Single Electricity Market

(SEM)

Consultation and Call for further Evidence on Indexation of Capacity Payments

SEM-23-014

10 February 2023

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1. Background

A proposed modification to the Trading and Settlement Code, Mod_07_22 "*Indexation to Calculation of Capacity Payments for New Capacity*"[1], was raised by Tynagh Energy in June 2022, with a second version submitted in August 2022 following an industry call, and a third version submitted in Oct 2022. The stated intent of the modification proposal is to include a term in the calculation of capacity payments to account for construction-related inflation for new capacity, where that inflation exceeds a certain threshold.

The proposer stated that the purpose of the proposal was to mitigate the risk that new capacity would be unable to build as a result of high and unexpected rates of inflation following, in particular, the invasion of Ukraine. The proposal provided for annual indexation of capacity payments where inflation varies from an expected 2% level, from the date the contract was awarded, to the start of the relevant capacity year. Where, for instance, a ten-year contract has been awarded, indexation would continue to be recalculated annually throughout each of the ten years of the contract, based upon outturn inflation over the course of the ten years.

This modification proposal was approved by the Modifications Committee, although it became apparent during the systems impact assessment carried out by SEMO subsequent to the Committee's vote, that the proposal could not be implemented in systems as currently drafted. As such, the proposal could not be approved by the RAs in its current form. In any case however, the SEM Committee is not convinced that the proposal, which would continue to apply indexation based on outturn inflation over the course of a ten-year contract, would be the appropriate way to mitigate the effect of high and unexpected rates of inflation following, in particular, the invasion of Ukraine.

Nevertheless, the SEM Committee recognises that there may be legitimate concerns as developers who entered certain auctions have faced high and unexpected rates of inflation, and that it merits further investigation as to whether inflation poses a real threat to the delivery of these projects.

The SEM Committee therefore launched a workstream to examine the issue of inflation risk driven by unforeseen global events, in respect of new capacity awarded in the 2024/25 T-3 and 2025/26 T-4 capacity auctions in particular. As part of this, the SEM Committee

[1] https://www.sem-o.com/documents/market-modifications/Mod_07_22/FRRMOD_07_22version2.0.pdf

issued a Call for Evidence (SEM-22-071)[2] asking market participants to provide evidence of the levels of inflation that their projects had been subject to, as well as evidence of the jeopardy to their projects as a result i.e., of how unexpected rates of inflation have impacted on the financial viability of projects to the extent that they have posed a risk to delivery. A total of 11 responses were received, and whilst numerous respondents provided examples of the levels of inflation they have faced (all of which are being treated as confidential and commercially sensitive), none provided comprehensive evidence of the *impact* of inflation on actual expected project returns or demonstrated that those returns have been reduced to the extent that project viability has been threatened.

The SEM Committee is therefore re-issuing the Call for Evidence in this document, insofar as it relates to the *impact* of inflation on the financial viability of projects. This document also clarifies the type of evidence being sought in this regard.

Whilst the evidence received in response to the first Call for Evidence was not as comprehensive as desired, the SEM Committee recognises that if there are projects for which inflation threatens financial viability, any mitigating measures need to be introduced sooner rather than later. Therefore, in this document, in parallel to the further Call for Evidence, the SEM Committee is also consulting on a mechanism for indexing capacity payments for the 2024/25 T-3 and the 2025/26 T-4 auctions.

In the longer term, the SEM Committee may consider developing and adopting an enduring approach to indexation of capacity payments, potentially similar to the indexation arrangements within the GB Capacity Mechanism.

2. Clarification of further Evidence required

The initial Call for Evidence[2] asked four specific questions:

1. To what extent is the EPC contract price fixed at the time the contract is signed, and what determines how soon the contract can be signed? Once the contract is signed, what percentage of costs become fixed, and to what extent do construction-related costs continue to escalate until the build is complete, and why?

[2] https://www.semcommittee.com/sites/semc/files/media-files/SEM-22-071%20Call%20for%20evidence%20regarding%20the%20impact%20of%20inflation%20in%20CRM.PDF

2. To what extent do other capitalised costs per derated MW escalate in line with inflation during the build phase (assumed to mean the period from date of the auction to the date of the start of the first capacity year, regardless of when the actual build is complete)?
3. To what extent, if any, do costs continue to escalate during the operational phase, and why?
4. How, in detail, have unexpected rates of inflation impacted on the financial viability of projects to the extent that they pose a risk to delivery?

A total of 11 responses from market participants were received, many of which contained confidential information.

Numerous respondents answered questions 1 and 2. Some suggested that whilst EPC contractors may have been willing to sign fixed price contracts in the past, during 2022 EPC contractors had become increasingly unwilling to sign fixed price contracts on all of the EPC contract, at least without a substantial inflation risk premium, which made the EPC contract offered uncompetitive. Those respondents stated that the market was increasingly moving to include a degree of indexation in EPC contract prices, although there was no clear picture presented by them as to the mix of indexation and fixed price elements within the contract, or what the indexation terms are where they existed. Where developers are able to sign fixed price EPC contracts, their capex inflation exposure is limited at the point the contract is signed, but where the EPC contracts contain residual indexation provisions, then the developer's capex inflation exposure may last all the way up until the build is complete, and the project is commissioned.

Gas-fired projects in Ireland also cited the unwillingness of GNI to offer fixed price connection quotes and provided confidential examples of where the cost inflation on their new gas connection assets had increased by significantly more than CPI during 2022.

Detailed quantitative evidence was provided by a number of respondents evidencing the inflation they had faced on certain elements of the costs for their 2024/25 T-3 and 2025/26 T-4 projects. Documentary evidence was also provided in support of this in the form of quotes or other correspondence from suppliers. However, no respondents provided the

direct and detailed evidence with respect to financial viability of actual projects[3] that was being sought in question 4.

While evidence has been presented as to the extent of inflation in project costs, the impact of this inflation on the financial viability of projects has not been demonstrated i.e., the extent to which this inflation has put projects in jeopardy has not been demonstrated. The SEM Committee is therefore re-issuing its Call for Evidence in respect of the 2024/25 T-3 and 2025/26 T-4 auctions as it relates to the fourth question above. That is to say that the SEM Committee is seeking evidence from investors demonstrating that unanticipatable inflation is putting projects in jeopardy i.e., threatening their financial viability. For instance, investors could demonstrate the impact of inflation on the financial viability of actual projects by providing:

- the project lifetime cashflow projections which underpinned their auction offers (demonstrating that expected returns exceeded costs of capital at that time), and
- updated project lifetime cashflow projections demonstrating that expected returns are now less than the cost of capital, taking into account awarded capacity prices.

Evidence will be more compelling where respondents are able to produce substantiating cost documentation from suppliers. The SEM Committee is fully conscious of the sensitivity of the information requested, which will be treated as confidential and commercially sensitive.

This Call for Evidence focusses particularly on the T-3 24/25 and T-4 25/26 given the timing of these auctions, and the likely procurement timeline for projects that were successful, relative to the invasion of Ukraine and the economic shock that has resulted. The SEM Committee would be minded not to extend any indexation provisions that might be introduced to contracts awarded in auctions prior to these.

[3] We received one response that was based around a hypothetical project, not an actual project from the 2024/25 T-3 or 2025/26 T-4 auction

3. Potential Indexation Mechanism for 2024/25 T-3 and 2025/26 T-4 Auctions

The SEM Committee recognises that if there are projects for which inflation threatens financial viability, any mitigating measures need to be introduced sooner rather than later. Therefore, in this document, in parallel with re-issuing the Call for Evidence, the SEM Committee is consulting on the form of indexation for contracts already awarded in the 2024/25 T-3 and 2025/26 T-4 auctions, so it will be in a position to swiftly move to implementation, if the need for indexation is established.

The proposals and issues set out in this document draw on the work undertaken in respect of TSC Mod_07_22 "*Indexation to Calculation of Capacity Payments for New Capacity*"[1].

The design of the indexation arrangements described in Mod_07_22 (Version 3) is such that capacity payments would be indexed to reflect inflation variances:

1. from the indexation built into the Auction Price Cap (2% p.a. in the case of the 2024/25 T-3 and 2025/26 T-4 auctions),
2. over the lifetime of the capacity contract,
3. based on the cumulative effect between the date on which the Capacity contract was awarded, and the first day of the relevant capacity year,
4. based on CPI inflation.

We note that whilst in their responses to the initial Call for Evidence[2], a number of market participants stated that they had been exposed to price increases well in excess of CPI on certain elements of their costs, the majority of the Modifications Committee supported this modification which indexes costs only in line with CPI increases, and only where these increases exceed 2%.

As noted previously, there are flaws in the legal drafting of Mod_07_22, which mean that it cannot be implemented as currently drafted. However, the SEM Committee also has concerns about the design of the indexation arrangements contained in this proposal, as to whether they target the appropriate projects (eligibility) and whether they are appropriate to address the stated concerns.

Proposed Design

At a high level, the SEM Committee would propose to make the following changes to the design of the indexation mechanism set out in version 3 of Mod_07_22, with this variation on the mechanism to be implemented subject to sufficient evidence being received to the Call for further Evidence contained in this paper. These elements of the design are then described in further detail in subsequent sections.

- Eligibility:
    - This indexation mechanism would apply to projects that won in the 2024/25 T-3 and 2025/26 T-4 auctions, but not to projects that won in any prior, or future, auctions;
    - Indexation would apply only to the subset of New Capacity which is making a sufficiently large investment as to be able to obtain a multi-year contract;
- Form of indexation:
    - Indexation would only be applied based on inflation during the build period. A one-off indexation factor would be calculated based on cumulative unexpected inflation during the build period (from the Auction Date to the start of the first capacity delivery year). That indexation factor would be applied to capacity prices awarded at auction for that unit for all ten years of the contract.
    - Indexation would be applied on a currency zone basis, with the Irish CSO's Harmonised index of Consumer Prices (HICP) applied to capacity prices in the Euro currency zone and the UK Office of National Statistics main CPI index (excluding housing costs) applied to capacity prices in the Sterling currency zone;
- Risk-sharing: A prudent investor will have expected a degree of risk around a central case expectation of inflation and factored a risk premium into its bids. Given this, *inter alia*, the SEM Committee is considering whether one of the following risk-sharing measures would be appropriate. One consideration impacting the design of any risk-sharing mechanism would be the extent of the jeopardy posed to projects and demonstrated in response to the Call for Evidence contained in this paper. That is to say that whether it is appropriate to introduce a risk-sharing mechanism such as the two described below, as well as the allocation of risk under that mechanism, would take into consideration the degree of jeopardy that the projects concerned are shown to be in. If, for example, the responses clearly showed that the jeopardy posed to projects by unanticipated inflation is such that

these risk-sharing measures would make the indexation mechanism ineffective in preventing the termination of those projects, then there may be an argument not to introduce risk-sharing.

- Introducing a risk-sharing percentage, x%, which would result in less than 100% of unexpected inflation being passed through to the capacity price, and hence to consumers.
- Introducing a "deadband" into the indexation provisions, between a lower bound and a higher bound. Variances above the upper bound, would be reflected in increases in the contract prices and variance below the lower bound would result in reductions in the contract price. There would be no upward or downward adjustment for inflation between the two bounds.

The values of the risk-sharing parameters would be set by the SEM Committee following this consultation, taking into consideration, amongst other things, the degree of jeopardy projects are shown to be in, and reflecting the basket of factors discussed in more detail in subsequent sections.

The above proposed changes to Mod_07_22 are explained in more detail below.

Eligibility: Which previous auctions would these arrangements apply to?

Mod_07_22 was originally intended to apply to all New Capacity, effective from the date the modification proposal would be approved[4], with an expectation that it would be effective by 1 October 2023. Mod_07_22 would therefore apply to units that won ten-year contracts in the 2022/23 T-4 auction and the 2023/24 T-4 auction, and have already started delivering. Mod_07_22 would also apply to new units that won in any subsequent auction, including T-1 auctions, like the 2023/24 T-1 planned for March 2023. Challenges to implementing this modification for new capacity only were highlighted in the course of the Modifications Committee discussions however, and the legal drafting that was approved by the Modifications Committee would apply indexation to capacity payments for all projects, both new and existing.

The SEM Committee proposes that any indexation arrangements should be targeted at those projects which faced unanticipated inflation as a result of the war in Ukraine during

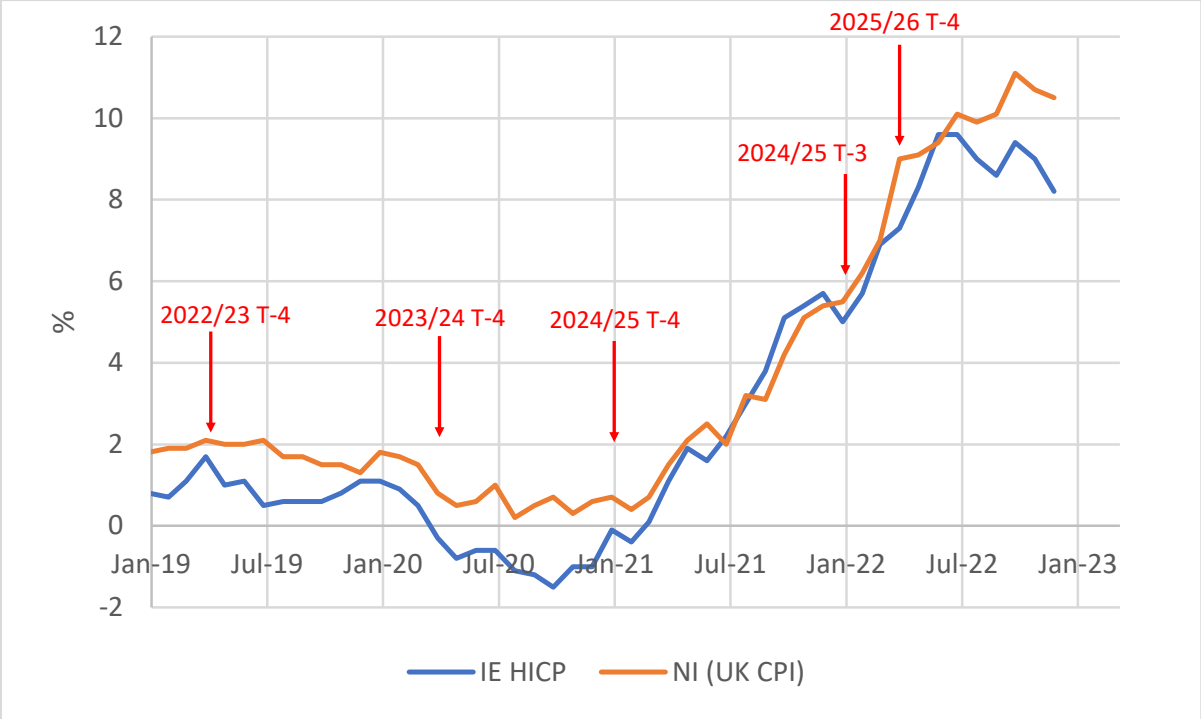
[4] although it is not clear that intent has been achieved with the proposed drafting

the build period, namely the new projects which won in the 2024/25 T-3 auction, and the 2025/26 T-4 auction.

As illustrated in Figure 1, the 2022/23, 2023/24 and 2024/25 T-4 auctions occurred before inflation increased in Ireland and the UK:

- The 2022/23 T-4 auction took place in March 2019, with Substantial Financial Completion (SFC) due by September 2020 and Substantial Completion by October 2022;
- The 2023/24 T-4 auction took place in March 2020, with SFC due by September 2021 and Substantial Completion by October 2023;
- The 2024/25 T-4 auction took place in January 2021, with SFC due by July 2022 and Substantial Completion by October 2024.

Figure 1: Timing of auctions in comparison to actual annual CPI inflation in Ireland and Northern Ireland. For reasons of clarity, forecast inflation is not shown in the graph below, but would also have been a relevant consideration at the time when bids were being assembled for each auction.



The level of inflation which projects have been or will be exposed to depends upon precisely when they are able to lock-in capex costs.

As shown in Table 1, inflation was less than 2% in both Ireland and the UK, at the time of the 2022/23, 2023/24 and 2024/25 T-4 auctions. Therefore, where successful projects were in a position to sign capex contracts and lock-in costs (via fixed price contracts) immediately following the respective auctions, they will have been able to lock-in capex costs in a low inflationary environment.

Table 1 shows actual inflation at the auction date, actual / projected inflation between the auction date and the SFC milestone date and actual / projected inflation between the auction date and the start of the relevant capacity delivery year for each the T-4 and T-3 auctions. Inflation up to December 2022 is based on Irish CSO EU HICP estimates for Ireland and UK Office of National Statistics estimates of the UK CPI (all items) index. Inflation projections for January 2023 onwards are based on latest Central Bank of Ireland (CBoI) and UK Office for Budget Responsibility (OBR) forecasts.

To meet the SFC milestone, an investor is required to have signed "all the Major Contracts and Finance Documents"[5], and projects are required to have met the SFC milestone within 18 months of the auction date. Even where a 2022/23 or 2023/24 T-4 auction winner was not able to sign contracts until the SFC Date, the maximum inflation they would have been exposed to was 4.7% cumulative CPI growth over the 18-month period (for a 2023/24 T-4 project in NI).

Table 1: CPI Inflation in Ireland and Northern Ireland between auctions and delivery

Auction	Inflation at auction date		Actual and projected inflation between auction and SFC Date		Actual and projected inflation between auction and start of delivery year	
	Ireland	NI	Ireland	NI	Ireland	NI
2022/23 T-4	1.1%	1.9%	-0.8%	2.0%	13.5%	17.9%
2023/24 T-4	-0.3%	0.8%	3.6%	4.7%	20.3%	24.9%
2024/25 T-4	-0.1%	0.7%	12.3%	12.4%	25.2%	26.6%
2024/25 T-3	5.0%	5.4%	13.5%	15.9%	19.2%	20.1%
2025/26 T-4	6.9%	7.0%	11.3%	15.1%	18.2%	17.2%

Source: Ireland CSO and UK National Statistics Office for historical data; Central Bank of Ireland (CBoI) and UK Office of budget Responsibility Q4 2022 inflation forecasts[6]; RA calculations.

[5] See Section J.2.1.1 of the CMC

[6] the CBoI forecasts do not provide a value for 2025 HICP growth, so we have assumed 2% from 1 Jan 2025 to 1 Oct 2025, compared with the CBoI forecast of 2.8% for 2024

The inflation exposure of a 2024/25 T-4 auction winner is likely to depend upon how soon after the auction they were in a position to sign contracts. If they were in a position to sign major contracts soon after the January 2021 auction (e.g., because they already had necessary permissions and connection agreements), then they would have been able to do so at a time before inflation rose. CPI inflation was still around or below 2% p.a. in both jurisdictions throughout the first half of 2021.

By January 2022, CPI inflation had risen somewhat to around 5% in Ireland and around 5.5% in Northern Ireland, but may have been perceived to be a short-term inflation effect due to transitory disruption in supply chains in the immediate aftermath of the pandemic. For instance, in Q1 2022, the Central Bank of Ireland was forecasting inflation in Ireland on the EU HICP definition to be 4.5% in 2022, declining to 2.4% in 2023 and 2.1% in 2024. At the same time, the UK Office for Budget Responsibility (OBR) was forecasting UK CPI inflation to be 4.0% in 2022, declining to 2.6% in 2023 and 2.1% in 2024.

The SFC Date for the 2024/25 T-4 auction was July 2022, not long after the Ukraine invasion. Cumulative CPI growth by the SFC Date, was just over 12% in both Ireland and the UK.

The 2024/25 T-3 and 2025/26 T-4 auctions took place in January 2022 and March 2022, i.e., at a time when inflation had risen (values in Figure 1 show annual inflation over the previous twelve months), but forward looking expectations for the build period were relatively low. Therefore winners in the 2024/25 T-3 and 2025/26 T-4 auction may have priced their auction offers based on relatively low expectations of inflation, and have expected to be able to lock in EPC and other build costs in 2022 and 2023 at relatively low levels of inflation. However, the winners in those auctions are likely to have been faced with a fairly immediate price shock resulting from the Ukraine invasion in February 2022. They may have been required to commit to capex contracts at a time when, contrary to prior expectations, inflation was not falling but accelerating.

As discussed above, some respondents to the initial Call for Evidence stated that following the Ukraine War price shock, procurement became more challenging not only because of the direct effect of rising inflation, but also because:

- EPC contractors were increasingly unwilling to sign fixed price contracts, without an uncompetitive inflation risk premium; and

- the market was increasingly moving to include a degree of indexation in EPC contract prices, with a range of different levels of cost increases faced by different elements of different projects. Some respondents also noted that as GNI refused to offer fixed price quotes on gas connections, they were exposed to inflation over the lifetime of the connection asset build.

Where 2024/25 T-3 and 2025/26 T-4 auction winners were required to sign key contracts with indexation provisions, they may continue to have inflation exposure beyond the SFC Date, possibly with a degree of inflation exposure all the way to the start of the delivery year, or beyond, if they do not achieve completion by the start of the delivery year. As shown in **Error! Reference source not found.**, cumulative HICP inflation is projected to be 19.2% between the date of the 2024/25 T-3 auction (January 2022) and the start of the delivery year (Oct 2024), and this exceeds 2% p.a. by a cumulative 13.6%. The corresponding figures for Northern Ireland are cumulative CPI inflation of 20.1%, which is 14.5% in excess of 2% p.a. inflation.

We have not received any feedback to suggest that participants in the 2024/25 T-4 auction faced similar difficulty obtaining fixed price contracts. On this basis, this SEM Committee considers it reasonable to assume that winners in the 2024/25 T-4 auction had a greater ability to manage their inflation exposure by signing fixed price contracts earlier, at a time before inflation increased and fixed price offers became more difficult and expensive to source.

Given the timing of the auctions, the timing of key events (particularly the Ukraine War) and their impact on inflation and the availability of fixed price contracts, it would appear that winners of the 2024/25 T-3 and 2025/26 T-4 auctions have been exposed to materially more unexpected inflation than other auction winners, which is why the indexation mechanism described here would target indexation at these contracts.

Eligibility: Which Capacity Market Units would be eligible?

The key concern Mod_07_22 sought to address is the inflation impact on the *construction* costs of New Capacity. The original intent of Mod_07_22 was not to apply indexation to Existing Capacity, which had not been exposed to inflation on build costs. However, in the

course of the Modifications Committee discussions, the practical challenges associated with applying the mod to new capacity only were highlighted, and the final proposed legal drafting does not distinguish between different capacity types and adjusts the capacity payments of all capacity, including Existing Capacity[7].

The SEM Committee is of the view that any modification that applies indexation in respect of auctions which have already occurred should not apply to Existing Capacity[8]. However, not all New Capacity has necessarily incurred significant build costs. For instance, a new DSU may be a different aggregation of existing sites, or a mix of old sites and new sites, where no significant investment has been necessary to deliver the capacity. Where no significant investment has been necessary it is much less likely that inflation in build costs threatens the delivery of the capacity.

Whether a New Capacity unit has successfully applied for a multi-year contract by demonstrating that its investment has exceeded the New Capacity Investment Rate Threshold (NCIRT) may be a reasonable proxy for whether it has potentially been subject to high and unexpected inflation in build costs. The SEM Committee would propose restricting the indexation of capacity payments to the subset of New Capacity which has invested at a level sufficient to obtain a multi-year contract. The estimated MW of capacity that would be subject to indexation on this basis is shown in Table 2.

[7] The drafting states that the $CINF_u$ term "is the average annualized inflation (or deflation) for the period beginning on the date when a New Capacity contract is awarded and ending on the first date in which the Capacity Payments are being calculated". By referencing New Capacity in the definition of $CINF_u$, it appears that it is only intended to apply to New Capacity, but other elements of the $INFMOD_{uy}$ formula (which calculates the indexation to apply) set out in the drafting of F.17.1.2 are not restricted to New Capacity, so would appear to apply to all capacity and adjust the payments of all capacity. Furthermore, as New Capacity is not a defined term in the TSC (only the CMC) a definition of New Capacity would be needed to make the drafting work.

[8] although as discussed in Section 4, it may consider a move to indexation of all capacity in the longer term

Table 2: Derated MW (MW_d) of All, New and New Multi-year capacity by auction

		Ireland	NI	Total
2024/25 T-3	All	1,399	72	1,471
	New	1,378	69	1,447
	New, multi-yr	1,349	41	1,390
2025/26 T-4	All	4,679	1,820	6,499
	New	381	305	687
	New, multi-yr	323	260	583
Total	All	6,078	1,892	7,970
	New	1,759	375	2,134
	New, multi-yr	1,672	301	1,972

As shown in Table 2, if indexation were to be applied to all capacity, including Existing Capacity, awarded in the 2024/25 T-3 and the 2025/26 T-4 auctions, there would be a total of 7,970MW_d of New Capacity that would be subject to indexation. If indexation was restricted to New Capacity, 2,134MW_d would be subject to indexation, whereas there would be only 1,972MW_d of multi-year contracts, which have invested more than the NCIRT, a difference of 161MW_d.

Although the SEM Committee considers that it would be appropriate to target an indexation mechanism for these auctions to multi-year New Capacity only, it is worth noting that the impact on cost to the consumer of restricting the indexation only to multi-year contracts rather than to all new capacity is relatively low, as indexing the multi-year contracts will impact the consumer for ten years, whereas indexing the contracts for existing capacity or for single year New Capacity impacts the consumer for only one year.

Table 3: Estimated costs of applying indexation to all capacity, all New Capacity and Multi-year New Capacity only (€ million)

	All	New Capacity only	Multi-yr New Capacity only
2024/25 T-3	277	277	276
2025/26 T-4	107	80	78
Total	383	357	354

Source: Ireland CSO and UK National Statistics Office for historical data; Central Bank of Ireland (CBoI) and UK Office of budget Responsibility Q4 2022 inflation forecasts[9]; RA calculations.

[9] the CBoI forecasts do not provide a value for 2025 HICP growth, so we have assumed 2% from 1 Jan 2025 to 1 Oct 2025, compared with the CBoI forecast of 2.8% for 2024

As shown in Table 3, based upon the current Central Bank of Ireland/UK OBR forecasts, over the lifetime of the contracts the cost of this proposed indexation mechanism would be €383m if applied to all capacity, €357m if applied to all New Capacity and €354m if applied to multi-year contracts only. For reference, if similar indexation provisions were extended to all auctions to date, and all capacity as envisaged by the final version of Mod_07_22, the forecast cost to the consumer would be in excess of €600m.

These values are before the application of any risk-sharing provisions discussed later in this section.

Form of indexation: restriction to build period

Mod_07_22 proposes to index capacity prices based on unanticipated inflation, for each year of a multi-year contract. On this basis, consider the following simplified example, whereby the expected inflation (the $AIND_u$ introduced in Mod_07_22) is 2% p.a. for all years, an auction takes place at precisely T-4, and a Capacity Market Unit (CMU) wins a ten-year contract at €100/kW_d/yr. Now let us suppose that the CPI index outturns at 5% p.a. in every year. Just before the first delivery year, unanticipated inflation would be calculated as 3% in every year since the auction date, and the Year 1 capacity price payable would be calculated as $1.03^{\wedge 4}$ x €100/kW_d = €112.55/kW_d. Assuming inflation continues to outturn at 5%, in each year, the capacity price would continue to be increased by 3% p.a. so the capacity price would be €115.93/kW_d in Year 2, and would increase to €146.85/kW_d in Year 10.

Whilst the stated rationale for Mod_07_22 is to mitigate to risk of inflation to projects resulting from inflation during the build period, the contract price continues to inflate long after the build period has finished. Whilst it is recognised that operating costs may continue to be subject to unexpected inflation over the life of a contract, capex costs do not. Based on numbers estimated in the BNE consultation, the ongoing opex costs constitute only about 35% of the NPV of capex and fixed operating costs incurred in the first ten years of asset life in the case of a CCGT, 28% in the case of an OCGT, 23% in the case of a gas engine and 25% in the case of a battery. Continued annual indexation throughout a ten-year life potentially over-compensates units for unexpected inflation. However, if the indexation provisions also include “clawback” (as Mod_07_22 proposes) when

unexpected inflation is negative, then units could be subject to excessive levels of "clawback", particularly if inflation is significantly less than 2% during the operational period.

If the SEM Committee decides there is sufficient evidence to introduce indexation for these auctions, it would propose that this should apply only in respect of the build period. It was expected during the design of the CRM that auction bidders should factor the risk of inflation into auction offers. Any intervention by the SEM Committee in respect of auctions which have already taken place would only be on the basis of an extraordinary risk to security of supply resulting from the effect of exceptional and unanticipated inflation on build costs, and should be targeted at unexpected inflation that happens during the build period, given that the build costs constitute the large proportion of a project's total costs.

Therefore, the SEMC's favoured approach would be to calculate a one-off inflation adjustment to apply just before the start of the first delivery year, and to re-fix the capacity price for that unit for all ten years at that price. So, in the above simplified worked example, the CMU would be paid €112.55/kW_d/yr for all ten years of the contract.

Form of indexation: indices to be used

Mod_07_22 proposed to use a 50:50 mix of the Consumer Price Index (CPI) in Ireland and the UK, and apply equally to units in Ireland and Northern Ireland. The Mod_07_22 Final Recommendation Report of the Modifications Committee discussed whether to use a Tender Price Index or the Output Price Index for New Infrastructure, but concluded that it would be simpler to use CPI.

The SEM Committee notes that there are a range of more detailed price indices which aim to capture inflation in many different products and services. However, the intent is not to match the precise inflation exposure that each investor faces. Responses to the initial Call for Evidence suggested that inflation exposure will vary significantly from project to project. The SEM Committee does not propose to have a bespoke regime tailored to the inflation exposure of each individual project, but would consider applying a standard index across the board with the aim that this should be sufficient to mitigate the risks to project viability, if demonstrated through this Call for Further Evidence. Additionally, it is more

practical to use a CPI measure as it is not possible to use an alternative index which is simple, reasonably consistently defined across both Ireland and the UK, and which accurately captures the inflation exposure of a range of different technologies, including gas turbines, storage and DSUs.

Inflation faced by investors in new capacity is likely to come from a range of sources. It may come from dollar inflation in cost elements for tradeable goods such as turbines, which may be typically priced in dollars or euros. It may be driven by fluctuations in local currency against the dollar, or in the case of Sterling, against both the dollar and the Euro. Or it may be driven by fluctuations in locally incurred costs, such as labour costs, denominated in local currency terms.

It may be appropriate to apply a 100% Ireland CPI to Euro denominated capacity prices, and a 100% UK CPI to Sterling denominated Northern Ireland capacity prices. Capacity prices for Northern Ireland are set at the time of the auction in Sterling values. All other things being equal, if there is a significant depreciation in Sterling relative to the Euro, it is reasonable to expect that inflation in the UK will be higher than in Ireland, as the price of imported goods (e.g., turbines) is likely to rise following the depreciation of the currency. If the Euro has not depreciated, we would not expect imported component prices in Euro to have inflated as much as imported components in Sterling. Arguably, capacity providers in Ireland should not benefit from a depreciation of Sterling which has not impacted them (or vice-versa). The SEM Committee would therefore propose that a 100% UK CPI should be applied to prices in Northern Ireland and a 100% Ireland CPI should be applied to prices in Ireland[10].

There are multiple CPI measures in use in both Ireland and the UK, and it is appropriate to more accurately define which index should be used. We would propose to use the Irish CSO's Harmonised index of Consumer Prices (HICP) to be applied to capacity prices in

[10] Consider the following simplified example, whereby a component's costs are denominated in dollars. At T-4 stage, let's assume that the component costs $100, and the $/€ exchange rate is 1.00, so the component costs €100, and the $/£ exchange rate is 1.2, so the component cost £83.33. Suppose that four years later the $/€ exchange rate is still at parity, whilst sterling has depreciated to $/£ = 1.1. Now assume that prices have not change in dollar terms, so the component costs £90.91, i.e., has seen 9.1% inflation, but still costs €100. If we used a 50:50 weighting both € and £ prices would be inflated by 4.5%, whereas if we use currency zone specific indices, the Northern Ireland indexation would reflect NI inflation at 9.1%, whereas the Ireland indexation would reflect Euro zone inflation at 0%.

the Euro currency zone and the UK Office of National Statistics main CPI index (excluding housing costs) to be applied to capacity prices in the Sterling currency zone.

Risk sharing

The SEM Committee is considering whether it would be appropriate to include some form of risk-sharing arrangements within the potential indexation mechanism.

Arguably, by calculating the inflation multiplier by reference to an expected inflation term ($AIND_u$) Mod_07_22 includes a degree of risk sharing. Suppose that in a T-4 auction expected inflation is 2% p.a. Now let's assume that outturn inflation is 10% in the first year of the build period, 5% in the second year, 0% in the third year and -1% in the fourth year. Calculated unexpected inflation would be 8%, 3%, -2% and -3% in the respective years. The calculated inflation adjustment to apply would be 1.08 x 1.03 x 0.98 x 0.97 = 1.0883, and a contract originally awarded at €100/kW_d/yr would be paid at €108.83/kW_d/yr. The fact that inflation out-turned below 2% in years 3 and 4 of the build period means that years 3 and 4 reduce the capacity payment rather than increase it. In principle, the indexation provisions can be negative, which could be construed as a degree of risk sharing with investors bearing risk, and consumers benefitting, if inflation falls below 2%.

However, the SEM Committee is considering whether it would be appropriate to introduce a further risk-sharing arrangement. Mod_07_22 provided for 100% pass-through of the variance in CPI inflation from an expected value of 2%. A prudent investor will have expected a degree of risk around the 2% central case expectation of inflation, and factored a risk premium into its bids. Therefore, the SEM Committee is considering one of the following risk-sharing measures. The decision as to whether or not to introduce one of these measures, and how the parameters should be set, would take into consideration the degree of jeopardy that projects are shown to be in in response to the Call for Evidence contained in this paper. If, for example, the responses clearly showed that the jeopardy posed to projects by unanticipated inflation is such that these risk-sharing measures would make the indexation mechanism ineffective in preventing the termination of those projects, then there may be an argument not to introduce risk-sharing.

- Introducing a risk-sharing percentage, x%, which results in less than 100% of unexpected inflation, above 2%, being passed through to the capacity price, and hence to consumers; or
- Introducing a "deadband" into the indexation provisions, between a lower bound (below expected inflation, a%) and an upper bound (above expected inflation, b%). Variances above the upper bound, would be reflected in increases in the contract prices and variance below the lower bound would result in reductions in the contract price. There would be no upward or downward adjustment for inflation between the two bounds.

We note that the risk-sharing parameter x% has some similarities to the 70% risk-sharing parameter introduced by the Government of Ireland in respect of its Inflation Co-operation Framework. However, the indexation provisions specified in that Framework have differences to those proposed here in that they are based on tailored, project specific calculations of inflation exposure, rather than more generic CPI indices. The use of a more generic index introduces more "basis risk", i.e., there is a greater potential for mismatch between the indexation provisions and actual inflation, given the basket of goods and services they must procure.

Some element of risk sharing might serve as a greater incentive to investors to lock-in prices where they can, and may also allow indexation to better reflect the fact that not all of the capex costs are inflation exposed for all of the build period.

The values of the risk-sharing parameters, a%, b% and x% would be set by the SEM Committee, as applicable, following this consultation. The approach to risk-sharing would need to take into account a range of considerations, including:

- The fact that the above indexation provision would cover inflation during the whole of the period between the auction date and the start of the capacity delivery year, whereas an investor is likely to have incurred most of the costs well before the start of the capacity delivery year;
- The proportion of an investment's project lifetime costs which are capex costs (which this intervention is seeking to target), and the proportion of lifetime costs which are opex. Evidence presented above from the BNE study showed that proportions vary depending on technology, but that capex may represent between 65% and 75% of lifetime costs on an NPV basis;

- The level of tolerance around central case expectations of inflation that a reasonably prudent investor will have factored into investment plans;
- The likely level of residual “basis” risk that may be borne by an investor, given that the indexation mechanism would be based on a generic inflation index such as CPI, rather than a more tailored index or set of indices that may apply in the case of the Government of Ireland’s indexation proposals under the Inflation Cooperation Framework for example.
- The degree of jeopardy that projects are in, as demonstrated in response to the Call for Evidence contained in this paper.

In considering the extent to which it should be the consumer, rather than the developer that should ultimately bear the risk of unanticipated inflation in the current context, the SEM Committee is conscious that although indexation provisions would increase the cost to the consumer in terms of capacity payments, this must be weighed against the benefit to the consumer of preventing projects from terminating, in terms of security of supply, and cost in the case where alternative emergency generation would need to be sourced, or lost load incurred, for example. The appropriate balance must be found between these considerations.

In the context of risk sharing there may be an argument that if indexation is to be applied, there should also be an increase in the cost associated with non-delivery i.e. termination charges. If consumers may ultimately bear the cost of increased capacity payments to enable delivery of new capacity, contracted in the 2024/25 T-3 and 2025/26 T-4 auctions, then it could be considered fair for generators to be more heavily penalised for non-delivery of that capacity. Given the security of supply implications of non-delivery, a sharpening of the incentive to deliver, through an increase in the termination charges for these projects, could be viewed as a prudent step for the SEM Committee to take at this time.

Implementation

Subject to sufficient evidence being provided of the impact on project viability arising from exceptional and unanticipated levels of inflation, these indexation arrangements would be implemented via a TSC Modification. The change to how capacity payments are calculated would be made only after the TSC Modification was approved and

implemented, so although the modification would apply to capacity contracts already awarded, the modification would not be required to take effect before the date of the modification decision and so would not be affected by the provisions in the TSC or CMC that relate to retrospectivity.

Since the provisions would only apply to the 2024/25 T-3 and 2025/26 T-4 auctions, the change would have no effect on consumer bills, capacity payments and related systems until October 2024. The prohibition on retrospectivity would not be engaged by a decision on this potential modification as it would not seek to unwind any right or remedy which would have accrued under an existing capacity contract before the date the modification took effect.

4. Longer-term Approach

The SEM Committee may also consider whether to move from the current system whereby capacity contracts are awarded and fixed in nominal prices, to a system where investors enter a T-3 or T-4 auction knowing that prices will be indexed over the lifetime of the contract. Therefore, they are essentially bidding a price in real terms, rather than nominal terms, and inflation risk is transferred from the investor to the consumer.

This is the approach employed in the GB capacity mechanism.

The SEM Committee considered this approach during the I-SEM CRM detailed design phase (see SEM-16-022), but decided at that time to fix payments in nominal terms, and not to index them over the life-time of a contract. A key reason for this decision was the belief that auction winners could manage their inflation exposure via inflation swaps, but it appears that recent investors have not done so.

Moving to a system of indexed contracts transfers inflation risk from investors to consumers, but in doing so, could serve to lower the cost of capital to investors and increase the attractiveness of the SEM as a location for investment vis-à-vis other markets, both of which would be to the benefit of consumers.

The SEM Committee is also considering undertaking work to strengthen incentives to deliver capacity. This was an area raised in the EY report which questioned whether the incentives for delivery were too low to ensure capacity procured is built. The report

questioned, for example, whether higher termination charges would ensure realistic auction bids and timely delivery of new build. Work undertaken in this regard could also consider whether parties that fail to deliver should be eligible to compete in future CRM auctions for a defined period, or whether the price they can extract from any future CRM auction should be capped.

5. Consultation Questions

Stakeholders are invited to submit comments on any aspect of this consultation paper and are requested to respond on the following points in particular:

1. Respondents are requested to provide further evidence in respect of the impact of unanticipated inflation on the financial viability of actual projects, by providing the project lifetime cashflow projections which underpinned their auction offers (demonstrating that expected returns exceeded costs of capital at that time), and updated project lifetime cashflow projections demonstrating that expected returns are now less than the cost of capital, taking into account awarded capacity prices. Evidence will be more compelling where respondents are able to produce documentary evidence of costs from suppliers.
2. Any element of the proposed indexation mechanism for the 2024/25 T-3 and 2025/26 T-4 auctions, as described in Section 3, including the eligibility, form of indexation and risk-sharing proposals.
3. Is it correct that recent auction winners have not managed their inflation exposure via inflation swaps, and if not, why not?
4. Do you have any other comments on the impact of inflation on the CRM and the design of the indexation provisions described in this paper?
5. Do you have any comment on whether it is appropriate to increase the cost of non-delivery via an increase in termination charges, if indexation is applied?

6. Next Steps

Following this consultation, the SEM Committee will consider the further evidence presented, in order to assess the risk to security of supply in respect of these previous auctions as it stands. If the SEM Committee judges that on balance, the introduction of an indexation mechanism is warranted, then it will take into account all responses received to this Consultation in relation to the design of the mechanism.

Responses should be submitted to CRMSubmissions@uregni.gov.uk and CRMsubmissions@cru.ie by close of business on 10 March 2023.

All information received by the SEM Committee in response to the Call for further Evidence will be treated as confidential and commercially sensitive.