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For the Attention of:

Merin Joseph and Donna Maye
SEM Committee

30th November 2022

Re: Best New Entrant Net Cost of New Entry (BNE-Net CONE) Consultation Paper - SEM-22-076

To whom it may concern,

New Fortress Energy (NFE) is a global energy transition company with operations in 10 countries and is now at the forefront of green Hydrogen developments. NFE looks forward to playing a leading role in Ireland's energy security and transition to net zero.

NFE, through its Irish subsidiary Shannon LNG, is proposing a 600 MW Combined Cycle Gas Turbine (CCGT) power plant, a 120 MW one-hour battery storage system and a Liquefied Natural Gas (LNG) Terminal at Shannon Technology and Energy Park (STEP) site in Tarbert.

We are an international developer with significant expertise in power, infrastructure, transportation, and liquefied natural gas (LNG) developments which allows us to manage the entire development process from end-to-end: building and operating liquefaction facilities, onshore and offshore regasification terminals, pipelines, power plants, and small-scale solutions.

We have acquired, developed, and supplied over 3,000 MW of power capacity since 2016 in Jamaica, Brazil, Puerto Rico, Nicaragua and Mexico with a 1,100 MW of further power projects in development in Brazil, Jamaica and South Africa.

Shannon LNG is developing a highly flexible 600 MW CCGT powerplant in Ireland in three blocks of 200 MW. We were successful in the ECP-2.1 batch and have received a 600 MW MEC connection agreement from Eirgrid which will be executed shortly. We also expect a decision on our overall STEP planning application from An Bord Pleanála imminently.

We have applied to qualify the power generation facility for the upcoming T-4 2026/27 auction. We are the most advance CCGT project in development in the country and by the time the auction is held in March 2023 we will have:

- Planning permission for the 600 MW CCGT.
- Planning permission for a 26km gas pipeline (as backup to the LNG terminal) with all wayleaves executed
- An executed 220 kV connection agreement for 600 MW MEC

We welcome the opportunity to respond to the SEM Committee's consultation paper on Best New Entrant Net Cost of New Entry (SEM-22-076) and trust that you will consider it in your deliberations. We would be happy to provide further clarification on the points made below as may be required.

Regards,

Andrew Kelly
Head of Regulatory and Commercial (Ireland)
New Fortress Energy

Overview of response

As correctly cited in the report by CEPA (SEM-22-076a), the Capacity Market is intended to address the 'missing money' issue where the revenues from the wholesale energy market and system services market are insufficient to attract the necessary investment to maintain system integrity and avoid curtailment. Given the security of supply issues in Ireland¹, we consider it essential that the government and agencies attract investment in power generation infrastructure into the country over this decade.

The flexible, multi-shaft CCGT proposed by NFE, with high efficiency and low stable minimum generation is the ideal support required by the electricity networks in integrating high levels of RES on the system, as is anticipated between now and the end of this decade.

There are several initiatives in this regard taken by the government² and the CRU³. These include a direction to system operators (ESB, EirGrid and GNI) to prioritise the granting of connection offers and advance investment in the gas network to reducing timeline-related risks to developer, providing appropriate market signals to developers etc. We, therefore, find this study and the assumptions made in the report counterintuitive to the intent of the policies published by the government and the regulatory authorities.

For this consultation to propose reducing the potential Capacity Market Revenues for new entrants at a time of significant shortfall in generation capacity, the cancellation of previously awarded capacity and ongoing uncertainty in relation to future market structures does not send the correct signals to infrastructure developers who face significant risks in Ireland during development.

Overestimation of Market Revenues

Infra Marginal Rent (IMR) Revenues

The CEPA report mentions Ireland's ambition to expand power generation from RES by targeting 7 GW of Offshore wind and 5.5 GW of solar by 2030. Minister Eamon Ryan has recently announced an ambition to accelerate the delivery of that solar target which will have a consequent effect on thermal plant. While these targets might increase the flexibility requirement for the power system, higher volumes of RES should lead to lower operating hours for thermal generation technologies which should impact the Inframarginal rent. The report has used estimates from a previous study done for CY 2025/26 on Inframarginal rents for the BNE. This previous report would have been compiled at a time where the wholesale market prices were rising. We have recently seen the cost of gas futures go down significantly from Aug 2022. While the outlook for future power prices still appears high, it is arguably less severe than from what we have seen in the previous months and will likely remain highly volatile.

The study also assumes that a the CCGT would be on load 65% of time the run hours are maintained for the 10-year period. We consider this an entirely unrealistic assumption given that we are moving to a high-RES system in the future. It is also inconsistent with historic data from the SEMC 'Generator Financial Performance in the SEM for Financial Year 2020' which shows average load factors of 39.6% for gas plant.⁴ In that report no plant had reached the threshold of 'baseload' since 2017 which would imply a load factor of 75%. Therefore, at best, a new thermal plant will run as 'mid-merit', a category of generator which the SEMC acknowledges as having extremely tight gross margins.

¹ [CRU Publishes Security of Supply Information Note](#)

² [National Energy Security Framework](#)

³ [Security of Electricity Supply - Programme of Actions](#)

⁴ <https://www.semcommittee.com/sites/semc/files/media-files/SEM-22-021%20Generator%20Financial%20Performance%20for%20FY2020%20Report.pdf>

Mid-Merit plants have the tightest gross margins at 5% in FY2020 (excluding the large negative margins of Price-takers). Mid-merit plants also show a high degree of volatility in net margins. This is demonstrated in net losses in FY2016 and FY2017, net profits in FY2018 and a return to net losses in FY2019 and FY2020 (-9%). Mid-Merit plants are often the marginal price setting generator in the market due to their place in the merit order, which means that they tend to earn less inframarginal rent from the units of electricity sold relative to lower cost generators. In contrast to Peak plants, they also tend to earn relatively less revenue per unit of electricity generated from capacity payments.

Our understanding is not only will the thermal technologies have lower run hours but the renewables on the system should put downward pressure on the prices in the market. This points to lower IMR revenues in the Irish electricity market in the future. Another approach suggested by CEPA to estimate the IMR, is for a linear reduction of IMR revenues to zero. This approach although better, is too simplistic for a dynamic electricity system such as the SEM. It would fail to consider the impact of changes to the electricity network and the market such as network reinforcements, Interconnectors, offshore wind, changes in dispatch rules etc.

In our opinion, a full-scale modelling exercise which considers the changes in wholesale market revenues over this decade and beyond would be required to increase the accuracy of the estimations. A 'fixed IMR approach' (as assumed in this report) or a 'linear decline in IMR' approach over 10 years does not fully reflect the complex changes that SEM and the Irish electricity system will undergo over this decade. As acknowledged by the report itself, there is significant uncertainty around parameters used in cost estimations throughout this report. In addition to this, the timing of the consultation as developers prepares their bids for the auction in March 2023, is not ideal and fails to inspire confidence in investors. Modelling undertaken by Baringa on behalf of NFE shows that average load factors for our power plant in the first 10 years of operation are significantly less than the 65% assumed by CEPA. This modelling is based on Government RES targets of 80% by 2030.

DS3 Revenues

As noted in the previous section, in a high-RES system as is expected towards the later part of the decade, thermal technologies will have lower run hours which should mean lower DS3 revenues for such technologies as well. The CEPA report based their price assumptions on existing 2021/22 values by applying a 20% discount on tariffs from 2021/22. The annual cap for DS3 System Services expenditure is €235M as set by the Regulatory Authorities (RAs) (with an additional €20M in a high-wind year). Eirgrid and SONI recently put out a consultation where they highlight that the cap is likely to be breached for the 2022/23 tariff year as the number of new technologies providing system services is likely to significantly increase⁵. The consultation paper proposes various options for rate cuts to avoid breaching the cap with the least severe being 10% and most severe being 35% for all fast-acting technologies. We certainly expect this trend in rate cuts to continue as a larger volume of fast-acting technologies like batteries energise through the decade. The system operators also held a similar consultation of DS3 tariff rates last year⁶.

Also, the current tariff arrangements are set to expire by April 2024, post which we will be moving towards more competitive arrangements (daily auctions) which are expected to reduce the per KW income for developers. In our opinion, the estimates around tariffs do not adequately reflect this trend of reduced revenues for developers.

⁵ [DS3 System Services Tariffs Consultation Document - Sept 2022](#)

⁶ [DS3 System Service Tariff Rate Review - May 2021](#)

Costs Underestimated

Capital Fixed Costs

The consultation paper compares the 2022/23 capitalised cost to a 2018 Poyry study. The table below highlights the figures for the capitalised costs and Gross CONE of a CCGT and OCGT plant in Ireland from the consultation paper.

	CCGT (450 - 500 MW)		OCGT (200 MW)	
	2018 Poyry	2022 CEPA/Ramboll	2018 Poyry	2022 CEPA/Ramboll
Capitalised Costs (€m)	380.0	395.3	129.8	108.1
Capitalised cost derated (€/kW)	993.8	1019.5	719.0	616.4

These figures represent **4%** increase and **16%** decrease in capitalised costs for a CCGT and an OCGT plant respectively. To contrast this with an infrastructure project in Europe between Ireland and France, a joint decision was published recently by the CRU and Commission de régulation de l'énergie (CRE, French Energy regulator) on cross border cost allocation for the CELTIC Interconnector⁷. The latest cost estimate for the Celtic Interconnector including contingency is forecast at **€1,623** million for delivery in 2027. This represents a **74%** increase in cost when compared to the 2019 estimates done by the regulators (**€930** million).

It's difficult to see the rationale behind the cost estimates made by the CEPA report for all reference technologies when the cost associated with actual projects has risen by a considerable amount. We hope to get additional clarity on the estimates when SEMC comes to a decision on this consultation. Inflation in the power and industrial sectors is well in excess of the general economy worldwide and perhaps even more so in Ireland. Due to significant industrial development (pharma, manufacturing, data centres etc., combined with a shortage of skilled labour and major supply chain issues, contracting costs in the sector are growing significantly.

Site Procurement Costs

The price of land assumed (**€35,898/acre**) is based on the value of agricultural land in the Irish farmer's Journal and applying a 100% uplift to that price. While we don't necessarily have a view on the approach, we notice that the prices of industrial land in Ireland are significant higher. Based on our experience, they are in the **>€100k** range for **prime industrial land**. **Land with reasonable access to both power and gas grid is in no way going to be priced close agricultural land and is likely to carry a significant premium.**

Electricity Connection Costs

The report estimates the cost of an electrical connection at **€6.75 million** for connecting into an existing 220 KV outdoor substation. In a recent workshop hosted by SEMO on the capacity auctions, EirGrid presented an overview of generation opportunities at different voltage levels on the grid⁸. It highlighted that there were limited opportunities on the existing 220 KV network.

To develop any of the referenced technologies in the report, it is likely that a new 220 KV substation would have to be built, potential both TSO and client side GNI, plus transformers, cabling etc. Based

⁷ <https://www.cru.ie/wp-content/uploads/2022/11/CRU2022976-Celtic-Electricity-Interconnector-Joint-RA-CBCA-decision-reaffirmed.pdf>

⁸ <https://www.sem-o.com/documents/general-publications/InfoSession2627T-4.pdf>

on our experience, a new substation will incur an additional expense which would be **4-8 times** the cost of connection estimated in the report depending on cable length, step-up transformers and the requirement for new/modified GIS. This increases the electricity connection costs significantly for the project and therefore recommend that the estimates be revised.

Cost of Finance

We would question the assumptions used about risk-free rates and the cost of capital. We have seen a number of increases in central bank rates both in Europe and abroad in the last twelve months; however, the risk-free rates expressed in the study do not seem to align with these increases and reflect materially out of date bond rates. A higher risk-free rate will necessitate a higher rate of return required on both debt and equity and therefore a higher WACC than is used in calculations.

Further to this, there is a relationship between the level of CONE and therefore capacity payment and the risk of overall project delivery. Where there is a lower CONE, but the actual costs are higher than this as outlined above, then the risk of the project will increase significantly as cost recovery cannot be guaranteed over the 10-year duration of the fixed capacity contract. This increased risk will also increase the required rate of return on the project and hence also contribute to an increased WACC.

Inflation while Estimating CONE

As per data from the Central Statistics office (CSO), the consumer price index rose by 9.2% between Oct 2021 and Oct 2022⁹. The CSO also noted that Oct was the 13th straight month where the annual increase for the CPI has been at least 5.0%. The report seems to have accommodated an 8.4% inflation rate on EPC costs in 2022. In July, the Society of Chartered Surveyors in Ireland reported that the 12-month construction Tender Price Index showed a 14% increase year on year¹⁰. Though inflation might slow down over the coming months and years, it is difficult to see how a low annual rate (2%) assumed in the report accurately reflects reality. The European Commission predicts that inflation may remain high for Ireland at 6% in 2023 before dropping down to 2.8% in 2024¹¹. High inflation has a significant impact on costs going forward which the assumption in the report fails to consider. For the SEMC to assume such a low inflation rate going forward is incongruous and contradictory especially given the recent decision in relation to Celtic Interconnector.

Appropriateness of Model

The CEPA model used uses an existing PLEXOS model run which only covers the 2025/26 capacity year; this is materially out of sync with the renewable targets which will be present for 2030 and beyond. This has significant impacts on the running hours which can be assumed for a CCGT plant and therefore the total level of inframarginal rent (IMR) which can be accumulated. We do not find this model fit for purpose to assess the period of 2026 to 2046 and that the use of such a model is fundamentally flawed.

Conclusion

⁹ <https://www.cso.ie/en/releasesandpublications/ep/p-cpi/consumerpriceindexoctober2022/#:~:text=Key%20Findings,has%20been%20at%20least%205.0%25.>

¹⁰ <https://scsi.ie/chartered-surveyors-say-national-annual-rate-of-construction-price-inflation-is-now-running-at-14/>

¹¹ https://economy-finance.ec.europa.eu/economic-surveillance-eu-economies/ireland/economic-forecast-ireland_en

We feel that the modelling exercise has been fundamentally flawed by using a model which materially fails to reflect the power system as it will be in the period 2026 to 2046. Furthermore, we question a number of the key assumptions used in relation to applying inflation to a 2025/26 model. We feel that these flaws have resulted in:

- Over-estimation of revenues, in particular IMR.
- Under-estimation of costs, ignoring the higher levels of inflation seen in the construction sector in recent years; and
- A material under-estimation of the capital costs required to be recovered by new entrant plant.

NFE would urge the SEM Committee to review the methodology used in arriving at these figures and to not make any decision based on its outputs. At the least, it is necessary to run an appropriate Plexos model to accurately reflect system conditions and to estimate revenues and present these findings in a subsequent consultation before any decision should be made.