EAI

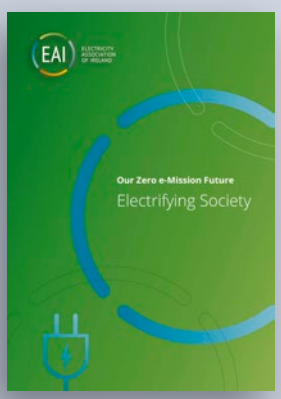
ELECTRICITY
ASSOCIATION
OF IRELAND

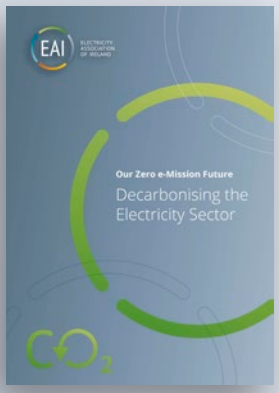
Our Zero e-Mission Future

Investment Framework for Decarbonised Dispatchable Generation

Contents

This report is part of a series of three reports from EAI. They are available at:
Our Zero e-Mission Future – Electricity Association Ireland





Foreword

The Electricity Association of Ireland (EAI) is the representative body for the electricity industry and gas retail sector operating within the Single Electricity Market (SEM) on the island of Ireland.

Our membership comprises utilities that represent over 90% of generation and retail business activities and 100% of distribution within the market. We believe that a decarbonised electricity system will decarbonise society in a cost-effective manner and move transport and heating away from fossil fuels. We are fully committed to leading this vital journey of transition and working with others to accelerate the rate of decarbonisation and electrification.

Electrifying our economy will help build a more comfortable and healthier living environment with less noise, better air quality and increased energy efficiency. We know that the energy transition of society will require genuine support from all stakeholders – from policymakers and regulators to consumers to ensure it happens. Our aim is to provide insights that are authoritative, evidence based and constructive.

In 2020, the Electricity Association of Ireland commissioned the MaREI SFI Research Centre for Energy, Climate and Marine research and innovation to investigate what the all-island electricity system needs to look like in 2030 on the way to fully decarbonised electricity generation. Uniquely they examined a quarter of a million hours of historical weather data to determine the extremes that our future weather-dependant electricity generation system will have to flex to.

The study found that moving to a Zero e-Mission Future post 2030 will require grid flexibility and different technological options, all of which come with implicit uncertainty, but share a requirement for early investment decisions, significant capital commitment and long lead times for construction.

Since the publication of our Zero e-Mission Future[1] in 2020, government ambition has increased significantly and with a little over five years to go to 2030, now is the time to turn our attention to achieving a post-2030 Zero e-Mission Future and ensure that the correct policy signals stimulate appropriate market incentives and the right investments for a cost-effective transition. The EAI has prepared several policy papers to outline the collective view of the electricity sector on achieving our post 2030 zero e-Mission Future.

1 Our Zero e-Mission Future – EA Ireland

Executive Summary

The goal of this paper is to explore the investment case for post-2030 technologies and how investment frameworks will need to evolve if they are to facilitate investment on a scale that has not been seen before on the island of Ireland.

The expected return from various revenue streams is going to transform dramatically over the next 15-20 years and whether the current market mechanisms can support an investment case on an unprecedented scale is a key question.

The EAI believe that the current framework does not incentivise investment on the scale required to facilitate the delivery of technologies for a low carbon future. The revenues from energy markets and ancillary services markets will decline in the coming years, and current capacity market conditions have led to a reduction in investment for new dispatchable plant. Energy, system services and capacity markets together must provide the investment signals for generation new and existing. A holistic re-think of the interdependencies between the existing revenue streams is required. A focus on cost minimisation for the short term will be to the detriment of meeting the capacity needs of the future, Ireland's decarbonisation goals, and the final cost to the consumer.

This paper recommends the following actions that can be made right now to ensure that the right market signals are there for the large capital investments required for the clean technologies of the future. More detailed recommendations are contained at the end of this paper:

Complete

a comprehensive review of the CRM Auction bid limits to ensure that there is not an increased risk of inefficient exit while also meeting ambitious climate targets.

Develop

a strategic approach to the 2027 CRM State Aid application to consider the most appropriate vehicle for investment in low carbon technologies.

Set up

a dedicated working group on the investment framework of the future.

Undertake

a cost benefit analysis of the various market investment options for the large CAPEX assets that are needed for the future.

Investing In Ireland's Zero e-Mission Future

Beyond 2030 there are a number of technology choices that could offer further decarbonisation potential, and it is not yet clear which option (or mix) is most appropriate for the all-island system.

What is clear however, is the need for further decarbonisation of the electricity sector and there are several technologies that have the potential to assist in the decarbonisation of the dispatchable fleet beyond 2030. Some technologies may be more suitable than others. While the EAI is technology neutral in its approach, there are a number of options for future low carbon dispatchable technologies that are widely discussed within the energy sector. These are, inter alia, hydrogen, ammonia, carbon capture and storage, as well as batteries and large-scale storage. Regardless of what options are ultimately chosen, all of them require unprecedented amounts of investment, have implicit uncertainty, share a requirement for significant capital commitment, long lead times for construction, decades-long operational lifetime, and the need for investment decisions to be made well in advance of 2030. The future all-island electricity system will require a diverse portfolio of firm and variable clean technologies with balancing resources to reduce system costs and ensure security of supply to withstand to external shocks.

Any option chosen will need an investment framework and a market design that will be able to provide reasonable certainty of a return on the investment made. However, investors in low carbon flexible generation will be dependent on revenue streams over long asset lives. Over this period, prices, regulations, and government policy will evolve as will the future cost of buying energy, the selling price, the optimum timing of sales, and the behaviour of competitors. They will therefore be looking for some form of long-term contractual assurance.[2]

Finding effective pricing arrangements will become increasingly important as i) the complexities of managing low carbon systems grow, and ii) scheduling and dispatch decisions increasingly relate to complex operating regimes, such as those required with storage, rather than simple merit order ranking. This could be provided by a regulated asset base approach, or government commitments.[3]

The next section examines the current investment framework in Ireland and the EAI view on its implementation.

2 Royal Society Paper on Large Scale Electricity Storage
3 Royal Society Paper on Large Scale Electricity Storage

The Current Investment Framework

The Cost of Electricity Generation in the SEM

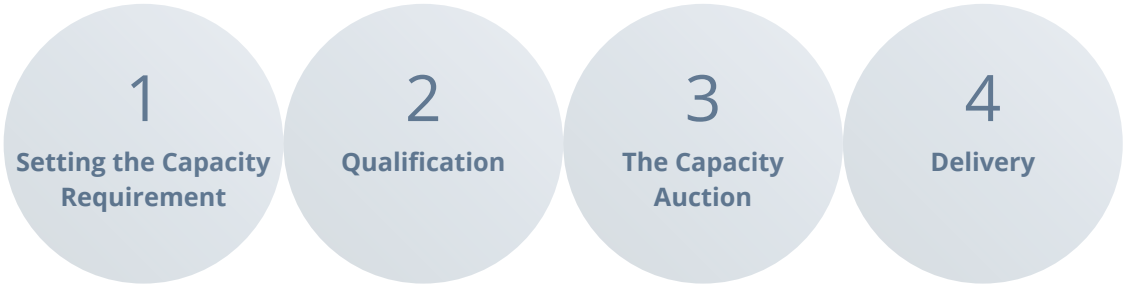
In 2024, the SEMC published[4] its latest report on the financial performance of licensed generation companies with a combined ownership capacity greater than or equal to 25MW operating in the Single Electricity Market (SEM). The purpose of the report is to enhance transparency in the SEM and develop a better understanding of the revenues accruing to different categories of generators, while respecting individual generator commercial sensitivity by presenting aggregated information only. This report concluded that "More broadly, generator investments are capital intensive, long-term investments, and made on the presumption that there will be variability in revenues, and profits over the economic life of an asset. While the 2022 financial year reflects higher than normal revenues for generators, this needs to be understood in the context of several years of lower margins, and the expected long-term decrease in market revenues for conventional generators with the ongoing roll-out of low or zero marginal cost generation."

Private investment globally has pivoted significantly toward wind and solar leading to a pessimistic investment environment for dispatchable generation in Ireland in recent years. This comes at a time where corporate strategies and shareholder sentiment are moving away from fossil fuels. It is this context that we look to the investment framework that will incentivise the low carbon generation of the future.

How Ireland's Capacity Market Works

In order to evaluate how the CRM and investment framework should evolve into the future, an assessment and explanation of how the current CRM is designed and implemented in Ireland is required. The all-island SEM Capacity Market has one main function that is ensuring electricity supply meets demand i.e. security of supply.

Market participants who participate in the capacity market are remunerated through the Capacity Remuneration Mechanism. The CRM timeline can be broken up into four stages:



4 SEM Generator Financial Performance for FY2022 Report

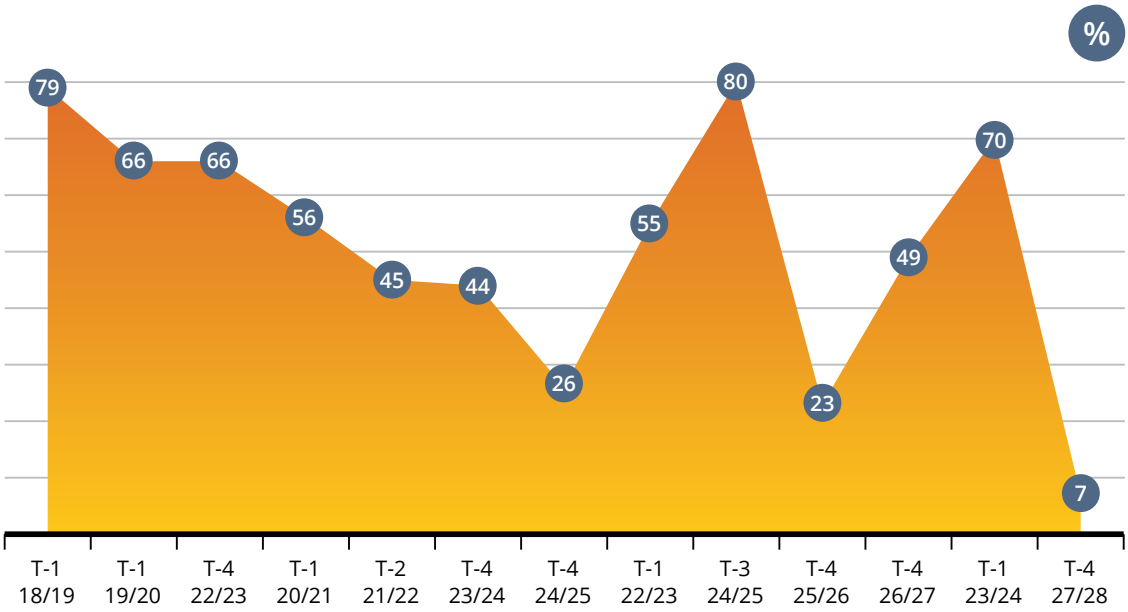
Capacity Requirement	The minimum quantity the market operator SEMO will buy in the auction is referred to as the 'capacity requirement'. It has to be sufficient to maintain the all-island reliability standard of 6.5 hours LOLE (this is to reduce to 3 hours in ROI as per DECC, CRU, and EirGrid). This is still far above EU average of 3 hours and leads to Ireland setting a lower capacity requirement than may be prudent. The all-island capacity requirement is expressed in de-rated MWs and is calculated using future demand scenarios, generator reliability, and renewable energy output. The de-rating process accounts for the fact that generators and other capacity providers do not have perfect reliability. The Demand Curve is set by the Regulatory Authorities and is adjusted for reserves, non-participating capacity, and capacity to be procured in future auctions. There are also three locational capacity constraint areas with minimum MW requirements – Ireland, Northern Ireland, and the Greater Dublin Area.
Qualification	A capacity year runs from September to September. There are T-4 auctions held four years ahead of delivery, with T-2 or T-1 auctions held closer to the delivery year if there is a need to procure more capacity. Capacity providers seek qualification for each Capacity Market Unit they wish to participate, and the unit must demonstrate it meets a minimum set of requirements detailed in the Capacity Market Code.
Capacity Auction	Units submit a sealed bid and are subject to price caps set during qualification – Existing Capacity Price Cap (ECPC) for existing and Auction Price Cap (APC) for new. The price caps are calculated using a Net Cost of New Entrant (Net CoNE) methodology that must be calculated once every five years in accordance with the ACER (Agency for the Cooperation of Energy Regulators) methodology. In the most recent assessment of the Net CoNE, an Open Cycle Gas Turbine (OCGT) was chosen as the Best New Entrant. There is an all-island demand curve set by the Regulators and the auction clearing price is set where the offer curve meets the demand curve. Cleared offers receive the higher of offered price or auction clearing price which is known as a pay as cleared auction.
Delivery	Successful existing capacity receives a 1-year contract or up to five years if refurbishing and new awarded capacity receives a 1-year contract, up to a 5-year contract, or a 10-year contract depending on the size of the investment per MW. There are strict obligations for delivery including the achievement and reporting of key delivery milestones. The Capacity Market is funded by suppliers through a capacity charge. When energy market prices exceed the Strike Price, capacity providers pay difference charges to suppliers. If capacity providers do not deliver during high energy prices, they are subject to difference charges at the imbalance price in the Balancing Market. The goal of this is to encourage capacity to deliver during times of system scarcity.

Current EAI Position on Ireland's CRM

In 2030, the system will require a greater volume of capacity to satisfy peak demand, yet the most recent TSO Generation Capacity Statement[5] anticipates capacity deficits for each of the next 10 years, with the anticipated shortage more pronounced in the short to medium term. The EAI believe that the capacity market needs to be implemented differently to retain and maintain essential existing capacity and deliver the new generation capacity that is required for security of supply, with potential reforms needed if Ireland and Northern Ireland are to meet their respective ambitious decarbonisation objectives. Into the future, generation is expected to earn less in the energy and system services markets, so the CRM is of critical importance for the retention and refurbishment of existing capacity and future investment in the all-island market.

Figure 1 below shows the trend of new Capacity Market Units (CMUs) that qualified for a T-4, T-3, or T-1 auction and the percentage of them that offered capacity in the auctions. There has been a steady decline from 80% in 2017 to less than 10% in 2023 (separate from the two auctions that were run due to security of supply concerns and lack of procured capacity in previous auctions). This fluctuating trend points to issues with the capacity market in its current form. The capacity parameters, which are published post qualification, have not incentivised investment as envisaged.

Figure 1: Offered Capacity in CRM since 2017



5 EirGrid SONI Generation Capacity Statement 2023-2032

The capacity market design is broadly fit for purpose; however, auction design needs to ensure that the parameters:

- Are set to a level that reflects the investor case for all the new technologies that need to come into the market to decarbonise the sector, as and when they are required. This would suggest a plurality of market signals needed to ensure that no new technologies are left out by price caps that are set narrowly based on a single reference unit.
- Consider the risks, limitations and challenges faced by existing capacity as they attempt to forecast future costs, revenues, and levels of generation over four years ahead.
- Incentivise existing capacity to stay in the market by creating parameters that are dynamic, fit for purpose and encourage these sites to repower/refurbish as an important pathway to decarbonise.

In the short term, there is a need to reflect existing technologies which facilitate the transition to a decarbonised system and support increased renewable penetration. In the longer term, there is also an urgent need to transition away from the current approach to procure capacity that focuses on unabated gas generation at scale and, instead, design auctions based on decarbonised generation. These could include fossil gas which will in due course switch to renewable gas.

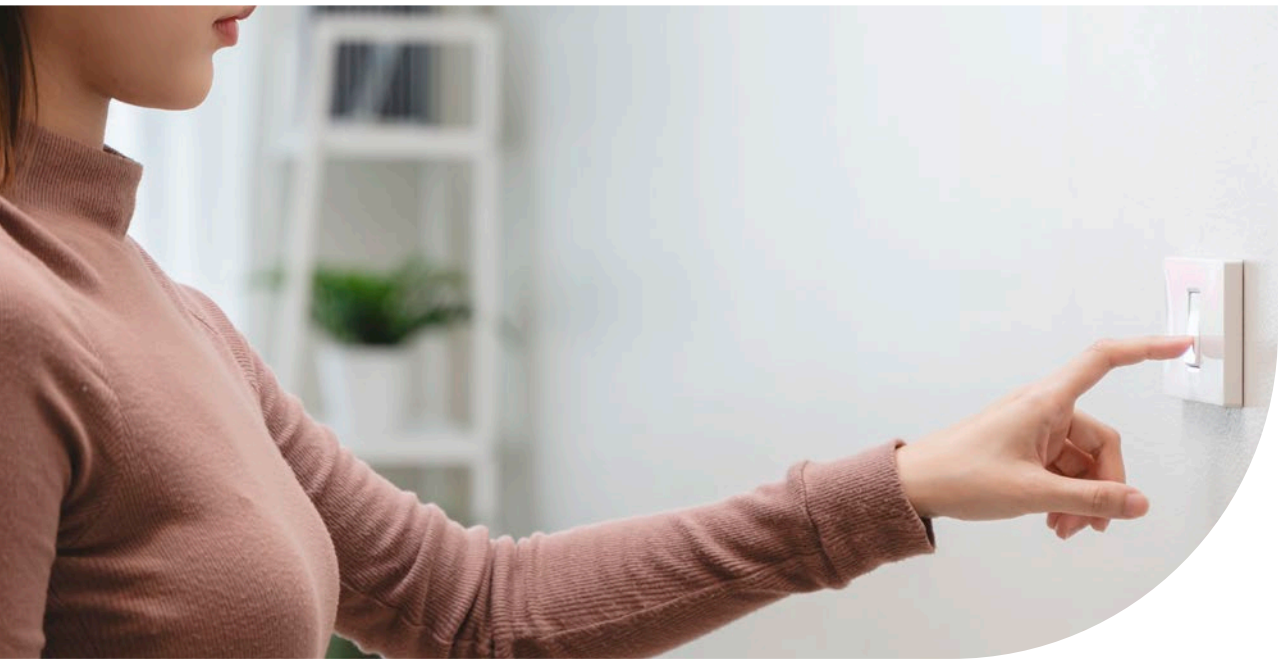
For the CRM to be relevant for the future capacity ambitions and needs of the system, it needs to be more dynamic in its implementation:

- The current bid limits need to be raised with added flexibility to ensure that there is not an increased risk of inefficient exit.
- The process and transparency for determining Unit Specific Price Caps (USPC) and the Existing Capacity Price Cap (ECPC) needs to be revised to ensure that they adequately allowing for the risks, limitations and challenges of forecasting future costs, revenues, and levels of generation over four years ahead.
- The value of the APC needs to be at least mirrored by commensurate increases in the ECPC to protect the relative value positioning of existing and new capacity in auctions. This is to ensure that any differential treatment of existing providers of capacity is fair.
- Existing capacity should be provided adequate remuneration not only on the basis of their ongoing costs but with a view to the potential for future development/ refurbishment at such sites.

The Current Investment Framework (continued)

The price caps are calculated using a Net Cost of New Entrant (Net CoNE) methodology that must be calculated once every five years in accordance with the ACER methodology. However, the approach for the calculation of Net CoNE does not reflect realistic assumptions that would be used by a rational private investor in a new technology. For instance, the Net CoNE assessment must:

- Adequately model costs, revenues, and inflation for every year of the proposed asset types, despite the significant degree of uncertainty from mid-2026 (including capacity shortfall and significant wind penetration).
- Acknowledge or model the changing investor and financing landscape including change in appetite away from fossil fuels.
- Consider regulatory obligations around the transition to a low-carbon system, carbon budgets, renewables targets.
- Deliver a holistic, and future looking Best New Entrant (BNE) that transitions from the current high carbon reference technology. The BNE as currently formulated suggests a continuation of fossil fuel only conventional generation with price caps that provide no signal either for redevelopment or conversion to low carbon alternatives, or for a new pathway to zero carbon capacity to be delivered, such as new renewable gas CCGTs (Combined Cycle Gas Turbine) and flexible generation. The BNE will impact procurement of capacity from 2027 out to 2032 with 10-year contracts well into the 2040's. Therefore, multiple Best New Entrant profiles need to be introduced to accurately assess costs and revenues for specific technologies.



Ireland's State Aid Application for CRM

Ireland applied for state aid for the current CRM in 2017 for a period of ten years. At that time, the Irish Regulatory Authorities outlined the need for a CRM due to increased risks to generation adequacy resulting from market failure exacerbated due to being a small island market with a rising level of intermittent renewables.

The need for a CRM as outlined in 2017 is still very applicable today:

- Missing money problem – prices do not reflect scarcity, and energy markets and system services markets do not generate the necessary revenues to create an investment case for new generation.
- Reliability classified as a public good – what would consumers have been willing to pay to avoid being turned off (individual Value of Lost Load)
- Intermittent renewables with limited interconnection
- Small size of market – when any investor responds to scarcity signals, it has to consider its own impact on the market, which may reduce the incentives to invest. The unit needs to be certain it can recover its costs through a sufficiently high number of running hours or a small number of hours in which prices will be high. If the size of the investment is large relative to the market, this may make it more difficult for an investor to achieve that certainty.

In 2017, the Irish TSOs (Transmission System Operators) were tasked to assess adequacy for three years across the next ten years in the absence of a CRM. The assessment concluded that there would be capacity shortfalls for all the assessed years if capacity providers had relied upon energy market revenues only. Key parameters of the assessment were how would generation unit closure decisions impact on capacity adequacy as well as interconnector capacity availability in periods of tightness.

The criteria to be satisfied in order to obtain State Aid approval were that the measures must not:

- Be financed through State resources.
- Grant an advantage liable to favour certain undertakings or the production of certain goods.
- Distort or threaten to distort competition.
- Be liable to affect trade between Member States.

Ireland's State Aid Application for CRM (continued)

The current CRM complies with these criteria under the Climate, Energy and Environmental State Aid guidelines ("CEEAG"). The CRM also needs to be compatible with the internal market and meet the following criteria from Point 22 CEEAG[6].

- The aid facilitates the development of an economic activity.
- The aid does not unduly affect trading conditions to an extent contrary to the common interest.
- The need for State intervention.
- The appropriateness of the aid.
- The proportionality of the aid (aid limited to the minimum necessary to attain its objective) including cumulation.
- The transparency of the aid.
- Avoidance of undue negative effects of the aid on competition and trade.
- Weighing up the positive and negative effects of the aid.

The need for state intervention is self-evident given the capacity adequacy deficits predicted for the next ten years by Generation Capacity Statement 2023. The remuneration on availability only helps to limit distortions on the wholesale electricity market. The CEEAG determines that capacity mechanism should be open to different technologies, provide adequate incentives for both new and existing capacity, and consider to what extent interconnectors can help remedy the generation adequacy problem identified.

The Electricity Association of Ireland would argue that adequate incentives are not provided for existing generating units. Recent capacity parameter decisions reassessed the auction price cap for new capacity but failed to adjust the existing price cap.

The are a number of ways in which to approach the next State Aid application. One approach would be targeted modifications to support the implementation of a capacity market that gives the best chance for delivery of new capacity and supports existing capacity. These could include extending the contract length for new capacity. However, regardless of the changes made to the market through the State Aid process, how these changes are implemented is of paramount importance.

The CEEAG were amended in 2022 to broaden the categories of investments and technologies that Member States can support to cover all technologies that can deliver the Green Deal (e.g. renewable hydrogen, electricity storage and demand response, decarbonising production processes). Technology-specific tenders remain possible, for example where EU law establishes specific sectoral or technology-based targets, e.g. for renewable energy under the Renewable Energy Directive. There is scope here for Ireland to consider the most appropriate vehicle for investment in low carbon technologies i.e., a new support scheme or market redesign, or for a separate funding application.

6 Guidelines on State Aid for Climate, Environmental Protection and Energy

Options for the Evolution of the CRM

Today, power markets in the European Union are based on the Energy-Only market design model where day-ahead marginal pricing ensures efficient dispatch and contributes (to some extent) to providing investment signals.

In the future, due to significant increases of non-dispatchable generation with low variable costs, firm and flexible capacities will become increasingly valuable, especially during stress events. The mechanisms that incentivise and provide an investment framework for these firm and flexible capacities are heterogenous across Europe and require state-aid approval.

A Eurelectric study, part funded by the EAI, prepared by and Compass Lexecon entitled *A Market Fit for Net-Zero Power System*[7] was written in anticipation of a European Market Design consultation from the European Commission. Compass Lexecon utilised the structure of expertise within Eurelectric over a nine-month period in 2022/23. The structure of the paper focused on the current market design and then developed three additional key pillars; a consumer engagement framework, an investment framework, and a framework to coordinate future system needs. A thorough analysis was conducted on capacity markets and the heterogenous way in which they are implemented throughout Europe and on investment frameworks outside of Europe.

The report recommended structurally embedding Capacity Markets in market design, which was taken on board by the Commission, and streamlining the approval process. This would have the effect of changing their status as a temporary solution or a last resort resulting in deterred investments. The report recommended developing guidelines for harmonising CMs while keeping sufficient flexibility to address national adequacy needs and specificities. These guidelines could include:

- Providing long-term contracts.
- Ensuring that mechanisms are competitive market-wide and technologically agnostic and remunerate both new and existing based upon their respective contribution to system needs.
- Ensuring mechanisms have efficient interface with energy markets and do not distort the markets – (Ireland's CRM is designed as a Reliability Option so it is not distortive of energy markets as remuneration is based upon availability rather than energy generated).

7 Eurelectric Electricity Market Design – Fit for Net Zero Study

Options for the Evolution of the CRM (continued)

The report also provided recommendations on the need for support schemes for flexibility. As the security of supply issue becomes more complex with a growing share of renewable generation, the system needs will no longer be one dimensional and focused on capacity adequacy. Ensuring adequate investment in firm and flexible technologies will be necessary to maintain security of supply. If a system-needs assessment identifies additional needs for flexible capacities, such as ramping constraints or inertia, which would unlikely be covered, adequate procurement procedures may need to be established.

A procurement mechanism could be introduced allowing long-term contracting for flexible resources to ensure adequate supply of the different system needs (linked to flexibility) if there is a risk that such needs would not otherwise be met. This is echoed in the Royal Society paper which poses the question of whether a single market participant can prepare a viable investment for a piece of flexible infrastructure like a large-scale storage facility or if an investment on that scale may need a dedicated procurement mechanism. Central procurement may unlock efficiencies that cannot be realised by a single market participant as well as providing a clear signal to the market of where further investment is needed. However, the entity that would operate the asset would need to be highly regulated to ensure no conflicts of interest arise.

A report assigned to the Spanish and Belgian Presidencies by the European Council was recently written and presented by Enrico Letta[8], the former Italian Prime Minister. The goal of the report was to independently assess the future of the European Single Market and will significantly influence the European Union's strategic priorities for 2024-2029. While the report covers the entire Single Market, Letta included pertinent proposals from an energy policy point of view which were:

- The pursuit of further energy market integration to increase Europe's competitiveness as well upscaling deployment of low carbon sources so as to lower energy costs.
- Proposals to develop new financial instruments to leverage capital markets and attract private capital for clean energy projects. Financial instruments like green bonds could be used, subject to certain sustainability criteria being met.
- The establishment of a Clean Energy Delivery Agency that would act as a one-stop-shop for providing access to certification schemes, advice on funding sources, and provide support with permitting procedures. The agency would be responsible for all European funding schemes and support schemes as well as overseeing market development pilot projects in emerging clean technology sectors like hydrogen.

The paper's support for leveraging both public and private capital for CAPEX-intensive generation investments, irrespective of the low carbon technology, is applicable to Ireland as the State alone will be unable to fund the projects that are required. Therefore, harnessing private investment as well as EU funding from Projects of Common Interest (PCIs) will be vital. In her recent Mission letter to the new European Commissioner Designate for Energy and Housing Dan Jorgensen[9], Ursula von der Leyen, Commission President, encouraged the College to draw on recent reports such as the Draghi[10] and Letti Reports and included a number of report recommendations within her text including a clean energy investment strategy for Europe to unlock private investment.

8 Much More Than A Market – Enrico Letta
9 Mission letter
10 The future of European competitiveness

Policy Recommendations

The EAI believe that the current framework does not incentivise investment on the scale required to facilitate the delivery of technologies for a low carbon future.

The revenues from energy markets and ancillary services markets will decline in the coming years, and the implementation of the capacity market by the Regulatory Authorities has led to a reduction in investment for new dispatchable plant. A radical holistic re-think of the existing revenue streams that considers interdependencies between the relevant streams is required. Energy, system services and capacity markets together must provide the investment signals for generation new and existing. A focus on cost minimisation for the short term will be to the detriment of meeting the capacity needs of the future, Ireland's decarbonisation goals, and final cost to the consumer.

The policy recommendations are based upon the above assessment and are broken into three sections. The first section focuses on the changes to the CRM that can be introduced between now and the State Aid application in 2027. The second section provides recommendations on what can be done to ensure Ireland gets the most out of the CRM State Aid application. The final section outlines some no regret decisions that can be made to facilitate investment in the low carbon dispatchable technologies of the future.

Implementation of the CRM

1. Complete a comprehensive review of the CRM auction bid limits to ensure that there is not an increased risk of inefficient exit while meeting ambitious climate targets.
2. Implement the lower reliability standard of three hours in Republic of Ireland which conforms with the EU average and must be incorporated into the current capacity requirement and help to ensure sufficient capacity for security of supply.
3. The carbon intensity of the generation portfolio in the CRM needs to be consistent with each jurisdiction's national carbon targets, requiring holistic thinking between the DECC, DfE (Department for the Economy), and SEMC.
4. The current bid limits need to be raised with added flexibility to ensure that there is not an increased risk of inefficient exit.

Policy Recommendations (continued)

5. The process and transparency for determining Unit Specific Price Caps (USPC) and the Existing Capacity Price Cap (ECPC) needs to be revised to ensure that they adequately allowing for the risks, limitations and challenges of forecasting future costs, revenues, and levels of generation over four years ahead.
6. The value of the Auction Price Cap (APC) needs to be set to a level which reflects the investor case for technologies which are required to secure the pathway to zero carbon, as and when they are required. The value of the APC must be at least mirrored by commensurate increases in the ECPC to protect the relative value positioning of existing and new capacity in auctions. This is to ensure that any differential treatment of existing providers of capacity is fair. Existing capacity should be provided adequate remuneration not only on the basis of their ongoing costs but with a view to the potential for future development/refurbishment at such sites.
7. Net CoNE assessment must:
    - adequately model costs, revenues, and inflation for every year of the proposed asset types, despite the significant degree of uncertainty from mid-2026 (including capacity shortfall and significant wind penetration).
    - acknowledge the changing investor and financing landscape including change in appetite away from fossil fuels.
    - consider regulatory obligations around the transition to a low-carbon system, carbon budgets, renewables targets.
    - deliver a holistic, and future looking Best New Entrant (BNE) that transitions from the current high carbon reference technology. Multiple BNE profiles need to be introduced to accurately assess costs and revenues for specific technologies.

2027 State Aid Application

1. Develop a strategic approach to the 2027 State Aid application to consider the most appropriate vehicle for investment in low carbon technologies, bringing in DECC, DETTE, and DfE, regulators, system operators, and industry. Vehicles for investment in low carbon technologies could include a new support scheme, market redesign, or a separate funding application.
2. The need for the CRM remains unchanged since the 2017 European Commission decision. The State Aid application must provide for a CRM that ensures security of supply whilst considering the demands of a decarbonising energy system with new technologies as well as providing the potential for converting existing plant and bringing forth other offerings that can meet the climate challenge.
3. Explore how the capacity mechanism could evolve to ensure availability of sufficient firm and flexible resources. Long-term contracts for system services could be procured through a capacity market in line with a holistic vision set out as part of the System Services Future Arrangements programme.
4. Any proposed changes to CRM need to be assessed through the lens of the Climate, Energy, and Environmental State Aid Guidelines to be compatible with the internal market and avoid distortion of competition.

Facilitating Investment in Future Technologies

1. Set up a dedicated working group on the future investment framework.
2. Undertake a cost benefit analysis of market investment options for the large CAPEX assets needed for the future to include but not limited to:
    a. Leveraging both public and private capital for CAPEX-intensive generation investments.
    b. Harnessing private investment through the use of Power Purchase Agreements. The EU Electricity Market Design[11] requires standardisation of PPA contract templates to encourage participation in the PPA market.
    c. EU funding from Projects of Common Interest (PCIs).
    d. Reformed implementation of the Capacity Remuneration Mechanism.
    e. Centrally driven coordination of investment plans with greater collaboration between stakeholders. For instance, in planning infrastructure where developers, system operators, and planning authorities would unlock mutual benefits especially in terms of coordination of investment in network infrastructure.
    f. Reverse auctions with the obligation to provide 'firm,' dispatchable, power (which would require cooperation between generators and providers of storage).
    g. Analysing if central procurement may unlock efficiencies that cannot be realised by a single market participant and provides a clear signal to the market of where further investment is needed, or whether market procurement and operation of large CAPEX assets is the most efficient and cost-effective investment framework.

11 Regulation (EU) 2024/1747

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