SINGLE ELECTRICITY MARKET COMMITTEE

Contractual Arrangements for Low Carbon Inertia Services (LCIS)

Decision Paper

SEM-23-064

06 September 2023

EXECUTIVE SUMMARY

In the Single Electricity Market Committee (SEMC) Decision Paper, on System Services Future Arrangements[1], the SEMC requested that the Transmission System Operators (TSOs) carry out an assessment on whether or not to initiate a fixed contract procurement process for zero carbon inertia sources and that the TSOs publish a detailed proposal on the matter, for public consultation.

Following this public consultation, the SEMC requested that the TSOs submit a recommendation paper to the SEMC. The TSOs have completed this process for the technical requirements and procurement of Low Carbon Inertia Services (LCIS)[2] and the SEMC issued the SEMC Decision Paper on the Procurement of LCIS in January 2023[3].

Subsequent to this, the TSOs consulted on 'the Contractual Arrangements for the Procurement of a LCIS' in April 2023[4] and based on the responses to the contractual arrangements consultation have produced a 'Recommendations on Procurement of LCIS – Contractual Arrangements' paper (Annex 1 – TSOs' Recommendation Paper).

The RAs have reviewed the TSOs' contractual arrangements consultation paper, the responses received to this consultation paper, the TSOs Recommendation Paper and engaged extensively with the TSOs in order to ensure a comprehensive consideration of all the issues raised in the development of this decision. Based on this review the SEMC has decided to approve the TSOs' Recommendations Paper (Annex 1 – TSOs' Recommendation Paper), as detailed below.

The SEMC's decisions, which should be read in conjunction with the TSOs' Recommendations Paper and associated LCIS Agreement and LCIS Protocol documents, are summarised below:

- Target Go-Live date/Longstop date – The maximum period between the LCIS contract effective date and target go-live date is to be extended from 33 months to 42 months. This extension does not prohibit projects connecting earlier and taking advantage of longer contract duration periods. A longstop date has been added to the LCIS Agreement, defined as the date falling 12 months after the target go-live date. The target go-live date and the service provision longstop date will be adjusted if a contracted providers actual date of connection is delayed beyond the target connection date, as a result of:
    - A TSO delay; or
    - A force majeure event.

[1] SEM-21-021 System Services Future Arrangements - Decision Paper 1.pdf (semcommittee.com)
[2] TSOs Recommendation on Procurement of LCIS Paper - 14 Nov 2022.pdf (semcommittee.com)
[3] SEM-23-002 LCIS Procurement - SEMC Decision Paper.pdf (semcommittee.com)
[4] Consultation on Contractual Arrangements for the Procurement of a Low Carbon Inertia Service (LCIS) | EirGrid Consultation Portal

If the actual date of connection is delayed beyond the target connection date, as a result of issues with the providers delivery of the unit, the target go-live date will not be adjusted. In such events the contract duration will effectively be less than six years.

- Participation in other system services arrangements - Parties to the LCIS Agreement will be prohibited from the provision of other related System Services (i.e. Synchronous Inertial Response and Steady State Reactive Power) as these services overlap with the LCIS service procured, which bundles the provision of Synchronous Inertia, Reactive Power support and Short-Circuit Contribution.
- In any potential requirement to participate in Future System Services arrangements, the Regulatory Authority shall consider associated service provider costs for participating in these arrangements. This decision applies only to a provider's participation in any Future System Services arrangements for the duration of the providers LCIS contract. Future System Services arrangements refer to any market arrangements outside the current regulated tariff arrangements.
- Grid Code Compliance - In the event that Grid Code modifications for LCIS devices are not fully implemented by the contract execution date, appropriate Grid Code standards for generating units will be deemed applicable to LCIS units. As stated in the TSOs Recommendation Paper, the TSOs will endeavour to provide additional technical information to assist developers, within the timeframe of the LCIS procurement process.
- Performance Security Arrangements – The TSO can no longer drawdown 100% of the performance bond in the event of a reporting milestone not being met. Amounts from the performance bond can only be drawn down in the event that a major milestone is not achieved. The amount to be drawn down is limited to, up to 25% of the total performance bond, for each major milestone not achieved.
- Shortfall charge - a 95% threshold on the application of the Shortfall Charge will apply, i.e. the Shortfall Charge will not apply if the installed capability is at or above 95% of the originally contracted volume.
- Synchronisation Performance Scalar - is reduced by the replacement of the term, Number of Instructions, by the maximum of the number of instructions and three. This will ensure that, in a month with a low number of dispatch instructions and one failure to follow notice to synchronise, the scalar won't be set to a markedly low value.
- The Trip Charge Rate is reduced from €45/MVA.s / £39.82/MVA.s to €15/MVA.s / £13.27/MVA.s.
- Planning Applications - The planning reference number and a plan of the facility at least up to the connection point will need to be provided by the tenderer at the Request for Proposal stage. The TSOs' evaluation team will check that planning is granted (with or without conditions) and that the plan includes the main equipment of the facility, including a step-up transformer to the connection point.

To assist developers in their assessment of which potential connection method would be appropriate, EirGrid is offering the opportunity to meet with developers to provide a desktop assessment of their connection design assumptions. Developers are required to share designs (site layouts including relationship to any neighbouring transmission station) with EirGrid to facilitate this assessment. Information provided by EirGrid during this assessment will be on a purely advisory basis, noting that actual connection design will be determined in the subsequent 90-day connection offer process.

- Locational Quantity Criteria - Both locational quantity criteria shall be retained:
  1. the limit of 2000 MVA.s of LCIS capability at a transmission station will include any contribution from LCIS devices connected from 'tail-fed' transmission stations.
  2. a minimum of 900 MVA.s of LCIS service will be procured in each of the three incentivised zones, where offered.
- Price Cap - The price cap will be €2.02/MVA.s per hour, in Ireland and £1.79/MVA.s per hour, in Northern Ireland. Tenderers should account for the impact of scalars in determining their LCIS bid price. Bids that result in payment rates above the price cap will be rejected.
- Availability - Payment based on 97% annual availability requirement, exclusive of 15 days of planned outages allowed annually following notification to the TSOs.
- Imbalance Price - The imbalance prices for the evaluation of LCIS providers are €97/MWh, in Ireland and £85.8/MWh, in Northern Ireland. The imbalance price will only be used for the purposes of the tender evaluation to account for the relative efficiency of the offered LCIS devices. The actual cost of energy consumption by LCIS devices will be managed separately, under SEM arrangements.
- Procurement Process and Contract Execution - Preferred bidders must sign the LCIS Agreement 20 business days after TSOs' notification of preferred bidder status. In Ireland, once the contract is signed, providers will be eligible to enter the grid connection offer process outside of the ECP process by direction from CRU. Multiple, mutually exclusive bids will not be permitted in the LCIS procurement process.
- LCIS Funding - LCIS costs will be shared across the island on a 75/25 basis. The SEMC confirms that annual revenue entitlements will reflect these arrangements.

This SEMC Decision Paper should be read in conjunction with the TSOs' Recommendation Paper and accompanying LCIS Agreement and LCIS Protocol documents. Following the publication of this Decision Paper the TSOs will commence the Request for Proposal (RfP) stage of the procurement process, with the aim of awarding LCIS contracts in December 2023.

Contents

1 INTRODUCTION

The TSOs' Shaping Our Electricity Future (SOEF) Roadmap document provides an outline of the key developments from a networks, engagement, operations and market perspective, needed to support a secure transition to higher levels of renewables on the electricity grid (RES-E), by 2030. In order to reach these renewable targets and enable a greater amount of non-synchronous generation onto the system, at any given time, services traditionally provided by thermal units, such as inertia, will need to come from new low carbon sources.

In the SEMC Decision Paper, on System Services Future Arrangements[5], the SEMC requested that the TSOs carry out an assessment on whether or not to initiate a fixed contract procurement process for zero carbon inertia sources and that the TSOs publish a detailed proposal for public consultation.

Following this public consultation, the SEMC requested that the TSOs submit a Recommendation Paper to the SEMC. The TSOs have completed this process for the technical requirements and procurement of Low Carbon Inertia Services (LCIS)[6] and the SEMC issued the SEMC Decision Paper on the Procurement of LCIS in January 2023[7].

Subsequent to this, the TSOs consulted on 'the Contractual Arrangements for the Procurement of a LCIS' in April 2023[8] and based on the responses to the contractual arrangements consultation have produced a 'Recommendations on Procurement of LCIS – Contractual Arrangements' paper (Annex 1 – TSOs' Recommendation Paper).

The RAs have reviewed the TSOs' contractual arrangements consultation paper, the responses received to this consultation paper, the TSOs' Recommendation paper and have engaged with the TSOs in order to ensure a comprehensive consideration of all the issues raised in the development of this decision.

Based on this review, the SEMC has decided to approve the TSOs' Recommendations Paper (Annex 1). Outlined below are some of the areas that received the most scrutiny from respondents to the TSOs' consultation and that the RAs sought additional information on prior to endorsing the TSOs' Recommendation Paper.

This SEMC Decision Paper should be read in conjunction with the TSOs' Recommendation Paper (Annex 1) and associated LCIS Agreement and LCIS Protocol documents.

[5] SEM-21-021 System Services Future Arrangements - Decision Paper 1.pdf (semcommittee.com)
[6] TSOs Recommendation on Procurement of LCIS Paper - 14 Nov 2022.pdf (semcommittee.com)
[7] SEM-23-002 LCIS Procurement - SEMC Decision Paper.pdf (semcommittee.com)
[8] Consultation on Contractual Arrangements for the Procurement of a Low Carbon Inertia Service (LCIS) | EirGrid Consultation Portal

2 KEY AREAS

The RAs questioned all aspects of the TSOs' Recommendation Paper and considered all the responses to the TSOs' consultation paper. Nevertheless, there were certain aspects of the TSOs' Recommendation Paper and the associated consultation responses that were of particular concern to the RAs and required significant engagement with the TSOs to resolve. These areas are detailed in the sections below.

2.1 Market Competitiveness Review

Prior to submission of the TSOs' Recommendation Paper, the RAs requested that the TSOs undertake a market competitiveness review, into the potential LCIS market. This required the TSOs to gather information on the potential projects that could enter the LCIS tender process, based on a review of planning applications and/or grid connection applications. The TSOs were asked to consider the ownership structure of these providers, and the feasibility of the projects being able to participate in the auction, in terms of planning and connection timelines and points.

2.1.1 TSO Response

The TSOs provided us with a market competitiveness review, conducted by Afry Management Consulting, based on:

- Planning applications for synchronous condensers in each county council area;
- Grid connection applications (in Northern Ireland); and
- TSO meetings with potential developers at 'customer clinics'.

The review indicated the potential for reasonable levels of competition in each jurisdiction and within each of the three specified locational zones.

2.1.2 SEMC Decision

The information provided by the TSOs indicates the potential for a reasonable level of competition, within each jurisdiction and each of the three locational zones and this assessment provided the SEMC with some comfort that the price cap should act as a technical cap rather than a target, within the LCIS auction process. The outcome of the competitiveness review assisted the SEMC in making the decision in relation to the price cap, discussed below.

2.2 Price Cap

The SEMC Decision Paper on the procurement of LCIS SEM-23-002 required that '*when developing the contractual arrangements, the TSOs will develop proposals for bid caps on providers' potential bids*.' The SEMC requested a price cap in order to protect consumers, particularly in a situation where insufficient competitive levels, on the island, or within a certain zone, may lead to uneconomic bid prices being accepted. As detailed in the TSOs' Recommendation Paper (Annex 1) the TSOs have recommended a price cap of €2.02/MVA.s per hour, in Ireland and £1.79/MVA.s per hour, in Northern Ireland.

The RAs agree with the TSOs decision to adopt a blended approach between the implied value of system services, estimated by the TSOs and the long run marginal cost (LRMC) of the best new entrant, estimated by Afry Management Consulting, to setting the price cap. Despite this, the RAs did have some concerns as to how the price cap was arrived at.

RA concerns over the LRMC figure focused on the fact that, per Afry's assumptions, providers would recover the full cost of their synchronous condensers over the six-year period, even though the assets themselves would have a much longer useful economic life. Some respondents also agreed with this point and argued that it would place higher costs on consumers.

2.2.1 TSO Response

As stated in the TSOs' Recommendation Paper*, 'in addition, with the long run marginal costs for providers approach, we have assumed a 6-year depreciation period (see AFRY report) while these devices shall have a longer lifetime. The main reasons for that are that LCIS will be the only source of revenue over the contract period and there is no firm revenue mechanism beyond the contract*.' At the RAs request the TSOs provided information on how increasing the depreciation period to 10-20 years would impact the LRMC and therefore the price cap.

2.2.2 SEMC Decision

Following discussions with the TSOs and the potential level of competition, highlighted in the market competitiveness review, the SEMC has decided to approve the proposed price cap of €2.02/MVA.s per hour, in Ireland and £1.79/MVA.s per hour, in Northern Ireland. While the SEMC does not endorse the approach of assuming recovery of the full capital investment, within a 6-year period, the market competitiveness review and subsequent discussions with the TSOs' connection team, indicate the potential for sufficient levels of competition, within each of the zones, to help ensure the price cap acts as a high-level ceiling, to protect consumers, rather than a target for bidders, in the auction process. The

SEMC is keenly aware of the need for LCIS on the island and consequently wants to avoid the situation where the price cap may be set too rigidly, and act as a deterrent to investment.

2.3 Participation in other system services arrangements

2.3.1 Prohibition on the provision of related system services

Some respondents argued against the prohibition on providers, under the LCIS agreement, to participate in multiple and parallel system services markets. The RAs questioned the TSOs on the rationale for this prohibition.

2.3.2 TSO Response

The TSOs responded that '*if we allow providers to participate in the existing System Services arrangements for their surplus, we may encourage oversupply of inertia and this could add significantly to existing System Services expenditure…. While we will need further inertia to meet our 2030 requirements, this surplus will not be optimal to meet our future requirements as a spread of inertia across the system is required as demonstrated by our technical studies for 2026. This is also one of the reasons why we have proposed a limit of 2000 MVA.s per transmission station and a minimum requirement of 900 MVA.s in each of the incentivised zones.'*

2.3.3 SEMC Decision

Given the TSOs' rationale, the SEMC approves the TSOs' proposal, in that, parties to the LCIS Agreement will be prohibited from the provision of other related system services (i.e. Synchronous Inertial Response and Steady State Reactive Power) as these services overlap with the LCIS service procured which bundles the provision of Synchronous Inertia, Reactive Power support and Short-Circuit Contribution.

2.3.4 Participation in Future System Services Markets

In the SEMC Decision Paper on the Procurement of LCIS[9] it was stated that '*when developing the contractual arrangements, the TSOs should include a requirement that providers bid into available competitive system services markets on the basis of cost-based bids, reflecting the providers energy costs*.' Most respondents raised concerns in relation to the implications of this requirement and argued that it created open-ended risks, given the lack of clarity on what is expected.

[9] SEM-23-002 LCIS Procurement - SEMC Decision Paper.pdf (semcommittee.com)

2.3.5 TSO Response

Given respondents feedback, the TSOs proposed amending clause 2.8 of the LCIS Agreement to include the following, *'During the term of the Agreement, the Service Provider acknowledges that it may be required to participate in future System Services arrangements as may be directed by the Regulatory Authority. In any potential requirement to participate in future System Services arrangements, the Regulatory Authority shall consider associated Service Provider costs for participating in these arrangements.'*

2.3.6 SEMC Decision

Based on discussions with the TSOs and the above response the SEMC approves the position in the TSOs' Recommendation Paper, in that the RAs shall consider any associated service provider costs for participating in any Future System Services arrangements, as may be directed by the RAs. This decision applies only to a provider's participation in any Future System Services arrangements for the duration of the providers LCIS contract. Future System Services arrangements refer to any arrangements outside the current regulated tariff arrangements.

2.4 LCIS Funding Mechanism

In the TSOs Recommendations Paper the TSOs seek endorsement from the SEMC of an LCIS rebalancing mechanism, that allocates the total cost of LCIS between the jurisdictions on a 75/25 basis, and the equivalent confirmation from the CRU and the UR that the annual revenue entitlements will reflect these arrangements.

2.4.1 TSO Arguments to support 75/25 split between ROI and NI consumers

The TSOs cited a preference for the 75/25 split for the following reasons:

- *'LCIS will reduce the number of sets required across the island, leading to savings in dispatch balancing costs which are an all-island cost, funded on a 75/25 basis. Therefore, funding LCIS on a 75/25 basis would ensure costs are aligned to benefits.*
- *The percentage of total TSO cost incurred in each country during each year will vary with exchange rates (NI contracts in GBP), scalars, timings of connections and volume/quality of service provided.*
- *The cost of electricity imported to provide the service is being shared across the island via the TSC.*
- *Payments will be based on the inertia provided, we have a single inertia floor value for the island.*

- *FASS HLD envisages a transition to a single supplier charge for system services.'*

2.4.2 SEMC Decision

Based on discussions with the TSOs, the SEMC endorses the TSOs' proposal to split the costs between ROI and NI consumers on a 75/25 basis, respectively. The SEMC confirms that annual revenue entitlements will reflect these arrangements.

3 SUMMARY OF DECISIONS

This SEMC Decision Paper approves and should be read in conjunction with the TSOs' Recommendation Paper (Annex 1). The SEMC decisions are listed below and should be implemented by the TSOs.

3.1 Target Go-Live Date/Longstop Date

SEM Committee Decision: The maximum period between the LCIS contract effective date and target go-live date is to be extended from 33 months to 42 months. This extension does not prohibit projects connecting earlier and taking advantage of longer contract duration periods. A longstop date has been added to the LCIS Agreement, defined as the date falling 12 months after the target go-live date. The target go-live date and the service provision longstop date will be adjusted if a contracted providers actual date of connection is delayed beyond the target connection date as a result of:

- A TSO delay; or
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If the actual date of connection is delayed beyond the target connection date, as a result of issues with the providers delivery of the unit, the target go-live date will not be adjusted. In such events the contract duration will effectively be less than six years.

3.2 Participation in other System Services Arrangements

SEM Committee Decision: Parties to the LCIS Agreement will be prohibited from the provision of other related System Services (i.e. Synchronous Inertial Response and Steady State Reactive Power) as these services overlap with the LCIS service procured, which bundles the provision of Synchronous Inertia, Reactive Power support and Short-Circuit Contribution.

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3.3 Grid Code Compliance

SEM Committee Decision: In the event that Grid Code modifications for LCIS devices are not fully implemented by the contract execution date, appropriate Grid Code standards for generating units will be deemed applicable to LCIS units. As stated in the TSOs Recommendation Paper, the TSOs will endeavour to provide additional technical information to assist developers, within the timeframe of the LCIS procurement process.

3.4 Shortfall Charge

SEM Committee Decision: a 95% threshold on the application of the Shortfall Charge will apply, i.e. the Shortfall Charge will not apply if the installed capability is at or above 95% of the originally contracted volume.

3.5 Performance security arrangements

SEM Committee Decision: The TSO can no longer drawdown 100% of the performance bond in the event of a reporting milestone not being met. Amounts from the performance bond can only be drawn down in the event that a major milestone is not achieved. The amount to be drawn down is limited to, up to 25% of the total performance bond, for each major milestone not achieved.

3.6 Synchronisation Performance Scalar

SEM Committee Decision: The Synchronisation Performance Scalar is reduced by the replacement of the term, Number of Instructions, by the maximum of the number of instructions and three. This will ensure that, in a month with a low number of dispatch instructions and one failure to follow notice to synchronise, the scalar won't be set to a markedly low value.

3.7 Trip Charge

SEM Committee Decision: The Trip Charge Rate is reduced from €45/MVA.s / £39.82/MVA.s to €15/MVA.s / £13.27/MVA.s.

3.8 Planning Applications

SEM Committee Decision: The planning reference number and a plan of the facility at least up to the connection point will need to be provided by the tenderer at the Request for Proposal stage. The TSOs' evaluation team will check that planning is granted (with or without conditions) and that the plan includes the main equipment of the facility, including a step-up transformer to the connection point.

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3.9 Locational Quantity Criteria

SEM Committee Decision: Both Locational Quantity Criteria shall be retained:
1. the limit of 2000 MVA.s of LCIS capability at a transmission station will include any contribution from LCIS devices connected from 'tail-fed' transmission stations

2. a minimum of 900 MVA.s of LCIS service will be procured in each of the three incentivised zones, where offered.

3.10 Price Cap

SEM Committee Decision: The price cap will be €2.02/MVA.s per hour in Ireland and £1.79/MVA.s per hour in Northern Ireland. Tenderers should account for the impact of scalars in determining their LCIS bid price. Bids that result in payment rates above the price cap will be rejected.

3.11 Availability

SEM Committee Decision: Availability - Payment based on 97% annual availability requirement, exclusive of 15 days of planned outages allowed annually following notification to the TSOs.

3.12 Imbalance price for the evaluation

SEM Committee Decision: The imbalance prices for the evaluation of LCIS providers are €97/MWh in Ireland and £85.8/MWh in Northern Ireland. The imbalance price will only be used for the purposes of the tender evaluation to account for the relative efficiency of the offered LCIS devices. The actual cost of energy consumption by LCIS devices will be managed separately under SEM arrangements.

3.13 Procurement process and Contract execution

SEM Committee Decision: Preferred bidders must sign the LCIS Agreement 20 business days after TSOs' notification of preferred bidder status. In Ireland, once the contract is signed, providers will be eligible to enter the grid connection offer process outside of the ECP process by direction from CRU. Multiple, mutually exclusive bids will not be permitted in the LCIS procurement process.

3.14 LCIS Funding Arrangements

SEM Committee Decision: LCIS costs will be shared across the island on a 75/25 basis. The SEMC confirms that annual revenue entitlements will reflect these arrangements.

4 NEXT STEPS

Following this SEMC Decision Paper the TSOs will commence the Request for Proposal (RfP) stage of the procurement process, with the aim of awarding LCIS contracts in December 2023.

4.1 Next Steps

Should stakeholders have any queries or comments please contact both Bronagh McKeown (bronagh.mckeown@uregni.gov.uk) and Alexandria Charmoli (acharmoli@cru.ie).