

EirGrid and SONI Response to SEM-25-070

Options for Decarbonisation of the existing CRM design

27 February 2026



1. Introduction

EirGrid holds licences as the independent electricity Transmission System Operator (“TSO”) and Market Operator (“MO”) in the wholesale trading system in Ireland. The System Operator for Northern Ireland (“SONI”) is the licensed TSO and MO in Northern Ireland. The Single Electricity Market Operator (“SEMO”) is a contractual joint venture between SONI and EirGrid as MOs and operates the Single Electricity Market (“SEM”) on the island of Ireland.

EirGrid and SONI, both as TSOs and MOs, are committed to delivering high quality services to all customers, including generators, suppliers and consumers across the high voltage electricity system and via the efficient operation of the wholesale power market. EirGrid and SONI therefore have a keen interest in ensuring that the market design is workable, will facilitate security of supply and is compliant with their mandated duties and will provide optimal outcomes for customers.

EirGrid and SONI have duties under licence to advise the Commission for the Regulation of Utilities (“CRU”) and the Northern Ireland Utility Regulator (“UR”), collectively referred to as the Regulatory Authorities (“RAs”), respectively on matters relating to the current and expected future reliability of the electricity supply. EirGrid and SONI have also been allocated responsibility for administering the Capacity Market Code (“CMC”) via respective TSO licences. This response is on behalf of EirGrid and SONI in their roles as TSOs for Ireland and Northern Ireland (“the System Operators” or “SOs”).

2. EirGrid and SONI View on the Consultation Topic

EirGrid and SONI (“the System Operators”) welcome the SEM Committee’s consultation on options to support the decarbonisation of the existing Capacity Market. As the System Operators, we recognise the critical role that the Capacity Market plays in maintaining security of supply as we transition to a low-carbon power system. We therefore support measured, evidence-based enhancements to the Capacity Market that provide clear and credible decarbonisation incentives without introducing operational or administrative risks that could undermine the effectiveness of the mechanism.

Overall, the System Operators support the principles set out in SEM-25-070 but highlight that any interim measures adopted must remain practical, verifiable, and implementable within the timeframe available. The System Operators particularly welcome proposals that improve transparency around emissions, ensure consistency with system security requirements, and avoid distorting any technology’s physical contribution to reliability.

2.1. Key points

The System Operators consider the following key points in respect of the proposed Options for Decarbonisation of the existing CRM design:

1. The System Operators support efforts to promote capacity with lower carbon intensity.
2. Any measure must preserve the Capacity Market’s core objective of system adequacy.
3. Measures should promote investment in lower carbon technologies rather than operational changes.
4. Caution is required to avoid unintended consequences.
5. Any qualifying criteria for these incentives should be objective and verifiable.
6. Implementation is subject to detailed design and impact assessment.

These points are developed further in the following section.

2.2. Strategic Considerations for Decarbonising the Existing Capacity Market

The System Operators consider that any decarbonisation measures introduced into the existing Capacity Market must preserve the primary objective of the mechanism, which is the delivery of system adequacy. While decarbonisation is an important policy priority, any incentives implemented must be proportionate, operationally deliverable, and capable of being applied consistently across participants. The System Operators support measures that strengthen transparency, incentivise capital investment in low-carbon capability, and reflect clear technology pathways expected to be viable in the 2030-2040 period.

The System Operators also consider that eligibility for such measures should be based on transparent, objective criteria supported by strong evidence, and should not rely on operational changes—such as fuel switching—that cannot be robustly verified within existing Capacity Market processes. Any incentive framework must be based on verifiable metrics at Substantial Completion, and ex-post stages, and should be designed to remain administratively manageable within high-volume Capacity Market operations. Finally, the introduction of any measures would be subject to a detailed impact assessment once full eligibility criteria and legal drafting are available.

2.2.1. Any measure must preserve the Capacity Market's core objective of system adequacy.

While decarbonisation incentives are welcome and important, it is critical that central objective of the Capacity Market remains system adequacy. Low carbon technology pathways differ substantially in deliverability, flexibility, and contribution to adequacy; these differences should inform the design of thresholds, bonuses, and scalar values.

The System Operators consider that the proposed approaches are focussed on the price received by a successful unit and the duration of payment and avoid artificially distorting the physical contribution to reliability of any particular technology. It is critical that the qualified capacity that participates in the Capacity Market reflects that unit's contribution to reliability.

In this regard, the System Operators consider that while the proposed measures should incentivise investment in lower carbon technologies, it should not introduce undue levels of risk to Participants who adopt these measures. Where a Participant is qualified and is awarded additional contract duration or a higher price based on the proposed measures, where they fail to deliver these measures, the consequences should pertain to the additional contract duration or a higher price and should not extend to the full awarded capacity. Failure to apply this approach may deter investment in lower carbon approaches as prudent operators perceive the risks associated with what may be novel or innovative solutions to be too great. As with all measures of this nature, a balance must be struck between providing sufficient certainty to attract investment and ensuring robust and proportionate delivery criteria to incentivise performance.

2.2.2. Measures should promote investment in lower carbon technologies.

As the Capacity Market primarily relates to investment decisions (including decisions to maintain and upgrade existing capacity), the System Operators support incentives that promote *investment* in low-carbon capability such as higher-efficiency plant upgrades, hydrogen-ready technologies, long-duration storage (both mechanical and chemical), and zero-carbon generation, where these investments are substantial and would not proceed in the absence of the measures.

The System Operators consider that measures that do not involve substantial investment should not be eligible for the proposed incentives. Measures such as low carbon fuel procurement are important considerations in the process of decarbonisation; however, unless accompanied by substantial investment in the production of the relevant low carbon fuel, these decisions represent operational decisions, which are subject to decarbonisation policies under the energy market arrangements.

The System Operators support providing incentives to shovel-ready technologies that can make immediate contributions to adequacy at lower carbon intensity. Work is also needed to identify the technologies and technology pathways which are most likely to be commercially viable and deliverable in the next 10-15 years. It is important to consider how the design of these incentives can be compatible with any future development of the Capacity Market, in order to provide clear investment signals and certainty around the period that these incentive schemes are in effect.

2.2.3. Caution is required to not create unintended consequences.

Incentivising investment in meaningful reductions in carbon intensity is a complex undertaking, and great care is required to avoid perverse outcomes. In this regard, the RAs should have regard for potential trade-offs that could arise when Participants are making investment decisions.

For example, a switch from natural gas to RED II/III-compliant HVO may impact positively on the unit's specific emissions; however, it would not be possible to maintain an adequate system on HVO due to fuel delivery constraints and supply chain risks. The System Operators would emphasise the importance of fuel supply chain risk and fuel delivery constraints as important considerations when seeking to promote lower carbon investment while continuing to meet system adequacy standards.

Similarly, an increase in unit efficiency e.g. moving from a single shaft open cycle gas turbine to a single shaft combined cycle gas turbines may reduce the specific emissions of the unit; however, such a change may also result in an increase in the minimum stable generation level of the unit. In the context of the Ireland and Northern Ireland systems, which have world leading levels of variable renewables on a single synchronous system, a higher minimum stable generation of the higher efficiency unit may result in the greater levels of curtailment of variable renewables. The flexibility of a unit in terms of synchronous inertial response, start-up times, min stable generation, ramp rates, etc. are incentivised by the system service arrangements and the energy market arrangements. Nevertheless, care is required to ensure that any green bonus or scalar does not override any signals for flexibility coming from system service and energy market arrangements.

Investment in lower carbon intensity at a unit level cannot come at the expense of total system emissions or the reliability of the power system. Where the risk of these trades offs is present, the RAs should give consideration to making these measures not eligible for the proposed mechanism. This could be achieved in a manner that is principle based, ensures non-discrimination and is technology neutral.

2.2.4. Any qualifying criteria for these incentives must be objective and verifiable.

Decarbonisation incentives that the Capacity Market introduces must be supported by objective and auditable evidence. Clear frameworks for verification at Qualification, Substantial Completion, and ex-post stages are necessary to ensure that incentives produce real decarbonisation rather than unintended market responses. Designing these verification checks should be robust but should avoid placing undue administrative burden on Participants and the operation of the Capacity Market.

2.2.5. Implementation is subject to detailed design and impact assessment.

The System Operators emphasise that the Capacity Market is a high-volume, time-sensitive administrative process. Additional checks, certification reviews, or ex-post assessments must be feasible for the System Operators to implement within current operational structures and timelines and should not duplicate or cut across existing permitting, reporting, consenting, or oversight structures in respect of carbon emissions which are the responsibility of other state agencies. Approaches that rely on simple but robust documentary evidence, self-declaration (appropriately scoped), or verification aligned with existing processes are preferred.

2.3. Assessment of Proposed Measures

The System Operators acknowledge that both the Green Bonus and Green Scalar can introduce decarbonisation signals within the short to medium term, provided the measures remain consistent with the Capacity Market's fundamental role in securing capacity. The assessment below reflects the System

Operators' overarching principles, including system adequacy, promoting investment, operational deliverability, and the importance of incentivising capital rather than operational expenditure.

2.3.1. Principal Measure 1: Green Bonus

The Green Bonus may provide a clear investment signal for technologies requiring upfront capital expenditure—such as efficiency upgrades such as an OCGT converting to a CCGT with a by-pass stack (which would retain the flexibility of the OCGT), hydrogen-readiness, pumped storage refurbishment, or emerging long-duration storage solutions. However, the Bonus must be supported by clear eligibility criteria, based on verifiable investment thresholds, and aligned with technology pathways that can be delivered in the 2030-2040 period. The System Operators note that a one-year bonus may be insufficient for some technologies, and that a longer bonus period could better reflect the scale of required investment. Verification at Qualification and Substantial Completion should be robust but should not place undue burden on Participants and the operation of the Capacity Market and should be based on objective evidence.

The System Operators support the Green Bonus in principle, subject to:

- Clear eligibility criteria, defined in advance and applied consistently.
- Clarity on the technologies which would be incentivised by introducing this bonus contract year(s). The capacity market is technology neutral, and the RAs may wish to provide flexibility to Participants to bring forward innovative decarbonisation solutions. The System Operators would emphasise the importance of establishing a clear investment threshold to ensure measures are promoting investment in lower carbon technologies. Caution is required here to avoid investment that simply delivers readiness without providing the security of the underlying fuel supply over the course of the duration of the Awarded Capacity.
- A straightforward verification process aligned with Qualification and Substantial Completion stages. Where eligibility is decided through the Exception Process, as defined in the Capacity Market Code, it would be important to establish requirements as part of this process to confirm that the investment has been delivered substantially in line with the exception application.
- Clearly defined consequences for non-compliance. The System Operators consider that these should be proportionate, confined to the Green Bonus and in line with other non-delivery measures set out in the Capacity Market Code.
- Consideration of how novel or innovative solutions such as hydrogen-readiness, biomethane production, novel storage technologies can be reliably assessed.
- Further consideration on the duration of the bonus contract. A bonus contract length of 2-5 years may be more effective at incentivising more significant investments. Consideration could be given to establishing a green bonus duration of more than one year in proportion to the level of investment. Naturally, any measure would need to continue to comply with current decisions in respect of state aid and larger investments may not be possible without longer lead times and more significant measures may need to form part of the future development of the Capacity Market.
- The location of a project can impact on the system wide emissions and consideration could be given to inclusion of location as a criterion. While this may make for a more complex implementation, the benefits of a low carbon locational signal may result in reduced carbon emissions sooner due to more efficient use of the transmission and distribution system (e.g. reduced constrained operation of renewable generation).

From an implementation perspective, subject to detailed impact assessment as part of any modification of the Capacity Market Code, provided that the proposed approach leverages existing Capacity Market processes, awarding the additional contract year(s) at Final Capacity Auction Results –followed by termination of the bonus year(s) only in cases of non-compliance—offers a reasonably straightforward way to provide greater investment certainty in lower carbon technologies while allowing for enforcement where necessary.

2.3.2. Principal Measure 2: Green Scalar

The Green Scalar has potential to influence a broader cohort of existing generating units and may introduce signals more rapidly than the Bonus. However, design complexity may be significant. To avoid unintended market outcomes, eligibility should be tied to capital investment and verifiable parameters rather than operational decisions. Scalar application after auction outcomes may introduce administrative complexity and differences between system and published results. The System Operators consider that a continuous scalar function, while marginally more complex to implement, would avoid issues where investment becomes artificially targeted at the step change points.

The System Operators support the Green Scalar in principle, but highlight several practical considerations in addition to those that apply for the Green Bonus:

- Application after auction results requires careful design to preserve auction transparency.
- Operational complexities may arise as applying the scalar after auction results would result in differences between system (CMP) and published Final Capacity Auction Results unless carefully managed.
- If the scalar is to effectively incentivise genuine demand response (turning off demand), complex work may be needed in terms of the definition of what constitutes a Demand Side Unit under Grid Code. This work is likely to take considerable time to complete.

2.3.3. Supporting Measure 1: Emissions Data Publication

The System Operators strongly support enhanced transparency of unit-level CO₂ emissions. Publishing both qualification-stage data and verified ex-post emissions would improve market visibility, support policy development, and enable more consistent decision-making. Any changes to the publication of information from the Capacity Market would be subject to modifications to the Capacity Market Code and implementation timelines would be subject to impact assessment. Publication of submitted emissions information as part of the publication of qualification data in the Capacity Auction Results publications would be a reasonably straightforward step.

Publication of emissions data provided by participants at Substantial Completion is likely to require the introduction of new reporting requirements and would be more involved from an implementation perspective. It would be important to ensure that any emissions reporting does not conflict with broader emissions related information which would fall under the remit of other relevant authorities i.e. particularly for ex-post reporting. Where emissions reporting is already happening elsewhere, this should be the data utilised and a new reporting structure should not be developed.

2.3.4. Supporting Measure 2: Decarbonisation Declaration

The System Operators support requiring multi-year fossil fuel generator units to provide decarbonisation declarations. This measure would require some changes to operational processes at qualification stage, but systems impacts would be minimal. The System Operators also support requiring multi-year generator units to produce decarbonisation plans, but note that without enforcement or milestones, the decarbonisation impact may be limited. Strengthening declarations with a commitment to interim milestones / checkpoints which are easily verifiable may enhance this impact.

2.4. EirGrid and SONI direct response to consultation questions

2.4.1. Green Bonus

1. Would the Green Bonus create an incentive within the timeframe of the existing CRM?

To the extent that there is a choice available to Participants between a higher carbon and a lower carbon option, the Green Bonus would contribute to business case for the lower carbon option. The Bonus may incentivise investment in lower-carbon technologies requiring capital expenditure, provided eligibility is tied to clear investment thresholds and verifiable criteria. Care is necessary to avoid perverse incentives that may impact adversely on system level emissions due to a reduction in flexibility and/or in respect of reliability. Please see section 2.3.1 for further views on the Green Bonus.

2. Where should the CO₂ emissions threshold be set?

Thresholds should reflect the objective of incentivising decarbonisation or low-carbon technology pathways while avoiding unintended impacts on flexibility and reliability. The exact level to set the threshold should be the subject of careful consideration by the RAs and any eligibility requirements should also include minimum requirements in respect of reliability and flexibility.

3. Is one year the appropriate duration?

A single year may be appropriate for smaller upgrades; however, a longer period (e.g. 2-5 years) may be required to incentivise high-capex technologies.

4. Is the 30% hydrogen-readiness requirement appropriate?

The System Operators consider that it is unclear whether sufficient hydrogen will be produced in the relevant period to have a real impact on decarbonisation in the short to medium term. The System Operators would recommend that incentives focus on measures that are available to Participants currently (beyond readiness requirements).

2.4.2. Green Scalar

5. Would the Green Scalar create an incentive within the existing CRM timeframe?

Yes, though the complexity of implementation and risks of incentivising unintended outcomes require careful consideration. Please see sections 2.3.1 and 2.3.2 for further information.

6. What thresholds should apply?

Thresholds should incentivise genuine decarbonisation and avoided unintended consequences as outlined earlier in this response. Realistic and deliverable technology pathways should form the basis any incentives.

7. Continuous or step wise function?

A continuous function is marginally more complex to implement in existing IT and administrative systems although implementation timelines would be subject to an impact assessment of detailed proposals and legal text. Continuous functions have the benefit of avoiding targeting specific step change values that exist in step wise functions.

2.4.3. Questions relevant to both Green Bonus and Green Scalar

8. Which option is likely more effective?

A green scalar has the potential to provide greater incentives; however, with this stronger incentive would come a greater degree of caution to avoid unintended outcomes. The RAs may wish to consider a set of use cases that they consider to be lower risk and focus the design of these outcomes. Stronger incentives in terms of higher scalars would need to be subject to careful design to avoid incentivising investment that delivers lower carbon intensity at a unit level but may impact unduly on reliability or system wide carbon emissions. Please see sections 2.3.1 and 2.3.2 for further information.

9-10. Which technologies benefit, and what is the expected running pattern?

Technologies such as high-efficiency gas (without reduction in flexibility), pumped storage, long-duration storage, and zero-carbon generation may benefit. Expected running patterns and contribution to system adequacy differ between technologies and this would be reflected in their de-rating factors.

11. What verification process should apply?

Verification should be based on objective documentary evidence at Qualification and Substantial Completion, avoiding complex monitoring requirements.

2.4.4. Emissions Data Publication

12. Do you agree with publishing emissions data?

The System Operators would support publication of emissions data where it contributes to greater transparency and decarbonisation incentives. It would be important that any emissions information is that which pertains to the Capacity Market in line with relevant legislation and does not concern broader emissions related information which would fall under the remit of other relevant authorities.

Publication of emissions data provided by participants at Substantial Completion is likely to require the introduction of new reporting requirements and would be more involved from an implementation perspective. It would be important to ensure that any emissions reporting does not conflict with broader emissions related information which would fall under the remit of other relevant authorities i.e. particularly for ex-post reporting where emissions reporting is already happening elsewhere this should be the data utilised and a new reporting structure should not be developed.

Any publication of information would also be subject to the modification process under the Capacity Market Code and any implementation subject to impact assessment based on the specific requirements.

Further views on emissions data publication are set out in section 2.3.3.

2.4.5. Decarbonisation Declaration

13-14. Effectiveness and content of declarations?

Declarations support long-term decarbonisation but may require clearer expectations and interim checkpoints to ensure meaningful impact. Further views on decarbonisation declarations are set out in section 2.3.4.

2.4.6. Other Measures

15. Should other AFRY measures be considered?

The proposed measures in the consultation paper would likely be most effective. Detailed proposals, impact assessments, and draft legal text would all be needed to fully assess the measures.

As noted in section 2.3.1, the location of a project can impact on the system wide emissions and consideration could be given to inclusion of location as a criterion. While this may make for a more complex implementation, the benefits of a low carbon locational signal may result in reduced carbon emissions sooner due to more efficient use of the transmission and distribution system (e.g. reduced constrained operation of renewable generation).