's Agenda

1 **SMP Programme** Status Update

2 High-level SMP Programme **impact on Market Participants**

3 **Overview of FTRs** and impact on Market Participants

4 **SEMOpx overview** of SDAC & SIDC, trading and additional requirements

SMP Update

EU Integration

Bringing the SEM Markets and Operational Systems into compatibility with European Markets and system standards.

- High Level Requirements for EU Integration close to finalisation - requiring changes to market rules and schedules, operating processes and system scheduling;
- Detailed requirements and vendor engagement commencing;
- Current Celtic Interconnector go-live is planned for Q4 2026, and integration with EU markets will need to be in place for this date

Balancing Market Reform

Making changes to the Balancing Market Arrangements to enable and optimise flexible technology

- High level requirements for Balancing Market Reform initiatives now closing out are under review and moving into detailed requirements and vendor engagement.
- Project delivery planning is underway with engagement with key vendors and mapping of required code and system changes to estimate delivery timelines.

Post-Brexit Market Arrangements

Updates to the agreed arrangements for trading of electricity between the SEM and GB to increase market efficiency

- No update.

EirGrid

SONI

semo
Single Electricity
Market Operator

High-level SMP Programme impact on Market Participants

The SMP programme will have differing impacts to Market Participant's operational processes and systems depending on the individual deliverable.

PROGRAMME SCOPE

EU INTEGRATION

a) SEM joining Single Day Ahead Coupling & Single Intra-Day Coupling (SDAC & SIDC):
- 🟡 Increased number of auctions over a wider timeframe throughout the trading day
- 🟢 Increased operation and monitoring actions required by TSO including

b) SEM joining Coreso Regional Control Centre (RCC):
- 🟢 Management of defence and restoration plan in line with Coreso requirements

c) FTRs introduced for SEM-FR Border:
- 🟡 Optional participation in FTR auctions on the SEM-FR border

d) SEM joining Core CCR (Capacity Calculation Region):
- 🟢 Change to current market and system operations arrangements to manage capacity calculations across all timeframes for Core.
- 🟢 IT tools and hardware needed by TSO to manage inputs, submissions, and validation in real time to optimise cross-zonal capacities

EU REINTEGRATION & BALANCING MARKET REFORM

e) Multi-NEMO Arrangements in Ex-Ante and Balancing Markets
- 🟡 Potential to trade with other NEMOs within the SEM

f) Integration with EU Balancing Platform MARI
- 🟡 Expected increased monitoring and validation from TSOs once MARI platform is implemented

BALANCING MARKET REFORM

g) Implementation of Dispatchable Consumption
- 🔴 Impact on current teams' operations, once Dispatchable Consumption unit type is implemented in registration, market and energy management systems

h) Demand Response
- 🔴 Updates to treatment of demand response in the SEM will require changes to registration and operational processes

i) Implementation of LDES/ enduring ESPS
- 🟡 Too premature to properly assess impact of this

l) Enduring Non-Priority Dispatch Renewable Generators
- 🟡 Low operational impact on current team operations

### POST-BREXIT TRADING ARRANGEMENTS

m) Implementation of MRLVC
- 🟢 Impact on TSO and SEMO systems yet to be identified – changes likely to be at the central systems level
- 🟡 Trading arrangement to be decided

Key:
- 🔴 Operational Impact on Market Participant
- 🟡 Operational Impact on Market Participant – optional
- 🟢 Operational Impact on TSOs only

Forward Markets

The aim of long-term or forward markets is to create a mechanism to allow market participants to hedge against the volatility of spot prices and manage their risks.
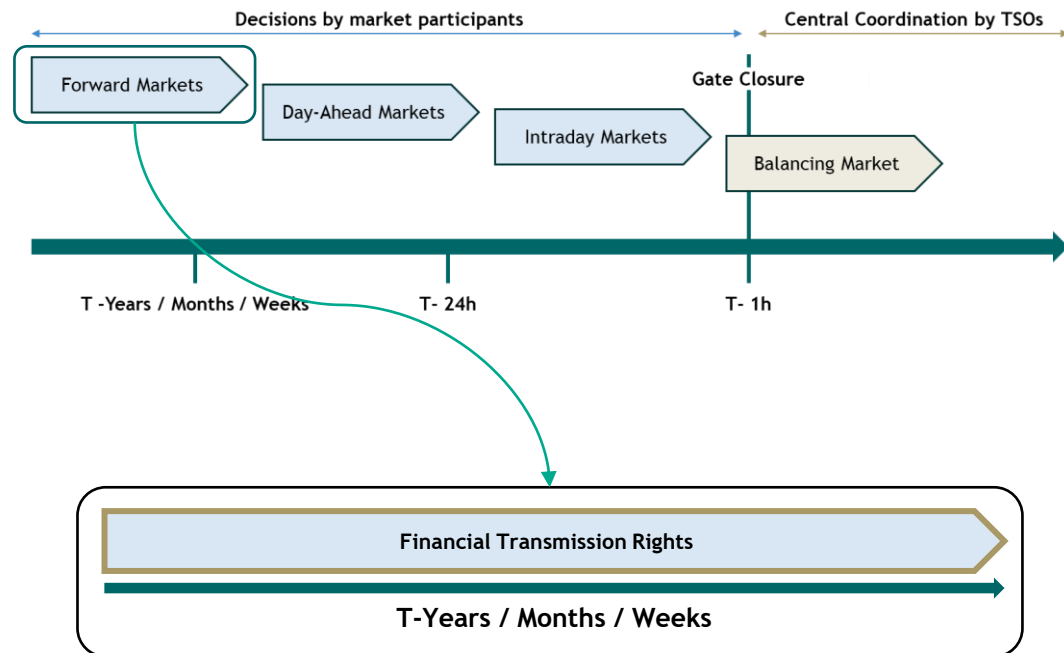
Financial Transmission Rights

Financial Transmission Rights (FTRs) are regulated under the Forward Capacity Allocation Guideline (FCA GL). The allocation of long-term cross-zonal transmission capacity is conducted through explicit auctions handled by JAO (Joint Allocation Office).

JAO Auction design to be re-used from ISEM prior to Brexit halting FTRs on SEM-GB Interconnectors

Financial Transmission Rights: Joint Allocation Office (JAO)

JAO are the leading service provider for Transmission System Operators (TSOs) designated as the single allocation platform under FCA in the European electricity market. They host a trading platform auctioning cross-border transmission capacity rights

> JAO host the trading platform (e-CAT) used for Financial Transmission Rights auctions within Europe.

Requirements for Market Participants :

- Participation in FTR auctions is not required and is at the discretion of the market participant

- There will be a requirement to register with JAO to participate within FTR auctions

- Collaterals will be required in the form of a bank guarantee or cash deposit

Further information on common questions can be found <u>here</u>.

JAO will host workshops prior to go-live to explain auction processes and requirements

SEMOpx Trading System

As the auctions trends evolve the trading system must also facilitating geographical expansions, small member expansion and increased API usage.

> EPEX SPOT and SEMOpx will launch a new Auction Trading system - Multiple Auction Trading System (MATS) in 2025

Key Information:

- This launch will result in the Decommissioning of the existing ETS application and associated API package

- MATS user testing to span over Q4 2024 and Q1 2025

- Technical documentation to be shared as of September 2024

- Webinars provided to support understanding and development of MATS be announced in coming weeks

Details on go-live plan and new features were published 22nd August and will be sent in addition to this pack.

SEMOpx: EU Integration to SDAC & SIDC

SEMOpx recognise change will be required across Market Participants processes however minimising impact is key to successful delivery

SDAC

Access to SDAC

- Access to the coupled SDAC market will remain the same as for the DAM.

- As a member of SEMOpx there will be no requirement to register for SDAC.

- Bid submission will remain through MATS given go-live in 2025.

- No intention to introduce new reports, the same reports provided today will be available.

- Celtic IC capacity available to trade implicitly within the SDAC market.

SIDC

Access to SIDC

- Access to the SIDC markets will remain the same as for the IDA and IDC.

- As a member of SEMOpx there will be no requirement to register for SIDC markets.

- Bid submission will remain through MATS for IDAs and M7 for XBID.

- No intention to introduce new reports, the same reports provided today will be available.

- Celtic IC capacity available to trade implicitly within the SIDC market.
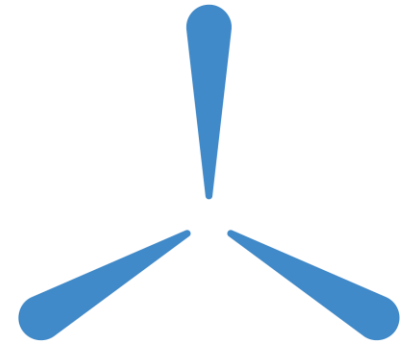
Trading limits and additional collateral

- With the introduction of SIDC there will be no immediate requirement to increase collateral.

- Similar to today's operation if there is an increase in trading levels this may require an increase in collateral.

MNA and SEM-GB Trading

- Under MNA there is no requirement to register with additional NEMOs operating within the SEM.

Scheduling and Dispatch Programme

SDP: Status Update (September 2024 Industry Workshop)

🗼 SDP — Summary Status

Overall Status	⇨ (orange)	Overall programme status is Amber as Target date for Tranche 1 Modifications approval of June 2024 has not been met. Build in progress for Tranche 1 initiatives and test has commenced for some of our vendors. Risk related to Tranche 1 Modification approval remains open.
Schedule	⇨ (orange)	System vendors are coming to the end of the system build. Test has commenced for some of our vendors with test preparation at an advanced state for others. Target date for Tranche 1 Modifications approval of June 2024 has not been met, no immediate impact but the risk that changes will be required is present until Modifications are approved. Planning for Tranche 2 delivery is in progress.
Resourcing	⇨ (green)	TSO/MO programme teams are fully staffed and engaged to continue work at pace.
Finances	⇨ (green)	SEMC All-Island Programme sub-committee approved the full funding request for the S&D (phases 3-5) programme on 22nd March 2024.

Key Messages

MP Sentiment is Green (steady)

- Market Participants actively engaged and driving forward solutions
- Strong support for SDP
- Next Participant Survey will be issued later this week

Key Activities For Action This Month

- Working with RAs on Analysis of responses to consultation on SEM-13-011 changes
- SDP Sandpit environment is being made available to Participant during September and October

Positive Developments (Since Last Report)

- SDP System Vendors have commenced test execution
- SDP Bidding Training course developed and will be delivered later today

Challenges (Since Last Report)

- Target date for Tranche 1 Modifications approval of June 2024 has not been met

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Scheduling and Dispatch: Phase 2 Milestones

| SOEF Milestone ID	Milestone	Dates
Tranche 1	Requirements Definition Complete for Scheduling and Dispatch Programme Tranche 1 Initiatives	September 2023
Tranche 1	System Design Complete for Scheduling and Dispatch Programme Tranche 1 Initiatives	March 2024
Tranche 1	TSC, CMS & GC Mods Review Complete for Scheduling and Dispatch Programme Tranche 1 Initiatives by the relevant review group (Mods Committee, Grid Code Review Panel, Capacity Market Workshops respectively)	March 2024
Tranche 2	Requirements Definition Complete for Scheduling and Dispatch Programme Tranche 2 Initiatives	July 2024
Tranche 2	Publication of milestones for Scheduling and Dispatch Programme Tranche 2 Initiatives	September 2024
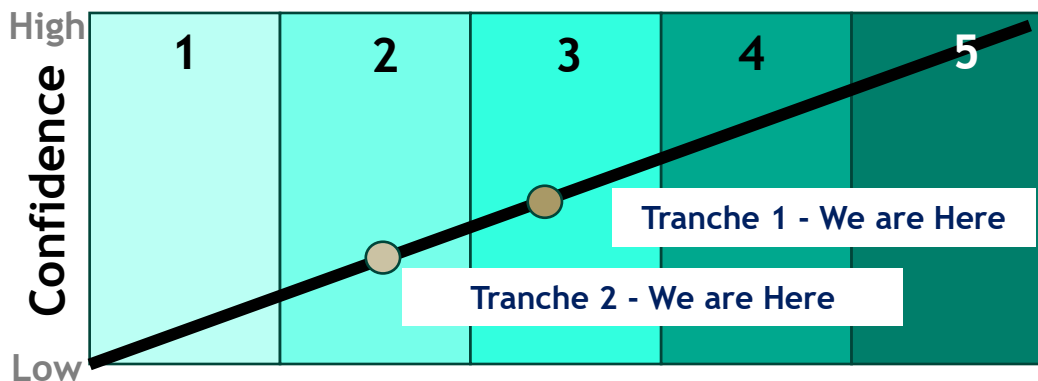
We currently have an overall **low – medium** level of confidence on the timelines. Confidence levels will increase as milestones are achieved and programme progresses further into Phase 3 for Tranche 1 and Phase 2 for Tranche 2
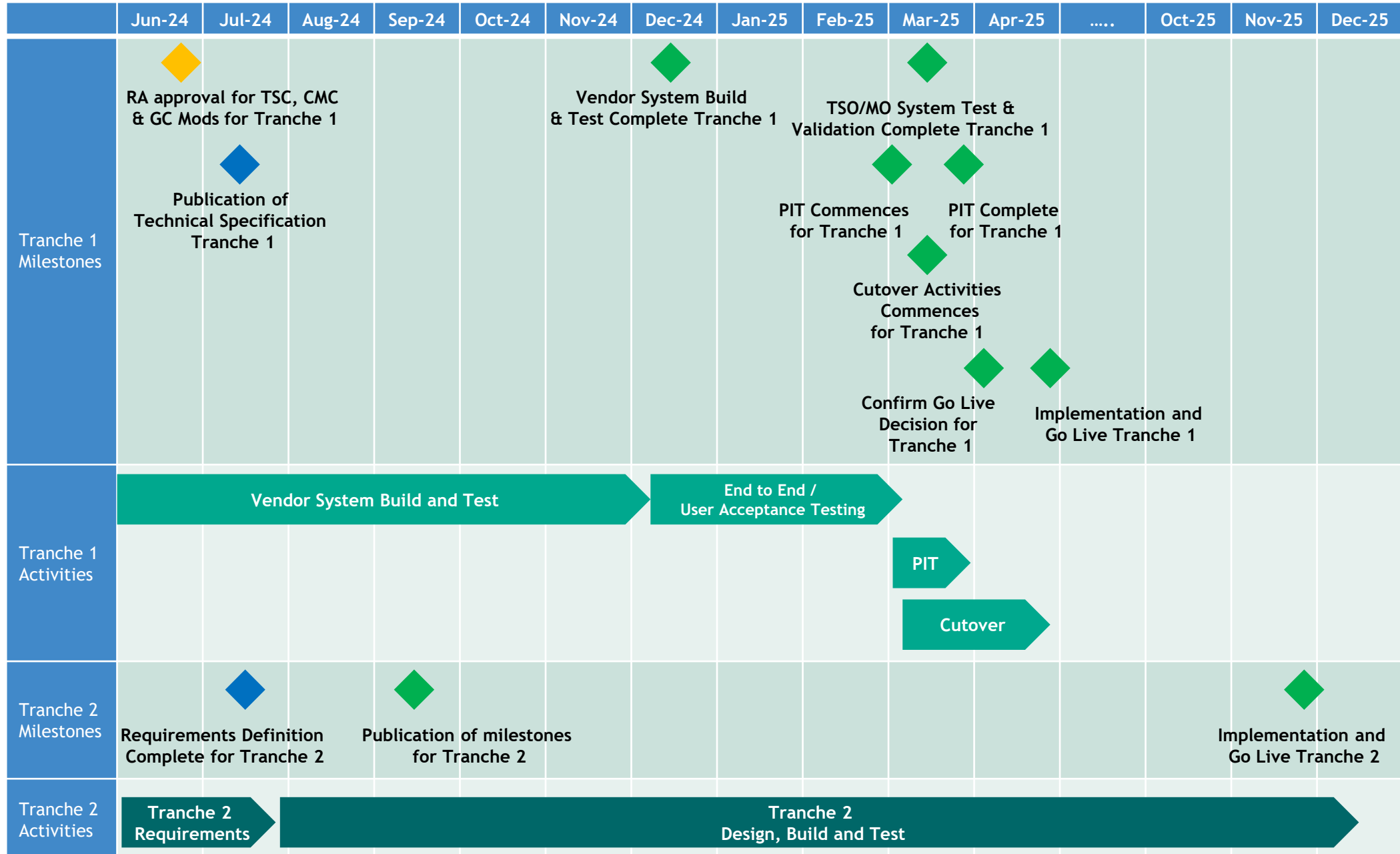
Scheduling and Dispatch: Phase 3 Milestones

SOEF Milestone ID	Milestone	Dates
Tranche 1	System Build Commenced for Scheduling and Dispatch Programme Tranche 1 Initiatives	March 2024
Tranche 1	Publication of key milestones for testing and go-live, including revised ISEM Technical Specification of Scheduling and Dispatch Programme Tranche 1 Initiatives	June 2024
Tranche 1	Regulatory Authority approval for Trading and Settlement Code (TSC), Capacity Market Code (CMC) & Grid Code Mods (GC) for Scheduling and Dispatch Programme Tranche 1 Initiatives	June 2024
Tranche 1	Publication of Technical Specification for Scheduling and Dispatch Programme Tranche 1 Initiatives	July 2024
Tranche 1	Vendor System Build and Test Complete for Scheduling and Dispatch Programme Tranche 1 Initiatives	Dec 2024
Tranche 1	TSO/MO System Test and Validation Complete for Scheduling and Dispatch Programme Tranche 1 Initiatives	Mar 2025
Tranche 1	Participant Interface Test (PIT) Commences for Scheduling and Dispatch Programme Tranche 1 Initiatives	Mar 2025
Tranche 1	Participant Interface Test (PIT) Complete for Scheduling and Dispatch Programme Tranche 1 Initiatives	Mar 2025
Tranche 1	Cutover activities Commences for Scheduling and Dispatch Programme Tranche 1 Initiatives	Mar 2025
Tranche 1	Confirm Go Live Decision for Scheduling and Dispatch Programme Tranche 1 Initiatives	April 2025
Tranche 1	Implementation and Go Live for Scheduling and Dispatch Programme Tranche 1 Initiatives	April 2025
Tranche 2	Implementation and Go Live for Scheduling and Dispatch Programme Tranche 2 Initiatives	Oct – Dec 2025
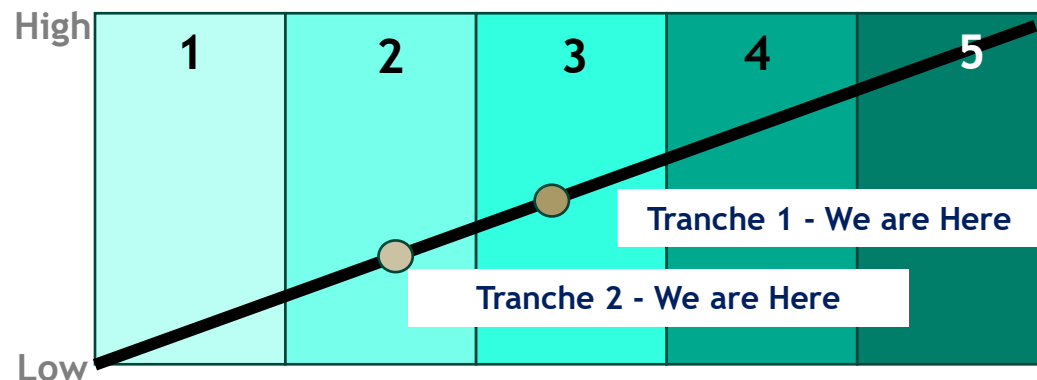
High

1 2 3 4 5

Tranche 1 - We are Here

Tranche 2 - We are Here

Low

We currently have an overall **low - medium** level of confidence on the timelines. Confidence levels will increase as milestones are achieved and programme progresses further into Phase 3 for Tranche 1 and Phase 2 for Tranche 2

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Scheduling and Dispatch – Milestone Plan

	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	.....	Oct-25	Nov-25	Dec-25

Tranche 1 Milestones

- ◆ **RA approval for TSC, CMC & GC Mods for Tranche 1** (Jun-24)
- ◆ **Publication of Technical Specification Tranche 1** (Jul-24)
- ◆ **Vendor System Build & Test Complete Tranche 1** (Dec-24)
- ◆ **TSO/MO System Test & Validation Complete Tranche 1** (Mar-25)
- ◆ **PIT Commences for Tranche 1** (Feb-25)
- ◆ **PIT Complete for Tranche 1** (Mar-25)
- ◆ **Cutover Activities Commences for Tranche 1** (Mar-25)
- ◆ **Confirm Go Live Decision for Tranche 1** (Apr-25)
- ◆ **Implementation and Go Live Tranche 1**

Tranche 1 Activities

- Vendor System Build and Test (Jun-24 – Dec-24)
- End to End / User Acceptance Testing (Jan-25 – Feb-25)
- PIT (Mar-25)
- Cutover (Mar-25 – Apr-25)

Tranche 2 Milestones

- ◆ **Requirements Definition Complete for Tranche 2** (Jul-24)
- ◆ **Publication of milestones for Tranche 2** (Sep-24)
- ◆ **Implementation and Go Live Tranche 2** (Nov-25)

Tranche 2 Activities

- Tranche 2 Requirements (Jun-24)
- Tranche 2 Design, Build and Test (Jul-24 – Dec-25)

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SDP Tranche 1 Initiatives – Modifications Status

SDP_01 Operation of Non-Priority Dispatch Renewables (NPDR)	SDP_02 Energy Storage Power Station (ESPS) Integration	SDP_04 Wind Dispatchability Improvements

Trading and Settlement Code

SDP_01 T&SC mod was recommended for approval by the Modifications Committee on 08-Feb and was sent for RA decision.

Updated SDP_02 T&SC mod was recommended for approval by the Modifications Committee on 23-Apr and was sent for RA decision.

TSO has provided inputs to RA text regarding updates to SEM-13-011 annex.

RAs issued text for public consultation between 17 June and 26 July.

Responses received and currently under analysis by RAs

Grid Codes

The SDP_01 Grid Code mod has been reviewed by the Grid Code Review Panels/Joint Grid Code Review Panel on 20-Mar.

Was recommended for approval by EirGrid panel, public consultation in NI has completed.

The SDP_02 Grid Code mod has been reviewed by the Grid Code Review Panels/Joint Grid Code Review Panel on 20-Mar.

Panel members requested more time to review, will be brought to panels in September.

SDP Participant Survey

SDP Participant Survey

- Our next SDP participant survey will be live from **Thursday 12th September** to **Thursday 26th September**

- The survey aims to gather feedback from industry participants on two key topics:

1. Your organisation's readiness and preparation for the SDP Tranche 1 Go-Live

2. Your organisation's feedback on how the SDP programme can support you in advance of the Tranche 1 Go – Live, e.g. more frequent communications, pre go-live support, etc.

- Survey results will be shared as part of the October industry workshop and help shape our market engagement approach for the coming months

- Survey details will be shared via market message on Thursday 12th September

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SDP Tranche 1 – Participant Sandpit Environment

- The SDP programme will facilitate Participant use of a sandpit environment based on the current Market Production code base (This environment will not contain the SDP changes).

Participant Sandpit Environment

- To register your interest in accessing the SDP Sandpit environment, please email either schedulinganddispatch@eirgrid.com or schedulinganddispatch@soni.com by COB 18/09.

- Participants will be provided with access to the sandpit environment on a phased basis over the course of September/October.

- **NB:** As the SDP Tranche 1 changes are currently in build, the sandpit environment does not contain any SDP "Release N" code. The Sandpit environment can be used to test interfacing to the current Production SEM Release

- In advance of accessing the Sandpit, participants are expected to have reviewed the available Balancing Market Bidding self-learning modules

- Any sandpit environment queries or support requests can be directed to the Scheduling & Dispatch Programme mailbox (above)

- During the period the SDP Sandpit is being made available, the programme will also run drop-in clinics to address any queries participants may have

SDP Tranche 1 – Participant Sandpit Environment

Participant Sandpit Environment

- After registering your interest, participants will be asked to provide the following information:

    o Party Name
    o Party ID
    o Unit ID
    o Contact details of nominated user of the sandpit environment
    o Nominated Authentication Code

- Any questions can be directed to the SDP Programme team at either:
    o schedulinganddispatch@eirgrid.com or
    o schedulinganddispatch@soni.com

Stakeholder Engagement: FPM Industry Workshop

Contacting FPM Programmes

To raise an issue or query for the Future Markets Programmes:

Contact	
	SDP Queries SchedulingandDispatch@Eirgrid.com SchedulingandDispatch@soni.ltd.uk
	LDES Queries LDES@Eirgrid.com LDESProgramme@soni.ltd.uk
	FASS Queries FASS@Eirgrid.com FASSProgramme@soni.ltd.uk
	SMP Queries SMP.PMO@Eirgrid.com
	FPM Policy FuturePowerMarkets@Eirgrid.com futurepowermarketsNI@soni.ltd.uk

Information to Provide

- Your Name

- Your email & phone number

- Your organisation

- Topic of Issue/Query & Programme Name

- Description of the issue or query

- Any additional information to aid in understanding the issue or query

- (*No requirement to email the same query to both EirGrid and SONI email addresses for a relevant programme*)

Future Power Markets: Future Workshop Schedule

	Future Discussion Topics

SDP

- Ongoing NPDR designation process updates
- Tranche 2 Overviews
- Tranche 2 Delivery Milestones

LDES

- Continuing to liaise with the RAs and Departments on next steps

FASS

- System Services Supplier Charge consultation – workshop on paper
- Code Development Working Group – ongoing updates

SMP

- Additional details on functional approach
- Overview of functional impacts of EU Reintegration on SEM Market Participants

EMP

- CACM 2.0
- Net Zero Further Update
- FCA 2.0
- CRM27 + (guided by SEMC)

Date	Location
09 October 2024	Virtual
06 November 2024	Virtual
04 December 2024	Virtual

11/09/2024

Strategic Markets Programme

Balancing Market Reform
Industry Presentation

Participation in MARI & TERRE

Executive Summary

- In line with the connection of the Celtic Interconnector in 2026, integration of the SEM into EU markets for trading at day-ahead, intraday and balancing will be necessary. This includes integration with EU wide Balancing Platforms to manage reserves across Europe.

- The main objectives of this High-Level Requirements are to:
  - Comply with EB GL requirement to participate in cross-border exchange of standard balancing energy products.

  - EU balancing platforms to increase efficiencies by facilitating platform specific imbalance netting and integrating balancing markets.

  - Implement the above two by layering the additional requirements on top of the existing SEM balancing market arrangements.

- The purpose of this presentation is to provide a high-level overview of the EU Balancing Platforms and SEM's proposed integration approach.

Brief Introduction of EU Balancing

The Electricity Balancing Guideline (EB Regulation), defines the framework for common European technical, operational and market rules for a cross-border balancing market. This market serves the purpose to secure economically efficient purchase and in time activation of regulation energy by simultaneously ensuring the financial neutrality of the TSOs.

EU Balancing Process
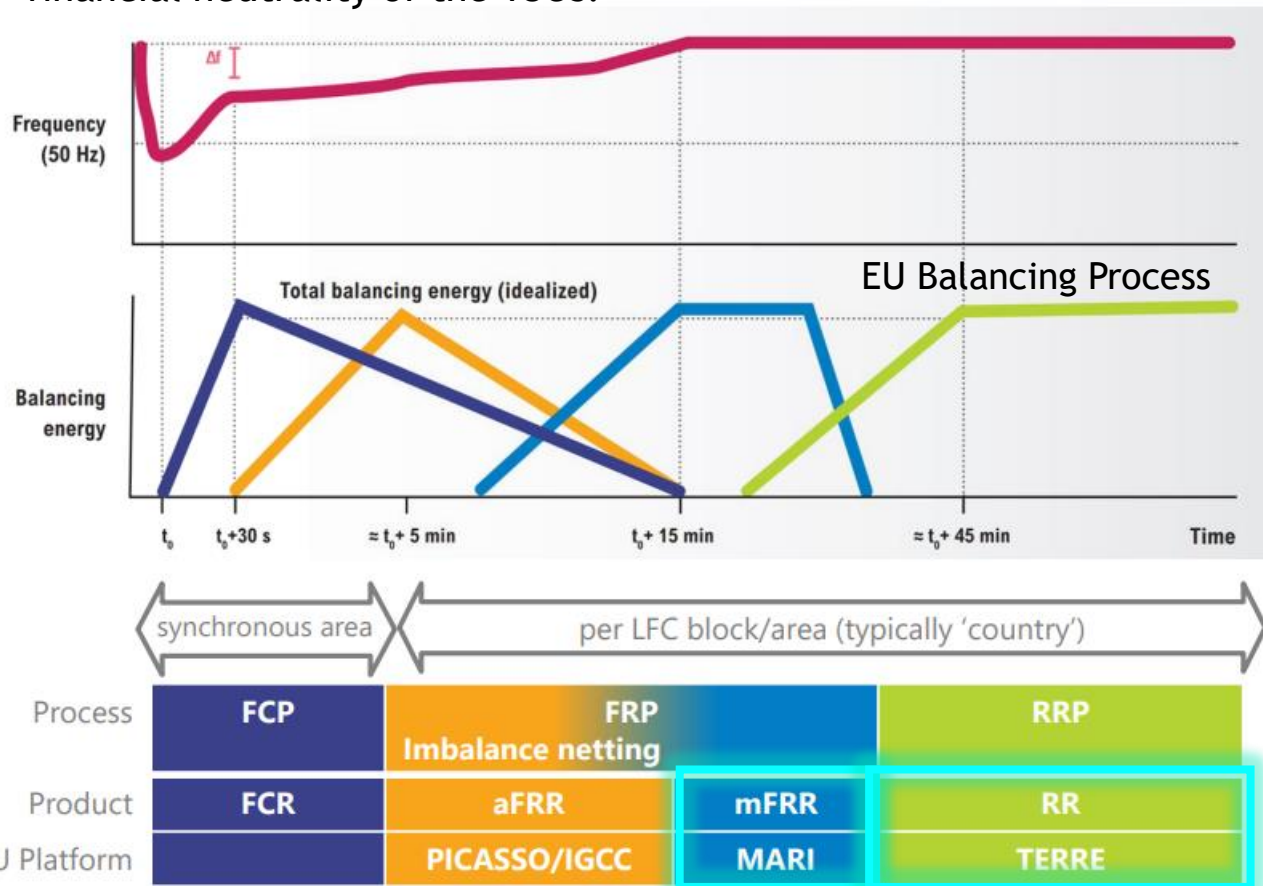
Platform	Manual Frequency Restoration Reserves (mFRR) – MARI	Replacement Reserves (RR) – TERRE	Automatic Frequency Restoration Reserves (aFRR) – PICASSO	Imbalance Netting (IN) – IGCC
Legal basis	Article 20(1) of the EB Regulation	Article 19(1) of the EB Regulation	Article 21(1) of the EB Regulation	Article 22(1) of the EB Regulation
Responsibility	all TSOs	all TSOs performing the reserve replacement (RR) process (pursuant to Part IV of Commission Regulation (EU) 2017/1485)	all TSOs	all TSOs

In 2019, EirGrid and SONI mapped the SEM balancing processes to EU standard products in the Synchronous Area Operational Agreement (SAOA) and LFC Block Operational Agreement (LFCBOA) as follows:

- mFRR: TOR1 and TOR2
- RR: Replacement Reserves

MARI Updates

MARI Members (29 TSOs)	MARI Observers*
50Hertz Transmission, Amprion, APG, AST, ČEPS, Creos, Elering, ELES, ELIA, Energinet, ESO, Fingrid, HOPS, IPTO, Litgrid, MAVIR, PSE, REE, REN, RTE, SEPS, Statnett, Svenska Kraftnät, Swissgrid, TenneT DE, TenneT NL, Terna, Transelectrica, TransnetBW	EirGrid, EMS, MEPSO, SONI, ENTSO-E

* Ukrenergo is in the process to become observer.

50Hertz,
Amprion,
ČEPS,
TenneT DE,
TransnetBW   APG

| 2022 | 2023 | 2024 | 2025 | Accession |

- Member TSO operational
- Member TSO non-operational
- MARI observer
- Technical readiness

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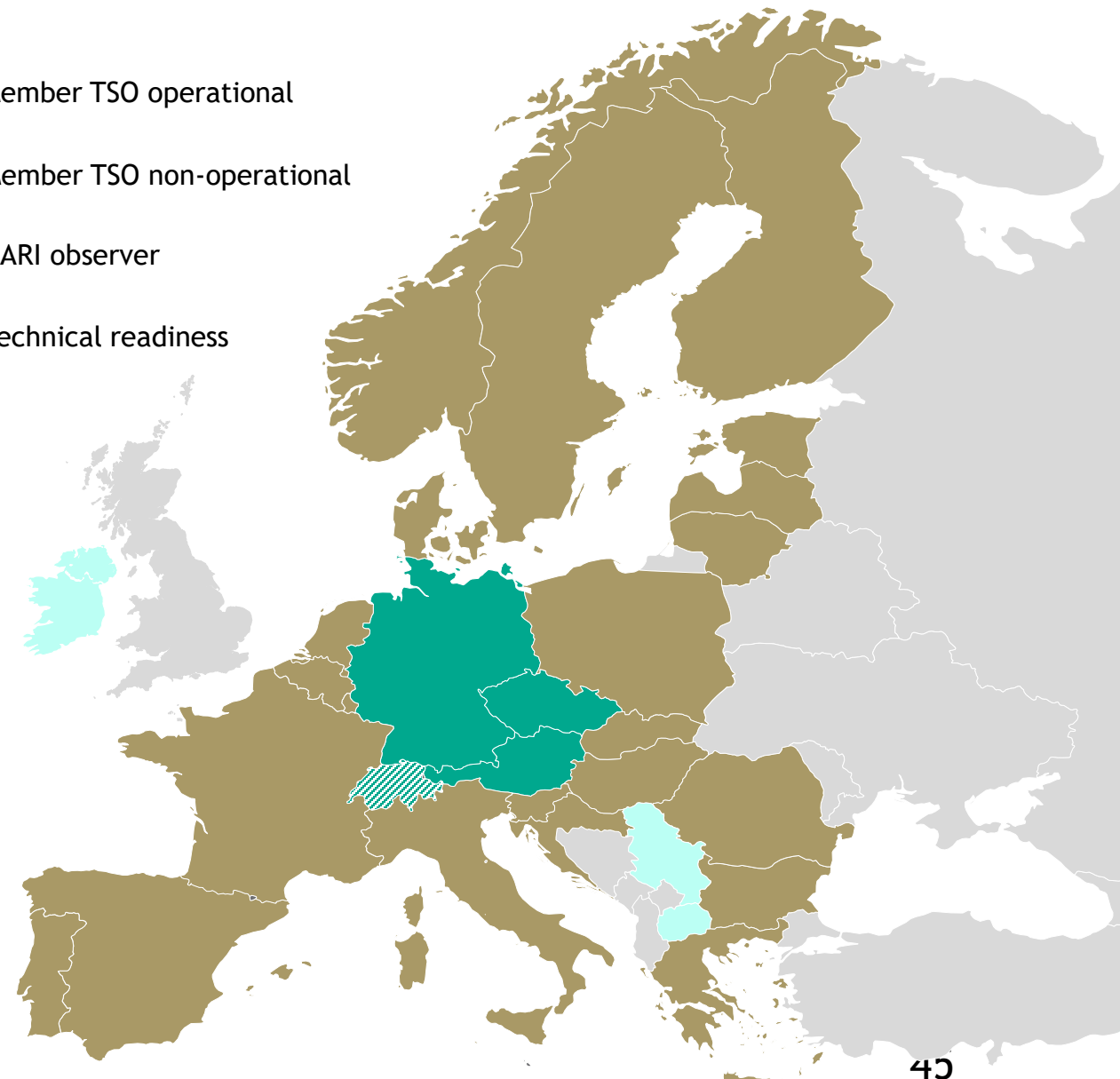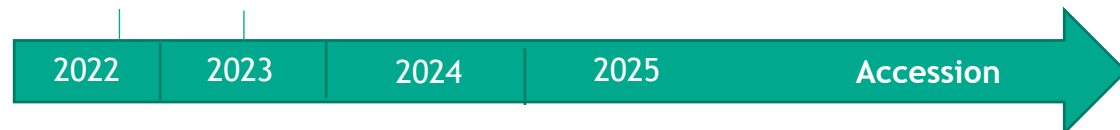
TERRE Updates

TERRE Members

- **Region 1**
  - France (RTE)
  - Italy (TERNA)
  - Portugal (REN)
  - Spain (RE)
  - Switzerland (SG)

- **Region 2**
  - Czech Republic (CEPS)
  - Poland (PSE) (not connected yet)

- **Observers**
  - Hungary (MAVIR)

Project Members

- Germany (Amprion)
- Norway (Statnett)
- Sweden (Svk)

Legend:
- Members
- Observers
- Project members
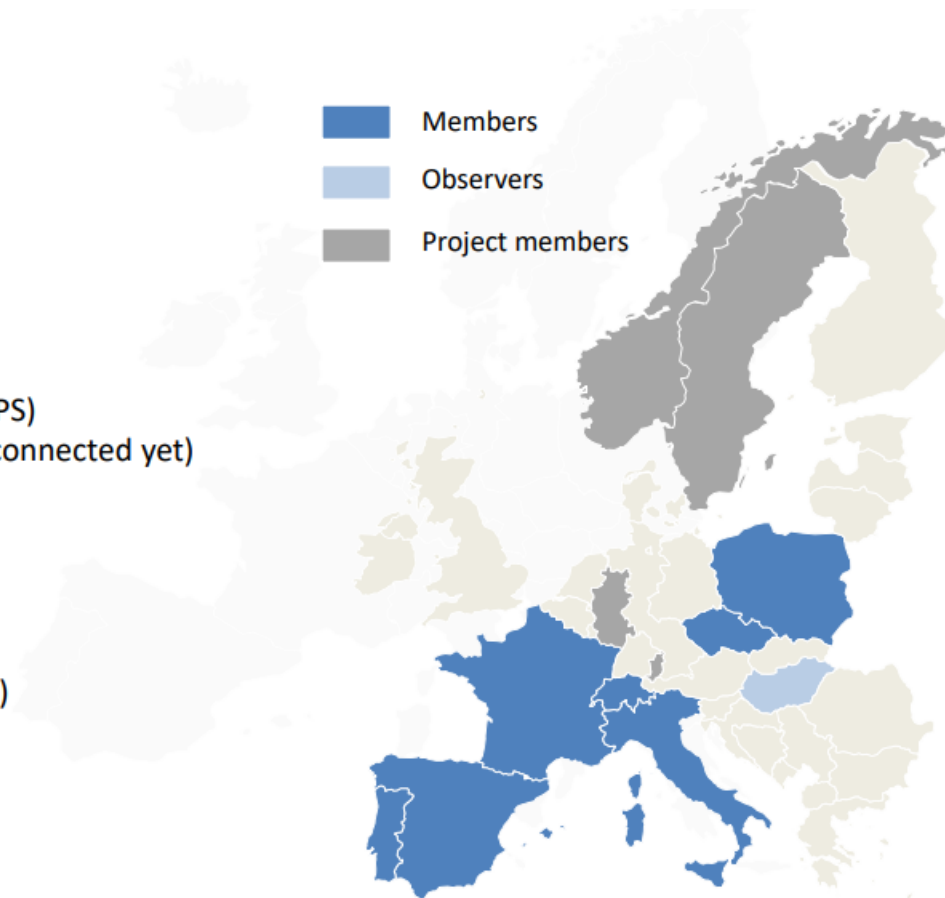
Future of TERRE project:

As of now the RR process consists of 24 daily gates with 24 clearings per day. This design was mainly chosen because, at the time of the introduction of the RR platform, the cross-border scheduling step was 60 minutes on most borders.

The upcoming change of intraday cross-zonal gate closure time (IDGCT) from 60' to 30', as foreseen in Electricity Market Design Regulation, is forcing the end of the TERRE project as the new IDGCT is clearly not compatible with the RR process.

Hence, the TERRE TSOs decided to stop investing into the TERRE platform, which will be gradually decommissioned at the end of 2025.

High-Level Functional Flow : EU Balancing (MARI) & SEM

Objective:

The MARI platform operation can be divided into seven steps. For each step, the stakeholders are identified and whether modification with respect to the current SEM process is needed.
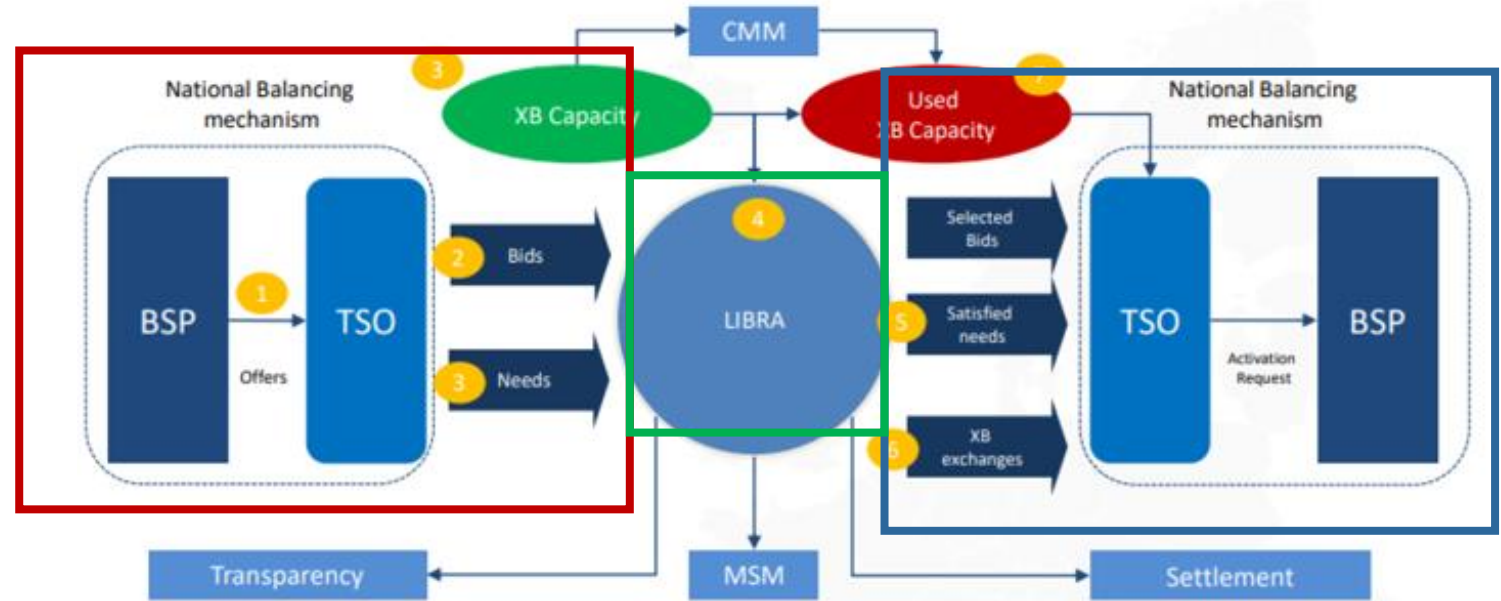
		Steps	Parties Responsible	SEM process Modification Required?
Preparation of SEM MARI Inputs	1	TSO receive bids from BSPs in local market balance area	TSO, Participant	No
	2	Forward of coherent mFRR balancing products to mFRR platform	TSO, MARI	Yes
	3	TSOs communicate their balancing demands and the available XB transmission capacities (ATC)	TSO, CMM(MARI)	Yes
MARI Clearing	4	Optimization of the clearing of balancing demands against BSPs bids	MARI	-
Integration of MARI Outputs	5	Communication of the accepted bids, satisfied demands, and prices	MARI, TSO	Yes
	6	Calculation of the commercial flow between market balancing areas and settlement of the expenditure and revenues	MARI, JAO, TSO, Participants	Yes
	7	The resulting XB schedules and remaining ATC are sent to the TSOs	MARI, TSO	Yes

Approach to Integration

A three-step approach has been taken for integration with MARI, as described below, and as illustrated in the High Level Functional Flow.

A. Preparation and Submission of SEM MARI Inputs
   1) Offer Data (Bid Submission)
   2) Balancing Demand Submission (TSO needs)
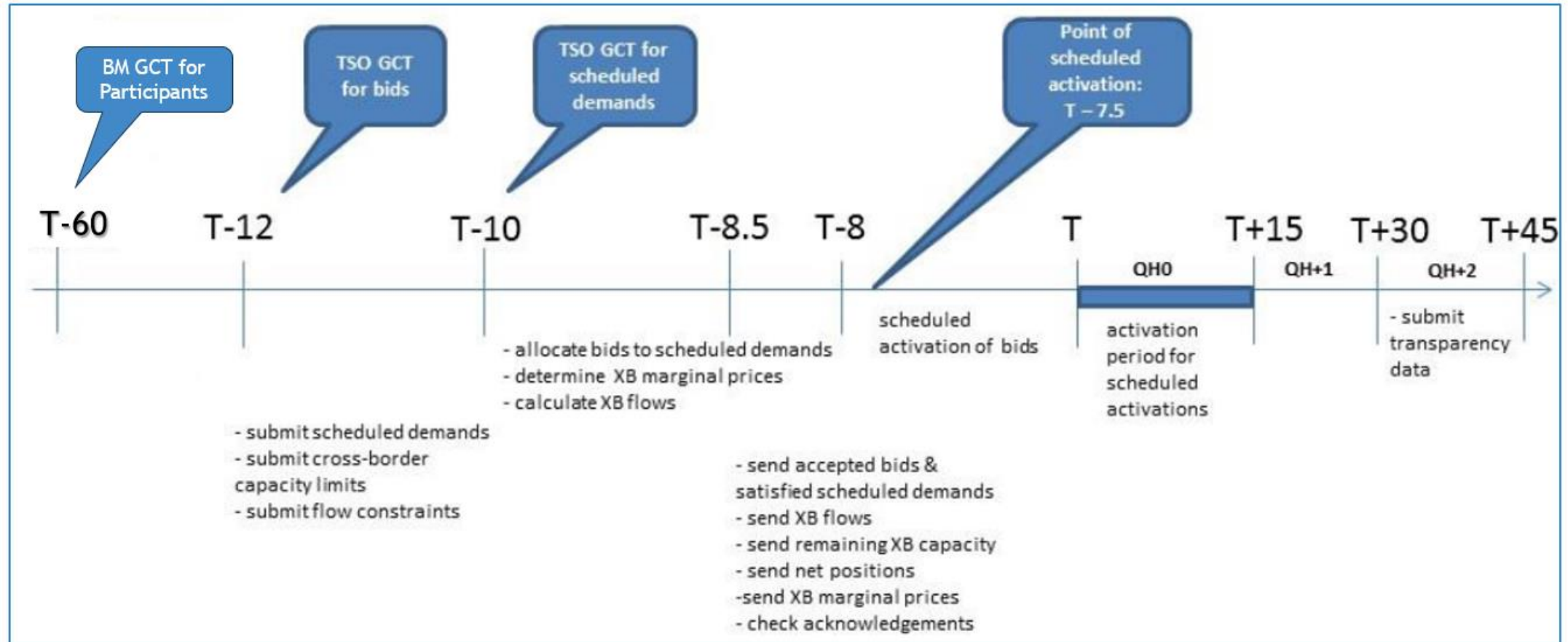   3) Interconnector Cross-Border Capacity Submission
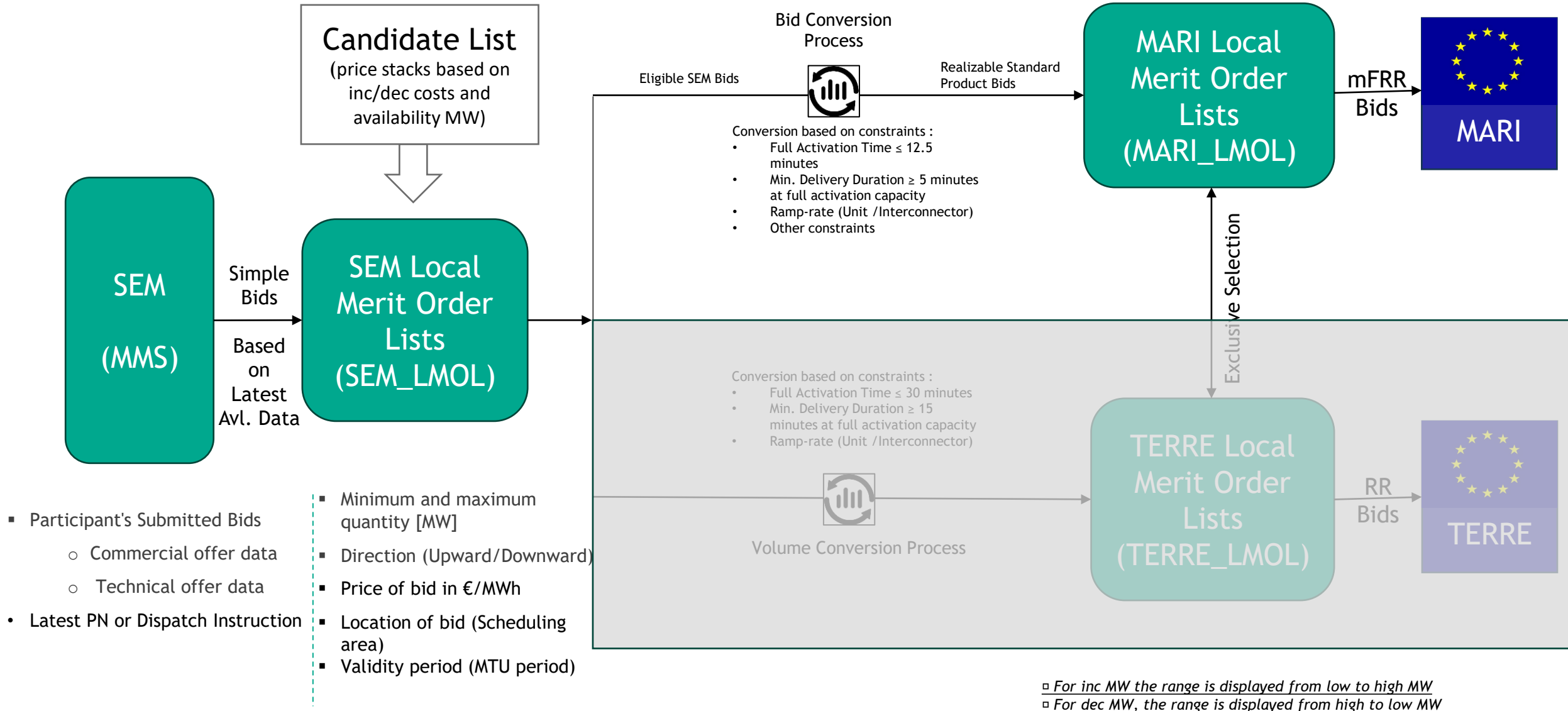
B. MARI Clearing

C. Integration of MARI Outputs
   1) Integration of Accepted Bids (Scheduling & Dispatch)
   2) Imbalance Price Calculation
   3) Imbalance Settlement
   4) Reporting
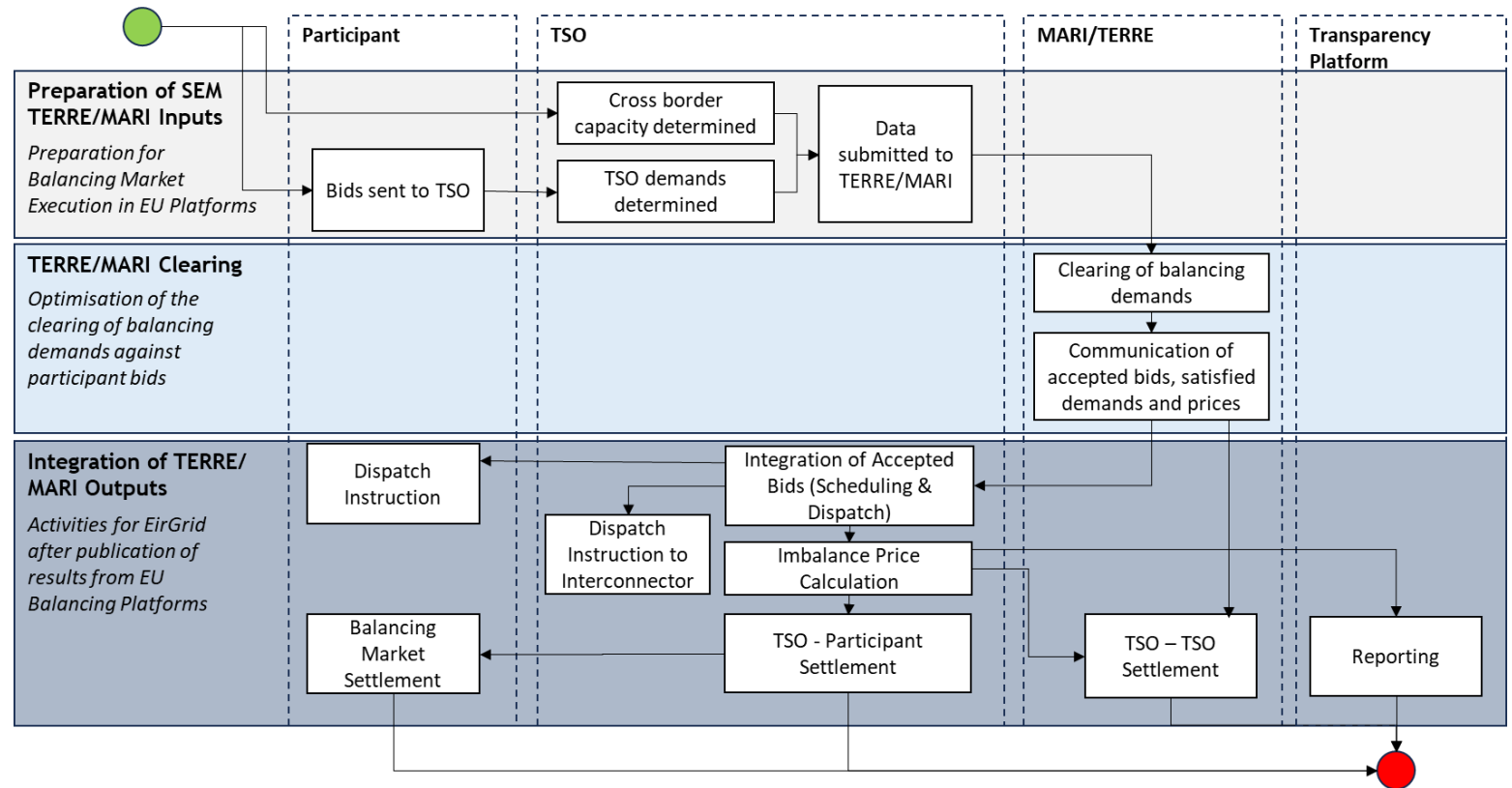
A1. Preparation of SEM MARI Inputs – MARI Timelines

A1. Preparation of SEM MARI Inputs - Offer Data (Bid Submission)

Candidate List
(price stacks based on inc/dec costs and availability MW)

Bid Conversion Process

Eligible SEM Bids

Realizable Standard Product Bids

Conversion based on constraints :
- Full Activation Time ≤ 12.5 minutes
- Min. Delivery Duration ≥ 5 minutes at full activation capacity
- Ramp-rate (Unit /Interconnector)
- Other constraints

MARI Local Merit Order Lists (MARI_LMOL)

mFRR Bids

MARI

SEM (MMS)

Simple Bids

Based on Latest Avl. Data

SEM Local Merit Order Lists (SEM_LMOL)

Exclusive Selection

Conversion based on constraints :
- Full Activation Time ≤ 30 minutes
- Min. Delivery Duration ≥ 15 minutes at full activation capacity
- Ramp-rate (Unit /Interconnector)

Volume Conversion Process

TERRE Local Merit Order Lists (TERRE_LMOL)

RR Bids

TERRE

- Participant's Submitted Bids
  - Commercial offer data
  - Technical offer data
- Latest PN or Dispatch Instruction

- Minimum and maximum quantity [MW]
- Direction (Upward/Downward)
- Price of bid in €/MWh
- Location of bid (Scheduling area)
- Validity period (MTU period)

▫ *For inc MW the range is displayed from low to high MW*
▫ *For dec MW, the range is displayed from high to low MW*

A1.1 Calculation for Sample "Realisable" MW : Bid Conversion

Example : SEM Local Merit Order List (LMOL) of Station-A for MARI_LMOL
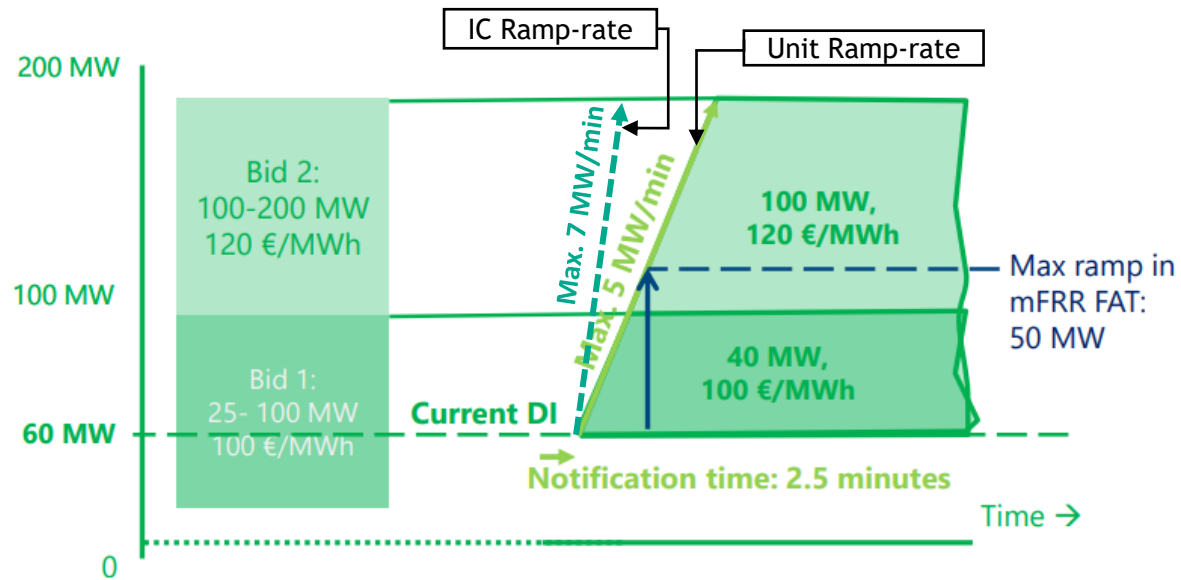
- For this example, it is assumed that Station A is dispatched at 60 MW and is technically able to ramp-up with 5 MW/min after a notification cum preparation time of 2.5 minutes. IC Ramp rate considered as 7 MW/min.

- The volume conversion formula:

  [(MARI's Full Activation Time – Station's Preparation period) x Realisable Ramp-rate]
  Where, the Realisable Ramp-rate = Min(Unit Ramp-rate , IC Ramp-rate)

- Accordingly, within the Full Activation Time (FAT) of mFRR standard product of 12.5 minutes, this station can ramp-up (12.5 – 2.5) x 5 MW/min = 50 MW.

- The allocation of this 50 MW to the bids in the LMOL starts with the cheapest bid. This bid can be sent to MARI with its full availability of 40 MW.

- Considering that the next cheapest bid of this station shall consider the already activated 40 MW, only 10 MW is left for this bid for sending to MARI.

SEM Local Merit Order List (LMOL)					
Station	Max Available [MW]	Current DI [MW]	MW Range		Cost [€/MWh]
			From	To	
A	40	60	25	100	100
..	..	..	..	..	..
A	100	60	100	200	120

MARI_LMOL	
Volume Realisable [MW]	Price [€/MWh]
40	100
..	..
10	120

A.2) Preparation of SEM MARI Inputs :
Balancing Demand Submission (TSO needs)

Forecast Imbalance Calculation

Demand forecast

RES forecast
(Excluding NPDR)

Physical Notifications
or Dispatch instruction

Cross border schedule
(incl. SEM – GB trade)

Other inputs from EMS/Other
system as necessary

① Σ

② **Filter**
e.g.
Dead band;
Reduction by x%;
Maximized;
Max. difference with
previous value.

③ **Manual
overrule
possibility**
for volumes and
timing of mFRR and
RR need

④ TERRE
or MARI
platform

① Based on data in EMS and MMS, the need is calculated
automatically for next quarter (for MARI) and next hour (for
TERRE) based on a formula: PNs (or Dis) - Forecast Demand
+ Renewable Forecast + Cross-Border Flow

② The result is filtered by e.g., a dead band (only needs above x
MW), reduction by x%, maximized to x MW or has a relation
to previous or next values

③ It should be possible for the dispatcher to manually
overrule the need for mFRR and RR, both with respect to
the required volumes and the timing.

④ The result is sent to MARI (every 15 minutes, 10 minutes
before the quarter) and TERRE (every hour, 40 minutes
before the hour)

A.3) Preparation of SEM MARI Inputs : IC Capacity Submission

The determination of the capacity on Celtic that is available for MARI is based on the remaining capacity after the previous markets (Day Ahead, Intraday and bilateral trades). The allowed ramping caused by MARI exchange shall also take into account the ramping of the previous markets.
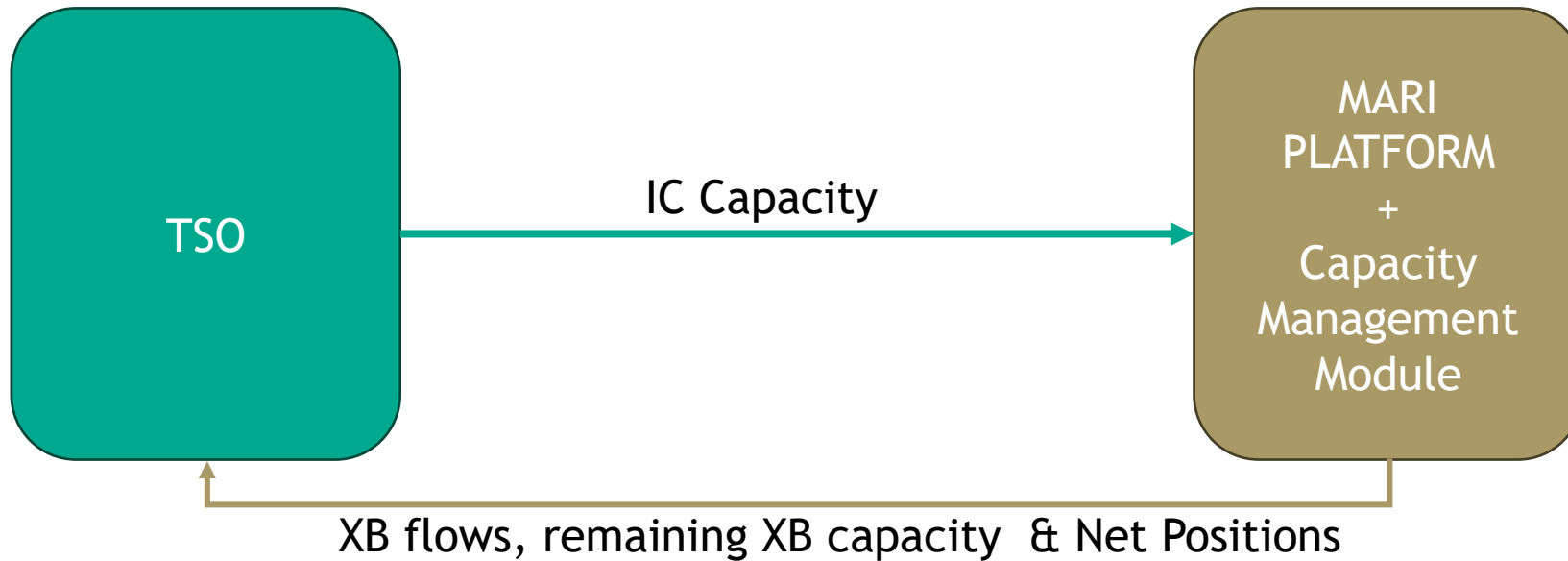
B. MARI Clearing

Section B considers the MARI clearing process through Platform Activation Optimization Function (AOF).

Sample algorithm process for MARI AOF :

- The implementation of market rules (constraints) in MARI AOF.
- The optimization process of MARI AOF by introducing the different steps of the optimization,
- Consideration of Specific market situations
- Finally, the MARI AOF safeguard functionalities

MARI AOF overall objectives are the followings:
1. Economic surplus maximization
2. mFRR cross border flow minimization

This part refers to the Platform operations and we do not envisage any interaction with SEM.

C.1) Integration of MARI Outputs : Integration of Accepted Bids (Scheduling & Dispatch)

Market / EU Market: Order Book Closure occurs, cross border trades are determined — Balancing Platform (MARI)

Balancing Market / ICMP: Calculates ICRP (Interconnector Reference Programme) — *Activated bids* — Determines NTC (Net Trade Capacity) value

Balancing Market / MMS: ICRP is used as PN for long/short term scheduling — Cross Border Auction Results received and utilised in IP — NTC is seen as the units available in MMS

ICRP Validation
ICRP Implementation

Balancing Market / EMS: NCT value declared for interconnector

Interconnector / CELTIC: Dispatched to CELTIC

Through MISTL pushes from MMS

Settlement / CSB: Receives ICRPs, instruction profiles and operational data — Calculates interconnector charges/payments and issues invoices to finance

Activated Bid Means?

- Either the same bids sent to the platform If available
- Otherwise in case SEM has already used those bids in local balancing, then similar volume with next cheapest available bids on the merit order will be used.

C.2) Integration of MARI Outputs : Imbalance Price Calculation

MARI

Activated volume
(Upward/Downward)

One price for upward mFRR(SA)
One price for downward mFRR(SA)

TERRE

Activated volume
(Upward/Downward)

One price for upward RR
One price for downward RR

Through ICMP ➡ MMS
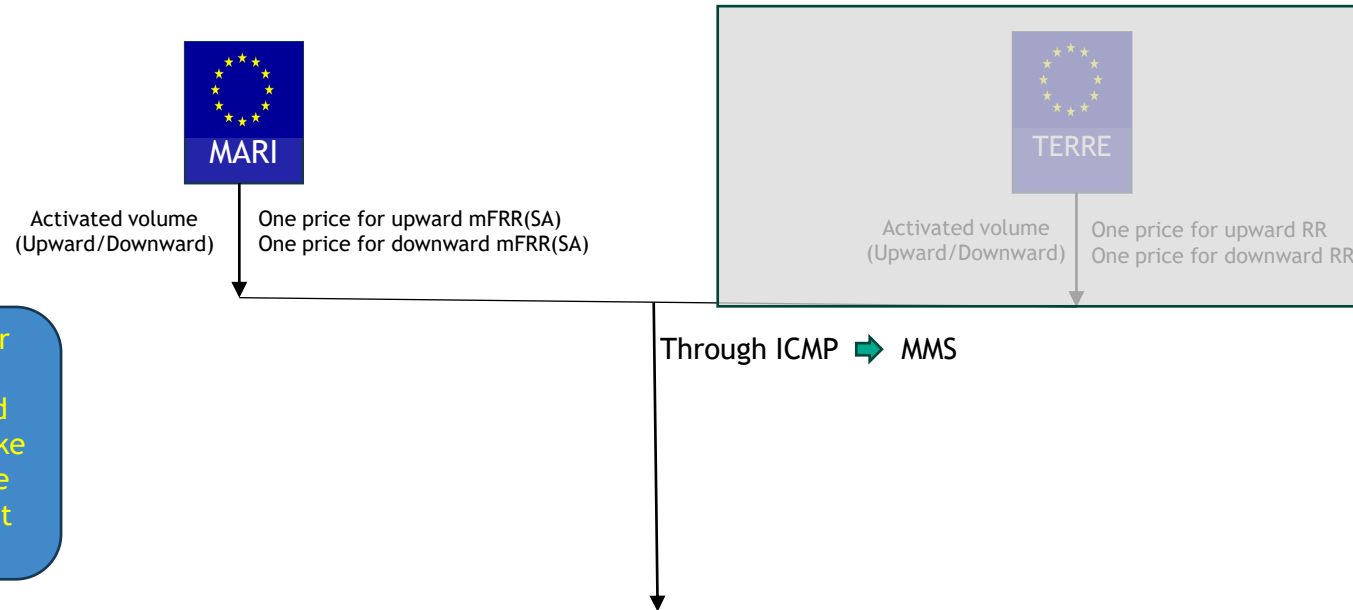
Legal Requirement: As per Article 30 of EBGL, MARI prices must be considered for Imbalance Pricing (unlike SEM-GB Border, where the activations are flagged out of imbalance pricing)

SEM Need = 0 (Export to MARI) or SEM Need > 0 (Import from MARI)

The solution shall provide input to the imbalance price calculation for flagging/tagging based on the activated bid price irrespective of the defined purpose[1] of the TSO need. The NIV tagging shall have the following principal in consideration, while not SO flagging the actions on Celtic IC (unlike SEM-GB Border) for MARI:

- If the MARI **activated bid price > local SEM bids**, then it is always flagged as **Non-Energy Action** and thereby no impact on the PIMB.
- If the MARI **activated bid price < local SEM bids**, then it is always flagged as **Energy Action** and operational data input given to CSB via MMS.

1 Note: An assumption is to be made to note that the actions taken by MARI are for energy actions to manage energy, and therefore it can be assumed that its output is with the goal to manage energy (similar approach to EUPHEMIA) for the participating TSO irrespective of the defined purpose of the needs

C.3) Integration of MARI Outputs : Imbalance Settlement (Celtic IC Example)

Assuming EirGrid/SONI submits mFRR Balancing Needs to platform, which is to be fulfilled by Bids submitted by Balancing Service Providers in France as determined by the respective platform.

Note: There is no direct interactions between EirGrid/SONI/SEMO & BSPs in France. Similarly, when RTE's need fulfilled by the SEMO participants in that case there will be no direct interactions between RTE and SEMO Participants
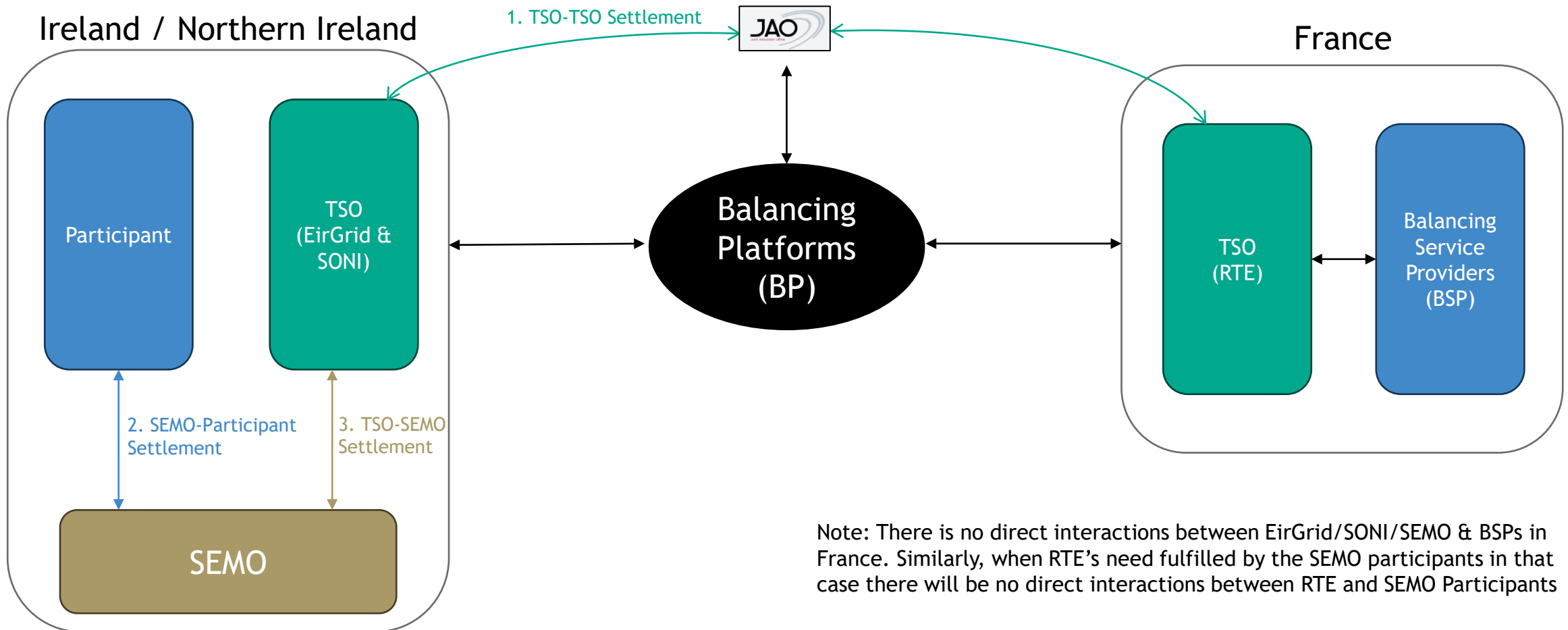
C.3) Integration of MARI Outputs : Imbalance Settlement

TSO-TSO Invoicing[1] & Settlement via JAO: Timelines & Process for MARI

Process	Point in time	Party responsible	Notification To
• The Energy Account Market Document is submitted by the balancing platforms to the Invoicing Services Service Provider	M+1CD	CSP	Invoicing Services Service Provider (JAO)
• Validation of the settlement data received from the BPs and issuance of the invoices	MARI: Before M + 10WD	Invoicing Services Service Provider (JAO)	TSOs
• Payments from TSOs to the Invoicing Services Service Provider	Not later than 30CD of the date of issue	TSOs	Invoicing Services Service Provider (JAO)
• Payments form Invoicing Services Service Provider to the TSOs	Not later than 32CD of the date of issue	Invoicing Services Service Provider (JAO)	TSOs
• Correction of errors in invoices	up to 36 months after the month of delivery	Invoicing Services Service Provider (JAO)	TSOs

Note- CD: Calendar Day, WD: Wording Day, CSP: Common Service Provider (e.g. host TSOs for platforms)

[1] – TSO to select out of the multiple invoicing scenarios available e.g. per product, per (+)/(-) price amount, aggregation of all product/price etc.

C.4) Integration of MARI Outputs : Reporting

- The data that each TSO must send to the ETP is stipulated in Article 12.5 of the [Balancing Guideline](#):

  - *No later than two years after entry into force of this Regulation, each TSO shall publish the information pursuant to paragraph 3 in a commonly agreed harmonised format at least through the information transparency platform established pursuant to Article 3 of Regulation (EU) No 543/2013. No later than four months after the entry into force of this Regulation, ENTSO-E shall update the manual of procedures as referred to Article 5 of Regulation (EU) No 543/2013 and submit it to the Agency for its opinion, which the Agency shall provide within two months.*

  - Article 12.3 of the EBGL lists the following information:

    - on the current system balance of its scheduling area or scheduling areas

    - on all balancing energy bids from its scheduling area or scheduling areas, anonymised where necessary, no later than 30 min after the end of the relevant market time unit

    - on whether the balancing energy bid was converted from a specific product or from an integrated scheduling process no later than 30 min after the end of the relevant market time unit

    - regarding how balancing energy bids from specific products or from integrated scheduling process have been converted into balancing energy bids from standard products no later than 30 min after the end of the relevant market time unit

    - aggregated information on balancing energy bids no later than 30 min after the end of the relevant market time unit

    - information on offered volumes as well as offered prices of procured balancing capacity, anonymised where necessary, no later than one hour after the results of the procurement have been notified to the bidders

MARI: Day in the life

Preparation of SEM MARI Inputs

Submit local Balancing Provider (Unit) bids/offers

Calculate / submit cross border capacity

Generate SEM_LMOL from TSO merit orders

Generate MARI (mFRR) subset of SEM_LMOL

Calculate TSO Need

MARI processing

Optimised clearing of balancing demands against MARI LMOL bids available

*Activated bids are reflected in updated ICRPs, dispatched using the relevant Units and are included in imbalance pricing -> **However, no change in the ICRP process as such other than revised frequency of generating IC schedules***

Settlement is performed per existing TSO-TSO, TSO-SEMO and SEMO-Participant processes

Integration of MARI outputs

Receive MARI activated bids

Update Interconnector Reference Programme (ICRP)

Dispatch to meet revised ICRP

TSO-TSO settlement (via JAO)

Flag MARI activated bids (if > available SEM bids)

TSO-SEMO settlement (BM)

Include activated bids in Imbalance Pricing

SEMO-Participant settlement (BM)
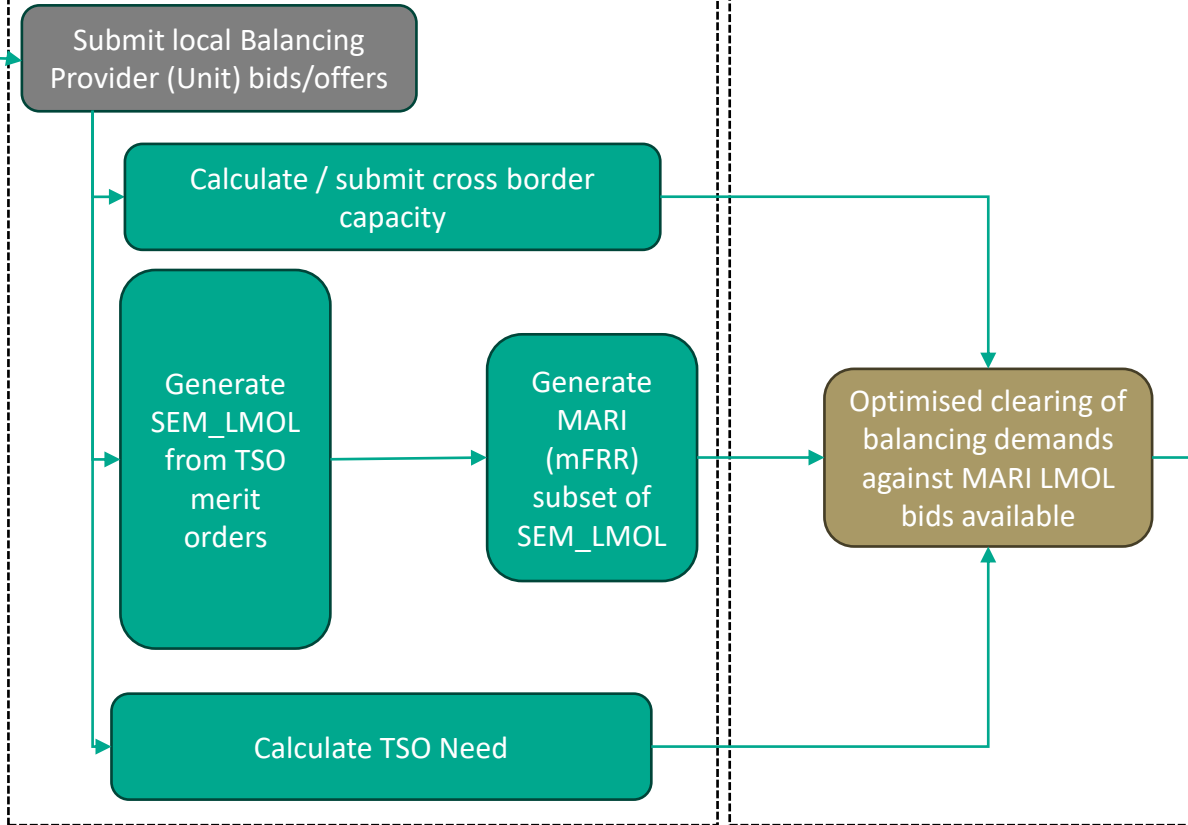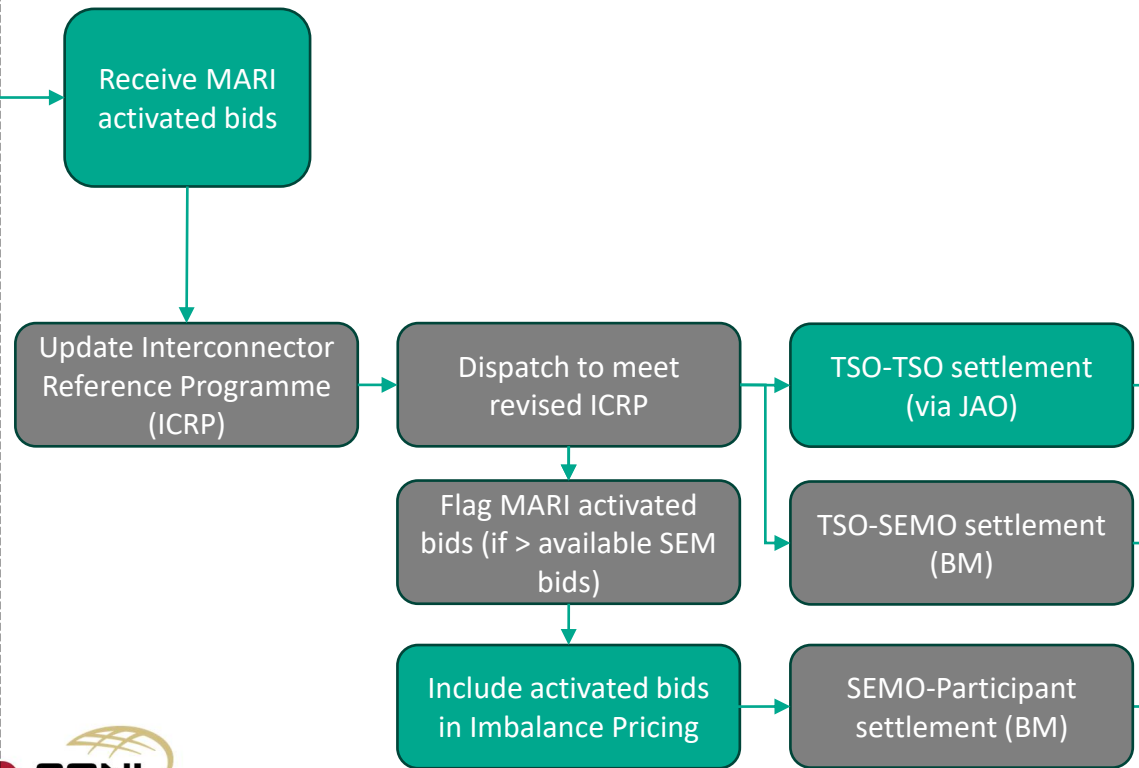
(a) *Bids relevant for MARI activation timescales are derived from a SEM "Local Merit Order List (LMOL)", derived from the TSO Merit Orders*
(b) *TSOs provide available cross border capacities*
(c) *TSOs calculate and submit its needs for mFRR (MARI)*

MARI processes determine (using LMOL information, needs and x-b capacities from all TSOs) the optimal set of bid activations.
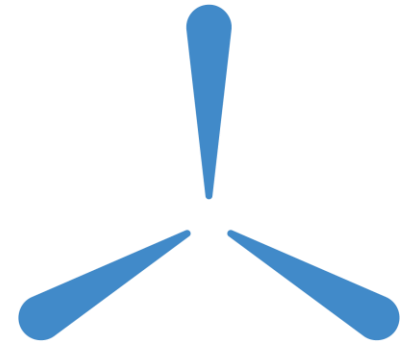
EirGrid   semo Single Electricity Market Operator   SONI

SDP – Balancing Market Bidding

Agenda

Physical Notifications
- PN Submission Format
  - A01 and A04
- PN Validation Logic
- Submission Logic

Commercial Offer Data
- COD Submission Types
- COD Validation Logic
- Application of COD in Pricing and Settlement.
- Recap on Gate Closure

Validation Technical Offer Data
- Overview of VTOD
- VTOD Data Change
- VTOD Set Selection

BMI Live Demo
- Walkthrough of BMI:
- Default COD
- Complex COD
- Physical Notifications
- TOD Set Selection
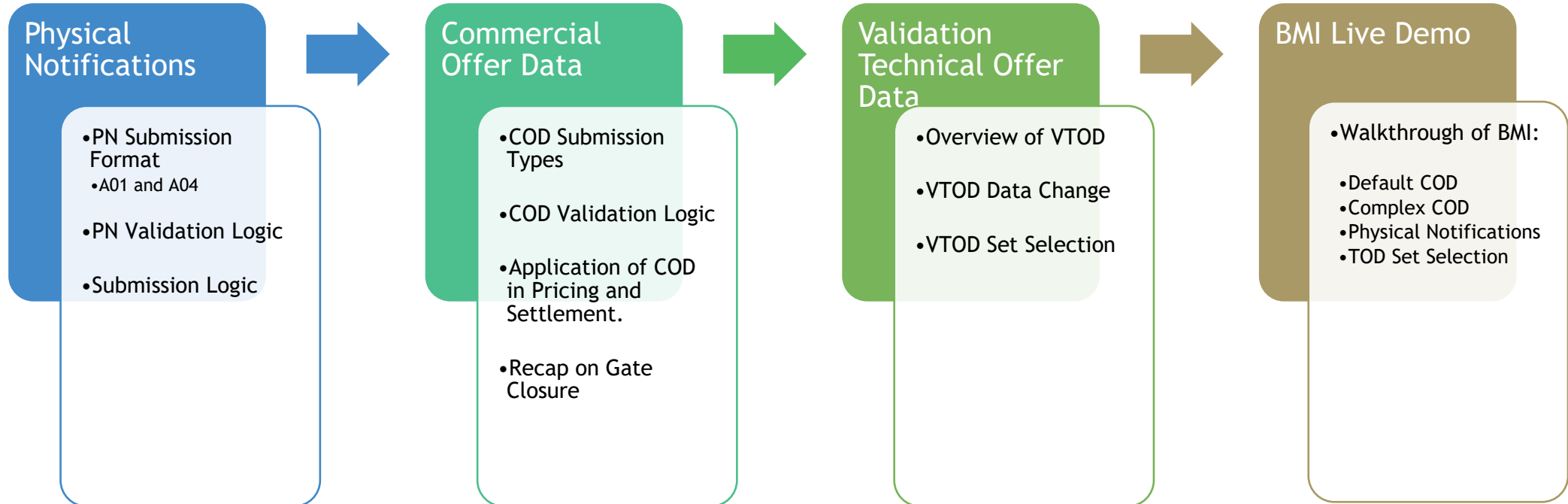
Physical Notifications

- Physical Notifications (PNs) are MW generation output (or consumption) profiles;

- They are used as the starting point for the Scheduling and Dispatch process:
  - Balancing Market cost is incurred if dispatch unit away from PN, dispatching to PN is "free", optimise to minimise cost of dispatching away from PN for energy and non-energy balancing requirements.

- They are also used as starting point for pricing and settlement processes:
  - Differences between dispatch and latest PN submission at Gate Closure 2 are considered balancing market actions.

- Under Test Flag used to reflect agreed test profiles.

Stepwise

Piecewise
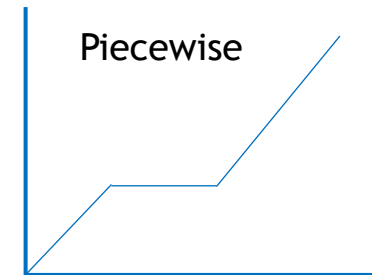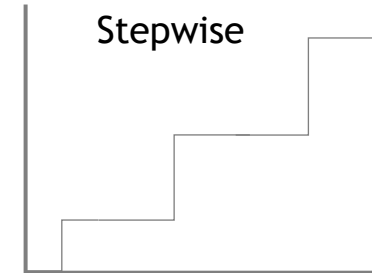
Physical Notifications

- PN needs to reflect the intended output of the unit in the absence of balancing market actions:

- PN needs to be physically feasible to dispatch:
  - Validations in submission process for approval/rejection, and ex-post for compliance, to ensure it is consistent with Technical Offer Data and Registration Data.

- At GC2, PN needs to reflect the final net market trade position:
  - Not validated as part of submission, ex-post market monitoring with some tolerances.

- The priority of the previous two requirements, if they are in conflict, is that the PN should be physically feasible to dispatch:
  - As the start point for scheduling and dispatch, and given that the dispatch profiles which will be compared with the PN profiles will be calculated based on physically feasible VTOD, the PN must be consistent with VTOD;
  - It is then a participant's obligation to ensure that its trades match as closely as possible with this physically feasible operation profile.

Physical Notifications

- Minute-by-minute resolution;

- From time and MW – To time and MW;

- A04 Format:
  - Piecewise Linear ("A04" in Tech Spec, Spot MW values with linear interpolation, format for most units);
  - Existing method used for ESPS units and will continue to be used.
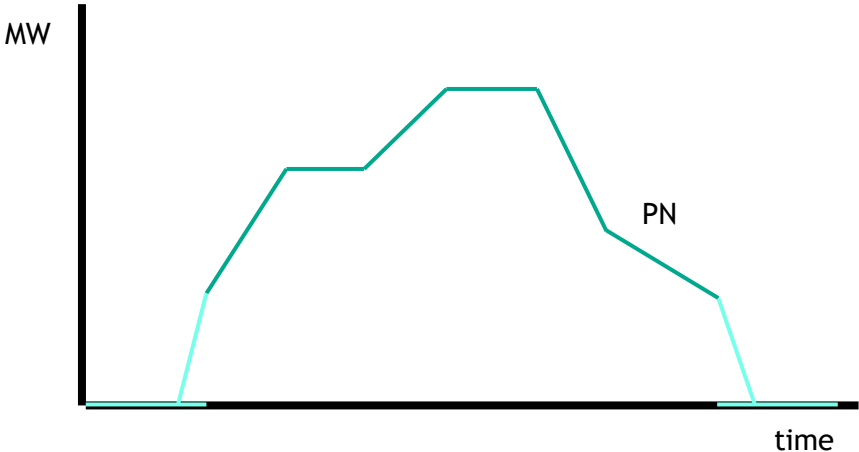
From Date/time	To Date/time	From MW	To MW	Under Test?
03/10/2023 16:45	03/10/2023 17:18	135	300	False
03/10/2023 17:18	03/10/2023 17:35	300	300	False
03/10/2023 17:35	03/10/2023 17:45	300	350	False
...etc.	...etc.	...etc.	...etc.	...etc.
04/10/2023 22:45	04/10/2023 23:00	215	145	False

Physical Notifications

- Minute-by-minute resolution;

- From time and MW – To time and MW;

- A01 Format:
  - Stepwise ("**A01**" in Tech Spec, constant MW values in 15 minute blocks, De-Minimis dispatchable units, and Non-Dispatchable units).
  - NPDR submit A01 Format, PNs previously based off availability for instruction profiling.
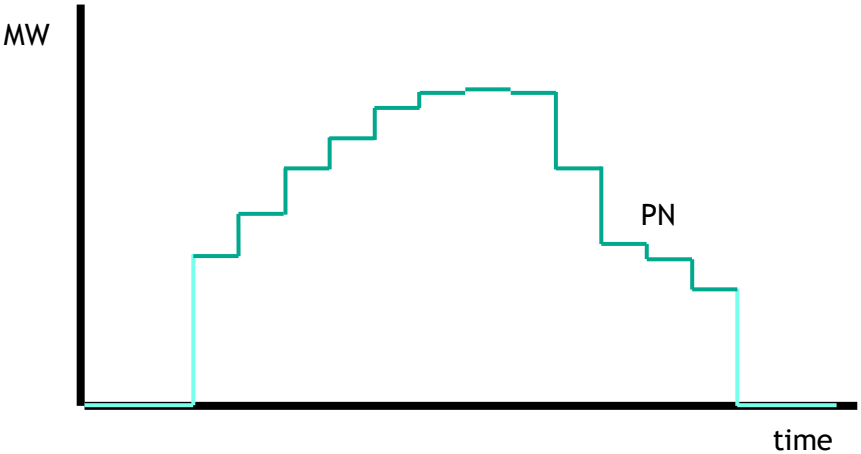
From Date/time	To Date/time	From MW	To MW	Under Test?
03/10/2016 16:45	03/10/2016 17:00	190	190	False
03/10/2016 17:00	03/10/2016 17:15	245	245	False
03/10/2016 17:15	03/10/2016 17:30	299	299	False
03/10/2016 17:30	03/10/2016 17:45	320	320	False
…etc.	…etc.	…etc.	…etc.	…etc.
04/10/2016 22:45	04/10/2016 23:00	180	180	False

Physical Notifications Obligations

- First submission must be Made by 13:30 (Gate Closure 1).

- Checks carried out by Market Operator to ensure Participants are compliant with this obligation. Reminder emails sent out to key contacts by 14:30; if not submitted.

- PN of 0MW must be submitted, even during generation outages.

- Revised submissions can be made up to each rolling Gate Closure 2; based on updated trades made in Intraday Auctions and Intraday Continuous Market.
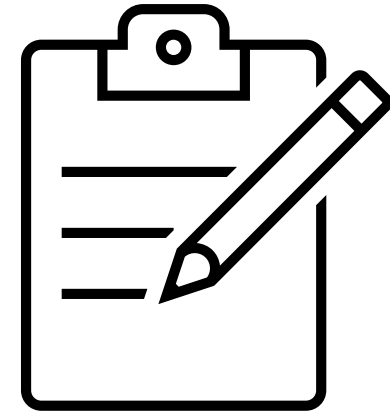
Commercial Offer Data

- COD is data which represents the cost implications for dispatching a unit differently from its market position (defined through its PN submission);

- This data is one of the primary means by which a unit can interact with the Balancing Market, influencing its schedule, the imbalance price, and its settlement amounts;

- There are three COD submission types, in two format types:

  - Default Data (also known as Standing Offer Data):
    - Complex Bid Offer Data format, mandatory, initially submitted as part of registration.
  - Trading Day Specific data:
    - Complex Bid Offer Data format, optional.
  - Trading Period Specific data:
    - Simple Bid Offer Data format, optional.

Default Commercial Offer Data

Default Commercial Offer Data is mandatory to submit in the Balancing Market. It is there to ensure market continuity and mitigate risk for the participant in the event they are unable to submit daily COD.

> ### _Key Points_
>
> 1. It can only be updated for a date 19 days in the future. Daily COD must be submitted for all dates in between.
>
> 2. Default data is Complex COD, contains marginal costs plus fixed costs.
>
> 3. Participant obligation to ensure it is reviewed at least once per Quarter (TSC D.3.3)
>   - ✓ Compliance with BMCoP/BCOP.
>   - ✓ Ensures COD is cost reflective, in the event of non-submission of daily Complex or Simple COD.
>
> 4. Can be entered as a single entry for all dates, or calendar day specific.

Default Commercial Offer Data

- Standing Offer Data for COD has a Day Type Parameter that identifies the calendar days for which the data will apply:

  - Identifies values of SUN, MON, TUE, WED, THU, FRI, SAT, or ALL;

  - All Generators must have one SOD set with an "ALL" Day Type, and may submit multiple other default COD sets with other Day Types which would be selected as default data ahead of the "ALL" SOD set on those days;

  - Standing Offer Data with an "ALL" Day Type cannot have an expiry date, but SOD with other Day Types can have an expiry date after which the Market Operator shall not utilise the SOD set as default data

Commercial Offer Data

Complex COD

- 10 Inc & Dec PQ Pairs
- Start Costs
- No Load Costs
- Subject to BCOP

Simple COD

- 10 Inc & Dec PQ Pairs
- Not subject to BCOP

Price (P)

Monotonically increasing

Incremental PQ Pairs

Decremental PQ Pairs
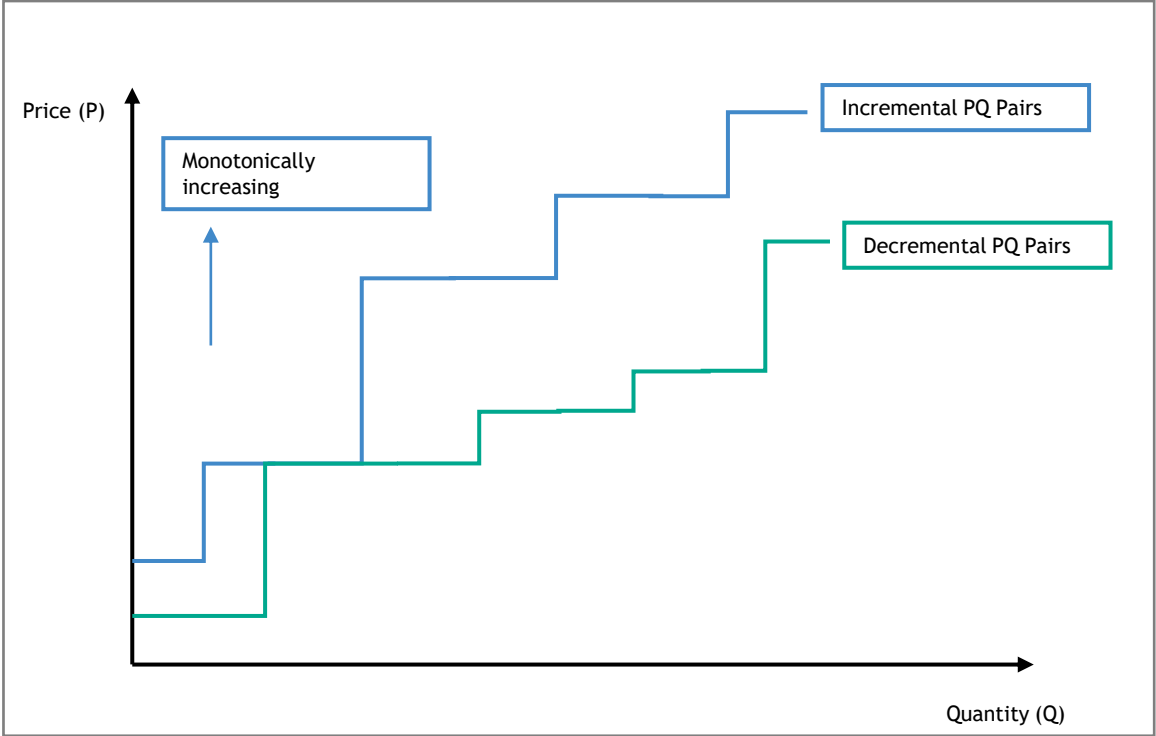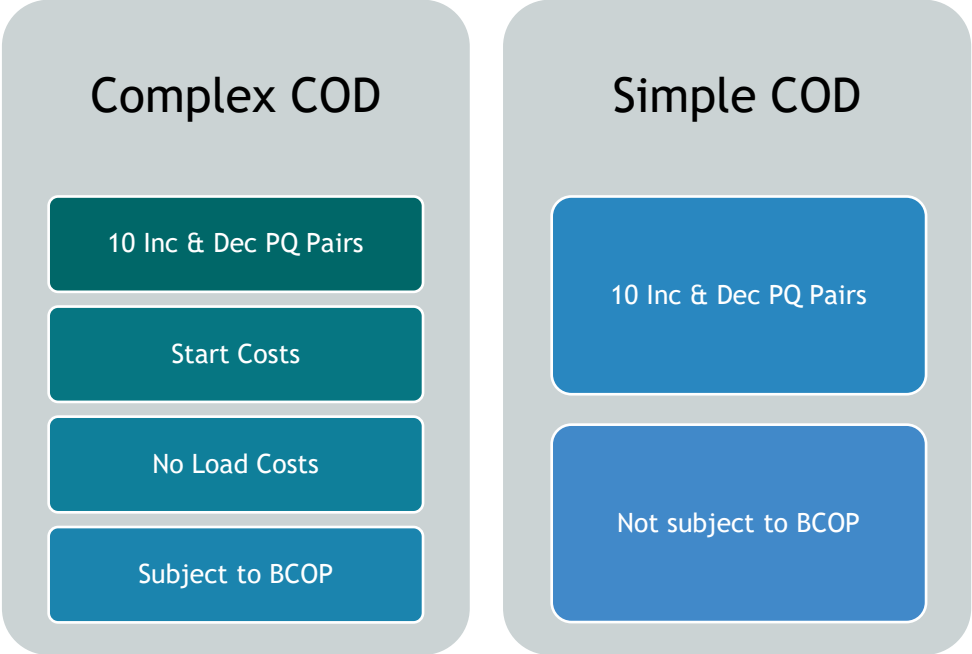
Quantity (Q)

✓ The quantities submitted for each curve are different, but for the same output range the price in the Dec curve is always less than or equal to that of the Inc curve.

✓ Each curve is used for considering different situations: Inc prices for increasing power output above PN, Dec prices for decreasing power output below PN.

Commercial Offer Data

- Prices should generally be positive in both Inc and Dec curve, but are allowed to be negative:

  - Incs are positive quantities (Accepted Offer Quantities), Decs are negative quantities (Accepted Bid Quantities);
  - Positive price in Inc curve: price unit wants to be paid to generate more. Negative price in Inc curve: price unit is willing to pay to generate more;
  - Positive price in Dec curve: price unit is willing to pay to generate less. Negative price in Dec curve: price unit wants to be paid to generate less.

- Prices must be greater than or equal to Price Floor, and less than or equal to Price Cap – 2023/2024:

  - PCAP = 18,577€/MWh;
  - PFLOOR = -1,000€/MWh.

Commercial Offer Data

Data Type	NPDR Validations		ESPS Validations	
10 Inc & Dec PQ Pairs	🟢	Must be monotonically increasing	🟢	Must be monotonically increasing
Start Costs (Hot, Warm Cold)	🟢	Mandatory, must be equal €0	🟢	Mandatory, must be equal €0
No Load Costs	🟢	Mandatory, must be equal €0	🟢	Mandatory, must be equal €0
Operational Max Storage Capacity	🔴	Not Applicable	🟢	Optional, must be >=0 and <= Registered Max Storage Capacity If blank, Registered Max Storage value will be used
Operational Min Storage Capacity	🔴	Not Applicable	🟢	Optional, must be >=0 and >= Registered Min Storage Capacity If blank, Registered Min Storage value will be used

Note: See updated ISEM Technical Specification (ITS 9.7) for further details.

Commercial Offer Data (Forecast Element)

Data Type	NPDR Validations	ESPS Validations
Maximum MW	🟢 Mandatory, must be >= 0	🟢 Mandatory, must be >= 0
Minimum MW	🟢 Mandatory, must be >= 0	🟢 Mandatory, must be equal 0
Minimum Output MW	🟢 Mandatory, must be equal 0	🟢 Mandatory, must be <= 0

TOD New Fields

Data Type	NPDR Validations	ESPS Validations
Storage Cycle Efficiency	🔴 Field not applicable	🟢 % must be between 0 to 100.00

Note: See updated ISEM Technical Specification (ITS 9.7) for further details.

Commercial Offer Data

	Complex Bid Offer Data	Simple Bid Offer Data
Mandatory?	Yes (default data in registration)	No
Format	Single Start Up Cost per Warmth State (Hot / Warm / Cold) (€ or £) Single No Load Cost (€/hr or £/hr) 10 part Inc and 10 part Dec Price / Quantity Pair curves (MW and €/MWh or £/MWh)	10 part Inc and 10 part Dec Price / Quantity Pair curves in MW and €/MWh or £/MWh
Timeframe covered in submission	Trading Day	Imbalance Settlement Period
Timeframe covered in resubmission	All open Imbalance Settlement Periods for the relevant Trading Day after time of resubmission	Imbalance Settlement Period if still open at time of resubmission
Balancing Market Principles Code of Practice	Applies	Does not apply
Treatment of Fixed Costs	Explicitly submitted as separate data	Implicitly in prices submitted
Use in Scheduling and Dispatch	For Unit Commitment decisions, and Economic Dispatch decisions if no Simple data submitted	For Economic Dispatch decisions
Use in Imbalance Pricing	Yes, used in Pricing	Yes, used in Pricing
Use in Imbalance Settlement	Yes, used in Settlement	Yes, used in Settlement

Commercial Offer Data Back Up Rules

COD Type
- Complex

→

Primary
- Use Trading Day specific Complex COD

→

First Back Up
- Use Default Complex COD

COD Type
- Simple

→

Primary
- Use Trading Period Specific Simple COD

→

First Back Up
- Use Inc/Dec Trading Period Specific Complex COD

→

Second Back Up
- Use Inc/Dec Trading Period Specific Default COD
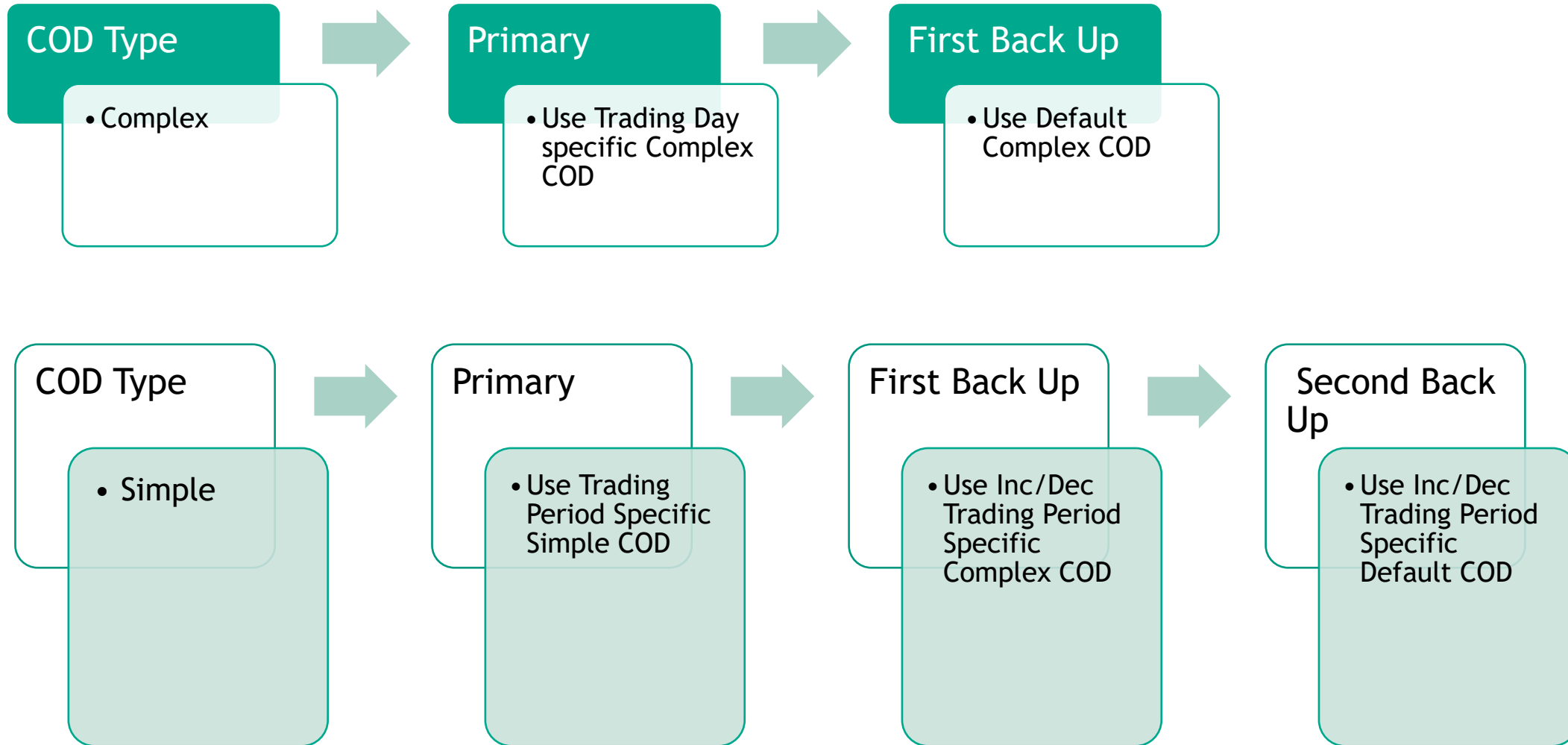
Commercial Offer Data

- Which set of COD is used for pricing and settlement is based on:

    - The timing of the Balancing Market actions taken;

    - What formats of COD are submitted; and

    - The reason for which the action was taken (energy vs non-energy) – this only influences the COD used for settlement, not for pricing.

Application of Commercial Offer Data

Application of Commercial Offer Data is different between Settlement and Pricing.

1. Timing of the Bid Offer Acceptance relative to Gate Closure.

2. Whether or not a TSO action is categorised as Energy/Non-Energy.

Note: Covered under F.3.3 of the TSC.

Imbalance Pricing

- **Complex COD** applied to PBOA = Acceptance time before Gate Closure 2

- **Simple COD** applied to all PBOA = Acceptance time after Gate Closure 2

Imbalance Settlement

- **Complex COD** applied to PBOA = Acceptance time before Gate Closure 2 **OR** action is non-energy.

- **Simple COD** applied to all PBOA = Acceptance time after Gate Closure 2 **AND** action is Energy.

- **Note:** If SO Flag < 1 or NIV Tag < 1 for an Imbalance Pricing Period; then action is considered non-energy in Settlement for that Imbalance Settlement Period.

ESPS Non-Energy

Reminder, all ESPS actions will initially be treated as Non-Energy; and will be SO Flagged in Imbalance Pricing.

These units will Settle on Complex COD.

Simple COD will still be used in Imbalance Pricing, where applicable.

Application of Commercial Offer Data

- This figure gives an example of the same COD Price Quantity Pairs applying in multiple periods, and how pricing and Bid Offer Acceptance Quantities could be calculated considering a Final Physical Notification profile (bottom line) and Dispatch Quantity profile (top line);

- The absolute MW quantities submitted (1 to 4) are seen as straight lines representing points on the output range of the unit, covering the whole range. The prices submitted alongside those quantities are applicable for all points below that quantity until the previous quantity. The Bid Offer Acceptance Quantities calculated are split into each PQ band so that the individual price applies.
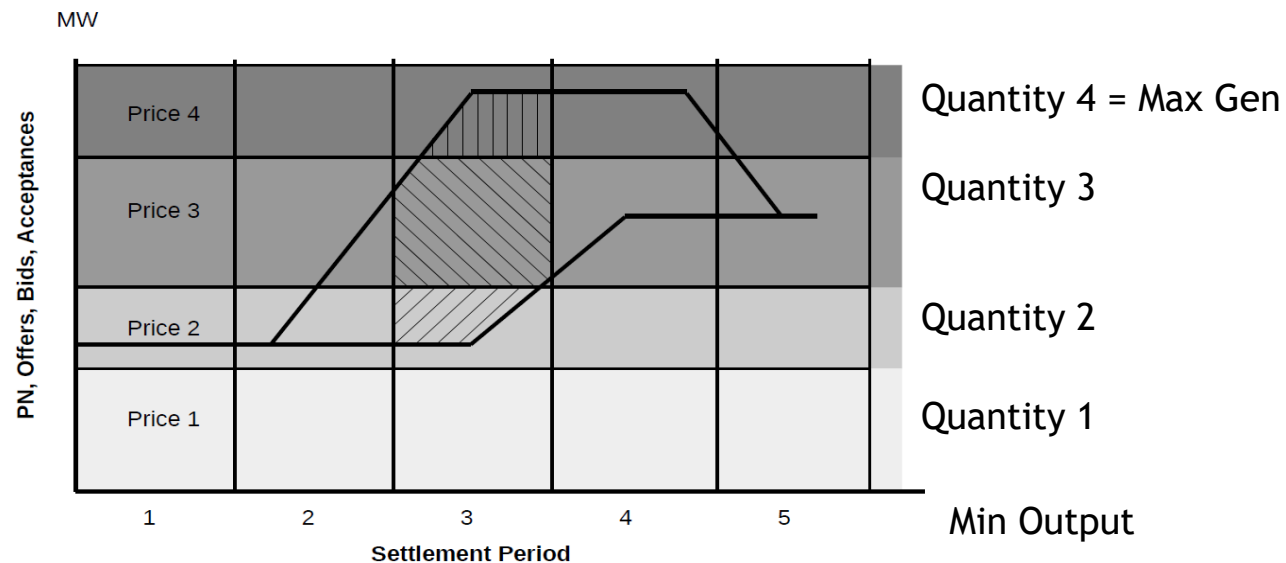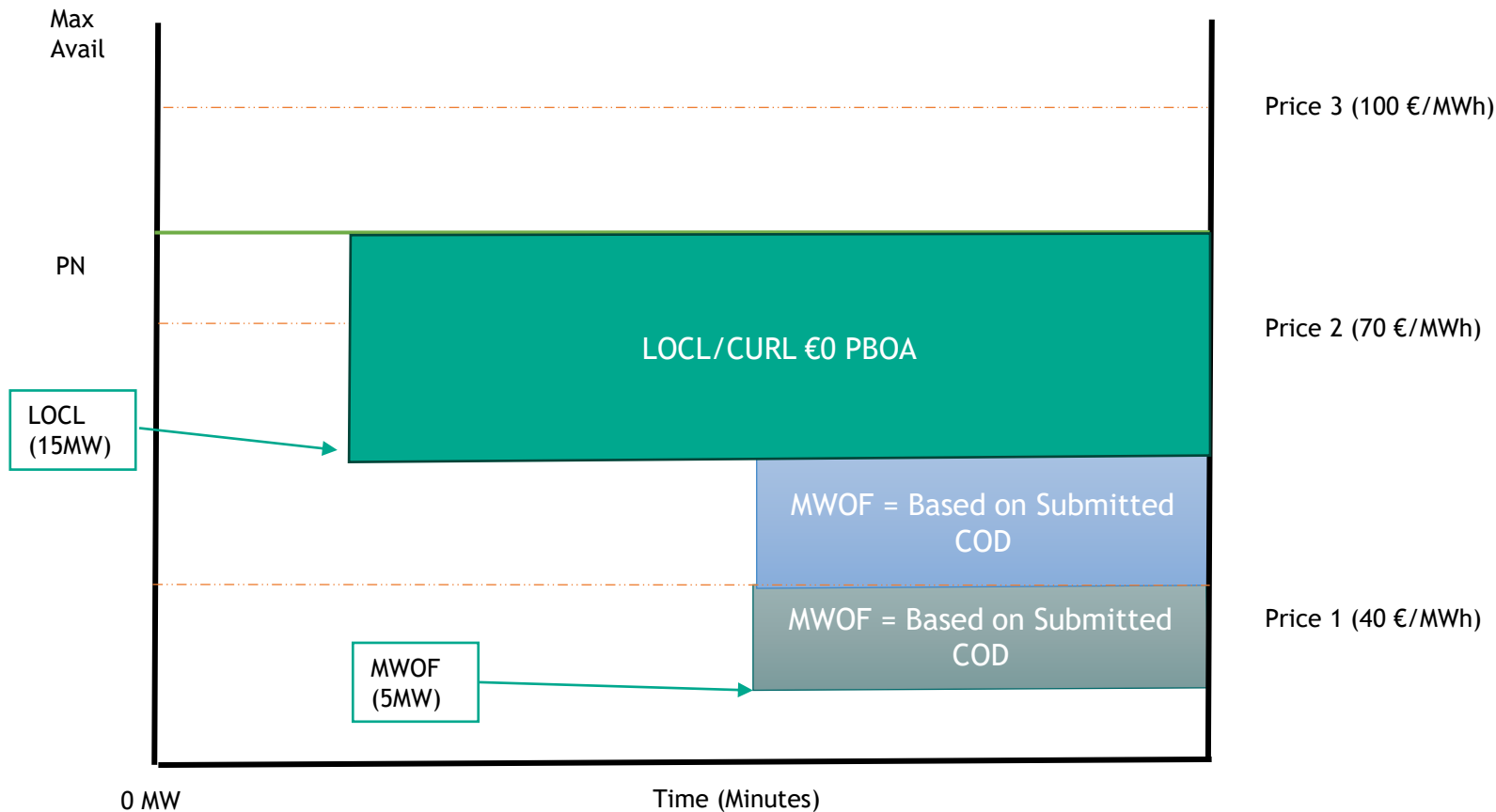
Application of COD (NPDR)
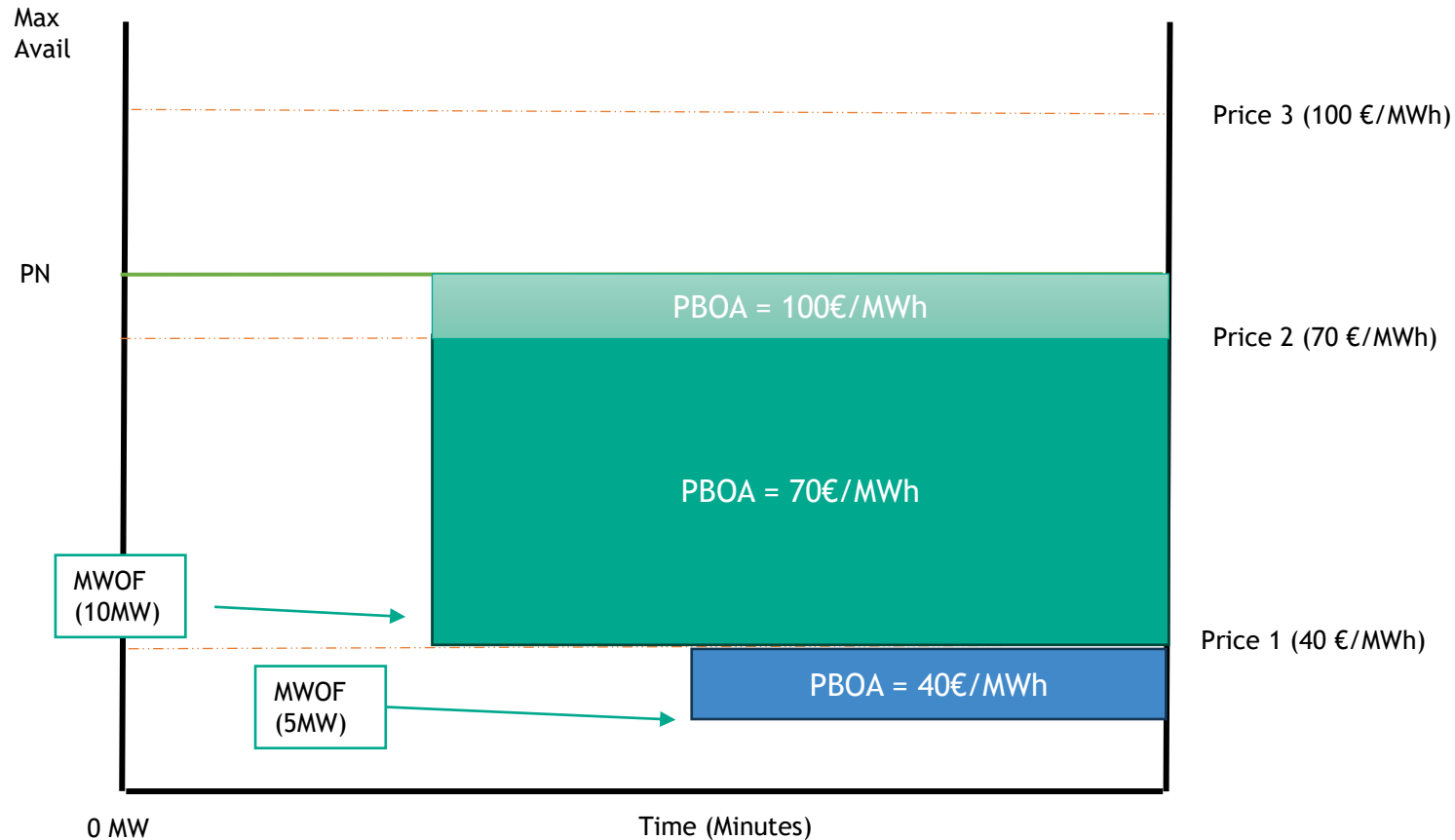
Example 1

- NPDR issued two MWOF instructions, dec actions away from the PN.

- 10MW instruction followed by 5MW instruction.

- Three orders created, dividing the actions into their associated price bands.

Application of COD (NPDR)

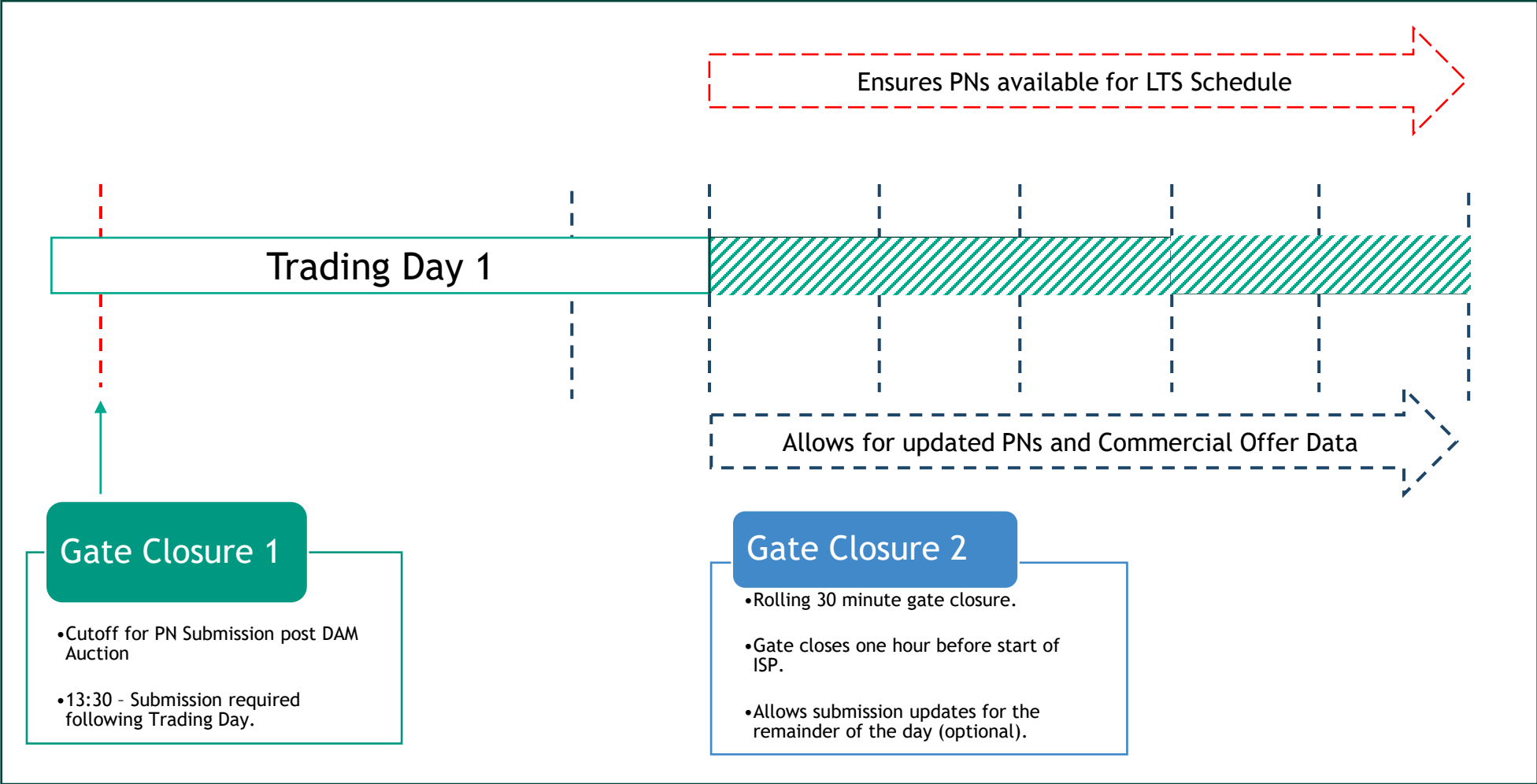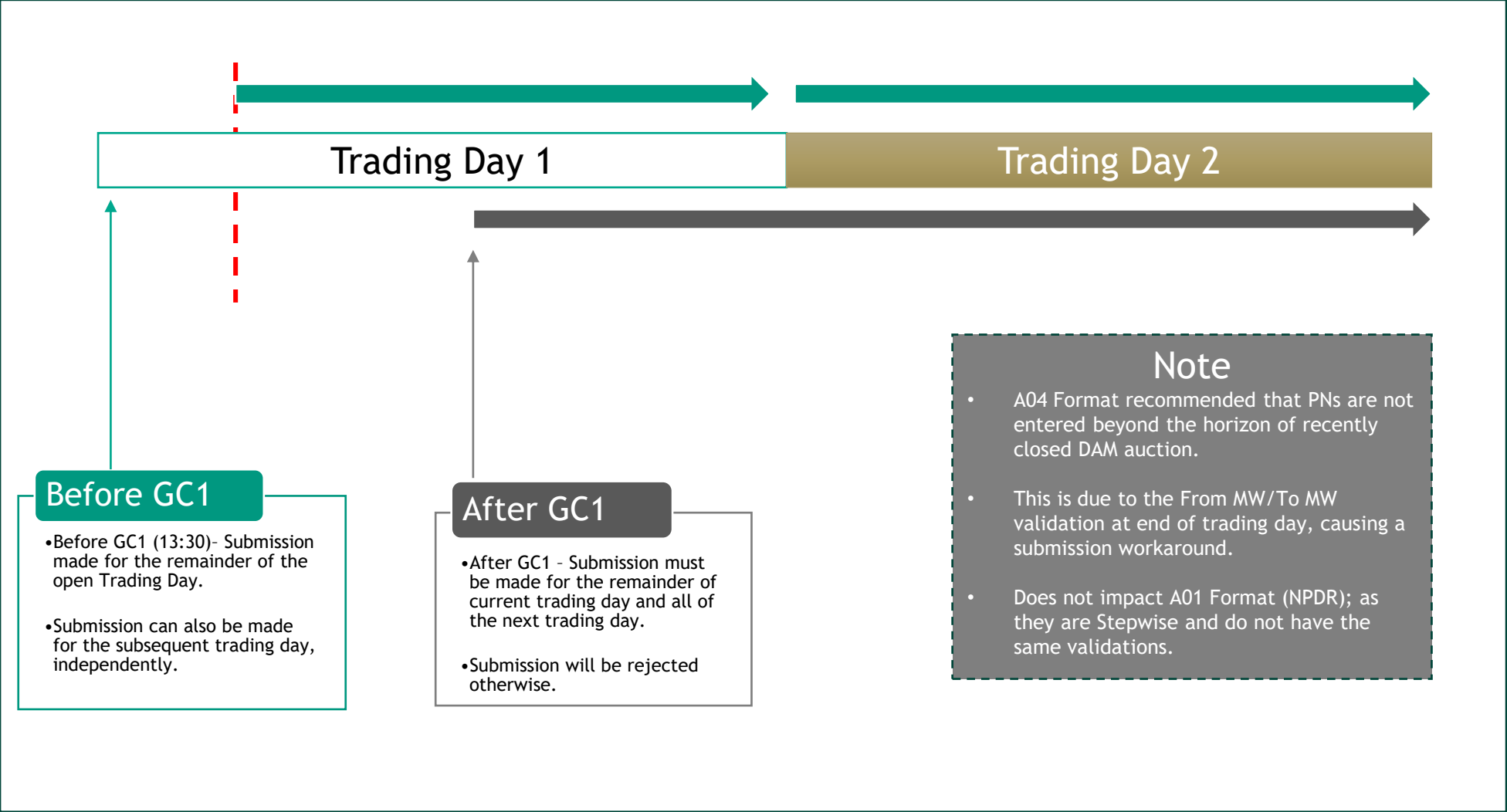**Example 2**

- NPDR issued a LOCL instruction (15MW), reducing output from PN due to constraint.

- One order created for this action, this whole order is priced at €0; regardless of underlying price bands,

- 5MW MWOF instruction issued, further moving the unit away from its PN.

- Two separate orders created for the MWOF instruction, dividing their associated price banthe actions into ds.

Data Submission and Gate Closure

Ensures PNs available for LTS Schedule

Trading Day 1

Allows for updated PNs and Commercial Offer Data

Gate Closure 1

- Cutoff for PN Submission post DAM Auction

- 13:30 – Submission required following Trading Day.

Gate Closure 2

- Rolling 30 minute gate closure.

- Gate closes one hour before start of ISP.

- Allows submission updates for the remainder of the day (optional).

Data Submission and Gate Closure (PNs)

Trading Day 1 | **Trading Day 2**

Before GC1

- Before GC1 (13:30)– Submission made for the remainder of the open Trading Day.

- Submission can also be made for the subsequent trading day, independently.

After GC1

- After GC1 – Submission must be made for the remainder of current trading day and all of the next trading day.

- Submission will be rejected otherwise.

Note

- A04 Format recommended that PNs are not entered beyond the horizon of recently closed DAM auction.

- This is due to the From MW/To MW validation at end of trading day, causing a submission workaround.

- Does not impact A01 Format (NPDR); as they are Stepwise and do not have the same validations.

Validation Technical Offer Data (VTOD)

Participants can submit up to six Validation Data Sets (VDS) via the BMI;

Set Selection:
- VDS1 is the default TOD Set or all participants for each Trading Day.
- Selected VDS must be submitted by 13:20 (Gate Closure 1 – 10 Mins)
- If none set selected, Set 1 will automatically default.

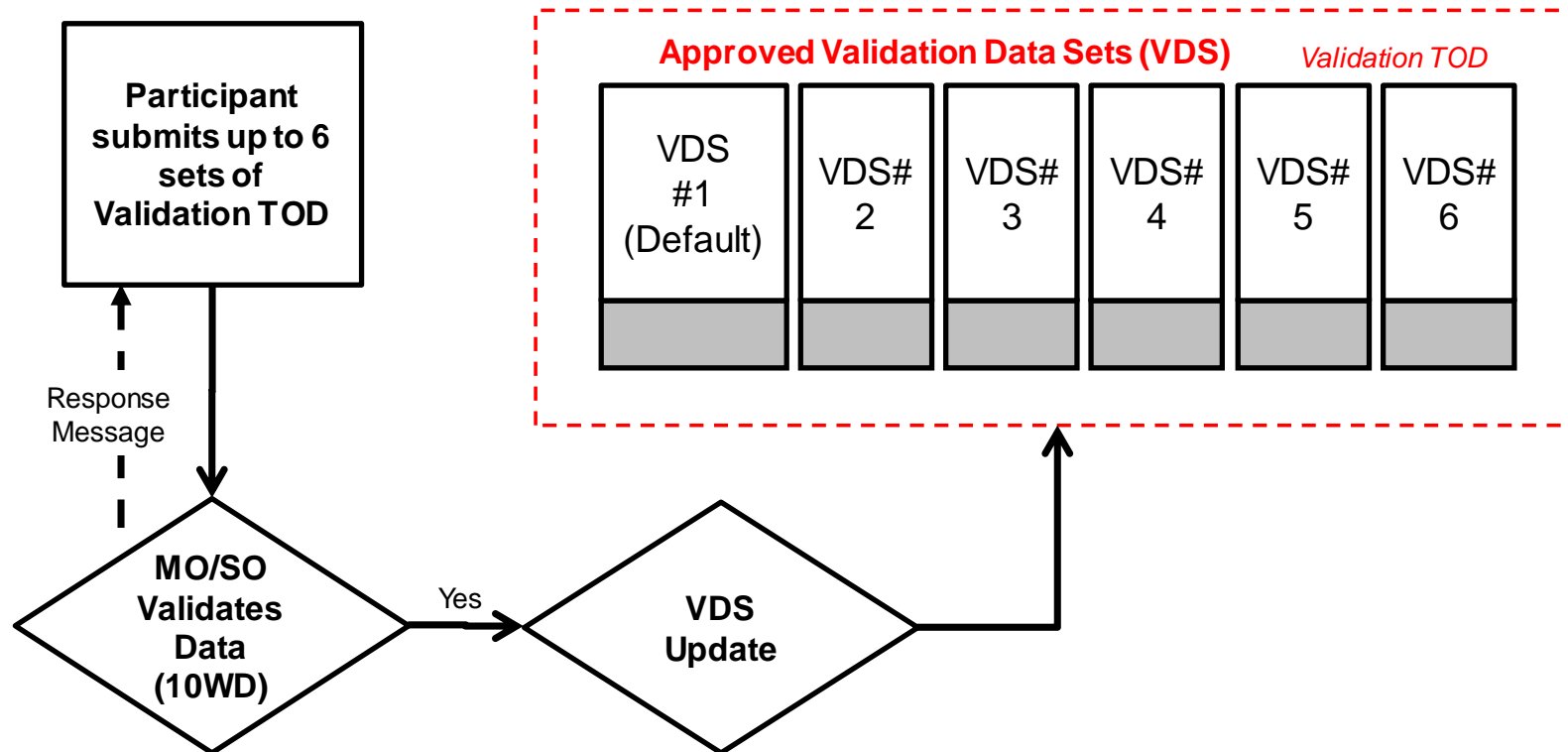**Updates to existing VDS or creation of new VDS:**
- VTOD change or new set submitted into BMI.
- TSO Reviews within 10 Working Days (Approve/Reject)
- Market Operator matches TSO status (1 additional Working Day)
- Approval/Rejection communicated to the Market Operator.

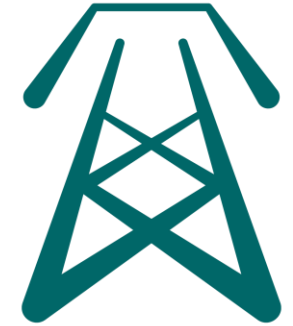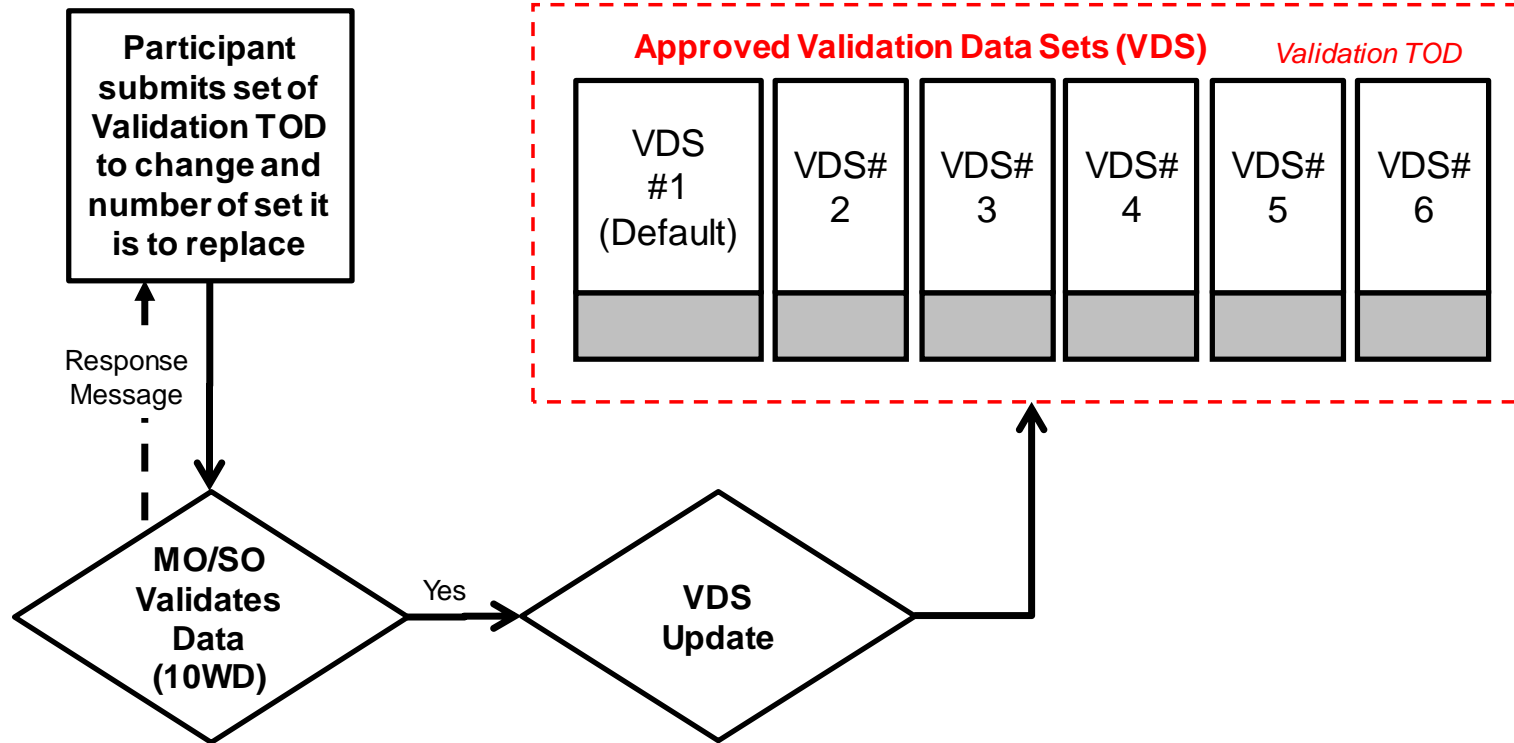**NPDR will have one VDS applicable to all units.**

Validation Technical Offer Data (VTOD)

<u>Submission of VTOD.</u>
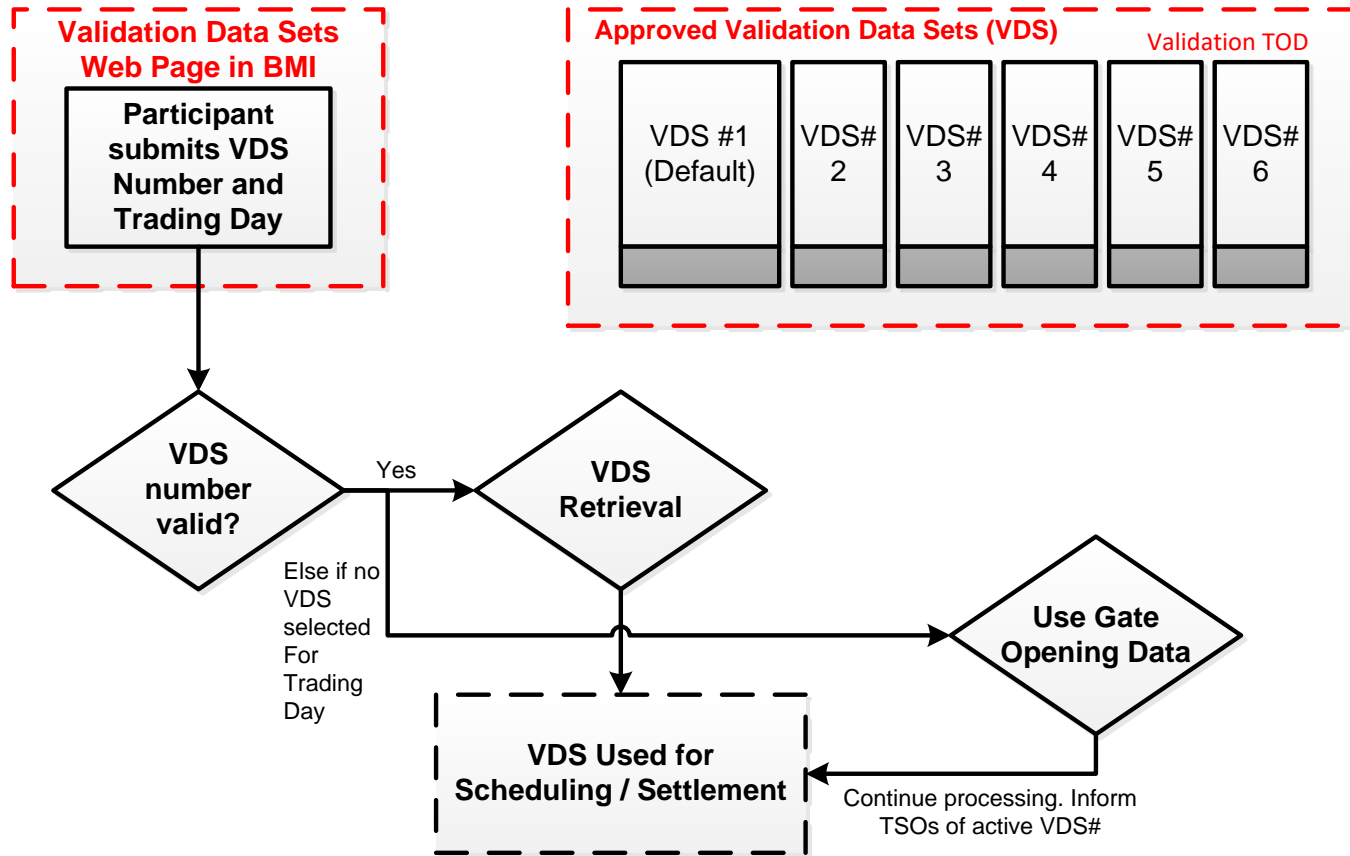

Participant submits up to 6 sets of Validation TOD

Response Message

MO/SO Validates Data (10WD)

Yes

VDS Update

Approved Validation Data Sets (VDS)

Validation TOD

VDS #1 (Default) | VDS# 2 | VDS# 3 | VDS# 4 | VDS# 5 | VDS# 6

Validation Technical Offer Data (VTOD)

Submission of VTOD.

Participant submits set of Validation TOD to change and number of set it is to replace

Response Message

MO/SO Validates Data (10WD)

Yes

VDS Update

Approved Validation Data Sets (VDS) *Validation TOD*

VDS #1 (Default) | VDS# 2 | VDS# 3 | VDS# 4 | VDS# 5 | VDS# 6

Validation Technical Offer Data (VTOD)

Submission of VTOD.

Forecast Imbalance Report

Current calculation

Demand − TSO Renewable Forecast + Interconnection + Physical Notification = Imbalance Forecast

New calculation

Demand − TSO Renewable Forecast (minus NPDR) + Interconnection + Physical Notification (plus NPDR) = Imbalance Forecast

TSO NPDR Renewable Forecast

⭐ Not included in calculation, but published for transparency.
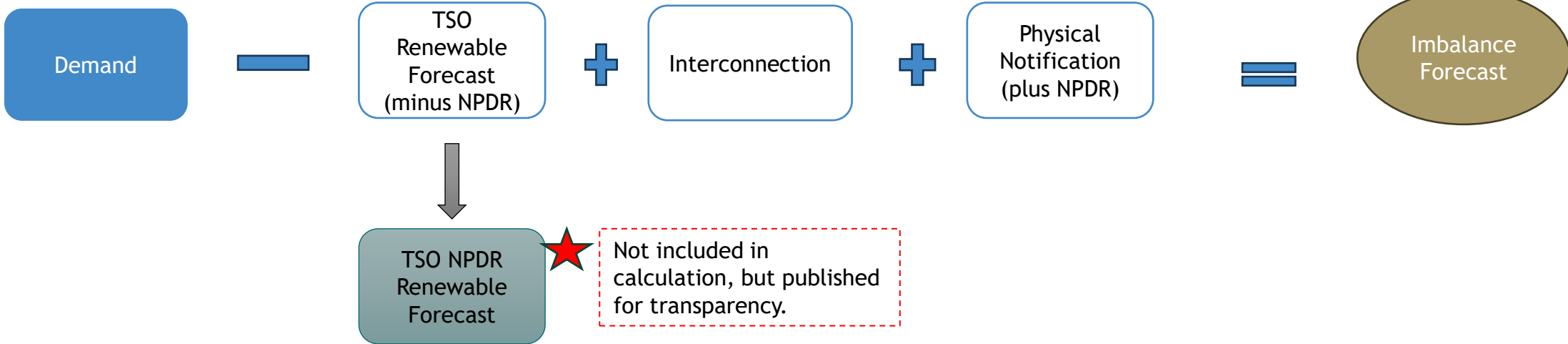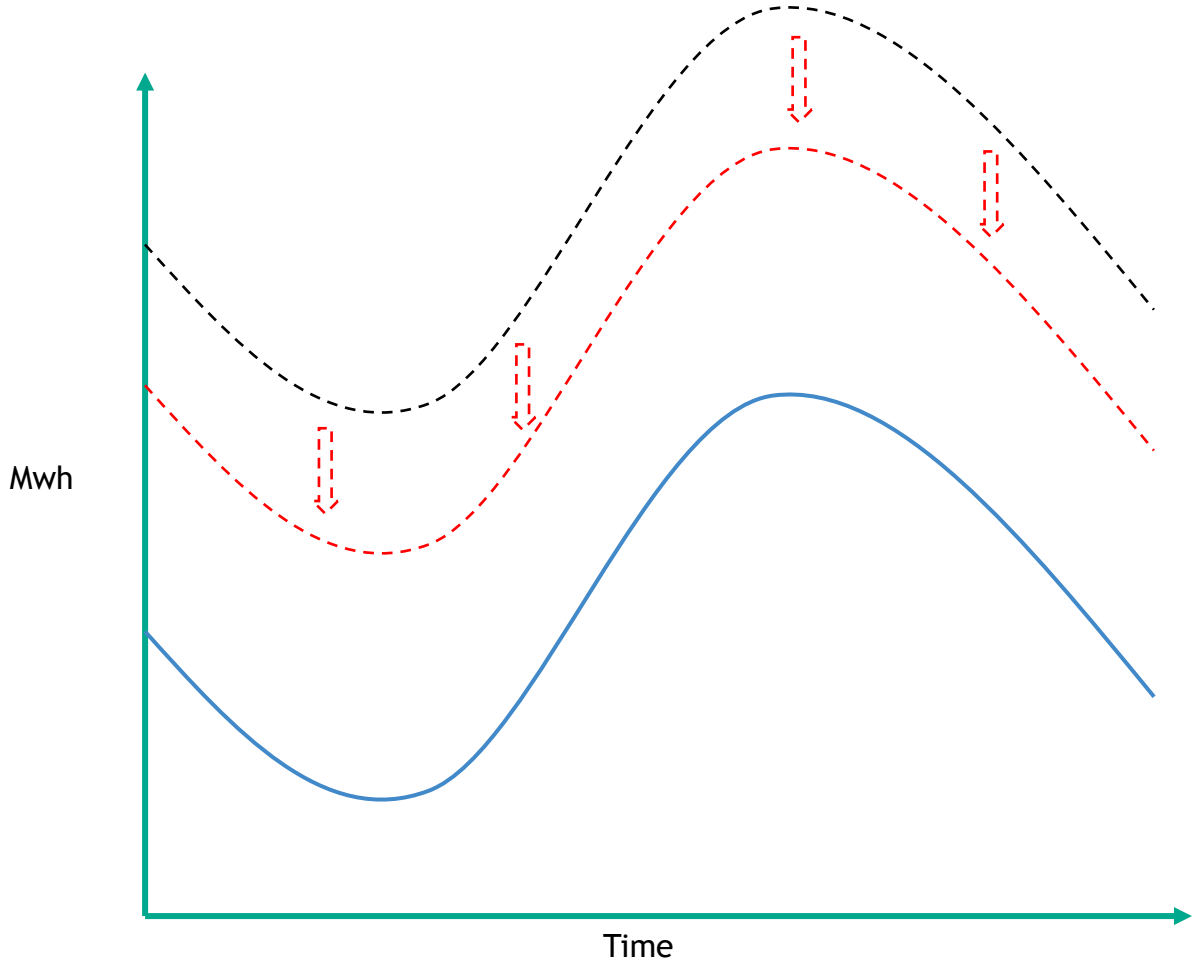
Long Market (Forecast Imbalance Example)

Mwh

Time

Market Long

- Pre-SDP black line equals sum of all renewable availability + PNs.

- Post-SDP – Example NPDR declaring PN less than availability.

- In this example Forecast Imbalance reduces, lower volume of dispatch down required to meet demand.

Key

= Pre-SDP

= Post-SDP

= System Demand

Live Demo Scenarios

❑ Submission of Commercial Offer Data
   ▪ Successful Submission and rejection
   ▪ Default COD submission

❑ Submission of Physical Notifications
   ▪ Successful Submission and rejection

❑ VTOD Set Selection
   ▪ Successful Submission