

EP UK Investments Response to SEMC Consultation on Options for Decarbonisation of the CRM

EP UK Investments ('EPUKI') welcomes the opportunity to respond to this consultation paper. While EPUKI supports decarbonisation in the Single Electricity Market, it is critical that measures taken do not undermine Security of Supply which must remain the primary objective of the Capacity Remuneration Mechanism ('CRM'). In recent years when the CRM has failed to satisfy the security of supply needs for the Island, and in particular the Republic of Ireland, out of market contracts have been entered into with units with much higher carbon intensities such as the retention of Moneypoint and the procurement of Temporary Emergency Generation units. Those units would not otherwise have been allowed to participate in the CRM due to their carbon intensities not meeting the Clean Energy Package ('CEP') requirements. Therefore, if decarbonisation is prioritised ahead of security in the CRM the result will be a need for more highly carbon intensive units.

Similarly, it is understood that the options considered within this paper are done so in the context of the existing CRM arrangements and state aid approval. It is important that work done in relation to this consultation does not pre-determine the approach undertaken when considering the wider CRM review and state aid renewal. EPUKI welcomes a wider review with a broader scope of measures for decarbonisation as part of the state aid renewal process.

EPUKI is supportive of the introduction of a Green Scalar, which if calibrated correctly, would support investment in low-carbon technologies. However, this Scalar should be reflected in units' bid prices to avoid undermining competition and jeopardising Security of Supply.

EPUKI also believes that measures taken should be technology neutral to the extent possible, to minimise the risks of the consumer paying for assets which may be stranded, and to ensure alignment with state aid rules.

EPUKI has concerns around the proposed "Decarbonisation Declaration". Specifically, there appears to be limited practical benefit to this measure, which may place additional administrative burden on participants and create challenges in future years if the system requires units to continue their operations in contrary to previously made declarations.

Finally, EPUKI urges careful consideration with respect to the verification process. Failure to de-risk this process may result in participants making significant investments in low-carbon projects only to be unable to verify emissions intensity at Substantial Completion (for example if the necessary gas blend is not available on the network). This could result in significant financial loss for projects if they consequently do not avail of decarbonisation benefits.

1. Would the Green Bonus create an incentive that market participants can respond to within the timeframe of the remaining auctions under the existing CRM?

EPUKI has concerns on the ability of the Green Bonus to incentivise projects within the remaining years of the CRM. Longer contract durations are helpful in supporting the investment case in New Capacity projects, particularly projects which might have larger capital investment requirements. However, there are a number of issues with the existing CRM governance which undermines the effectiveness of these measures.

The time value of money means that an additional year on top of a ten-year contract is worth significantly less than a year at the beginning of a contract. This reduces the extent to which a participant can expect to recover investment on a project. Prior to introduction of the Green Bonus, the SEM Committee (**'SEMC'**) should consider the Net Present Value (**'NPV'**) impact of this measure and consider whether any actions can be taken to address this.

Similarly, in the absence of a mechanism to include indexation in capacity payments, the additional risk exposure associated with a longer contract outweighs any benefit the additional year would bring. In committing to longer contracts generators must consider the risks associated with equipment failure particularly if the units have been in operation for a number of years prior to taking a Green Bonus contract. Maintenance cycles for gas fired plants generally run in five-year blocks between major overhauls during which owners will determine the condition and remaining life in the equipment. Therefore, it may be the case that many existing units will not wish to lock into contracts for longer than 5 years without seeking a higher auction clearing price.

Another issue which undermines the effectiveness of the Green Bonus is regulatory uncertainty around the availability of contract extensions. Recent years have demonstrated that New Capacity projects are liable to incur delays arising for a variety of reasons, many of which are beyond the control of participants (planning appeals, gas and grid connection delays). Such delays threaten the feasibility of projects and can result in termination.

In response to this risk, the SEMC introduced new mechanisms by which participants can apply for extensions to contract durations in the instance of no-fault delays. In SEM-26-001 the SEMC state that the mechanism for awarding contract extensions "*is not an enduring feature of the market*". This creates regulatory uncertainty as to whether projects can avail of these extensions. This consequently reduces the effectiveness of any addition to contract duration awarded through the Green Bonus. If a project incurs a no-fault delay which cannot be remedied through an extension mechanism, any benefit received from an additional year on the Green Bonus is voided.

To address this, the SEMC should either provide clarity to industry on the long-term treatment of the extension mechanism for no-fault delays, or otherwise should implement the Green Bonus in such a manner that it can increase in duration (i.e., from one year to two years) in the event that the extension mechanisms are delayed. This will allow participants and investors to scope and plan decarbonisation projects without the risk of sudden regulatory changes which affect the likelihood of successful delivery.

2. Where should the CO₂ emissions threshold be set to incentivise higher efficiency gas plant as well as low carbon technologies? Please provide appropriate evidence and rationale to support.

EPUKI consider that if a figure is to be introduced it should be set at the baseload design efficiency of a CCGT, which under the LCP BAT Conclusions should be 46%, giving a carbon intensity of 439 gCO₂ per kWh_e based on the ACER guidance.

EPUKI caution that thresholds from the CEP are based on design efficiencies, these are achieved when units are operating at Baseload. However, actual carbon intensities will be higher when units are dispatched at lower loads and often units are dispatched for long periods of time at their minimum generation level. Therefore, a unit with a lower CEP carbon intensity could operate at higher carbon intensity than a unit with a higher CEP carbon intensity, by virtue of having a lower level of minimum generation and/or being dispatched to lower loads more frequently. Unfortunately, it would not be feasible to stipulate that carbon intensities at minimum generation are used as there is currently no alignment between SONI and EirGrid Grid Codes on minimum generation or turn down ratio requirements, and there are no market system services incentives to offer lower levels of minimum generation. So, placing a minimum generation carbon intensity requirement would result in an incentive to develop units with higher minimum generation levels and would result in increased renewables curtailment.

The Industrial Emissions Directive introduces a 1,500 annual run hour limit for gas turbines that are not combined cycle i.e. have lower efficiencies and higher carbon intensities. However, while this limit has been imposed by the Northern Ireland Environment Agency (NIEA) it has not been adopted by the Republic of Ireland ('RoI') Environmental Protection Agency (EPA). The SEM subsequently introduced Annual Run Hour Limit de-rating figures that penalise development of OCGTs that are limited to 1,500 hours, the consequence of this is that in NI generators are incentivised to develop higher efficiency, lower carbon CCGTs but in RoI generators will continue to develop OCGTs due to their lower installed capacity costs. EPUKI consider that the Green Bonus could seek to redress this deficiency, by providing proportionally higher capacity market returns to lower carbon intensive CCGTs throughout the Island.

Clarity is requested on how unit performance will be assessed against the threshold. The consultation states that the "*carbon emissions intensity would be declared at*

Qualification Stage and verified at Substantial Completion". However, it is also understood that the demonstration of generating with lower carbon emissions may be dependent on the availability of suitable fuel.

The consultation paper states that the threshold would be based on a hydrogen blend of up to 30% based on the expected composition of the gas network in the 2030s. However, if this level of gas does not materialise on the network this creates a risk that projects will be unable to verify carbon emissions at Substantial Completion stage. This creates a risk that participants will make a significant investment to develop low-carbon projects and will not be able to verify performance at the threshold and will hence not receive the benefits of the Green Bonus.

Most existing gas fired technology can be converted to operate on some level of blended hydrogen, but the trade-off usually reduces the generation capacity of the unit and has the potential to increase harmful nitrogen oxide emissions. EPUKI do not consider it appropriate to specifically incentivise blended Hydrogen capability while the Hydrogen economy is in its infancy as the result will either lead to stranded assets without a suitable fuel source or to the consumer paying extra for Hydrogen capable generation that does not actually operate on Hydrogen and consequently provides no reduced carbon intensity benefit.

EPUKI consider it would be best to set a carbon intensity limit and let participants determine how best to achieve it through a range of technologies and fuels including; efficiency improvements like Combined Cycles, or fuels such as Hydrogen blends, biomethane, biomethanol or Hydrogenated Vegetable Oils. We would remind the SEMC that the CRM should be technology neutral.

Clarity is requested on the steps which will be taken in the above case. This clarity will enable participants to better understand the threshold and allow better consideration of appropriate levels for same.

3. Is one year the appropriate additional contract duration?

As outlined above, due to maintenance cycles and lack of indexation the appropriate level of additional contract duration will be greater than 1 year. The exact number of years will depend on both the treatment of the NPV for projects in receipt of the Green Bonus as well as regulatory certainty around the treatment of contract extensions in response to no-fault delays.

In view of the regulation in GB, we deem it within reason to grant a bonus of five years on top of awarded contracts on the condition that the SEMC introduces indexation for capacity payments and continues to grant extensions for no-fault delays. This would align with the five-year maintenance cycles for gas fired plants mentioned above and unlock investment certainty beneficial enough to outweigh NPV concerns. Backing that,

Bhagwat et al. identify that ‘longer contract duration leads to longer periods with lower capacity market prices. This translates into a lower average capacity market clearing price and a reduction in the price uncertainty on the capacity market.’¹

4. Is the definition of blended hydrogen-readiness appropriate i.e. that the unit must incorporate combustion equipment that is capable of burning a blend of up to 30% hydrogen? Should a higher/lower percentage blend be applied for the blended hydrogen-readiness definition?

EPUKI does not support setting a hydrogen blend figure as this will be outside the control of generators and will be dependent on hydrogen being added to the existing gas network which is subject to significant uncertainty at this time. Also, hydrogen is not inherently green, at present globally most hydrogen is produced from natural gas with the same carbon emissions as directly using natural gas.

Notwithstanding the above, if a certain percentage of hydrogen-readiness were to be considered, it would have to settle at 10%. This figure is acceptable given the unlikelihood of high shares of hydrogen in the overall network gas blend.

5. Would the Green Scalar create an incentive that market participants can respond to within the timeframe of the remaining auctions under the existing CRM?

EPUKI supports the introduction of the Green Scalar mechanism but notes that this would need to be calibrated at the correct level to support investment.

Furthermore, EPUKI believes that the Green Scalar should be reflected in unit’s bids, acting similarly to a Unit Specific Price Cap, rather than a mechanism which applies a scalar to a unit’s capacity price only after the auction. This will avoid undermining competition in the Capacity Market and will protect consumers from inefficient spend.

If the Green Scalar only applies after the Capacity Auction, it creates a risk that more expensive, less carbon-intensive projects can reduce their bid prices to a level which might displace projects which are more feasible or more likely to deliver but might have a higher emissions factor.

This potentially undermines Security of Supply if projects which are more likely to deliver are displaced by more speculative projects which may be less feasible. Additionally, it is unclear whether the potential distortion of competition would be consistent with Capacity Market rules and state aid approval.

¹ Bhagwat et al., ‘An analysis of a forward capacity market with long-term contracts’ (2017) 111 Energy Policy 255 <https://doi.org/10.1016/j.enpol.2017.09.037>

6. What are the appropriate CO2 emissions thresholds that should apply for the Green Scalar? Please provide appropriate evidence and rationale to support.

See above response to Question 2. EPUKI believes that the same threshold should be applied regardless of which mechanism is chosen.

7. Should the Green Scalar be a continuous or stepwise function?

EPUKI suggest that the analysis on the Best New Entrant ('BNE') figure is required to set an appropriate scalar. The SOs need to determine what level of scalar would be required to support a CCGT anywhere on the Island becoming the BNE in place of an OCGT located in Rol. EPUKI proposes that at least initially rather than a continuous or stepped function there should be a single carbon intensity threshold and a single scalar for all units below it. Otherwise, there will be significant risk of unintended consequences by overly incentivising storage and Demand Side technologies that cannot satisfy demand for periods longer than a few hours.

8. Which of these two options – the Green Scalar or the Green Bonus – do respondents consider is likely to be more effective within the timeframe of the remaining auctions under the existing CRM?

EPUKI considers the Green Scalar to be the more appropriate of the two options, provided that it does not distort competition in the Capacity Market and/or undermine Security of Supply. Additionally, the parameters including level of and threshold for the application of the Green Scalar will need to be correctly calibrated to ensure that this measure is effective.

It is noted that this question, and wider consultation, only refers to measures taken under the existing CRM arrangements. As such, the measures explored within this consultation are fundamentally restricted and do not represent the optimal approach to introduce decarbonisation to the CRM. As such, policies established now to incentivise decarbonisation in the remaining years of the existing CRM should not impact the measures explored and taken as part of the CRM redesign and state aid approval. EPUKI is seeking confirmation from the SEMC that this decision will not influence future CRM design.

9. What technologies could be expected to benefit from the Green Bonus or Green Scalar in the specified timeframe? For each technology referred to, what is the associated scale of and timeframe for an existing or a new plant?

EPUKI consider that all 100% renewable generation technologies like wind and solar (provided they do not already have subsidy contracts in place), as well as CCGTs, Geothermal, Batteries or other combustion relation generation that can utilise lower

carbon fuel sources or blends, should be able to benefit from the Green Bonus or Green Scalar.

These technologies will have construction timelines of 3-5 years, with the exception of batteries that can be delivered much faster, although in EPUKI's experience the longest task for completion with any project is currently the electrical grid connection which will mean the timeframe for all technologies would be the same.

Development timeframes may range from 1-4 years depending on the technology but more importantly on where the generation is located. If grid connection offers are to be required for all New Capacity in the next T-4, projects in RoI will need to factor in at 18 - 30 months for a connection offer (depending on how the ECP-GCS batch gates align with their planning approval date and when the next T-4 auction qualification window takes place). This would be preceded by 12-24 months for planning approval. Therefore, although with sufficient incentivisation some projects can be operational by September 2030, for many it may be closer to 2040 before they can be completed.

10. What are the expected commercial running patterns for each technology and are there constraints on its flexibility?

EPUKI has no strong views on this matter.

11. What verification process should apply to ensure compliance with the emissions thresholds for either measure?

EPUKI believes that the verification process, should not be dependent on a third-party as this will create too much risk for participants if it becomes impossible to verify emissions at completion stage. Where the gas network is not equipped to deliver the necessary fuel blend in order to carry out necessary verification tests (at Substantial Completion stage), then the developer should not be responsible for this test. EPUKI considers a prudent approach would be to assume the unit is compliant until such a time as a test can be carried out.

Failure to take such an approach would create a risk whereby a developer invests considerable money into a project on the assumption that it will receive the benefit(s) of a Green Bonus or Green Scalar. If the participant cannot verify performance at the point of Substantial Completion due to circumstances outside of its control (i.e., unavailability of sufficiently blended gas), there is a risk of loss on investment. This risk undermines any potential benefit delivered through the decarbonisation mechanism.

EPUKI consider that the current verification process for compliance with CEP is sufficient and could be extended to cover the Green Bonus or Scalar.

12. Do you agree with the proposal to publish the carbon emissions data submitted at qualification by successful units, and where relevant, ex-post data provided by successful units?

EPUKI do not support the publication of carbon emission data as part of the CRM. The publication of emissions data with respect to individual Capacity Market units should also reflect the volume of output of relevant units across a given year. As outlined above, the fundamental separation between the Capacity Market and the energy market means that important information, such as how frequently and to what extent a given unit is run, is not reflected in the Capacity Market.

This could result in the publication of data suggesting that individual Capacity Market Units have a greater contribution to overall emissions in the Single Electricity Market ('SEM') while ignoring the fact that those units may have contributed to meet demand consistently throughout the year and may even be more efficient on a per MWh basis. EPUKI do not see any benefit in publishing this level of information.

13. How effective do respondents consider the proposed “Decarbonisation Declaration” would be?

While cognisant of the important role that conventional generation will play in decarbonisation, EPUKI sees little value in the proposed Decarbonisation Declaration. Generation in the SEM with a capacity of > 10MW is obliged to participate in the Capacity Market. Additionally, generation is obliged to bid into and participate in the energy market. This means that should the System Operators choose to dispatch a unit; that unit must provide power to the grid, regardless of its impact on emissions or decarbonisation.

As such, it is beyond the power of individual generators to deliver Net Zero by 2050. Generation businesses may have their own commitments to decarbonisation and will likely pursue cleaner and more efficient generation as a means to remain competitive in the market. However, where a unit is required by the System Operator to meet system needs or to keep the lights on, a generator is unable to refuse to generate. Only the System Operator, and/or wider decarbonisation policies can mitigate or offset the carbon output of individual generation units.

The only way to guarantee a unit does not run would be to exit the market, however this may not be possible if doing so would jeopardise Security of Supply. As such, it is not clear what the benefit of a director-backed acknowledgement would be. The introduction of a Decarbonisation Declaration would only serve to introduce additional administrative burdens and create challenges in future years if the system requires units to continue their operations in contrary to previously made declarations, with no clear upside.

14. Is the proposed content of the “Decarbonisation Declaration” sufficient? Could other elements be included e.g. feasibility study, interim target?

EPUKI does not support the introduction of the Decarbonisation Declaration as a whole. As outlined above, it is not clear what practical benefits would be realised as a result of such a declaration. The potential for additional content to be included such as feasibility studies is concerning. This work represents additional administrative burden and a use of resources which would be better spent elsewhere. EPUKI is opposed to the introduction of new obligations on market participants with no clear benefits or interest.

15. Do you consider that any of the other measures discussed in the accompanying AFRY Assessment Report, or any measures to achieve decarbonisation that not identified by AFRY, should be considered further by the SEM Committee? If so, please state clearly if your view relates to the timeframe of the present workstream (lifetime of the existing CRM) or longer-term CRM development. If so, please provide supporting evidence.

EPUKI largely supports AFRY's conclusions with the exception of publishing emissions data and the decarbonisation commitments. In terms of wider recommendations, EPUKI supports greater transparency and greater frequency around the BNE process. In the long-term, updating the BNE for each Capacity Auction would help to support investment in capacity. In order to maintain regulatory certainty, the models and calculations underpinning the BNE methodology should be made publicly available. By establishing and publishing a robust methodology for the BNE, the only variable should be the inputs to the model. This would mean that participants can reliably forecast the direction of travel associated with the BNE, supporting long-term investment plans in both reliable and low-carbon technologies.