

# Future Power Markets

## Stakeholder Engagement

Industry Workshop: 11 April 2024

Updated Version: 15 April 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 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.

# 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 (11 April 2024)

## Agenda for today's workshop

Time	Topic
13:00 - 13:10	Introduction & Housekeeping
13:10 - 13:40	Future Arrangement System Services
13:40 - 14:00	Scheduling & Dispatch
14:00 - 14:15	Long Duration Energy Storage
14:15 - 15:00	Strategic Markets Programme
15:00	Close out



### Since We Last Met

Future Power Markets core projects and workstreams will feed into Industry Workshop calls as we move ahead:

- Strategic Markets Programme (SMP)
- Future Arrangements for System Services (FASS)
- Scheduling and Dispatch (SDP)
- Long Duration Energy Storage (LDES)
- Energy Market Policy (EMP)

Recent updates from Workstreams:

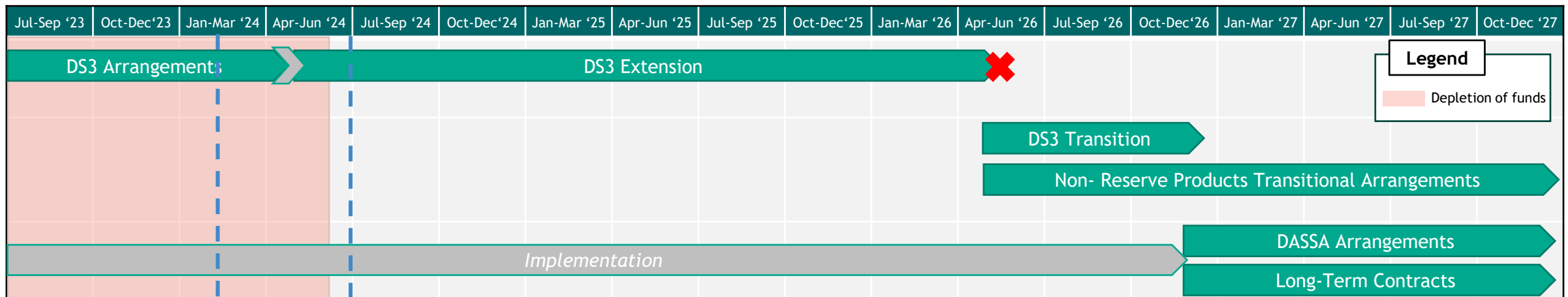
- FASS DASSA Arrangements Design Consultation, Mar-10<sup>th</sup> May
- Factual summary of the LDES Call for Evidence
- SMP Market Operator Special Topic meeting, 14<sup>th</sup> Mar
- Ongoing engagement with RAs across all workstreams

# Introduction

As set out in the High-Level Design Decision Paper in April 2022:

‘The objective of FASS is to deliver a competitive framework for the procurement of System Services, that ensures secure operation of the electricity system with higher levels of non-synchronous generation’ - *SEM Committee*

FASS Component	Description	Target Timeline
Day Ahead System Services Auction (DASSA) Arrangements	Daily auction and associated market arrangements. This is a requirement based on EU regulations and direction from SEM Committee.	<ul style="list-style-type: none"> <li>December 2026</li> </ul>
Fixed Term Contracts	Procurement of fixed term contracts and development of future products (e.g.: Low Carbon Inertia Service (LCIS)).	<ul style="list-style-type: none"> <li>TBC, as required by product.</li> <li>LCIS Phase 1 October 2024</li> </ul>
Product Review, Volume Forecasting and Locational Methodology	Ensuring the system services we procure and the volumes obtained enable the TSOs to operate the power system with higher levels of renewables.	<ul style="list-style-type: none"> <li>2024 (reserve services)</li> <li>2025 (non-reserve services)</li> </ul>
Layered Procurement Framework	Procurement at timeframes greater than one day and less than one year.	<ul style="list-style-type: none"> <li>Pending outcome of annual assessment</li> </ul>



# DASSA Design Consultation

## Overview



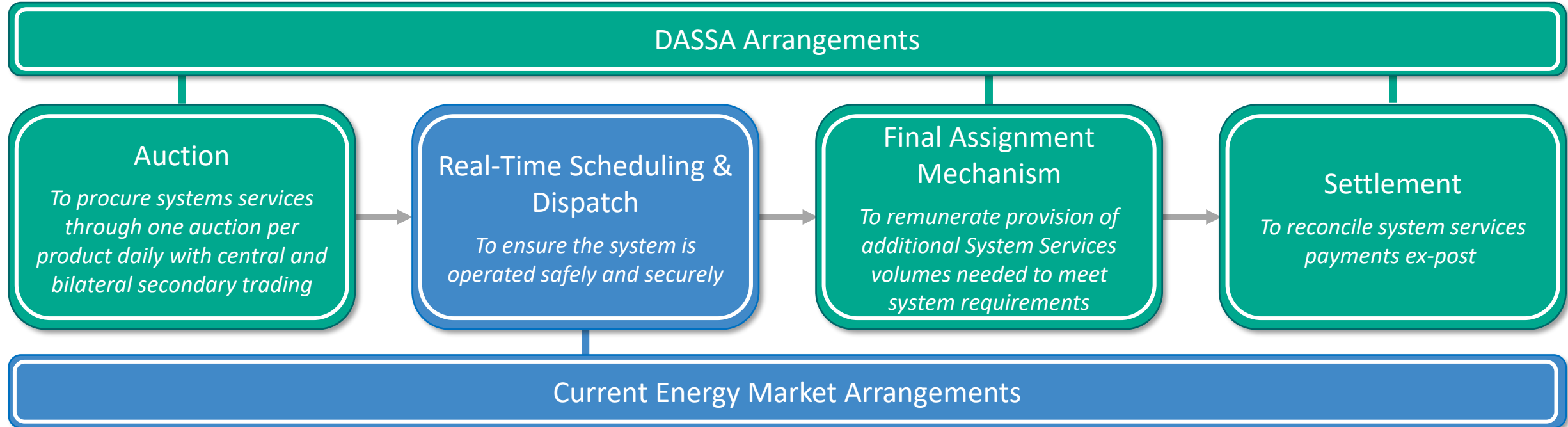
An 8-week consultation period is now underway. Responses to be submitted by May 10<sup>th</sup>



We will hold an industry workshop presenting our proposals for interested parties in April 2024



Questions can be submitted to [FASS@Eirgrid.com](mailto:FASS@Eirgrid.com) or [FASSProgramme@soni.ltd.uk](mailto:FASSProgramme@soni.ltd.uk)





# FASS Programme Engagement Channels

SSFA Project Panel	Bi-monthly	The Project panel is an RA led bi-monthly forum to track progress and enable nominated stakeholders to input.
FPM Industry Engagement	Monthly	The Future Power Markets monthly Industry Engagement will give an overview of the current programme status in addition to other programme topics as required.
Code Development Panel	TBC	This channel will be established in June 2024 per the PIR in order to collaboratively develop the Plain English Version of the System Services Code. The Panel's TOR will be published in April.
Workshops	As Required	Specific standalone workshops will be arranged as appropriate. Every effort will be made to consolidate engagement with existing forums in the interest of efficiencies.





# FASS: Status Update (April 2024 Industry Workshop)

- As planned, no issues    ↗ Improving
- Minor - moderate concern    ↔ Steady
- Significant issue / concern    ↘ Worsening

## 🏗️ FASS Summary Status

<b>Overall Status</b>	<span style="color: green;">➔</span>	Overall green status following publication of TSOs’ Phased Implementation Roadmap (PIR) and DASSA Design consultation paper, providing clarity in terms of programme trajectory and scope.
<b>Schedule</b>	<span style="color: green;">➔</span>	Green status reflecting the programme’s alignment with the Phased Implementation Roadmap published on both EirGrid and SONI websites on 13 <sup>th</sup> March.
<b>Resourcing</b>	<span style="color: orange;">➔</span>	TSO programme teams are staffed and engaged to continue work at pace. However, continued funding approval is required to maintain resources
<b>Finances</b>	<span style="color: orange;">➔</span>	Awaiting RA decision on Phase 2 Uplift and Phase 3 & 4 ROM Estimate Funding Application. Expectation that existing funding will be exhausted by June 2024.

## Key Messages

 <p><b>Service Provider Sentiment:</b></p> <ul style="list-style-type: none"> <li>TBC. Survey to be issued at later date in addition to feedback gather through existing engagements channels.</li> </ul>	 <p><b>Key Activities for Immediate Action</b></p> <ul style="list-style-type: none"> <li>Funding approval</li> <li>DASSA Arrangements Industry Workshop April 2024</li> <li>Publish System Service Code Development Panel ToR April 2024</li> </ul>	 <p><b>Positive Developments (Since Last Report)</b></p> <ul style="list-style-type: none"> <li>Publication of TSOs’ Phased Implementation Roadmap</li> <li>Publication of DASSA Design Consultation Paper</li> <li>IT System Procurement has commenced</li> </ul>  <p><b>Challenges (Since Last Report)</b></p> <ul style="list-style-type: none"> <li>Funding uncertainty persists</li> </ul>
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Note: DS3 System Services Tariff Consultation is outside of the scope of the FASS programme. This is covered under existing operations.

Refreshed: 5<sup>th</sup> April 2024



This update is provided to the FPM industry workshop on 11<sup>th</sup> April 2024.



# Phased Implementation Roadmap (PIR)

## Approach:

- The TSOs propose a bi-annual evaluation of Phased Implementation Roadmap (PIR) to provide clear timelines for industry and ensure programme delivery.
- Level 1 outlines overall plan for DASSA Arrangements (2024 - 2026), while Level 2 focuses on 2024.

## Frequency:

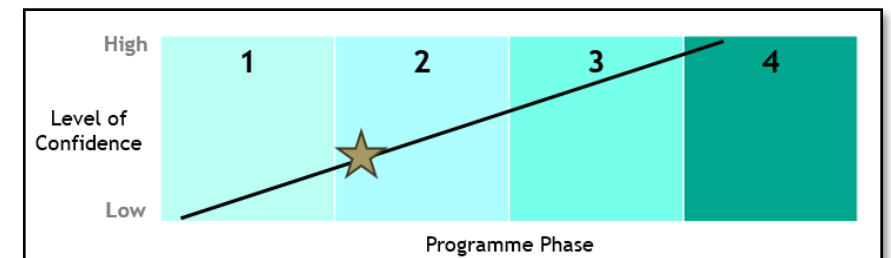
- The TSOs will conduct a comprehensive PIR assessment every six months, detailing milestone and workstream timelines for the subsequent period.
- Changes to the PIR will be managed through agreed RA/TSO change control processes.

## Governance:

- Programme Governance will be managed by agreed RA/TSO all island arrangements for efficient decision-making and risk mitigation.

## Confidence in Timeline:

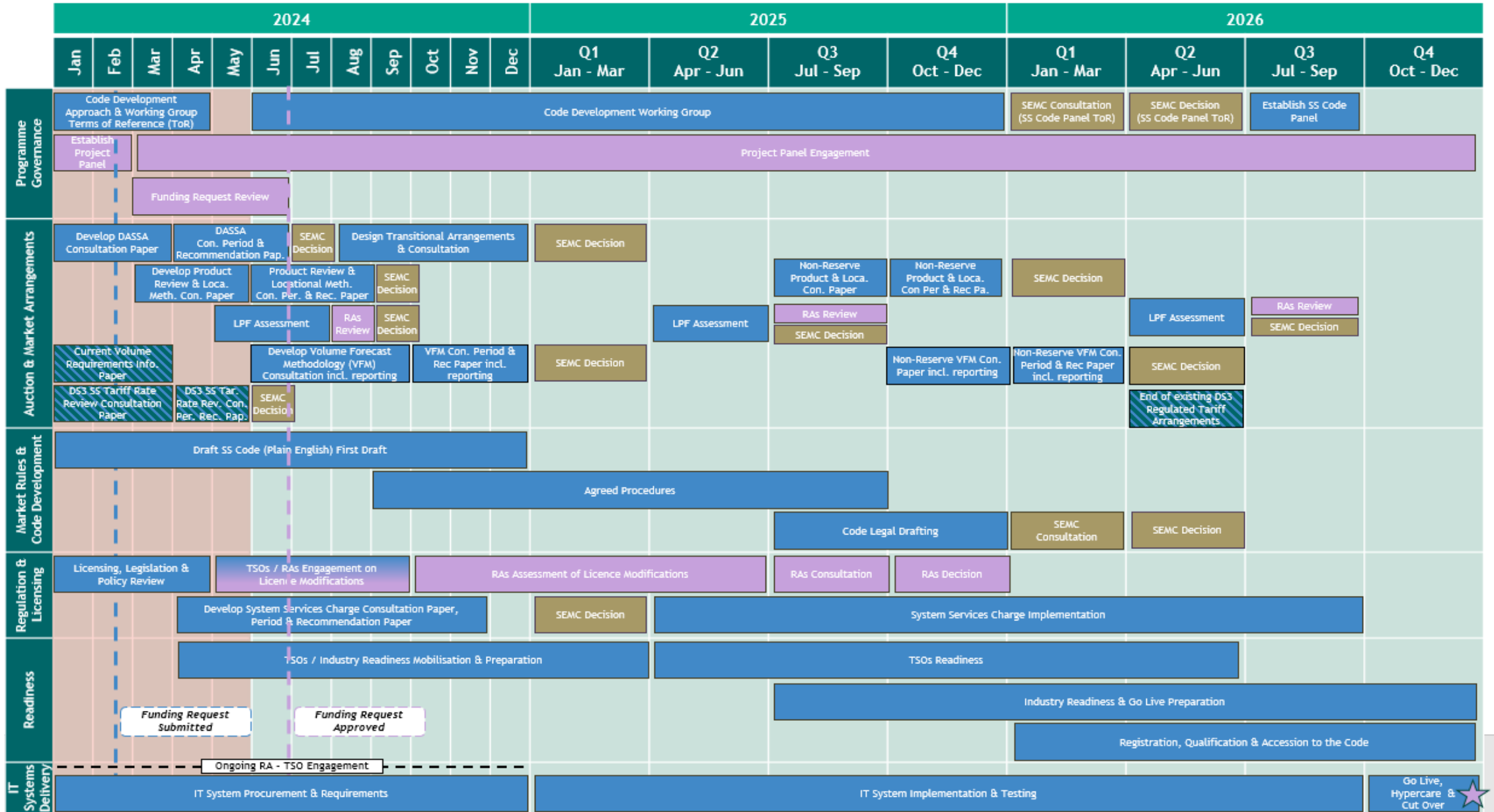
- The TSOs currently have low-medium confidence in timelines. This is typical at this early stage in programmes of this scale and complexity.
- Detailed timelines are contingent upon funding approval, IT vendor mobilisation, and finalised PIR approval by SEMC.



# Phased Implementation Roadmap - Level 1

**Legend**

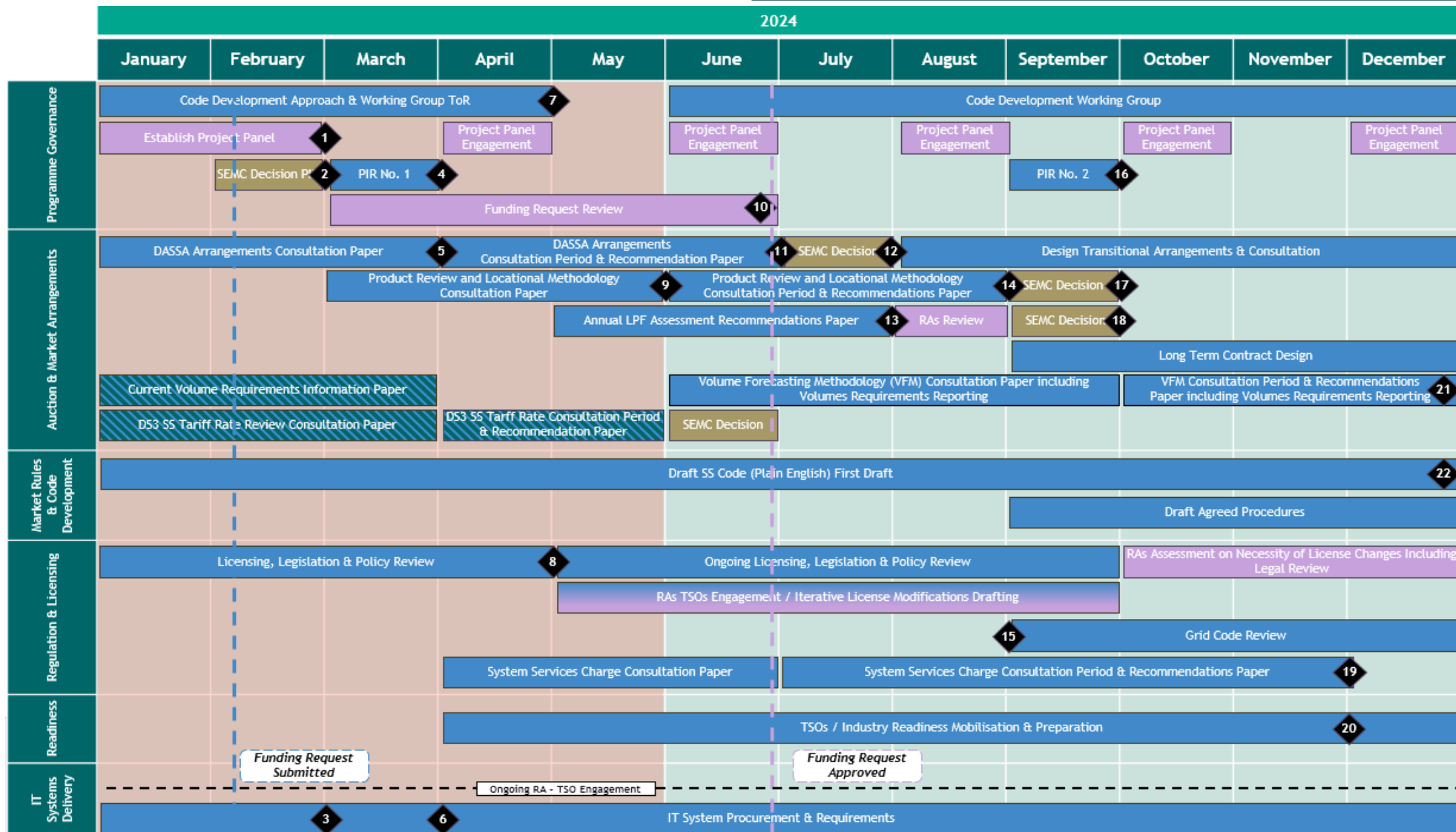
- TSOs Led Activity
- SEMC Decision
- DS3 Activity
- RAs Led Activity
- RA TSOs Activity
- Depletion of Funds



# Phased Implementation Roadmap - Level 2

## Legend

- TSOs Led Activity
- SEMC Decision
- Milestone
- Depletion of Funds
- RAs Led Activity
- RAs /TSOs Activity
- DS3 Activity



# 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	In Progress
FASS.08	Issue List of Proposed Licence Modifications to RAs	-	TSOs	April 2024	In Progress
FASS.09	Publish FASS Daily Auction Product Review and Locational Methodology Consultation Paper	-	TSOs	May 2024	In Progress
FASS.10	FASS Programme Funding Request Approval	-	RAs	June 2024	Pending
FASS.11	Publish FASS Daily Auction/Procurement Design Recommendation Paper	FASS.05	TSOs	June 2024	In Progress
FASS.12	SEMC Decision on FASS Daily Auction/Procurement Design	FASS.11	SEMC	July 2024	
FASS.13	Publish Annual Layered Procurement Assessment Recommendations Paper 2024	-	TSOs	July 2024	
FASS.14	Publish FASS Daily Auction Product Review and Locational Methodology Recommendation Paper	FASS.09	TSOs	August 2024	
FASS.15	Commence Grid Code Review	FASS.14	TSOs	September 2024	
FASS.16	Publish Phased Implementation Roadmap 2	FASS.04	TSOs	September 2024	
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	
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	

# Thank You

*Questions can be submitted to*

[FASS@Eirgrid.com](mailto:FASS@Eirgrid.com) or  
[FASSProgramme@soni.ltd.uk](mailto:FASSProgramme@soni.ltd.uk)

## Next Steps:

- The DASSA consultation will be open for eight weeks, closing on **10<sup>th</sup> May 2024**.
- An industry workshop will take place on the **24<sup>th</sup> April from 10:30-13:30**. The workshop will be facilitated **virtually**. Further details and invites to be circulated shortly.
- Following this consultation the TSOs will publish a recommendation paper in advance of the SEM Committee Decision in **July 2024** as per the timelines set out in the PIR.

# Scheduling & Dispatch Programme Overview

## Key Principles

For this complex programme...

1. Be **pragmatic** about solution pathways.
2. Solve the **immediate and urgent** problems at hand.
3. Don't allow perfect to be the enemy of **good**.
4. **Communicate** early and often - to all **stakeholders**.
5. Maintain **support of industry**.
6. **Actively manage** multidisciplinary delivery team.

Achievable - Valuable -  
"Simple"

## SDP Objective & Drivers

To enhance and improve the technology and capability of scheduling and dispatch in Ireland and Northern Ireland. This is driven by market participant needs, the EU Clean Energy Package mandates, and in support of the broader goals of renewables and System Non Synchronous Penetration (SNSP) penetration targets.

- Clean Energy Package requirements - NPDR treatment
- Ireland and Northern Ireland Government renewables targets for the 80%/70% total renewable energy and 95+% system non-synchronous penetration (SNSP) on an instantaneous basis.
- Market Participant requests for certainty on treatment of renewable assets, batteries - revenue certainty.
- Market Participant requests for improvement in re-balancing and re-dispatching (prevailing weather).

## Scope of SDP

One component of the broader SOEF programme.

1. **SDP\_001**: Operation of non-priority dispatch of renewables (NPDR)
2. **SDP\_002**: Energy Storage Power Station (ESPS) integration
3. **SDP\_003**: Fast Frequency Response (FFR)
4. **SDP\_004**: Wind/solar dispatchability improvements
5. **SDP\_005**: Reserve services scheduling and dispatch
6. **SDP\_006**: Synchronous condenser scheduling and dispatch

### Delivery Groupings

#### Group 1

- SDP\_001
- SDP\_002
- SDP\_004

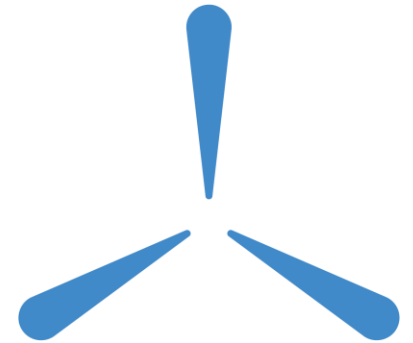
#### Group 2

- SDP\_003
- SDP\_005
- SDP\_006

## SDP Timeline



# Programme Status Update

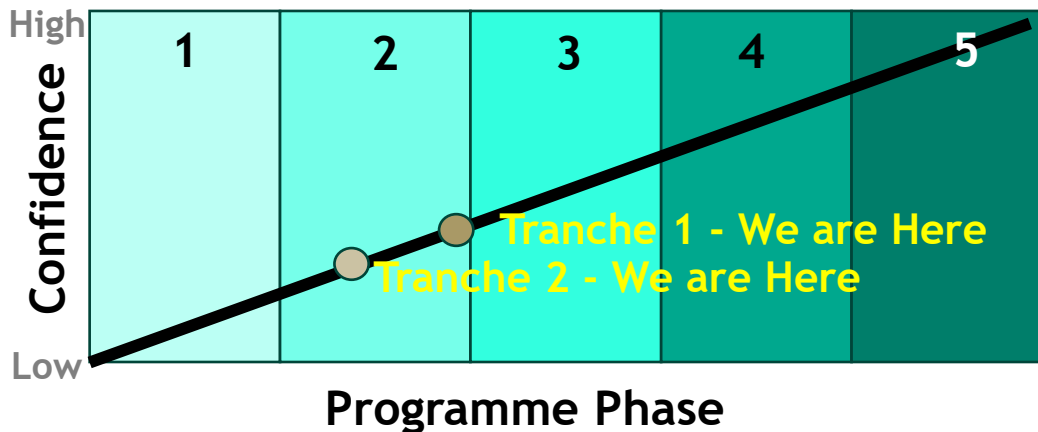




# Scheduling and Dispatch: Milestones

## Phase 2

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



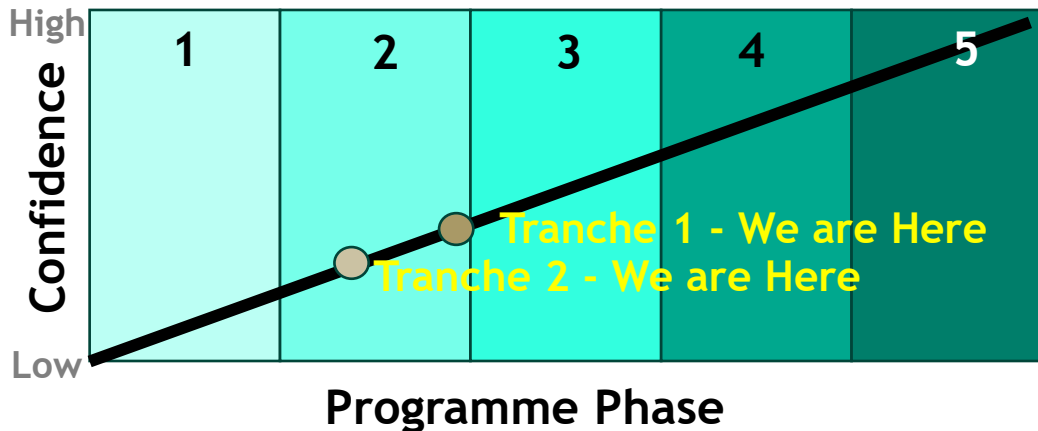
We currently have an overall **low - medium** level of confidence on the timelines. More detailed timelines cannot be provided until the following are all completed:

- We are engaging with industry in parallel on the changes, code modifications, etc and these need to be finalised as soon as possible to finalise the design
- We are engaging with our IT Vendors on the detailed design and delivery schedules and are awaiting final timelines

# Scheduling and Dispatch: Milestones

## Phase 3

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 TCS, CMC & GC Mods for Scheduling and Dispatch Programme Tranche 1 Initiatives	June 2024
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



We currently have an overall **low - medium** level of confidence on the timelines. More detailed timelines cannot be provided until the following are all completed:

- We are engaging with industry in parallel on the changes, code modifications, etc and these need to be finalised as soon as possible to finalise the design
- We are engaging with our IT Vendors on the detailed design and delivery schedules and are awaiting final timelines

# SDP: Status Update (April 2024 Industry Workshop)

- As planned, no issues
- Minor - moderate concern
- Significant issue / concern
- ↑ Improving
- ↔ Steady
- ↓ Worsening

Refreshed: 08 Apr 2024

This update is provided to the SDP industry workshop on 11 Apr 2024



SDP

## Summary Status

Overall Status	<span style="color: green;">➔</span>	Overall programme status is upgraded to Green based on SEMC All-Island Programme sub-committee approving the full funding request for the S&D (phases 3-5) programme on Thursday 29th February. Strong support for SDP across stakeholder community.
Schedule	<span style="color: green;">➔</span>	SDP milestones have been shared with industry. SDP team are preparing detailed implementation plans and plan to publish additional milestones in June 2024. SDP continue to work with IT vendors on detailed design. Potential change to AMBER status if Modifications approval extends beyond planned date.
Resourcing	<span style="color: green;">➔</span>	TSO/MO programme teams are fully staffed and engaged to continue work at pace.
Finances	<span style="color: green;">➔</span>	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)

- MPs actively engaged and driving forward solutions
- Strong support for SDP



### Key Activities For Immediate Action

- Modifications round 2 for ESPS
- Consultation on SEM 13\_011 changes
- Tranche 2 design and engagement
- Preparation of detailed programme plan



### Positive Developments (Since Last Report)

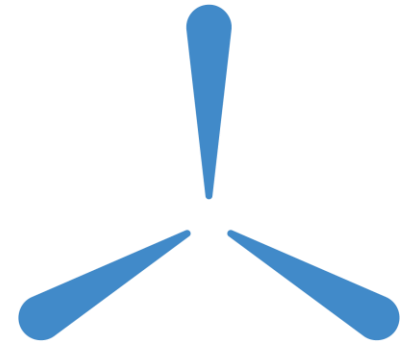
- Continuing Detailed Design at pace (T1), Detailed Requirements (T2)
- Strong stakeholder engagement and alignment on f(x) approach
- Progressing ANNEX 13\_011 changes



### Challenges (Since Last Report)

- Introduction of changes to recommended ESPS Modifications

# SDP Queries



# SDP: Query 96

## *Query:*

Would it be possible to get a list of all inputs required for NPDRs?

## *Response:*

We are providing a high-level view of the changes expected to the I-SEM Technical Specification. While not 100% confirmed yet, we trust this provides the scope and scale of changes such that MPs can plan their work and engage with technology vendors for the necessary changes. Items requiring further clarity are noted.

# SDP: Query 105

## *Query:*

Would it be possible to get a worked example - outlining the actions/steps to be taken by both a trading party and Eirgrid - showing how, in practice, a RESS generator will be able to avoid dispatch in the event of negative Day Ahead prices under the SDP\_04 Improvements?

For instance, what are the requirements for a trading party in terms of sending availability signals/declarations?

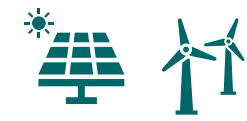
## *Response:*

You can find this information outlined in the “Day-in-the-Life” Scenarios for NPDR units in [previous workshop slides](#) and the Trading and Settlement Code modification proposal ([Mod 13\\_23](#)). Further, we will provide an initial high-level view of the changes to the I-SEM Technical Specification at the April FPM Industry Workshop.

More broadly, NPDR units will be treated economically in the markets (Ex-Ante, Balancing) except for the case of Constraint and Curtailment in which all applicable renewables are LOCL/CURL pro-rata.

Enabling this is the ability to submit Commercial Offer Data to the market which can specify the price at which the generator is willing to supply MW QTY in the Balancing Market.

Training material on the SEM is available on the [SEMO website](#).



# SDP: NPDR Designation

## Process for determining NPDR unit designation



### The Policy

SEM 20\_072 “Decision Paper on Eligibility for Priority Dispatch Pursuant to Regulation (EU) 2019/943” states the conditions for determining Priority, and subsequently Non-Priority) Dispatch status for applicable generation units. Following this, the TSOs are working on the process to identify, validate, and confirm those units that are obliged to be designated as NPDR units in SEM. In addition, the TSOs will provide a means for Market Participants to identify PD units for voluntary cessation of PD status.

### The Identification and Verification Process

#### Identification

Q2 2024 - Q3 2024

#### Validation

Q2 2024 - Q3 2024

#### Implementation

Q4 2024 - Q1 2025



RAs define units obliged to become NPDRs

RAs review list of obliged and voluntary PDs designated as NPDRs. **Confirm final list.**



TSOs review all existing PDs and develop list of unit obliged to become NPDRs based on RA criteria

TSOs develop list of obliged and voluntary PDs designated as NPDRs. **Confirm final list for RAs and MPs to review.**

TSOs develop data readiness process. Conversion of units to NPDR managed through SDP Readiness, including cutover.



Market Participants submit list of PD units for NPDR designation

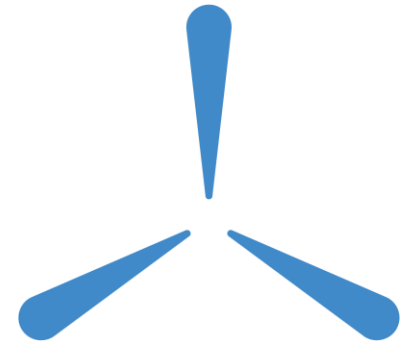
MPs review final list. Agree or dispute. Settle on final list.

MPs participate in data readiness, training, participant interface testing to confirm operability in preparation for SDP go-live.





# Market Arrangements Update



# Background

## *Initial Proposal for Treatment of Batteries*

- Due to vendor inability to fully optimise, these units will be scheduled and dispatched to follow Physical Notifications (PNs), except for in certain defined circumstances where required by the control centre.
- The TSOs first proposed that if dispatched away from PNs, Battery Storage Units should redeclare availability to reflect their updated state of charge.
- If the unit's PNs for later in the day became infeasible due to an earlier action by the TSO, the participant would be exposed to the Imbalance Price unless they traded out of their position in ex-ante markets and submitted new, feasible PNs.
- Market participants felt that this approach placed an unreasonable level of risk on them.

## *Revised Approach Included in Mod\_11\_23*

- If dispatched away from PNs, Battery Storage Units would not be required to update their availability to reflect this.
- This would mean that dispatch away from PNs which have become infeasible due to earlier TSO actions would be settled as if fully available.
- To protect the market from excessively high payments to these units based on Simple prices for actions which were taken for system reasons (and not based on price), the TSOs proposed that all actions on these units would be settled using Complex prices.

# Request from Regulatory Authorities

## *RA Request*

- The RAs proposed that if these units were always to be settled using Complex COD and dispatch decisions would not be made based on Simple prices, it would not be appropriate for these units to submit Simple prices.
- The RAs requested that the TSOs submit an updated mod including this change.

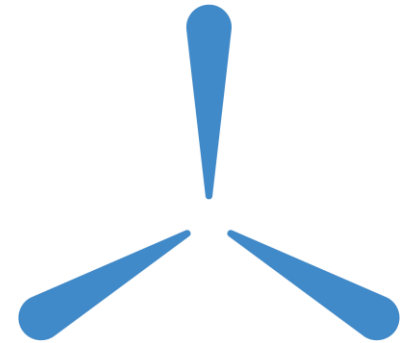
## *Updated Mod Proposal (Mod\_02\_24)*

- Following further discussion between the TSOs, RAs, and market participants on April 5<sup>th</sup>, a solution was proposed whereby these units could submit both Simple and Complex COD prices, but all actions on these units would be System Operator (SO) flagged.
- This would mean that these actions would initially be flagged out of pricing (although could be tagged back in), and would be settled using Complex COD.
- This approach was included in an updated mod proposal (Mod\_02\_24) which was submitted for the next mods committee on April 23<sup>rd</sup>.

# Q&A



# Questions?



# Long Duration Energy Storage

- A factual summary of the responses to the Call for Evidence on Long Duration Energy Storage (LDES) has been published on both the [EirGrid](#) and [SONI](#) websites. This paper aims to provide a condensed overview of the 38 responses received and present the varying viewpoints and arguments from stakeholders.
- We were very happy with the level of engagement with many insights from respondents proving to be extremely valuable, and we would once again like to thank everyone who provided feedback to the Call for Evidence.
- We are engaging further with RAs on the next steps.



# Long Duration Energy Storage

We would like to address and clarify the comments regarding timelines for the LDES programme during the industry workshop on Thursday.

As of now, we are awaiting direction from the RAs on the next steps for this programme and have no updates regarding future timelines. Comments made regarding an April consultation were made in error.

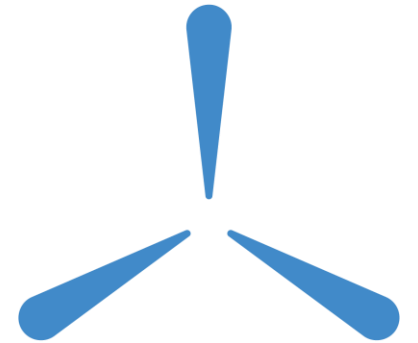
We will ensure to keep you updated on any updates and developments in the next Future Power Markets (FPM) Newsletter and iteration of the FPM Industry Workshops. Thanks for your understanding.



# Q&A



# Questions?





# Strategic Markets Programme

- Approach to the Strategic Markets Programme
- Reminder of High-Level Scope
- Indicative High-Level Plan on a Page
- Taking a closer look at Balancing Market Reform

# Approach to the Strategic Markets Programme

The SMP is at an early stage of understanding the full scope and approach to delivery of the requirements, it is clear, even at this early juncture, that implementation of the SMP will be significant, with an initial Very Rough Order of Magnitude (**VROM**) cost estimate placing the scale of the programme potentially in excess of €130m.

The SMP is a multi-year programme for the design and delivery of revised market arrangements, including the revisions to the Trading & Settlement Code, Grid Codes, and licences, and supporting IT systems and services. The Phases of the SMP are provided below;



The SMP is a multifaceted programme where resources will be required to drive multiple workstreams, each consisting of numerous interdependent activities that need to be appropriately resourced and managed.

The SMP is at an early stage of understanding the full scope and approach to delivery of the requirements, it is clear, even at this early juncture, that implementation of the SMP will be significant, with an initial Very Rough Order of Magnitude (**VROM**) cost estimate placing the scale of the programme potentially in excess of €130m.

The detailed scope and deliverables under the SMP programme will only be defined and refined through delivery of Phase 1 and 2. When these phases are complete, the programme will share them with IT specialists who will develop the technical requirements for tendering and then for implementation.

It is likely that due to the size of the scope and level of change required to be delivered under the SMP that not all scope items will be delivered within the timeframe, Q1 2027.



# Strategic Markets Programme



### Full integration into EU

Once the SEM is physically connected with continental Europe after the Celtic Interconnector goes live, there will need to be full integration into EU forwards, day-ahead, intraday, and balancing markets. This involves re-coupling the day-ahead market but also new arrangements for coupled intraday markets and participation on the EU balancing platforms



### Post Brexit Trading Arrangements

Following Brexit, we only have local intraday auctions between SEM and GB. We will need to implement the changes that arise from the ongoing UK and European Commission discussions on same



### Balancing Market Updates

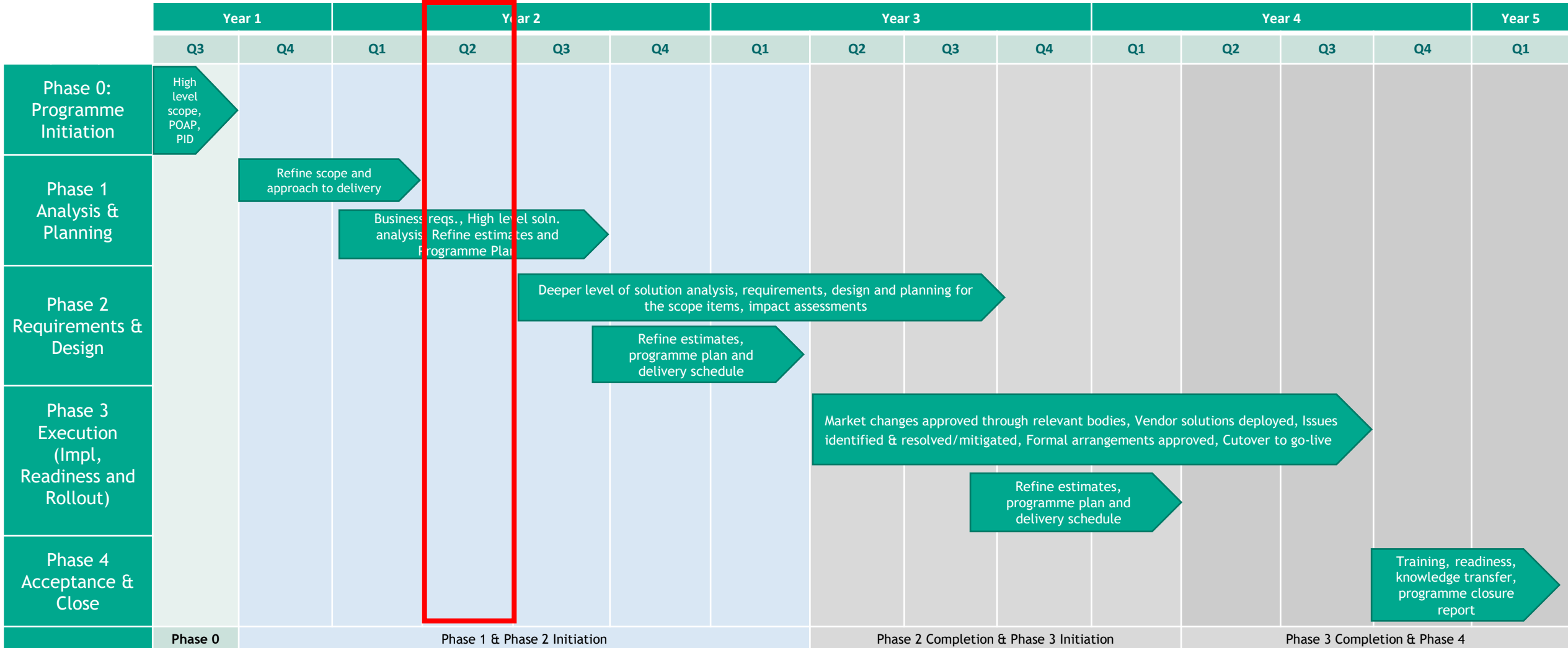
This will investigate items like scheduling of long duration storage, enduring implementation of Non-Priority Dispatch Renewables and Dispatchable Demand.



# Strategic Markets Programme - Indicative High-Level Programme Plan On A Page (POAP)

# DRAFT

Critical Path Milestone:  
Funding Application to be approved by RAs within Q2 ★



# Strategic Markets Programme

## ➤ Balancing Market Reform -

- BMR is covering several aspects of balancing market changes that will have implications for the TSOs' operational systems
- Integration with EU platforms will require changes to the TSOs' Market Management System and other associated tools.
- This will involve sharing merit orders with the EU platforms and integrating results into our QBOA and PBOA processes.
- Other significant changes to balancing arrangement are also needed such as -
  - *Enduring solution for Energy Storage Power Stations (beyond "Follow PN");*
  - *This should include solutions for long duration energy storage (e.g., > 100 hours);*
  - *Dispatch up of demand - instructing participants to increase consumption (e.g., for electrode boilers, hydrogen electrolyzers, etc.);*
  - *Enduring solution treatment of Non-Priority Dispatch Renewables (grandfathering of constraints, i.e., apply commercial offers in constraint management);*
- The information in subsequent slides is based on ongoing design considerations and does not represent final designs



# Development Process



## Business

Business Conceptual Overview

High level view of what needs to be delivered, why, what elements of the current solution may be affected

High Level Requirements

What are the critical elements of the functional/technical requirements (i.e. “what needs to be delivered”)?

## Implementation Team

Detailed Requirements

Vendor-specific detailed requirements

Designs

Vendor designs to explain how are each of the critical elements being delivered as part of a solution

Delivery

Delivery of approved designs

# Development Process

## Business

Business Conceptual Overview

High level view of what needs to be delivered, why, what elements of the current solution may be affected

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What are the critical elements of the functional/technical requirements (i.e. "what needs to be delivered")?

## Implementation Team

Detailed Requirements

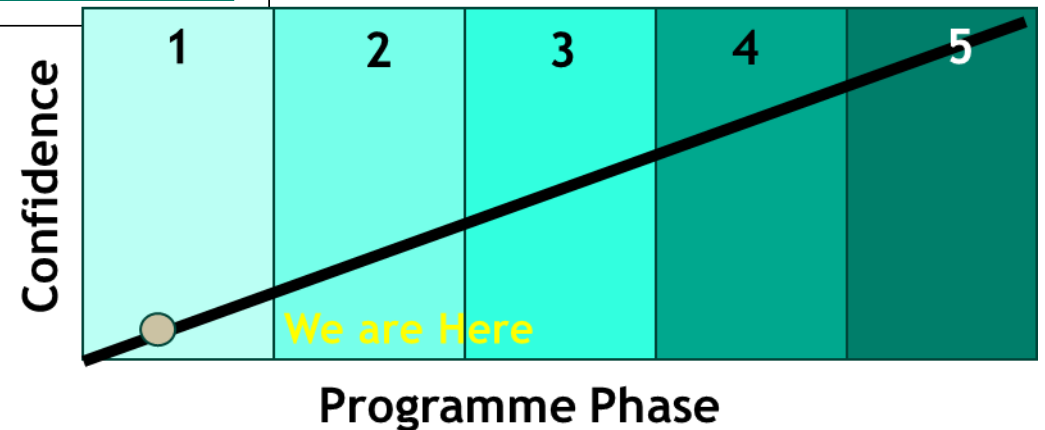
Vendor-specific detailed requirements

Designs

Vendor designs to explain how are each of the critical elements being delivered as part of a solution

Delivery

Delivery of approved designs





# Dispatchable Consumption

- With more and more renewables connecting, ways to manage the surplus renewable generation need to be explored;
- Climate Action Plan envisages electrification of processes that currently use carbon intensive technologies while UK Low Carbon Hydrogen Standard includes requirements for electrolysers to be dispatchable assets;
- Units that could offer dispatchable consumption are being explored;
- The Balancing Market systems need to expand to include a unit type that can increase consumption rather than production

Objective
<b><u>Enabling explicit dispatch of consumption:</u></b> <ul style="list-style-type: none"><li>• Registration of “dispatchable consumption” market units, with dispatch via EDIL</li><li>• “dispatchable consumption” units are scheduled and then dispatched to increase demand</li><li>• Treatment should be similar to any dispatchable asset</li></ul>
<b><u>Linking DCUs to a Wind Constraint Group:</u></b> <ul style="list-style-type: none"><li>• Where the system determines that there is a need to reduce the output of the WCG due to local congestion (constraint), charging of the DCU is considered.</li></ul>
<b><u>Facilitation of provision of System Services:</u></b> <ul style="list-style-type: none"><li>• Enable system services to be contracted/paid for dispatchable demand units</li></ul>

# Multi-NEMO arrangements

- CACM (EU regulation on Capacity Allocation and Congestion Management ) sets out the rules for designation of NEMOs (Nominated Electricity Market Operators) in each bidding zone.
- This allows for the direct designation by the designating entity (i.e., the Member State or appointed body which is the CRU and UR in the SEM, for Ireland and Northern Ireland respectively) and also for a passporting approach.
- Under this rule, any party which has been designated as a NEMO by another Member State can apply to offer NEMO services in additional Member States without further designation.

Objective
<b>Definition of bidding zones/scheduling agents</b> <ul style="list-style-type: none"> <li>• Define new rules for scheduling agents of each NEMO and for the bidding zone itself</li> </ul>
<b>Registration</b> <ul style="list-style-type: none"> <li>• Facilitate the registration of entities within the balancing market for all necessary functions of each participating NEMO (i.e., for purposes of nomination, scheduling of net positions, scheduling of power flow imports/exports, settlement, etc)</li> <li>• Each participating NEMO may not have the same requirements when it comes to registration of entities. Requirements will need to be fleshed out with the NEMOs intending to provide services</li> </ul>
<b>Multi-NEMO nomination to Balancing Market Interface</b> <ul style="list-style-type: none"> <li>• Facilitate the submission of ex-ante market quantities (QEX) from multiple NEMOs to the TSO's Balancing Market Interface;</li> </ul>
<b>Determination of cross-border flows</b> <ul style="list-style-type: none"> <li>• Determine actual cross border power flows required based on net positions of each participating NEMO</li> </ul>
<b>Settlement of imbalance for multiple NEMOs</b> <ul style="list-style-type: none"> <li>• Define settlement arrangements for imbalances for each participating NEMO</li> </ul>

# Enduring Non-Priority Dispatch Renewable Generators

- The SDP is providing an interim solution for NPDR generators.
- This will see NPDRs submitting PNs and commercial offers for treatment in balancing but in constraint and curtailment management, pro-rata rules will continue to apply across all renewables;
- For the enduring solution, prices submitted by variable NPDRs will be included in constraint management; wind generators within a constraint group to be constrained on economic basis;
- Solution heavily dependent on SDP delivery;

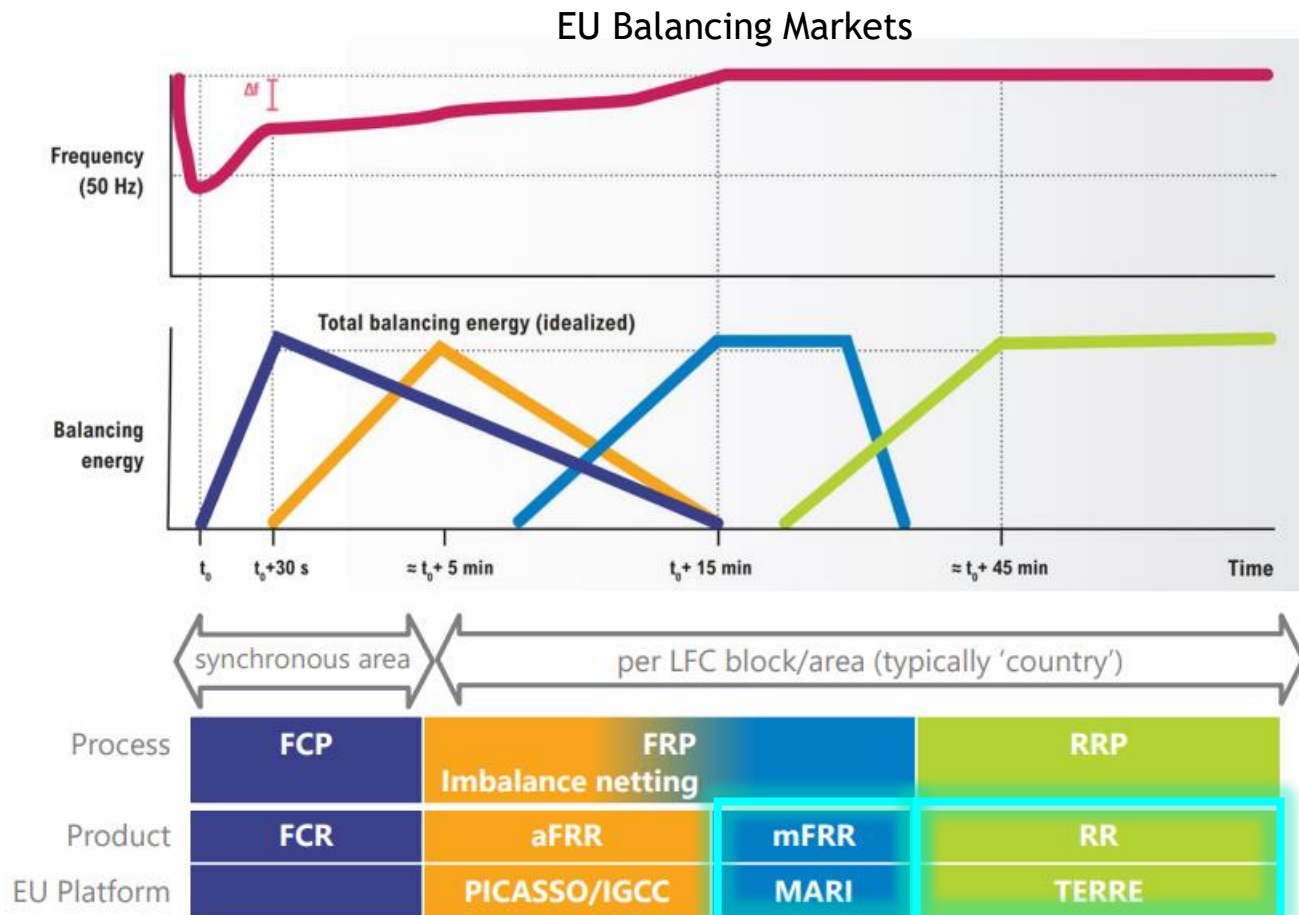
Objective
<p><b><u>Operational Scheduling and dispatch:</u></b></p> <p>Inclusion in the optimisation (to the extent possible) to achieve the following objectives:</p> <ul style="list-style-type: none"><li>• Balancing actions from NPDR units (<i>already included in SDP scope</i>)</li><li>• Market-based constraint for NPDRs</li><li>• Pro-rata constraint for Priority Dispatch renewables</li><li>• Pro-rata curtailment for both NPDRs and Priority Dispatch renewables</li></ul>

# Enduring Energy Storage Power Station Treatment

- The SDP is providing an interim solution for ESPS based on a follow-PN approach and inclusion of inc / dec offers in the merit orders for scheduling & dispatch;
- Enduring approach is intended to provide a more efficient utility from ESPS in the future;
- Given different charging capability, a full optimisation (as done with Turlough Hill in the original SEM) is not feasible -
  - A battery with a two-hour charge cycle cannot be optimised across a 45 min RTD run, just as a long duration battery with a multi-day charge cycle cannot be optimised across an LTS run;
- The operational challenge appears to be the same whatever the duration of the technology;
- The solution needs to consider where battery levels can be “shared” between runs to carry forward accurate state of charge information and ensure that outputs of different runs are compatible with each other;
- Examining what data needs to be included, considering storage target levels, etc.

# EU Balancing Platform Integration

With the Celtic interconnector starts operation in 2026, the Irish Power System will be physically connected to the CE countries. Accordingly, the SEM needs to be connected to EU electricity markets, including Day Ahead, Intraday and Balancing markets.



In 2019, EirGrid and SONI's has 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

## Objectives of connecting SEM to TERRE and MARI:

Meet EU legal obligations once connected to the CORE CCR and EU markets

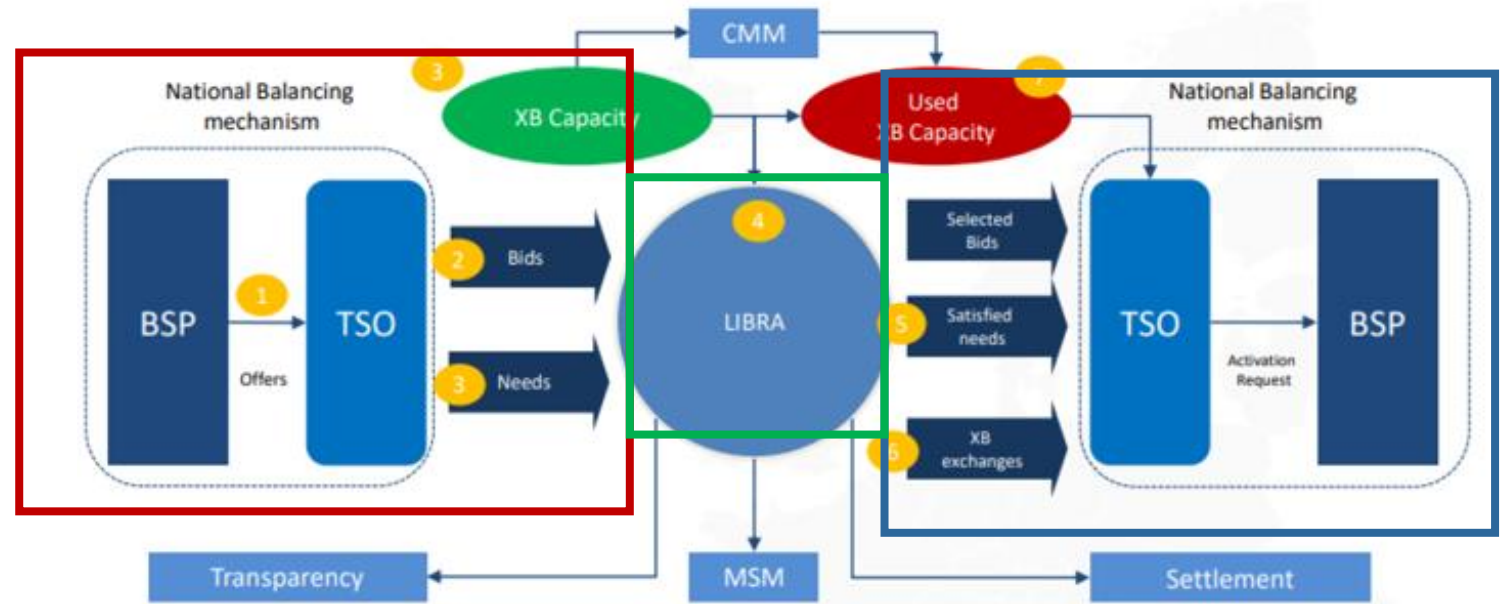
Introduce additional efficiencies

Minimise impact on SEM market processes

# EU Balancing Platform Integration

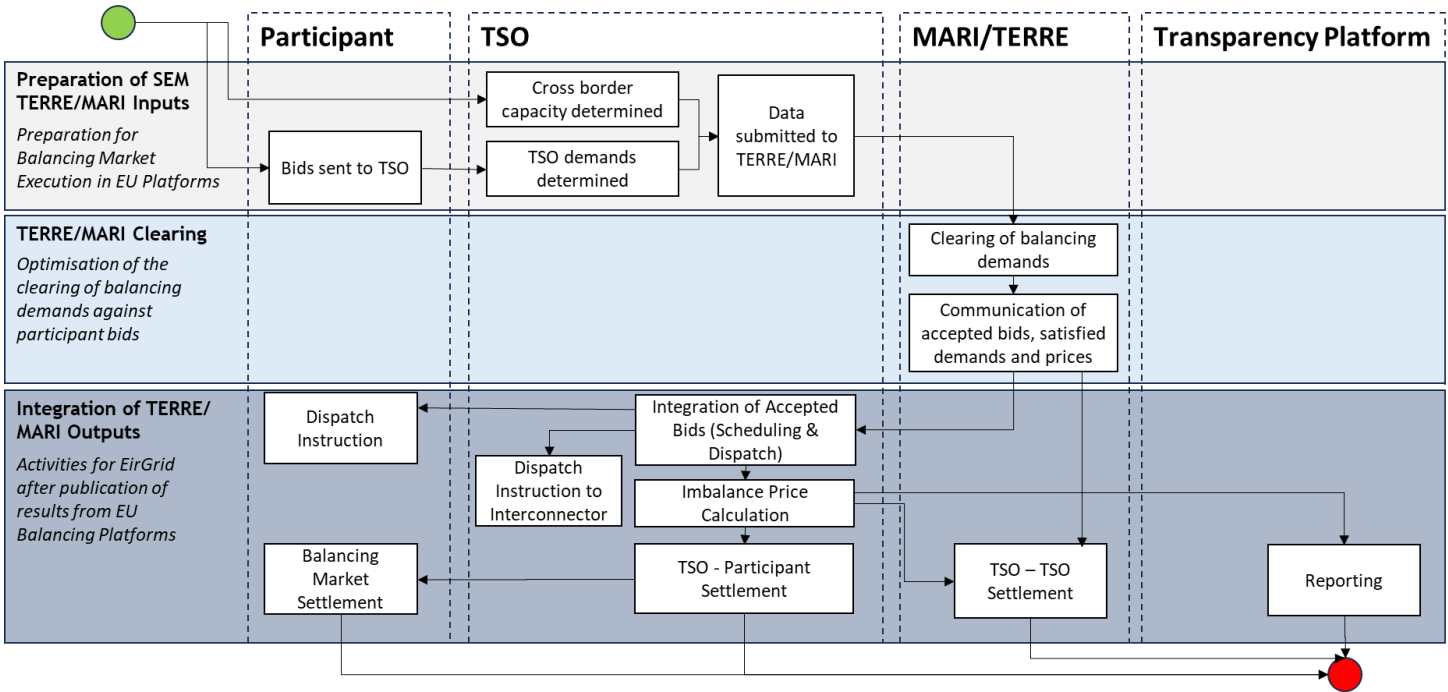
## Objective:

The MARI/TERRE platform operation can be divided into seven steps and 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 TERRE/MARI Inputs	1	TSO receive bids from BSPs in local market balance area	No
	2	Forward of coherent mFRR balancing products to mFRR platform	Yes
	3	TSOs communicate their balancing demands and the available XB transmission capacities (ATC)	Yes
TERRE/MARI Clearing	4	Optimization of the clearing of balancing demands against BSPs bids	-
Integration of TERRE/MARI Outputs	5	Communication of the accepted bids, satisfied demands, and prices	Yes
	6	Calculation of the commercial flow between market balancing areas and settlement of the expenditure and revenues between TSOs	Yes
	7	The resulting XB schedules and remaining ATC are sent to the TSOs	Yes

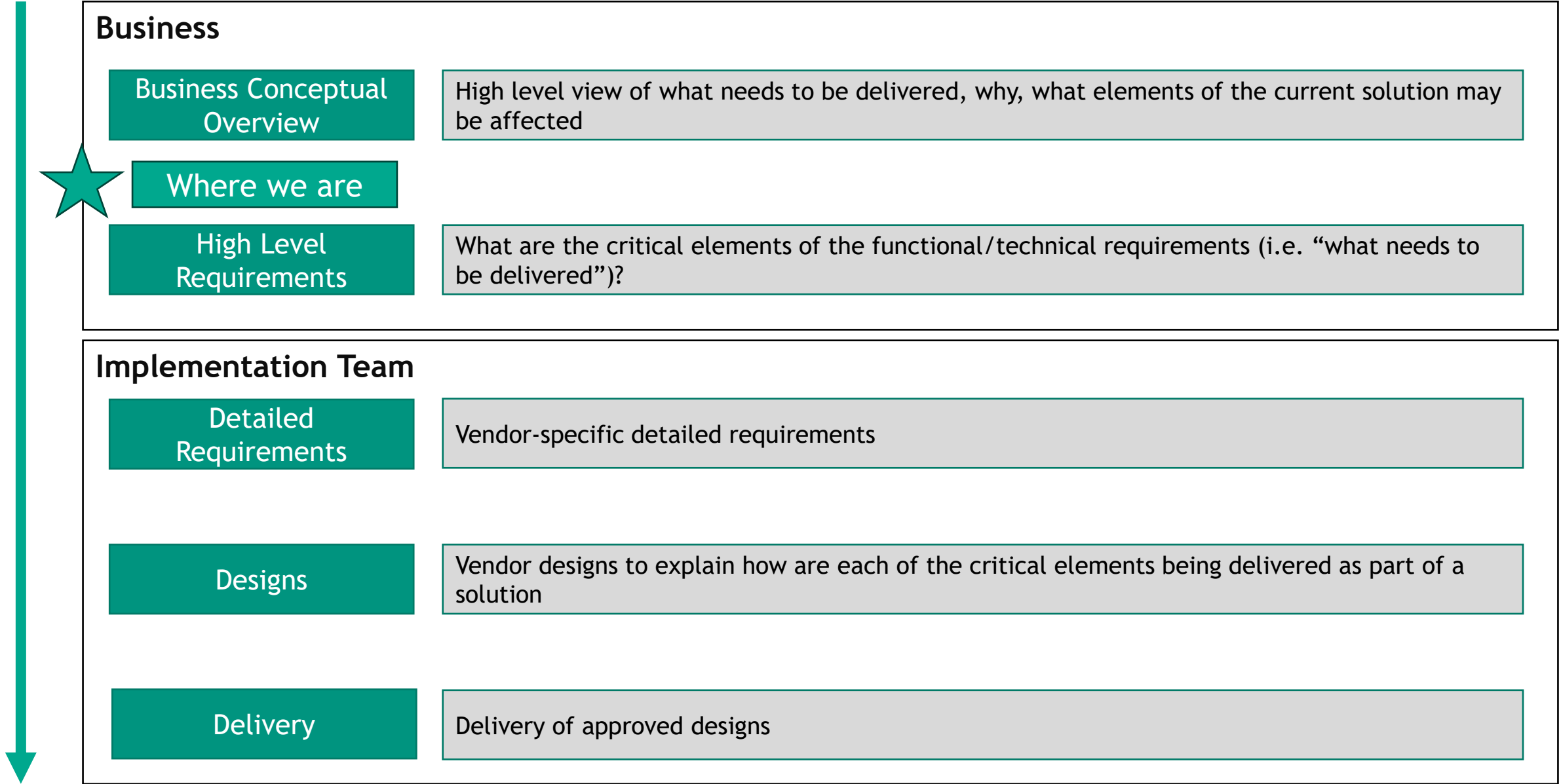
# EU Balancing Platform Integration



- Preparation and Submission of SEM TERRE/MARI Inputs
  - Offer Data (Bid Submission)
  - Balancing Demand Submission (TSO needs)
  - Interconnector Cross-Border Capacity Submission
- TERRE/MARI Clearing
- Integration of TERRE/MARI Outputs
  - Integration of Accepted Bids (Scheduling & Dispatch)
  - Imbalance Price Calculation
  - Imbalance Settlement
  - Reporting



# Development Process



# Further Presentation / Engagement

- Are there gaps in the scope presented at the MOST last month?
- We are in the early stages of the design and no final decisions / commitments have been made
- Plan to continue to engage through this forum going forward
- Would welcome feedback for future engagement, e.g. dedicate future sessions to deeper dive on one topic?

# 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](mailto:SchedulingandDispatch@Eirgrid.com)

#### LDES Queries

[FuturePowerMarkets@Eirgrid.com](mailto:FuturePowerMarkets@Eirgrid.com)

#### FASS Queries

[FASS@Eirgrid.com](mailto:FASS@Eirgrid.com)

[FASSProgramme@soni.ltd.uk](mailto:FASSProgramme@soni.ltd.uk)

#### SMP Queries

[SMP.PMO@Eirgrid.com](mailto:SMP.PMO@Eirgrid.com)

#### FPM Policy

[FuturePowerMarkets@Eirgrid.com](mailto:FuturePowerMarkets@Eirgrid.com)

### 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

# Future Power Markets: Industry Workshop

## Future Workshop Schedule

Date	Time	Location
08 May 2024		TBD - Dublin, Belfast, Dundalk
05 June 2024		TBD - Dublin, Belfast, Dundalk
03 July 2024		TBD - Dublin, Belfast, Dundalk
07 August 2024		TBD - Dublin, Belfast, Dundalk
11 September 2024		TBD - Dublin, Belfast, Dundalk
09 October 2024		TBD - Dublin, Belfast, Dundalk
06 November 2024		TBD - Dublin, Belfast, Dundalk
04 December 2024		TBD - Dublin, Belfast, Dundalk



## Future Discussion Topics

### SDP

- ESPS and NPDR Modification Approval - Updates
- Detailed Implementation Plan
- Ongoing NPDR designation process updates

### LDES

- Updates on procurement design

### FASS

- DASA Design Consultation (closing 10 May)
- DASA Design Consultation workshop
- System Service Code Development Panel ToR

### SMP

- High-Level Implementation Timeline
- Additional details on functional approach

### EMP

- TBD

## Disclaimer

This document has been prepared as an early indication of the expected changes to the I-SEM Technical Specification and specifically the Balancing Market Interface. As the vendor design specifications are not yet finalised and the I-SEM Technical Specification will not be published until Q2 2024, this document should be treated as indicative only. In this context:

1. EirGrid and SONI accept no responsibility for decisions made or actions taken by Participants as a result of the information presented in this document or associated documents. Furthermore, EirGrid and SONI do not indemnify any commercial or organisational decisions made by Participants in relation to the information herein.
2. The information provided in this document is based entirely on documentation and information provided by the software vendor. Although EirGrid and SONI have made all reasonable efforts to ensure that the information presented is correct, it cannot guarantee the information provided.
3. Further changes to the processes described or schema elements presented may result as new information comes to light during the finalisation of vendor designs.

## SEM Technical Specification: Volume C (v15.1) Summary of SDP001/002 changes - indicative

Section	Sub-section	NPDR Commentary	ESPS Commentary
1		No change	No change
2	2.1	No change	No change
	2.2	No change	No change
	2.3	No change	No change
3	3.1	No change	No change
	3.2	No change	No change
4	4.1	No change	No change
	4.2	No change	No change
	4.3	No change	No change
	4.4	No change	No change
	4.5	No change	No change
	4.6->4.6.1	No change	No change
	4.6->4.6.2	No change	No change
	4.6->4.6.3	No change	No change
	4.6->4.6.4	No change	No change
	4.6->4.6.5	No change	No change
	4.6->4.6.6	No change	No change
	4.6->4.6.7	No change	No change
	4.6->4.6.8	No change	No change
	4.6->4.6.9	No change	No change
	4.6->4.6.10	No change	No change
	4.6->4.6.11	No change	No change
	4.6->4.6.12	No change	No change
	4.6->4.6.13	No change	No change
	4.6->4.6.14	No change	No change

## SEM Technical Specification: Volume C (v15.1) Summary of SDP001/002 changes - indicative

Section	Sub-section	NPDR Commentary	ESPS Commentary
4	4.6->4.6.15	<ul style="list-style-type: none"> <li>Definition of permissible combinations of flags (e.g., Dispatchable, Priority Dispatch and Controllable fields) for NPDRs</li> </ul>	<ul style="list-style-type: none"> <li>Minimum Storage Capacity (update to clarify that will be zero for units excluding ESPS)</li> <li>Minimum Generation (zero for units excluding ESPS and Pumped Storage, negative or zero for ESPS and Pumped Storage)</li> <li>Maximum Storage Capacity (update to apply to ESPS)</li> </ul>
	4.6->4.6.16	No change	No change
	4.6->4.6.17	No change	No change
	4.6->4.6.18	No change	No change
5	5.1	No change	<ul style="list-style-type: none"> <li>Recognition of ESPS storage parameters</li> </ul>
	5.2	No change	No change
	5.3	No change	No change
	5.4	No change	No change
	5.5	<ul style="list-style-type: none"> <li>Fixed Costs (SUC and NLC) must be zero for NPDRs</li> </ul>	<ul style="list-style-type: none"> <li><b>Pending:</b> outstanding query regarding RA request to limit ESPS to only submit Complex COD</li> <li>Fixed Costs (SUC and NLC) must be zero for ESPS</li> <li>Specific parameters for batteries as well as pumped storage and energy limited units</li> </ul>
	5.5->5.5.11	No change	<ul style="list-style-type: none"> <li><b>Pending:</b> outstanding query regarding RA request to limit ESPS to only submit Complex COD</li> <li>Fixed Costs (SUC and NLC) must be zero for ESPS</li> </ul>
	5.5->5.5.2	<ul style="list-style-type: none"> <li>Fixed Costs (SUC and NLC) must be zero for NPDRs</li> </ul>	<ul style="list-style-type: none"> <li>Fixed Costs (SUC and NLC) must be zero for ESPS</li> </ul>
	5.5->5.5.3	No change	No change
	5.5->5.5.4	No change	<ul style="list-style-type: none"> <li>Include ESPS-specific fields</li> </ul>

# SEM Technical Specification: Volume C (v15.1) Summary of SDP001/002 changes - indicative

Section	Sub-section	NPDR Commentary	ESPS Commentary
5	5.5->5.5.5	<ul style="list-style-type: none"> <li>Fixed Costs (SUC and NLC) must be zero for NPDRs</li> <li>Forecast availability                             <ul style="list-style-type: none"> <li>minimum_mw must be zero for NPDRs</li> <li>minimum_output_mw already specified as equal to zero</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Fixed Costs (SUC and NLC) must be zero for ESPS</li> <li>Forecast availability                             <ul style="list-style-type: none"> <li>minimum_mw must be zero for ESPS</li> <li>minimum_output_mw must be &lt;=0 for ESPS</li> </ul> </li> <li><b>Pending:</b> outstanding query regarding RA request to limit ESPS to only submit Complex COD</li> <li>Complex COD                             <ul style="list-style-type: none"> <li>Operational Maximum Storage Quantity (new)</li> <li>Operational Minimum Storage Quantity (new)</li> </ul> </li> </ul>
	5.5->5.5.6	No change	No change
	5.6->5.6.1	No change	No change
	5.6->5.6.2	<ul style="list-style-type: none"> <li>Specify what is applicable for NPDRs and default values as relevant, comprising:</li> <li><u>Mandatory Fields</u> <ul style="list-style-type: none"> <li>Minimum Stable Generation (must be zero)</li> </ul> </li> <li><u>Optional Fields</u> <ul style="list-style-type: none"> <li>Ramp Up Rate 1</li> <li>Ramp Down Rate 1</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Specify what is applicable for ESPS and default values as relevant, comprising:</li> <li><u>Mandatory Fields</u> <ul style="list-style-type: none"> <li>Storage Cycle Efficiency (new)</li> <li>Minimum Stable Generation (must be zero)</li> <li>Block Load Flag (must be false)</li> </ul> </li> <li><u>Optional Fields</u> <ul style="list-style-type: none"> <li>Maximum On Time</li> <li>Minimum On Time</li> <li>Minimum Off Time</li> <li>Ramp Up Rate 1-5</li> <li>Ramp Up Quantity 1-5</li> <li>Ramp Up Rate 1-5</li> <li>Ramp Up Quantity 1-5</li> </ul> </li> </ul>
	5.6->5.6.3	No change	No change
	5.6->5.6.4	No change	No change
	5.7	<ul style="list-style-type: none"> <li>A01 criteria to apply to NPDRs (as not dispatchable)</li> </ul>	<ul style="list-style-type: none"> <li>from_mw criteria to include ESPS able to have negative values</li> <li>to_mw criteria to include ESPS able to have negative values</li> </ul>
	5.8	No change	No change



# SEM Technical Specification: Volume C (v15.1) Summary of SDP001/002 changes - indicative

Section	Sub-section	NPDR Commentary	ESPS Commentary
6	6.1	No change	No change
	6.2	No change	No change
	6.3	No change	No change
	6.4	No change	No change
	6.5	No change	No change
	6.6->6.6.1	No change	No change
	6.6->6.6.2	No change	No change
	6.6->6.6.3	No change	No change
	6.6->6.6.4	No change	No change
	6.6->6.6.5	No change	No change
	6.6->6.6.6	No change	No change
	6.6->6.6.7	No change	No change
	6.6->6.6.8	No change	No change
	6.6->6.6.9	No change	No change
	6.6->6.6.10	No change	No change
	6.6->6.6.11	No change	No change
	6.7->6.7.1	No change	No change
	6.7->6.7.2	No change	No change
	6.7->6.7.3	<ul style="list-style-type: none"> <li><b>Pending:</b> potential updates to the Forecast Imbalance report (REPT_042), to clarify the calculation of forecast imbalance and separation of forecast totals between Priority Dispatch and NPDRs</li> </ul>	No change
	6.7->6.7.4	No change	<ul style="list-style-type: none"> <li>Daily Commercial Offer Data (REPT_053)                             <ul style="list-style-type: none"> <li>Add Operational Minimum Storage</li> <li>Add Operational Maximum Storage</li> </ul> </li> <li>Daily Technical Offer Data (REPT_053)                             <ul style="list-style-type: none"> <li>Add Storage Cycle Efficiency</li> </ul> </li> </ul>

## SEM Technical Specification: Volume C (v15.1) Summary of SDP001/002 changes - indicative

Section	Sub-section	NPDR Commentary	ESPS Commentary
6	6.7->6.7.5	No change	No change
	6.7->6.7.6	No change	No change
	6.7->6.7.7	No change	No change
	6.7->6.7.8	No change	No change
	6.7->6.7.9	No change	No change
	6.7->6.7.10	No change	No change
	6.7->6.7.11	No change	No change
7		No change	No change
8		No change	No change
9		No change	No change
10		No change	No change