Implementation Roadmap

Hybrid Co-Located sites with MEC Sharing

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EirGrid | ESB NETWORKS

JSOP Joint System Operator Programme

Contents

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Revision	Date	Description	Originator	Approver
V1	05/06/2026	Version 1	EirGrid & ESBN	EirGrid & ESBN

Glossary

Term	Definition
CAP	Climate Action Plan
CRU	Commission for Regulation of Utilities
DAC	Designated Activity Company
DSO	Distribution System Operator
DUoS	Distribution Use of System
IGG	Industry Governance Group
LSAT	Look Ahead Security Assessment Tool
MDR	Market Discussion Request
MEC	Maximum Export Capacity
MCR	Market Change Request
MLE	Multiple Legal Entity
NI	Northern Ireland
PPM	Power Park Module
PSO	Public Service Obligation
SCADA	Supervisory Control and Data Acquisition
SEM	Single Electricity Market
SM	Sub-meter
SO / SOs	System Operator(s)
TSO	Transmission System Operator
VTT	Voltage Trajectory Tool

Background

On 15 April 2026, the CRU published the Decision Paper on the Sharing of Maximum Export Capacity (MEC) behind a Single Connection Point (CRU202643)[1].

"The ability to share MEC has been identified as a key enabler of Hybrid projects. Hybrid projects combine two or more types of electricity generation technologies connecting through a single connection point on the electricity network, for example, a combination of renewable technologies such as solar photovoltaic (PV) and wind turbines, or generation co-located with battery storage. This decision enables hybrid projects to share the MEC at a connection point, thereby enabling increased renewable/generation output, accelerating delivery, reducing the need for grid upgrades, and enhancing system flexibility through the co-location of complementary technologies and storage. This policy is limited to Co-Located Hybrid Projects, which are made up of separately metered generation/storage units connected to the onshore electricity system."

This decision delivers the next step in removing the barriers to Hybrid-connections set out in the Climate Action Plan 2021 (and subsequent CAPs 2023 and 2024), following the removal of the Installed Capacity Cap (CRU202402) by CRU in 2024. This decision on MEC sharing follows from a technical assessment by EirGrid and ESB Networks and a public consultation by CRU (CRU202528) published in March 2025.

The decision paper requested that the System Operators develop a roadmap outlining the steps required to implement the approved arrangements for MEC sharing at Hybrid co-located sites. Following publication of the CRU decision, the System Operators have developed an indicative Implementation Roadmap, as set out in the sections below. Throughout the delivery of the Roadmap, EirGrid and ESB Networks will continue to engage with industry and with the CRU in relation to implementation actions and timelines, seeking to identify opportunities to accelerate delivery and minimise complexity where possible.

[1] Decision on Sharing Maximum Export Capacity (MEC) behind a Single Connection Point | CRU.ie

Key Assumptions for MEC Sharing at Hybrid Co-Located sites

Hybrids Definitions

For the purposes of this document, the definitions of Hybrid project configurations are taken directly from the CRU Decision on the Sharing of Maximum Export Capacity (MEC) behind a Single Connection Point and are adopted as the working definitions for implementation.

The CRU defines a **Hybrid Co-Located Project** as *projects "that combine multiple forms of generation and/or storage technologies behind a single defined connection point to the electricity distribution or transmission network where the generation units for the different technologies are individually sub-metered and registered, and operate independently of one another for market, settlement, and dispatch purposes."*

The CRU further defines an **Integrated Hybrid Project** as projects *"that combine multiple forms of generation and/or storage technologies utilising multiple primary energy sources behind a single defined connection point to the electricity distribution or transmission network where the generating units for the different technologies are registered and operate as a single unit for market, settlement, and dispatch purposes."*

These definitions form the working basis for this Implementation Roadmap. The configurations illustrated in Figure 1 align directly with the Hybrid project definitions set out by the CRU in the decision paper. Both the first and second configurations are consistent with the CRU definition of Hybrid Co-Located Projects, in that multiple technologies are connected behind a single connection point and remain independently registered and operated for dispatch, settlement, market participation, and system services purposes. The distinction between the two configurations relates solely to the treatment of the Maximum Export Capacity (MEC):

- In the first configuration, A – Current Approach (MEC Summation), the site MEC is defined as the summation of the individual MECs of each connected asset at the connection point.
- In the second configuration, B – Implementation Approach (MEC sharing), multiple technologies share a single site-level MEC at the connection point.
- The third configuration, C – Future Approach (Single Combined Unit), reflects Integrated Hybrid Projects, as defined by the CRU, where technologies operate as a single combined unit and which are outside the scope of the current decision and this Implementation Roadmap.

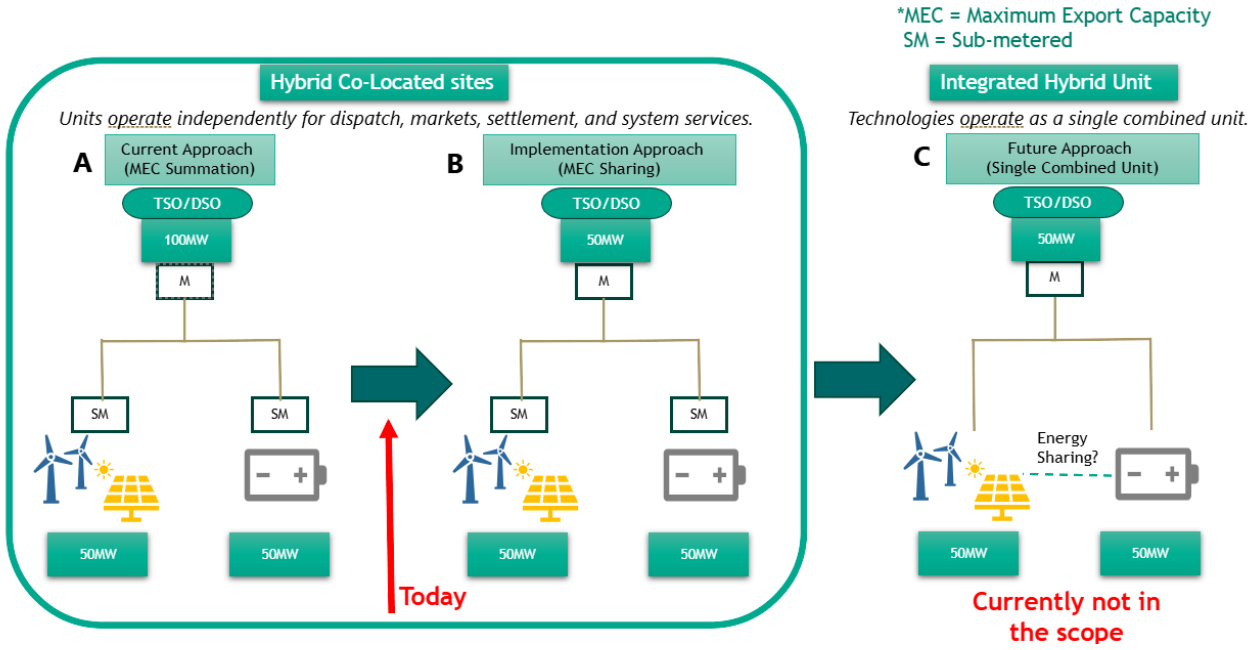

Figure 1 – Hybrid site configurations

The CRU decision further notes that, while MEC sharing for Hybrid Co-Located projects is enabled, there are a number of areas where additional work, clarification, or assessment would be required before such arrangements could be facilitated. These areas are summarised below.

Cross-charging and energy sharing behind the meter

The decision explicitly states that energy sharing or cross-charging between co-located technologies behind the connection point is not permitted. Energy discharged, curtailed, or dispatched down from one technology cannot be redirected to another technology behind the meter.

At present, energy sharing cannot be supported as the required levels of operational visibility and control are not available. The TSO requires separate real-time visibility and control of individual assets to maintain system security, which would not be achievable where energy flows occur behind the meter[2]. In addition, enabling cross-charging would require significant changes to market rules, dispatch and forecasting systems, metering arrangements, settlement processes, and technical standards, including site-level controls and SCADA integration. For these reasons, cross-charging remains outside the scope of the current MEC sharing arrangements.

The SOs recognise the potential benefits of energy sharing for developers. In parallel with and separate to the delivery of MEC sharing, the System Operators will assess the changes that

[2] This reflects the TSO's statutory obligation to operate the transmission system securely under the Electricity Regulation Act 1999, as operationalised through the TSO Licence (in particular Conditions 10 (Central Dispatch) and 15–16 (Operating Security)) and the Grid Code (e.g. GC.15 System Control), which collectively require unit-level telemetry, observability and dispatchability.

would be required to facilitate such arrangements in the future, including whether cross-charging could only be considered as part of any future enabling of integrated Hybrid configurations, given the additional complexity involved. The SOs will continue to engage with industry and the CRU on this topic as part of ongoing work, providing updates as further assessment is progressed.

Priority Dispatch

The CRU decision highlights that the interaction between MEC sharing and priority dispatch requires further assessment and notes that MEC sharing may represent a significant change in how priority dispatch is applied. The CRU further indicates that any determination as to whether such a change constitutes a material modification to existing arrangements remains a matter for the competent authorities.

In this context, accommodating priority dispatch within MEC sharing arrangements introduces substantial operational and regulatory complexity. The presence of both Priority Dispatch and Non-Priority Dispatch units behind a single connection point gives rise to multiple dispatch and curtailment scenarios, each with different system, market, and compensation implications. Given the absence of regulatory clarity in this area, and the potential impacts on existing dispatch and market arrangements, Priority Dispatch configurations are not enabled under the current MEC sharing framework and are not in scope for this implementation roadmap and would require further assessment before being considered in any future phase.

Technology neutrality for Hybrid Co-Located sites

The applicability of MEC sharing across different technology types introduces additional technical and operational considerations and requires further assessment. In particular, the mixing of different technology types under a shared MEC, including synchronous and non-synchronous generation, requires further assessment due to differences in operational characteristics and compliance requirements.

Hybrid configurations involving different generation technologies introduce material complexity, as conventional synchronous generation and non-synchronous (Power Park Modules, PPMs) are assessed and operated under different Grid Code and operational frameworks. Sharing MEC across these technologies would therefore require further development of technical standards, operational processes, and supporting arrangements.

In parallel with the implementation of MEC sharing for Hybrid co-located sites, the System Operators will progress further assessment of the technical, operational and compliance considerations associated with the mixing of different generation technology types under a shared MEC.

The outcomes of this assessment will determine whether, and under what conditions, such configurations could be facilitated in the future. Any potential changes would be subject to further development, regulatory consideration and appropriate assurance prior to implementation. Updates on this topic will be communicated as the assessment progresses.

Scope and applicability of MEC sharing arrangements

The CRU decision applies only to onshore Hybrid Co-Located projects. Units within a Hybrid Co-Located site must remain separately registered, scheduled, dispatched, and settled, and must be individually sub-metered, notwithstanding the sharing of a single MEC at the connection point. Each unit continues to participate independently in the market and in system services, and all existing regulatory and operational obligations continue to apply at the unit level. Responsibility for ensuring that the aggregate export from the site does not exceed the shared MEC remains with the participant at all times.

The CRU decision further clarifies that the enabling of MEC sharing applies only to projects operated by a single legal entity, and that arrangements involving multiple legal entities (MLE) sharing a single connection point are not enabled under the current decision and would require further consideration and development. Accordingly, for the purposes of the current Implementation Roadmap, scenarios involving MLE are outside the scope of the current programme, and any consideration of MEC sharing for multiple legal entities would need to be progressed, if at all, through a separate and distinct workstream beyond the scope of the current roadmap.

The enabling of MEC sharing does not alter the applicable connection application processes. Where a project seeks to increase its contracted MEC, an application through the relevant connection process will continue to be required. Where a project avails of MEC sharing without any increase in contracted MEC, this will be progressed through a modification to the existing connection arrangement, in line with existing policy and procedures.

Notwithstanding the above, and consistent with the CRU decision paper on MEC sharing, these arrangements define the framework within which MEC sharing for Hybrid co-located sites will be implemented, as set out in the roadmap sections that follow.

Implementation Roadmap

This Implementation Roadmap sets out how the approved MEC sharing arrangements for Hybrid Co-Located sites, as determined by the CRU, will be delivered in practice by the System Operators. It translates the scope, principles, and constraints established through the CRU decision into a structured programme of delivery activities, identifying the sequencing, dependencies, and assurance steps required to progress from decision through to operational implementation and go-live.

The roadmap does not revisit or extend the policy decisions made by the CRU. Instead, it focuses on enabling implementation in a safe, controlled, and transparent manner, recognising the cross-cutting changes required across policy, market, operational, systems, and compliance domains, and the governance and regulatory approvals that underpin those changes.

The high-level roadmap (Appendix 1) sets out the main workstreams that SOs are required to implement MEC sharing at Hybrid Co-Located sites. The roadmap is structured over a

multi-phase delivery period, measured from a defined start month (M1). A short preparatory ramp-up period is required prior to the formal start of the roadmap workstreams. The SOs will confirm the M1 start date through a dedicated industry webinar/ workshop, at which the roadmap will be presented and questions addressed.

Overall delivery of the MEC sharing programme is expected to extend beyond 24 months. For clarity, activities illustrated between M1 and M12 focus on preparatory, assessment and design activities required to scope and define the changes needed to enable MEC sharing. Regulatory processes, including code modifications and regulatory authority decisions, are expected to occur predominantly from M12 onwards. The outcomes of these processes will determine the final scope, requirements and sequencing of subsequent implementation activities. As such, activities shown from M12 onwards represent the earliest potential window for implementation, subject to regulatory approval and resolution of any issues raised through those processes.

For clarity, the roadmap is structured around two high-level delivery phases: a Scoping and Design phase followed by an Implementation and Go-Live phase, with progression between phases dependent on completion of upstream activities and regulatory processes.

It should be noted that regulatory approval of proposed code or rule changes is not guaranteed to align with the original proposals put forward by the System Operators. Changes arising from regulatory decisions, departmental priorities or competing work programmes across both System Operators, may also require further refinement of design assumptions, with potential implications for downstream system, market and operational implementation activities.

The implementation roadmap brings together a coordinated programme of delivery activity that progresses, in parallel, the policy, market, operational, systems, and compliance changes needed to move from the CRU decision through to full implementation and go-live of MEC sharing for Hybrid co-located sites. The focus throughout delivery is on enabling the necessary arrangements, controls, and system changes in a controlled and phased manner, supported by appropriate testing and assurance.

Certain elements of the roadmap are All-Island in nature, reflecting the need for coordination across market arrangements and systems that operate on an All-Island basis. While there is strong ongoing engagement and collaboration between the System Operators, the progression, sequencing and timing of All-Island activities across scoping, design, implementation and go-live phases may be influenced by broader regulatory and governance sequencing arrangements applicable at an All-Island level. As a result, delivery of these activities may extend beyond the indicative timelines shown. Indicative timelines shown in the roadmap reflect current assumptions and dependencies, including the need for regulatory approvals and coordination across TSO and DSO operational, market, settlement, and supporting IT systems, and may be refined as the programme progresses.

The full detailed implementation plan, including task-level activities, sequencing, and dependencies across all workstreams, is provided in Appendix 1.

Workstream Details

This section provides an overview of the delivery focus, indicative minimum durations, reflecting current assumptions and known dependencies of the workstreams underpinning the Implementation Roadmap. Timings are referenced to the roadmap start month (M1) and reflect scoping, design, implementation and transition activities aligned with the two high-level delivery phases identified in the roadmap. Early-phase timelines primarily reflect assessment, design, consultation and regulatory activities, while later-phase timelines represent the earliest feasible implementation windows. The sequencing and duration of individual workstreams are subject to dependencies across regulatory, market, operational and system activities, and completion of individual workstreams, or of the overall programme, may extend beyond the periods shown.

For clarity, M1 does not coincide with the publication month of the CRU decision on MEC sharing and will commence following a short preparatory ramp-up period, with the start date to be communicated separately by the SOs.

Connections Policy and Agreements (M4 - M14, ~10 months)

This workstream includes updates to the connection process and agreement to accommodate the concepts related to shared MEC, assessment of the impact of shared MEC on firm access methodology for each technology, assessing the impact for shared MEC on network and connection studies, updates to connection financial security arrangements, and updates to the Connection Policy and Connection Agreements to explicitly reference MEC sharing and site-specific controls.

Market Arrangements (M2 - M18, ~ 17 months)

Market arrangements activities cover assessment of settlement impacts for market and system services, review of market registration processes and development of guidance, definition of codes and operating protocols, updates to market monitoring arrangements, and implementation of the required code and protocol changes through to completion at M18.

Balancing Market Settlement (M3 - M13, ~ 9 months)

This workstream comprises a defined testing phase followed by a market impact outcome milestone. Testing of registration and settlement systems is undertaken from M3 to M11 (approximately 9 months) to validate settlement arrangements for units sharing MEC. This is followed by a Market Impact Outcome milestone in M13, aligned with outputs from related market and code workstreams, to confirm that settlement impacts have been appropriately assessed and addressed prior to progression to later implementation stages.

Operations, Scheduling and Dispatch (M1 - M12, ~ 12 months)

Operational delivery includes the creation of new availability signals, feedback and testing of those signals across systems, testing of scheduling and dispatch systems to ensure compliance with shared MEC limits, development of an operational policy for Hybrid sites, and

development of guidelines for grid-connected transformers to constrain aggregate export at the connection point.

System Services (M4 - M15, ~ 11 months)

System services activities include assessment and testing of availability signals, updates to the System Services Protocol Document, system services settlement testing, and dispatch performance monitoring to ensure compliance with shared MEC arrangements.

Tools, Forecasting and Modelling (M2 - M16, ~ 14 months)

This workstream covers updates to forecasting methodologies, development of modelling requirements and data feeds for tools such as VTT and LSAT, identification and delivery of software enhancements, and modification of existing tools to accurately represent Hybrid Co-Located sites operating under shared MEC.

Registered Capacity and Reactive Power (M1 to M9, ~ 8 months)

Activities focus on reviewing and identifying the impacts of shared MEC on registered capacity, reactive power, and voltage-control requirements for Hybrid co-located sites operating under shared MEC, ensuring alignment with Grid Code obligations and operational compliance at the connection point.

Generator Testing (M13 - M24, ~ 13 months, indicative)

Generator testing is delivered in two distinct phases. An initial phase runs from M3 to M18, during which generator testing templates are updated to reflect MEC sharing requirements. This is followed by a second phase from M19 to M24, during which generator testing is carried out to demonstrate compliance with Grid Code, scheduling and dispatch, and system services requirements prior to go-live. The overall timing is indicative and aligned with the completion of the upstream system and market changes.

Rules and Compliance (M3 - M19, ~ 16 months)

This workstream spans review, consultation, and modification of relevant codes and compliance frameworks to assess the impacts and incorporate the changes required to enable the concepts and application around sharing of MEC, including the Grid Code, D-Code, Trading and Settlement Code, and Capacity Market Code, with timelines dependent on governance and approval processes.

IT Systems (M1 – M24, ~ 24 months)

While preparatory review, high-level assessment and planning activities commence early in the programme, detailed system design, build and implementation activities are dependent on the outcome of relevant regulatory processes, including approval of any required code or rule changes.

In line with established delivery practice, the System Operators would not normally commence detailed system design or implementation until the relevant regulatory authority decisions have been made, to mitigate the risk of rework arising from changes to approved requirements.

This workstream spans the lifecycle from review and preparation through to implementation and go-live, as reflected in the roadmap. Timelines are indicative and subject to change. Activities between M1 and M18 focus on IT review, assessment, design, and preparation required to support MEC sharing for Hybrid Co-Located sites.

At M13, the System Operators will have developed a plan that consolidates the outcome of the assessment and inform implementation. This plan consolidates the outputs of the preceding review phase and is used to direct the final delivery activities.

From M13 to M24, the workstream transitions into implementation and go-live phase, covering the rollout and completion of the IT changes required to operationalise Hybrid MEC sharing, with go-live occurring during this period.

Retail Market Design (M1 - M24+, ~at least 24 months)

This workstream addresses retail market design impacts, including processes and market messages, associated with Hybrid connections. Timelines are subject to change depending on the outputs of the design stages, with any changes documented through Market Discussion Requests (MDRs) and managed via the IGG change control process.

Prioritisation of changes to central market systems required to support Hybrid connections, including any Market Change Requests, will be subject to engagement with the CRU Retail team. This includes consideration of enduring arrangements for Commercial Storage. As noted in the roadmap, detailed design, build, test, and implementation for enduring commercial storage are expected to extend until end Q4 2029 at the earliest. In the interim, arrangements set out in MCR1214 Interim metering responsibilities for DSO connected battery storage and MCR1205 Application of the PSO to Commercial Storage will continue to apply.

Metering Arrangements (M1 – M12, ~12 months)

This workstream covers the consideration of metering arrangements and associated meter data processing for Hybrid Co-Located sites with MEC sharing. As set out in the roadmap, activities include a review of metering arrangements led by ESB Networks, undertaken in consultation with EirGrid and the CRU, to assess the implications of MEC sharing on metering configurations and data handling during the core implementation period.

Metering Rules and Compliance (M1 - M24+, ~at least 24 months)

This workstream covers the review and modification of metering rules and associated agreements, noting that the review is not limited to the documents listed in the roadmap. Activities include review of meter data roles and responsibilities, meter data services agreements, meter registration agreements, the Metering Code for the SEM, Distribution Use of System (DUoS) agreements, and rules for the application of DUoS tariffs. This workstream is undertaken in consultation with the TSO and CRU, with implementation of any resulting changes expected to extend beyond the core MEC sharing implementation window, reflecting the longer-term nature of metering rule changes.

The detailed sequencing, task-level activities, and dependencies associated with each workstream are set out in Appendix 1, which provides the full implementation plan underpinning this Roadmap.

Next steps

Following publication of this Implementation Roadmap on the EirGrid and ESB Networks websites, the immediate next step will be industry engagement to communicate the planned start date (M1) and to discuss the Implementation Roadmap in detail. As outlined above, M1 will commence after a short preparatory ramp-up period and does not align directly with the publication of the CRU decision on MEC sharing.

The System Operators expect to host an industry webinar on 25 June 2026 to communicate the proposed start date for the roadmap and to walk the industry through its structure, sequencing, indicative timelines, and key areas of work. The session will also provide an opportunity for participants to ask questions and seek clarification on the roadmap and next steps. Further information on this webinar and registration will be communicated in due course.

Following this engagement, activities will progress in line with the Implementation Roadmap, with an initial focus on preparatory and review phases ahead of later implementation and go-live stages. In parallel, and as instructed by the CRU, the SO(s) will provide quarterly progress updates to the CRU over the course of delivery. Ongoing engagement with industry and with the CRU will continue as the programme progresses.

Appendix 1 – Hybrids Implementation Roadmap

Hybrids Implementation Roadmap (MEC Sharing)

All Island ** | Ireland | Retail Market (IE)

Scoping & Design Phase | Implementation & Go-Live Phase

Note: Timelines shown are minimum and indicative. Progression beyond M12 is dependent on completion of regulatory activities and clarification of IT system and vendor delivery timelines. Delivery may extend beyond the periods shown.
Note: All-island workstreams require cross-jurisdictional coordination and relevant approvals.