Capacity Remuneration Mechanism (CRM)

Indexation of Capacity Payments

Detailed Response Paper

SEM-23-045

03 July 2023

Executive Summary

A proposed modification to the Trading and Settlement Code to index CRM capacity contracts was raised by a market participant in June 2022. The concern that prompted the proposal was 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 SEM Committee was not convinced that the mechanism contained in the proposal would be the most appropriate way to mitigate the effect of such high and unexpected rates of inflation, and further, considered it necessary to collect evidence as to the extent and impact of this inflation.

The SEM Committee therefore launched a workstream to examine the issue of inflation risk driven by unforeseen global events, and the best way to mitigate this risk. A Call for Evidence was issued asking market participants to provide evidence demonstrating the level of inflation they faced on their projects, and how this threatens their financial viability. Whilst numerous respondents to this first Call for Evidence provided examples of the levels of inflation they have faced, 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 therefore issued a Second Call for Evidence, related specifically to the impact of inflation on the financial viability of projects. Cognisant of the potential need to act quickly, the second document also set out a consultation on a “strawman” proposal for how the indexation provisions would work, if they were to be introduced. The “strawman” proposals focused on multi-year New Capacity projects which were awarded capacity in the 2024/25 T-3 and 2025/26 T-4 auctions, which evidence received suggested were most at risk.

Based on the responses to the two Calls for Evidence, the SEM Committee has concluded that:

- There was capex inflation over and above that which could/should have been reasonably anticipated by a prudent operator;

- This unanticipated inflation threatens the viability of a significant proportion of multi-year new capacity projects which won in the 2024/25 T-3 and 2025/26 T-4 auctions, and could have a material impact on security of supply;
- Indexing contracts is the simplest and most effective way to address the financial jeopardy faced by relevant new capacity;
- The capex inflation faced was at a rate in excess of that captured in the HICP in Ireland and the UK CPI; and
- A number of investors would be faced by continuing inflation throughout the majority, if not all of the build period.

The SEM Committee analysed the costs and benefits of four indexation options, relative to the status quo of no indexation. The quantifiable costs and benefits included:

- The expected cost of indexation in terms of extra Capacity payments; and
- The potential savings to the consumer in terms of the avoided cost of Temporary Emergency Generation. The estimated savings depend on how many derated MW (MW_d) of capacity, are assumed to be "saved" by indexation, with this MW_d estimate based on financial viability data received for a range of projects.

If projects are "saved", the "saved" capacity is also likely to reduce energy prices, which constitutes an additional benefit to consumers, although the SEM Committee has not sought to quantify this effect directly. The SEM Committee has also taken into account the impact of a number of less quantifiable factors, such as moral hazard, as well as the cost reflectivity, transparency, simplicity and credibility of the indices.

Options 1a and 1b were based on HICP/CPI indexation, as per the "strawman" proposals contained in the consultation. Option 2a and 2b were based on wholesale construction indices, reflecting consultation feedback that HICP/CPI metrics would fail to adequately capture the capex inflation investors faced. Options 1a and Option 2a, did not include any risk-sharing, with 100% pass-through of "unexpected" inflation. Option 1b and 2b reflected explicit risk-sharing, with 70% pass-through of "unexpected" inflation.

On balance, the SEM Committee has decided that Option 2b would achieve the best balance across both quantifiable net benefits and other less quantifiable factors:

- Financial viability analysis suggests that there are a number of "at-risk" projects which are broadly around 250MW$_d$. Any intervention would only need to prevent the termination of, i.e., "save", one of these projects to deliver a net benefit to consumers, and it is likely that Option 2b would "save" at least one of these projects, yielding positive net benefits;
- Options based on the wholesale construction indices (Options 2a and 2b) are more cost reflective than options based on HICP/CPI (Options 1a and 1b);
- The SEM Committee sees explicit risk-sharing as a key component of limiting the effect of moral hazard, favouring Option 2b over Option 2a. Whilst the SEM Committee recognises that introducing risk-sharing somewhat reduces cost reflectivity, Option 2b is still expected to "save" some projects and yield positive net benefits;
- Option 2b (and 2a) are based on indices produced by reputable agencies, and are based on indices that have a reasonable degree of credibility, transparency and simplicity, even if the indices are less widely used than HICP/CPI.

Overall, the SEM Committee is satisfied that, in designing these arrangements, it has struck an appropriate balance, in the interests of consumers, between addressing the significant security of supply and financing risks posed by these unexpected circumstances and maintaining a level playing field.

In light of the urgency of communicating the decision to investors, the SEM Committee published a short Decision Paper (SEM-23-038)[1] setting out its decision on 11 May 2023. In SEM-23-038, the SEM Committee undertook to issue a more detailed response document in the following weeks, summarising the non-confidential responses received and setting out a more detailed explanation for its decision. This

[1] Indexation of Capacity Payments Decision Paper.pdf (semcommittee.com)

document summarises the responses and sets out in more detail the reasons for the SEM Committee decision.

This document also clarifies that, whilst indexation will normally be applied based on the calculated change in the indices during the Build Period, impacted market participants will also have the option to base the indexation on a period ending at Substantial Financial Completion, rather than on the day prior to the start of the first Capacity Year.

Contents

1. Background

1.1 Introduction

A proposed modification to the Trading and Settlement Code, Mod_07_22 “Indexation to Calculation of Capacity Payments for New Capacity[2]”, was raised by Tynagh Energy in June 2022. The stated intent of the modification proposal was 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 stated 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 recommended for approval by majority vote of 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 drafted. As such, the proposal could not be approved by the RAs as written. In any case however, the SEM Committee was 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 recognised that there may be legitimate concerns as developers who entered certain auctions have faced high and unexpected rates of

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

inflation, and considered that further investigation was merited 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 issued a Call for Evidence (SEM-22-071)[3] 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 had impacted on the financial viability of projects to the extent that they 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 therefore issued a Second Call for Evidence (SEM-23-014)[4], related specifically to the impact of inflation on the financial viability of projects. Cognisant of the potential need to act quickly, given the upcoming Substantial Financial Commitment (SFC) milestones for the two auctions, SEM-23-014 in parallel set out a consultation on a “strawman” proposal for how the indexation provisions would work, if they were to be introduced.

The SEM Committee received a total of 9 responses, most of which were confidential. The confidential responses provided more detailed financial information on project viability across a broad range of projects covering nearly three-quarters of the multi-year New Capacity awarded in the 2024/25 T-3 and 2025/26 T-4 auctions. The RAs

[3] WP-05: Institutional Arrangements (semcommittee.com)

[4] SEM-23-014 Indexation Consultation and CfE.pdf (semcommittee.com)

also had a number of follow-up bi-lateral meetings with respondents clarifying aspects of their submissions.

Having given due consideration to the responses to this Call for Evidence, in addition to previous consideration of responses to the first Call for Evidence, the SEM Committee has decided to implement a form of indexation for multi-year New Capacity awarded in the 2024/25 T-3 and 2025/26 T-4 auctions based on wholesale construction price indices for Ireland and Northern Ireland.

In light of the upcoming SFC milestones mentioned above, the SEM Committee published a short Decision Paper (SEM-23-038)[5] setting out its decision on 11 May 2023. In SEM-23-038, the SEM Committee undertook to issue a more detailed response document in the following weeks, summarising the non-confidential responses received and setting out a more detailed explanation for its decision.

A significant proportion of the responses to both calls for evidence were confidential, particularly where respondents were providing quantitative evidence of the impact of inflation on their projects, and demonstrating the financial impact of inflation on their projects returns and the jeopardy to these projects as a result. The responses included a significant amount of confidential data on estimated project costs at the time the auction offers were submitted, and at the time of the calls for evidence. This confidential information forms a key element of the evidence on which the SEM Committee has based its decisions.

This document summarises the responses received to both the first (SEM-22-071) and the second (SEM-23-014) Call for Evidence, subject to confidentiality considerations. It also reflects the other sources of evidence considered by the SEM Committee and the key factors which the SEM Committee has taken into account in making its decision.

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[5] Indexation of Capacity Payments Decision Paper.pdf (semcommittee.com)

1.2 Security of supply situation

The electricity and gas systems of Ireland and Northern Ireland are facing an unprecedent level of change to replace high emissions plant, connect new renewables and storage and deliver decarbonisation.

An unprecedented amount of new capacity is needed to:

- Replace old coal, oil and peat units;
- Meet demand growth, which is driven by increasing data centre demand and electrification of the transportation and heating sectors; and
- Compensate for the termination of previously awarded new capacity

Including the 2026/27 T-4 auction, the CRM auctions to date have contracted a total of nearly 5,660MW$_d$ of new capacity contracts, of which around 3,600MW$_d$ is new gas fired capacity, with approximately 2,700MW$_d$ of new capacity in Ireland and 900MW$_d$ in Northern Ireland. Whilst the 2026/27 T-4 auction sought to procure additional capacity to address the risk of non-delivery of a proportion of the 5,660MW$_d$, it will not address the risk associated with capacity gaps in 2024/25 and 2025/26.

As shown in Table 1, the EirGrid/SONI 2022 Generation Capacity Statement (GCS) forecast a significant capacity deficit in Ireland throughout to 2026. Based on EirGrid/SONI's median demand forecasts, they estimate a capacity deficit of 940MW$_d$ in 2024, 1,490MW$_d$ in 2025 and 1,280MW$_d$ in 2026. The capacity deficit (also referred to as the capacity gap) is the shortfall between expected available capacity and the amount of capacity required to meet the 8-hour loss of load reliability standard.

Table 1: EirGrid/SONI estimate of capacity surplus/deficit[6] in derated MW, before impact of Security of supply measures, Ireland

Core Scenarios	2022	2023	2024	2025	2026
Low Demand	-270	-300	-600	-1090	-900
Median Demand	-380	-530	-940	-1490	-1280
High Demand	-510	-720	-1230	-1820	-1700
Sensitivities on Median Demand					
No NS Availability	-480	-630	-1040	-1590	-1380
No ARHL	-380	-530	-940	-1490	-850
No ARHL, No Capacity Delays or Terminations	-380	-530	-840	-470	-410
MP Available in 2025	-380	-530	-940	-1110	-1280

Source: 2022 GCS, Table 4.1

A key reason for the capacity deficit is the risk of non-delivery of pipeline capacity. Table 1 only partially addresses the potential impact of measures implemented under the Security of Supply Programme in the south of Ireland to address the capacity gap, such as the potential retention of Moneypoint units in 2025 and beyond, and the contracting of Temporary Emergency Generation (TEG).

As shown in Table 2, EirGrid/SONI are also forecasting a small capacity deficit in Northern Ireland in 2024 and 2025.

Table 2: EirGrid/SONI estimate of capacity surplus/deficit in derated MW, Northern Ireland

Scenario	2022	2023	2024	2025	2026
Low Demand	90	100	40	-80	630
Median Demand	50	40	-40	-170	490
High Demand	- 10	-40	-130	-290	350

Source: 2022 GCS, Table 4.3

[6] A positive value indicates a capacity surplus, relative to the reliability standard. A negative value indicates a capacity deficit.

There are clear benefits to the consumer of maximising the delivery of as much as possible of the contracted new capacity – the alternatives in terms of larger capacity deficit or greater use of temporary emergency generation are likely to be significantly more costly to the consumer.

2. Evidence on inflation

In this section we discuss stakeholders' responses to the following four questions set out in the Calls for Evidence:

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. 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?

These questions were asked in the first Call for Evidence (SEM-22-071). 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 (i.e., provided exhaustive answers on Q4).

Further evidence on Q4 was sought in the second Call for Evidence (SEM-23-014). A total of 9 responses to SEM-23-014 were received, with the majority of responses being confidential, or containing confidential appendices setting out quantitative evidence, including with respect to Q4. The confidential data, which includes detailed

financial projections and cost estimates, forms a key part of the evidence base considered by the SEM Committee in making this decision. The SEM Committee is unable to disclose any data provided on a confidential basis, but has sought instead to discuss the key themes below.

These four questions are summarised and responded to in Sections 2.1 to 2.4.

In SEM-23-014, the SEM Committee noted that at the time of the CRM detailed design phase, it was assumed that investors would be able to mitigate their inflation risk via use of inflation swaps. SEM-23-014 noted that responses to SEM-22-071 indicated that investors generally appeared not to have done so, and sought further evidence on whether they had or not, and if not, why not. This evidence is considered in Section 2.5.

In addition to asking investors about their inflation exposure and whether it was unanticipated, the SEM Committee sought to validate responses with independent evidence on expected levels of inflation. The SEM Committee sought to understand the extent to which a competent and prudent investor could or should have reflected appropriate risk premia in their auction offers for the two auctions concerned.

In Section 2.6 we assess the extent to which key forecasting authorities such as the Central Bank of Ireland (CBoI) and the UK's Office of Budget Responsibility (OBR) were forecasting high inflation at the time of the auctions (in January 2022 and March 2022). The SEM Committee concluded from this review that whilst inflation had risen prior to the 2024/25 T-3 and 2025/26 T-4 auctions, expert bodies such as the CBoI and the UK OBR, were, at the time of the auctions, forecasting inflation to quickly return to target levels of around 2% p.a. On that basis, it was reasonable for a prudent and competent investor to share that expectation.

In Section 2.7 we review the evidence from the 2026/27 T-4 auction. The 2026/27 T-4 auction took place in March 2023, with the result becoming available to the SEM Committee in late March 2023, in time for evidence on prices awarded to be taken into consideration in the indexation decision. Bidders in the 2026/27 T-4 submitted their auction offers in full knowledge of the inflation that had taken place between January/March 2022 and March 2023. The SEM Committee sought to understand to what extent new capacity in the 2026/27 T-4 auction required higher prices than would

be paid to 2024/25 T-3 and 2025/26 T-4 auction winners, without indexation. The SEM Committee concluded that whilst the average price paid in the 2026/27 T-4 auction was broadly comparable with the average price paid in the 2024/25 T-3 and 2025/26 T-4 auctions, the 2026/27 T-4 auction would not have been able to procure sufficient volumes at the prices paid to 2024/25 T-3 and 2025/26 T-4 winners. Furthermore, 2024/25 T-3 and 2025/26 T-4 auction winners had no scope to include further risk premia in their auction offers because the auctions cleared at or very close to the applicable Auction Price Cap (APC).

2.1 To what extent are EPC contract prices fixed when the contract is signed?

EPC contract price fixing: Summary of consultation

The largest single component of construction related costs during the build phase of a project is usually the EPC (Engineering, Procurement and Construction) contract. An EPC contract envisages appointing one main contractor to oversee elements of design, procurement, and construction for a project. For instance, in the case of developing an OCGT in Ireland, CEPA/Ramboll estimate that the total capital fixed cost would amount to €126.15m. Of this, an EPC contract would cost €87.9m[7], which approximates to around 70% of total capital fixed costs. The EPC contract also makes up the largest proportion of capital fixed costs for other relevant[8] technology classes such as BESS (battery storage), gas engines and CCGTs.

Given that the EPC contract forms the largest proportion of capital fixed costs for projects, this question aimed to understand the extent to which successful participants in the 2024/25 T-3 and 2025/26 T-4 Capacity Auctions were able to lock in these costs soon after the auctions, and limit their exposure to inflation risk at an early point during the build period.

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[7] Table 7 in SEM-23-016 BNE Decision (pg.19/20)

[8] OCGTs, CCGT, gas engines and BESS comprise the majority of multi-year new capacity projects which won in the 2024/25 T-3 and 2025/26 T-4 Capacity Auctions

In the remainder of this document, where we use the term “build period” we mean the period starting on the auction date and ending on the last day prior to the start of the first capacity delivery year. For the 2024/25 T-3 auction, for example, the auction took place on 20 January 2022, and the last day prior to the start of the first capacity delivery year is 30 September 2024.

EPC contract price fixing: Summary of responses

Many respondents stated that EPC contractors (OEMs) have been either refusing to enter into fixed price contracts on part or all of the EPC contract, or charging high risk premia on such contracts (to the extent that they become uncompetitive if the risk premia must be reflected in auction offers). Where fixed price offers are available, EPC contractors are also reducing the period for which fixed price offers are valid. In the past, EPC tender prices might have been fixed for 6 months. Now, where available, views vary on how long fixed price contracts are valid for, with some respondents saying 2-3 weeks, others saying 2 months. There is general agreement among respondents, however, that the length for which fixed price offers are valid does not fit with auction timescales. One respondent cited a lack of willingness of OEMs/suppliers to engage in pricing/contractual discussions pre-auction. Another participant, for example, argued that the time taken to secure an industrial emissions licence is a significant period of time, which would often form part of the delivery period post a Capacity Auction. The time taken to secure an industrial emissions licence is also longer than the price validity period of offers received by respondents.

Respondents provided further evidence indicating that inflation experienced by New Capacity projects has been multiple times greater than CPI.

EPC contract price fixing: SEM Committee response

The SEM Committee notes that there is significant evidence that some investors were/are unable to lock-in their EPC contract prices. Investors who entered the auctions with all requisite permissions may have been able to sign their EPC contract following confirmation of the auction results. However, many of the projects that qualified for the 2024/25 T-3 and 2025/26 T-4 auctions may have been unable to sign their EPC contracts until many months after the auction as they have not received all requisite planning and environmental permits and/or obtained connection offers.

Evidence provided by respondents suggests that a number of equipment manufacturers are no longer prepared to offer competitive fixed price EPC contracts, even at the point of signature, which can be as much 18 months after the auction. Where fixed price contracts are on offer, they may include a prohibitive inflation risk premium.

The SEM Committee accepts that a significant proportion of the 2024/25 T-3 and 2025/26 T-4 projects faced, and may continue to face, ongoing inflation on the capex expenditure, for at least 18 months after the auction, and in some case for the whole of the build period on their EPC contracts.

The SEM Committee also notes that:

- EPC costs typically account for about 70% of the total capex costs on an OCGT, gas engine or CCGT, which comprises the bulk of the relevant capacity; and
- There is evidence that, in some cases, the level of inflation faced materially exceeds the HICP/CPI inflation measure, and certainly exceeds the 2% p.a. inflation.

2.2 To what extent do other capitalised costs per MW derated escalate in line with inflation during the build phase?

Other capex cost inflation: Summary of consultation

Along with the EPC contract, which is usually the largest component of construction related costs during the build phase of a project, successful participants in the 2024/25 T-3 and 2025/26 T-4 Capacity Auctions will incur other capital costs, which may be subject to inflation during the build phase.

In estimating the capital costs of OCGTs, CCGTs, gas engines and BESS, CEPA/Ramboll have estimated certain cost categories such as owners' contingency, have increased due to the increases in other costs such as EPC and connection costs (e.g., Gas and Electrical connection costs).

In asking this question, the SEM Committee wanted to better understand the extent of inflation during the build phase in these non-EPC capex costs.

Other capex cost inflation: Summary of responses

Some respondents stated that during the build phase, cost elements such as land (already procured) and development costs, would no longer be subject to cost escalation. This, however, represents a minimal amount of the total cost projects are subject to. Other respondents stated that costs associated with electrical, gas and grid connections, for example, have been subject to significant cost escalation. Inflation exposure is a particular driver for these costs, with some respondents providing confidential examples of increases in gas connection costs at rates significantly higher than HICP inflation.

Gas-fired projects in Ireland also cited the unwillingness of GNI to offer fixed price connection quotes and their exposure to inflation over the lifetime of the connection asset build as a result. They provided confidential examples of where the cost inflation on their new gas connection assets had increased by significantly more than HICP during 2022.

One respondent, expressing concern about inflation in GNI's connection costs argued that building of gas transportation networks should be opened up to competition.

BESS projects have provided confidential evidence of how costs have increased on Battery capex between when they received quotes and when they received auction results, largely due to increases in the cost of lithium carbonate and other inputs. They state this is a risk which OEMs make market participants bear.

Other capex cost inflation: SEM Committee response

The SEM Committee recognises that there have been significant increases in "other" capex costs, particularly gas connection costs. There is also significant evidence that:

- Some relevant projects, such as those that require new gas connections, remain exposed to inflation on a significant proportion of their "other" capex costs for the whole of the build period;

- In a number of cases, the level of inflation faced materially exceeds the HICP/CPI inflation measure, and certainly exceed the 2% p.a. inflation.

2.3 To what extent, if any, do costs continue to escalate during the operational phase, and why?

Operation phase inflation: Summary of consultation

The SEM Committee was keen to understand the extent to which costs continue to escalate beyond the build phase into the operational phase, given that the intent of version 3 of Mod_07_22 was to index capacity payments for inflation variances from a specified value, over the lifetime of the capacity contract. Mod_07_22 would have continued to update the contract price in each year of the contract based on the cumulative effect of CPI inflation between the date on which the capacity contract was awarded, and the first day of the relevant capacity year.

Operation phase inflation: Summary of responses

Respondents stated that cost elements including labour, maintenance, and Long-Term Service Agreements (LTSAs) are subject to cost escalation during the operational phase and term of the contract. In the case of BESS, one respondent stated that an LTSA does not include replacement parts such as battery cells. The respondent stated that this represents a large proportion of the BESS cost, is subject to high rates of inflation and with replacements required over the lifetime of the project. This respondent provided a confidential quote from the OEM to back up their statement.

Many respondents also stated that at the time of bidding into the 2024/25 T-3 and 2025/26 T-4 Capacity Auctions, assumptions would have been made on the various cost elements their project would have faced in the operational phase. Respondents argued the volatility of the inflationary environment could not have been reasonably foreseen at the time of forming bids and this has affected the cost projections they forecast to face beyond the build phase, with some respondents classifying their initial projections as “conservative”. The respondents also stated that they continued to project inflation rising and understand the cause of these increases are due to higher energy material and labour costs, for example.

Operation phase inflation: SEM Committee response

The SEM Committee recognises that there has been inflation in key cost elements that may continue to apply during the operational phase of the contract. However, inflation in both Ireland and the UK is expected to fall to around 2% p.a. by 2025 at the latest. Therefore, whilst operational costs may have faced some degree of "unexpected inflation" on opex since the auction, annual opex inflation is expected to decline to normal (around 2% p.a.) levels by around 2024 or 2025, and opex inflation has a less material impact on project viability than capex inflation.

2.4 How have unexpected rates of inflation impacted on the financial viability of projects to the extent that they pose a risk to delivery?

Financial viability impact: Summary of consultation

The SEM Committee sought detailed quantitative evidence on the unexpected rates of inflation impacting the financial viability of projects, to the extent that they posed a risk to delivery. Evidence was sought on the extent to which inflation had put projects in jeopardy. The SEM Committee was very much aware that market participants had been operating in a relatively high and volatile inflation environment, and that inflation had been significantly higher than might have been accounted for by investors when they participated in the 2024/25 T-3 and 2025/26 T-4 Capacity Auctions. The SEM Committee, however, was seeking reliable quantitative evidence to indicate how much of a developer's cost base was subject to inflation, how much inflation and for how long, how this mapped against a developer's procurement timelines, and whether there was a materially different inflation exposure for different technologies.

The SEM Committee also re-issued the Call for Evidence in SEM-23-014, insofar as it related to the impact of inflation on the financial viability of projects, relating to this question. The SEM Committee sought evidence from investors demonstrating that unanticipatable inflation was putting projects in jeopardy i.e., threatening their financial viability. For instance, investors in responding to the Call for Further Evidence were asked to 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.

Financial viability impact: Summary of responses

Detailed quantitative evidence was provided by multiple 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 in the first Call for Evidence. Documentary evidence was also provided in support of this in the form of quotes or other correspondence from suppliers, subject to commercial confidentiality considerations.

We received detailed financial projections for capacity totaling over 1000MW$_d$, with the confidential responses showing the investors' financial projections on which their auction offers were based, and their latest financial projections at the time of the second Call for Evidence, i.e., in Q1 2023. We also received testimony from investors covering a further 400MW$_d$, setting out the expected changes in project internal rates of return (IRRs), but without providing more detailed financial projections. The evidence base covered just over 1,400MW$_d$, approximately half of all new capacity projects in the 2024/25 T-3 and 2025/26 T-4 Capacity Auctions. It also covered a reasonably representative sample of relevant projects, so provided the SEM Committee with a strong evidence base on which to take its decisions.

Confidential evidence provided by many respondents to SEM-23-014 showed that while expected project returns (IRRs) were in excess of their investment hurdle rates (WACC) at the time they made their auction offers, they had now declined to a level significantly below their hurdle rates. Some respondents stated that they had not yet made their Final Investment Decisions, and that indexation might make the difference as to whether they proceeded with their projects or not.

Some projects provided a breakdown of reasons illustrating how different factors had contributed to the deterioration in the project returns. The magnitude of different

factors varied from project to project, in broad terms, the most material factors, in order of magnitude were:

- Unexpected capex inflation, particularly on EPC contracts and gas connection costs (where relevant);
- Unexpected delays in projects, which have led to an expectation of contract erosion; and
- Unexpected opex inflation.

Some respondents, in projecting IRRs significantly below their WACCs assumed a 10-year economic life for their plants, ascribing no residual value to the investments beyond the 10-year fixed term contract. CEPA however, in the case of gas fired projects for example, assumed that gas turbines had a 20-year economic life, with significant positive cashflows in years 11 to 20, supported by ongoing CRM revenues, which were key to allowing projects to earn their WACC. In clarifying aspects of submissions received by some respondents when the RAs met bi-laterally with them, some respondents stated that they could not be sure of continuing CRM income and that their financiers would not lend against revenues beyond the 10-year fixed term, particularly where the State Aid approval for the existing capacity mechanism expires in 2028. By contrast however, other respondents stated that they have assumed a 20+ year economic life, with assumptions of CRM revenue beyond year 11.

Financial viability impact: SEM Committee response

The SEM Committee received a significant body of evidence to demonstrate that:

- The new capacity projects which won in the 2024/25 T-3 and 2025/26 T-4 auctions expected to earn their cost of capital at the time the contracts were awarded, given the prices at which the contracts were awarded;
- Inflation, along with other unexpected events had materially adversely impacted the project returns; and
- A number of projects, which had not yet reached Substantial Financial Completion (SFC), were sufficiently adversely impacted by unexpected events that, on the balance of probabilities, they were likely to terminate for financial

reasons unless the SEM Committee acts to index contracts, to at least partially mitigate the effects of capex inflation.

The SEM Committee notes that, whilst the auction winners have taken on a contractual responsibility to deliver on the contracts awarded in the auctions, in practice, the financial impact to them of absorbing unexpected increases in inflation (particularly capex inflation) are potentially orders of magnitude larger than their exposure to termination payments. The SEM Committee cannot rely on termination payments alone as an incentive to make auction winners deliver. Where auction winners have not yet financially committed to their key contracts, they may choose not to honour their contractual commitments under the CRM if their returns are materially lower than their weighted average cost of capital (WACC).

Respondents provided testimony on their WACC/investment hurdle rates, and whilst the original values were generally slightly higher than the CEPA BNE estimates, respondents latest projections were generally below the CEPA estimated WACC, which CEPA indicated they would regard as the appropriate investment hurdle rate[9].

The SEM Committee notes that some respondents based their financial projections on a 10-year economic life, ascribing no residual value to the investments beyond the 10-year fixed term contract. The SEM Committee recognises that there is significant uncertainty about the level of infra-marginal rent, capacity income and ancillary services beyond the 10-year fixed price CRM contract[10], but does not agree that investments in key technologies such as OCGTs, gas engines or batteries have an economic life of only 10 years, and have no residual value beyond year 10.

The SEM Committee notes however that in the case of some of those investors who were projecting returns below their cost of capital based on a 10-year economic life, the 10-year assumption was not the sole reason that forecast project returns were below their estimated costs of capital and CEPA's estimated WACC.

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[9] i.e., include appropriate risk premia

[10] see BNE Decision SEM-23-016

The SEM Committee recognises that respondents had an incentive to reflect conservative views with respect to costs, revenues, economic life and other key assumptions, and may ultimately make their Final Investment Decision based on less conservative assumptions. Nevertheless, on the evidence presented, and based on other evidence available to the SEM Committee, including that set out in the sections that follow, the SEM Committee considers that:

- There has been material inflation that could not reasonably have been anticipated; and
- The inflation is sufficiently material to a number of multi-year new capacity projects which won in the 2024/25 T-3 and 2025/26 T-4 auctions to cause them financial jeopardy.

The other sources of evidence include the CEPA BNE study, which used indices for turbines and infrastructure construction costs, which showed significant increases in costs in 2022.

The SEM Committee notes that capex inflation is not the only factor which is causing projected returns to decline and to cause financial jeopardy, but the evidence suggests that capex inflation is the biggest single contributor to the decline in project returns, and threatens project viability for a reasonable proportion of multi-year capacity projects that were awarded in the 2024/25 T-3 and 2025/26 T-4 auctions.

The SEM Committee has used the quantitative evidence provided by investors to assess the likely impact of different indexation options on project returns and financial viability. The SEM Committee concluded that, on the balance of probabilities, there is a reasonable prospect that the chosen indexation option will materially mitigate the impact of inflation on project returns, and has a reasonable prospect of returning a significant proportion of the capacity contracted to financial viability.

2.5 Inflation exposure and inflation swaps

Inflation exposure and inflation swaps: Summary of consultation

During the CRM detailed design phase, one of the reasons that the SEM Committee decided not to index contracts was an assumption that a prudent investor could reasonably mitigate its inflation exposure via inflation swaps.

SEM-23-014 noted that responses to SEM-22-071 indicated that investors generally appeared not to have done so, and sought further evidence on whether they had or not, and why they had not.

Inflation exposure and inflation swaps: Summary of responses

Where views were offered, respondents agreed that they had not managed their inflation exposure via inflation swaps. One respondent stated that they were working with multiple vendors across European states, and it was unclear which currency such swaps would have been conducted in. Furthermore, they state that only typical levels of inflation were expected and built into their financial modelling and subsequent accelerated levels of inflation were so rapid it caused unprecedented levels of uncertainty within the market and premiums on mechanisms such as cash swaps. Another participant said inflation swaps are not readily available in the market and that they are rare and expensive trades. They considered that inflation swaps are not an appropriate tool to manage inflation risk during the build phase of a generation project.

One respondent also raised the point that it would be unfair to expect developers to have envisaged the extreme circumstances experienced due to the war in Ukraine and plan accordingly. Another respondent stated that any form of swap around CPI would not have provided sufficient mitigation against the price shocks experienced last year. Successful swaps have to be closely correlated to pricing risks experienced by the buyer and seller. One respondent explored the possibility but deemed it to be inappropriate for projects in the CRM as an inflation swap based revenue stream that is not guaranteed introduces significant risk.

Inflation exposure and inflation swaps: SEM Committee response

The expectation that investors could use inflation swaps to manage their inflation exposure was a factor in the decision (made during the CRM detailed design phase), not to index CRM contracts. The SEM Committee accepts that:

- Investors in recent auctions have not typically been using inflation swaps to manage their inflation exposure; and

- The typical form of inflation swap, which is based on an underlying HICP/CPI or RPI index may not have been a good hedge for the capex inflation faced by investors in the 2024/25 T-3 and 2025/26 T-4 auctions, even if they had sought to manage exposure using such swaps.

The SEM Committee will consider whether to prioritise a workstream on an enduring indexation mechanism for capacity contracts in the context of the SEM Committee's Forward Work Programme for 2023/24. For the avoidance of doubt, there should be no expectation that any form of enduring indexation that might be introduced in the future would necessarily replicate any element of the indexation mechanism set out in this paper. The context for a potential enduring mechanism would be very different to that in which the mechanism in this paper has been developed. As stated in SEM-23-014, the SEM Committee may consider moving to a similar approach to that employed in the GB capacity mechanism.

2.6 Would it have been reasonable for investor to have anticipated inflation and reflected it in their auction offers?

The stated intent of Mod_07_22 was to address the effects of inflation which could not reasonably have been anticipated at the time investors submitted their auction offers. The SEM Committee considered whether investors could reasonably have anticipated the level of inflation they have faced, and could have reasonably reflected such an expectation into their auction offers.

As discussed in SEM-23-014, when the 2024/25 T-3 auction took place in January 2022, HICP/CPI inflation was around 5% in Ireland and around 5.4% in Northern Ireland, but these relatively high rates may have been perceived to be a short-term 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. There are no similar publicly available forecasts for wholesale construction cost inflation indices. Therefore, the SEM Committee took the view that a

reasonable and prudent operator may have expected high inflation to be transitory and to drop back down closer to 2% during the build period.

Furthermore, many of those awarded contracts in the 2024/25 T-3 and 2025/26 T-4 auction were awarded contracts at prices at or close to the Auction Price Cap (APC) of €146.92/kWd/yr. There was no scope for a bigger inflation risk premium to be reflected in their auction prices. Following these auctions, the SEM Committee commissioned a new Best New Entrant study to review the effects of inflation (amongst other factors) on a Best New Entrant's costs. Following the conclusion of the study, the SEM Committee increased the APC for the 2026/27 T-4 auction to €180/kW$_d$/yr, and the APC for the 2027/28 T-4 auction to around €164/kW$_d$/yr, in part in recognition of the effects of inflation.

Therefore, the SEM Committee recognises that even if a reasonable and prudent operator had taken the view that it should reflect a higher inflation risk premium in its auction offers, there were limits on its ability to do so in the 2024/25 T-3 and 2025/26 T-4 auctions given the Auction Price Caps that applied for these auctions.

2.7 Comparison with prices paid in 2026/27 T-4 auction

The volume weighted average price for multi-year new generation and storage capacity[11] paid in the 2026/27 T-4 auction, excluding the Greenlink interconnector[12], was around €148/kW$_d$/yr. As shown in Figure 1, the average price of awarded capacity without indexation (at current exchange rates[13]) was €147.03/kW$_d$/yr in the 2024/25 T-

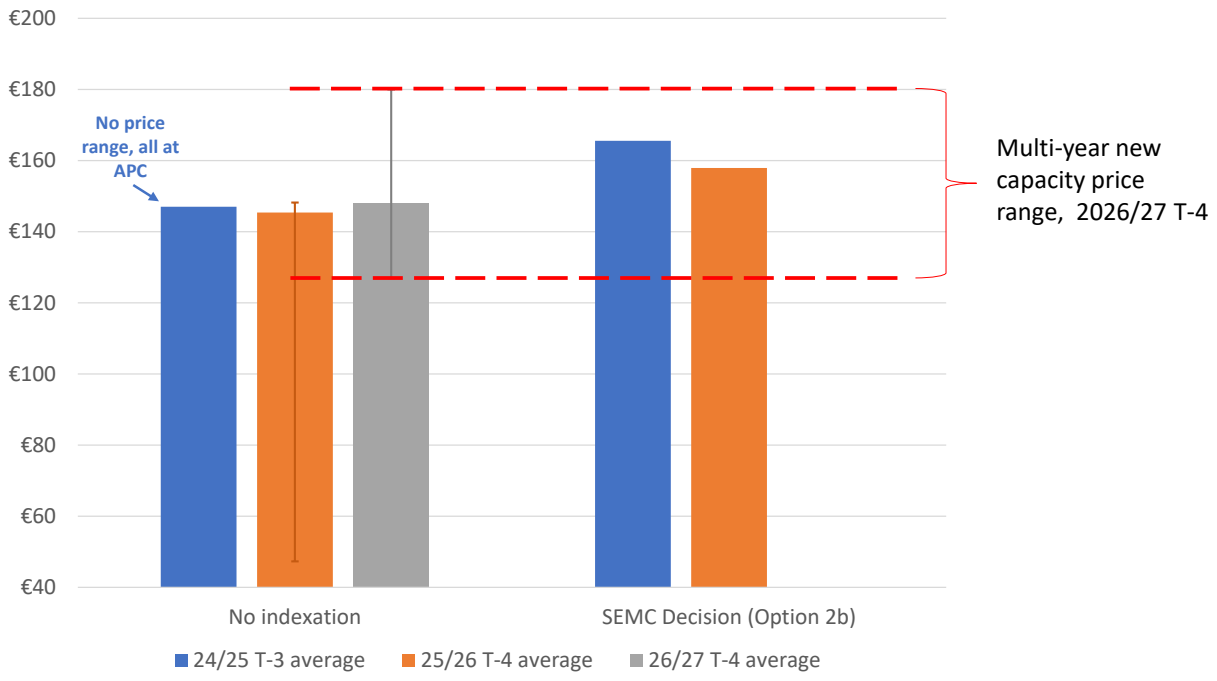
[11] The average price paid for all multi-yr new capacity was around €137/kW$_d$/yr, including the Greenlink interconnector. However, we have excluded the Greenlink interconnector, which is not a relevant comparator for the new thermal generation units that would be subject to indexation in the 2024/25 T-3 and 2025/26 T-4.

[12] The Greenlink interconnector is atypical of the capacity providers contracted in the 2024/25 T-3 and 2025/26 T-4 auctions, and has its own regulatory regime/financing arrangements. Greenlink has been granted Cap and Floor agreements by Ofgem in Great Britain and the Commission for the Regulation of Utilities (CRU) in Ireland. The Cap and Floor regime is an arrangement introduced by the GB and Irish regulators to promote the development, financing and construction of electricity interconnectors, where demonstrably beneficial to consumers.

[13] For the purposes of comparison to prices paid in more recent auctions, we have calculated the weighted average prices paid to capacity in Ireland and NI by converting NI contract values, which are denominated in Sterling to Euros at an assumed current exchange rate of €1.15 = £1, which differs from

3, and €145.38/kW$_d$/yr. Therefore, the average winner in the 2026/27 T-4 (i.e., after the effects of inflation are well known) is only marginally higher than the prices paid to the 2024/25 T-3 and 2025/26 T-4 winners.

Figure 1: Average multi-year new capacity prices by auction, with and without indexation*



*2026/27 weighted average excludes Greenlink interconnector

However, the range of prices awarded to multi-year new capacity in the 2026/27 T-4 were considerably higher than in the 2024/25 T-3 or the 2025/26 T-4. There is a significant proportion of the capacity that won in the 2026/27 T-4 auction which bid a price above the average prices paid in 2026/27 T-4 auction, and which will be paid a

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the exchange rates used in the 2024/25 T-3 auction and the 2025/26 T-4 auction. This is why the weighted average price paid in 2024/25 T-3 auction is shown as €147.03/kW$_d$/yr, which is more than the Euro value of the 2024/25 T-3 Auction Price Cap, which was set in Euro terms at €146.92/kW$_d$/yr. The final Annual Capacity Exchange Rate at the time of the 2024/25 T-3 auction was, €1.1225, and the change in the Euro/Sterling exchange rate explains why the weighted average price paid in Euro terms at current exchange rates exceeds the 2024/25 T-3 Auction Price Cap in Euro terms.

price in excess of the values that would be paid to 2024/25 T-3 and 2025/26 T-4 winners, even after indexation is applied.

Based on the SEM Committee's indexation decision, new capacity in Ireland which was awarded contracts in the 2024/25 T-3 will receive an average price of around €166/kW$_d$/yr[14], and projects in Ireland which won in the 2025/26 T-4 will receive an average price of around €158/kW$_d$/yr. These values are well within the range of prices paid in the 2026/27 T-4 auction.

Five projects, totaling around 250MW$_d$ of the capacity which won in the 2026/27 T-4 auction did so at price of €175/kW$_d$/yr or more. A further 270MW$_d$ of capacity which won in the 2026/27 T-4 was awarded a price of about €153-5/kWd/yr. This suggests that the 2026/27 T-4 would not have been able to procure the required volumes at the prices paid in the 2024/25 T-3 or the 2025/26 T-4, and could have cleared around 520MW$_d$ less capacity than necessary, leading to a significant shortfall in capacity required to meet the reliability standard. This evidence supports the thesis that a proportion of new capacity projects require more than the price they were awarded, of €145-7/kW$_d$/yr, to deliver, and that sufficient capacity cannot be procured to meet the reliability standard without paying some capacity at prices above €147/kW$_d$/yr.

2.8 Summary of inflation evidence

Based on the responses to the Calls for Evidence the SEM Committee is of the view that there is sufficient evidence to conclude that:

- There was unanticipated capex inflation over and above that which could/should have been reasonably anticipated by a prudent operator, and reflected in their competitive auction offers;
- A significant number of the multi-year new capacity project which won contracts in the 2024/25 T-3 and 2025/26 T-4 auctions had not yet made their

[14] Based on Q4 2022 forecasts of inflation from the Central Bank of Ireland and the UK Office of Budget Responsibility (OBR)

Final Investment Decisions. The unanticipated inflation is of sufficient magnitude to threaten the viability of a significant proportion of these projects, and this would have a material impact on security of supply. Indexation may make the difference as to whether these projects are progressed or not.

- The capex inflation faced was at a rate in excess of that captured in the HICP in Ireland and the UK CPI, and that a number of investors would be faced by continuing inflation throughout the majority, if not all of the build period.

Indexing contracts is the simplest and most effective way to address the financial jeopardy faced by relevant new capacity. In principle, it may be possible to develop a suite of measures which is tailored to each of the different causes of financial distress (e.g., capex inflation, delays and contract erosion, opex inflation), but:

- It would take time to develop a more tailored set of measures to address the different components of risk;
- It would be difficult to precisely address the diverse causes and magnitude of the risks faced by the range of technologies. Even within a given technology class (e.g., OCGTs) different projects have quite different cost drivers, and no single index can fully reflect the range of inflation experienced across the different projects;
- It is in the interest of consumers for the SEM Committee to act quickly and decisively, and put in place a relatively simple intervention that should make a material difference to a significant proportion of the pipeline capacity.

3. Indexation proposals

3.1 Summary of consultation

The SEM Committee recognised that if it was going to index contracts awarded in the 2024/25 T-3 and the 2025/26 T-4 Capacity Auctions, it would need to act quickly, if it was to impact investors' decisions on whether to proceed with projects or not. However, as previously noted, Mod_07_22 could not be implemented as is currently drafted. Furthermore, the SEM Committee had concerns about the design of the indexation arrangements contained in the modification proposal, as to whether they

target the appropriate projects and whether they are appropriate to address the stated concerns.

Therefore, in the interests of time, and considering the upcoming SFC milestones for the two Capacity Auctions, the SEM Committee also published a “strawman” proposal for how it would implement indexation for the 2024/25 T-3 and the 2025/26 T-4 Capacity Auctions if sufficient evidence were ultimately provided in response to the further Call for Evidence. The “strawman” proposals consisted of indexing contracts for “unexpected” inflation (i.e., inflation in excess of 2% p.a.) based upon HICP/CPI related indices for Ireland and the UK from the date of the auction to the start of the first capacity delivery year.

At a high level, the SEM Committee proposed to make the following changes to the design of the indexation mechanism set out in version 3 of Mod_07_22, with the intention that this variation be implemented, subject to sufficient evidence being received to the Call for Further Evidence.

- Eligibility:
    - This indexation mechanism would apply to projects that won in the 2024/25 T-3 and 2025/26 T-4 Capacity 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 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 risk-sharing percentage, x%, would be applied, 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.

In addition to consulting on the eligibility, form of indexation and risk-sharing, the SEM Committee asked industry the following questions:

- 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?
- 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?

3.2 Summary of consultation responses

Eligibility

Most respondents were in favour of the application of indexation to New Capacity projects only, and those who were awarded multi-year contracts in the 2024/25 T-3 and 2025/26 T-4 Capacity Auctions. Some respondents also agreed that indexation could be restricted to inflation experienced during the build period of a project and applied to capacity prices awarded at the auction for those units for all 10 years, although the majority of investors also favoured an enduring solution under which contracts would be indexed for inflation throughout the lifetime of the contract, like in GB. Respondents stated that at current levels, inflation introduces a large degree of risk to new capacity projects being developed. One respondent argued that while they believe New Capacity projects awarded under the auctions in question should be eligible for indexation, they strongly believe that existing capacity should be eligible too.

Another respondent stated that should the SEM Committee make the decision not to apply indexation, shortfalls in capacity due to projects failing to deliver would need to be procured elsewhere, for example through emergency generation, which would ultimately result in higher costs to the consumer.

While expressing concern about the retrospective change of price after the auctions in question have concluded, one respondent agreed that costs should be indexed for particular projects. Another respondent who shared the view that changing key auction parameters after the conclusion of an auction would be retrospective in nature, argued that there is no factual or legal basis to justify such a change. The revised indexation mechanism, according to the respondent, does not address their fundamental concerns and gives rise to concerns that historic parameters of capacity auctions are being changed after the auction has been completed contrary to the requirements of (a) the Capacity Market Code and Trading and Settlement Code, (b) Article 22 of EU Regulation 2019/943 (the Electricity Regulation), (c) the EU State Aid clearance decision in respect of the Capacity Mechanism and the EU Commission Guidelines on State Aid for Climate, Environmental Protection and Energy (the CEEAG) and (d) principles of EU procurement law. The respondent also believes this gives rise to clear benefits to certain market participants over others, distorting competition and giving rise to discrimination.

With regard to the future application of indexation, the vast majority of respondents shared the view that indexation should be applied on an enduring and forward-looking basis. One respondent even stated that though they do not support the short-term nature of the fix consulted upon in SEM-23-014, they do support the introduction of an enduring indexation mechanism and believe this should apply to both new and existing projects, and should be applied to contracts already awarded in the 2024/25 T-3 and 2025/26 T-4 and all other auctions. They agree with parts of the proposal except the short-term reactionary proposal. Another respondent also stated that given current conditions, the SEM Committee should look beyond the 2024/25 T-3 and 2025/26 T-4 Capacity Auction winners and introduce indexation as an enduring element of CRM. However, they believe the enduring mechanism can only apply for all new capacity that secures multi-year contracts in future auctions.

Form of Indexation

Some respondents agreed that indexation should only be applied in respect of inflation during the build period of a project and the majority of respondents agreed this should be based on a one-off indexation factor calculated based on cumulative unexpected inflation. However, many respondents also shared the view that HICP and CPI indexation would not be adequate to ensure project viability in terms of capital costs. One respondent suggested the CSO's Wholesale Price Index for Building and Construction Materials as a more appropriate index to use.

Another respondent stated that inflation experienced by New Capacity projects has been multiple times greater than both the HICP and CPI. The respondent was concerned around the proposal that indexation would be calculated based on price inflation which occurs during the construction period. They proposed that the initial adjustment should account for inflation to date but this should be followed by ongoing indexation linked to an appropriate index from the point of delivery to the end of the capacity contract.

One respondent also suggested that indexation would be needed for both their capital and operational costs, and the use of HICP and CPI indexation would be insufficient. Another respondent stated that they understood the hesitation of the RAs to offer compounded indexation over the lifetime of the project, however, they reiterated their position that CPI should not be used for indexation as it does not reflect the nature of cost increases that projects have incurred.

Risk-sharing

Differing views were received from respondents in relation to the SEM Committee's proposed approach in introducing a risk-sharing percentage. Most respondents argued that risk-sharing was inappropriate because the design of the HICP/CPI based indexation insufficiently addressed erosion of returns, even if there was 100% pass-through of HICP/CPI.

One respondent raised a concern around risk-sharing and stated that the original modification included risk-sharing by setting a 2% threshold, which inflation would have to exceed in order to apply to capacity payments. The introduction of a risk-

sharing mechanism would not incentivise investors to lock-in contracts as early as possible. Another respondent stated that developers are already taking on a significant amount of risk in building these projects. However, they also stated that should the RAs apply risk-sharing, it should be applied equally across the market, or it should not apply to any eligible party.

While most respondents were not in favour of risk-sharing, the SEM Committee also received views in support of risk-sharing. One respondent, for instance, recognised risk-sharing as a pragmatic approach to balancing the potential impact of inflation between consumers and developers. Another respondent believed that risk-sharing would lead to lower volatility and thus better value for both consumers and developers and welcomed any form of risk-sharing.

Respondents also shared views on introducing a “deadband” into the indexation provisions, between a lower bound and a higher bound and on the possibility of balancing the application of indexation with increasing termination charges. One respondent stated that the downside deadband would not work because of third-party contractors’ terms and conditions. Respondents expressed strong dissent towards increasing termination charges to balance the application of indexation.

Impact of inflation on the CRM and design of indexation provisions

Respondents were asked to share additional views on the impact of inflation on the CRM and the design of the indexation provision described in SEM-23-014. Some respondents believed there was value in conducting a review of the capacity payment indexation mechanism in the GB capacity market. Since the acute impact of inflation has changed the situation, OEMs are increasingly unwilling to fix prices for anything other than very short periods of time. Moving to a system of indexed contracts could serve to lower the cost of capital to investors and increase the attractiveness of the SEM as a location for investment. Another respondent stated that moving to a GB model for the capacity market would ensure security of supply. Another respondent believed the short-term fix would address immediate challenges, but for the longer term, embedding indexation would address flaws in the original CRM design and a long-term financial assurance of a suitable indexation mechanism would lower risks for deploying large-scale capital-intensive projects.

Increase cost of non-delivery through increase in termination charges

There were strong views from respondents that increasing termination charges would not be an incentive to deliver and could result in less investment in the CRM. One respondent stated that, the proposal to impose higher termination charges on projects experiencing delays would be grossly unfair as delays are outside the control of the developer. Higher penalties have the potential to magnify the problem as participants may consider an early exit rather than risk higher termination charges later in the process. One respondent believed it is not fair to increase non-delivery charges unless changes were made to other parameters within the capacity auction and capacity contract to provide a balance to risks.

3.3 SEM Committee response

Eligibility

The SEM Committee considers that it is appropriate to target indexation at multi-year capacity which won in the 2024/25 T-3 auction and 2025/26 T-4 auction.

In SEM-23-014, the SEM Committee proposed that any indexation arrangements should be targeted at those projects which faced unanticipated inflation as a result of the war in Ukraine during the build period, namely the new projects which won in the 2024/25 T-3 auction, and the 2025/26 T-4 auction. In SEM-23-014, the SEM Committee presented evidence to demonstrate that it was winners in those auctions which had been most affected. No significant evidence was provided by respondents to the contrary.

Quantitative evidence presented in the response to the Calls for Evidence clearly showed that capex inflation was the most significant impact on project returns, significantly outweighing the impact of opex inflation for the majority of projects. This confirmed the SEM Committee view that the indexation intervention should be focused on mitigating the effects of capex inflation, and that the best way to do that is to:

- Focus only on those projects with material capex, which means those new projects which have investment in excess of the New Capacity Investment Rate Threshold of €300/kW_d, and have qualified to obtain multi-year contracts; and

- To focus on unanticipated inflation that occurs only during the build period.

The SEM Committee does not consider that payments to existing capacity, which, by definition received one-year contracts in the 2024/25 T-3 and 2025/26 T-4 auctions should be indexed. These capacity market units will not have faced material capex inflation, and whilst they may have faced a degree of opex inflation, the magnitude of the risk is typically significantly smaller, and within the bounds which can be absorbed by market participants without material jeopardy to delivery of existing capacity. Furthermore, they are not locked-in to 10-year fixed price contracts, and will be able to adjust their bids for subsequent years to reflect opex inflation.

The SEM Committee has considered the arguments raised by respondents in relation to retrospectivity. It is satisfied that the proposed indexation arrangements will not operate retrospectively within the meaning of the relevant legal instruments described in Section 3.2 (summary of consultation responses), e.g., by seeking to reopen settled transactions or alter the conduct of ongoing processes.

The Committee also notes the arguments regarding the impact of the indexation arrangements on competition and as to discrimination. It is satisfied that, in designing these arrangements, it has struck an appropriate balance, in the interests of consumers, between addressing the significant security of supply and financing risks posed by these unexpected circumstances and maintaining a level playing field.

Form of indexation

The SEM Committee recognises that respondents have provided a range of evidence to show that they have faced capex inflation at a rate which exceeds HICP/CPI. If indexation was based on HICP/CPI it is likely that it would not adequately mitigate the impact of capex inflation on project viability.

As result, the SEM Committee examined options for indices which should be a more reflective of the inflation which threatens delivery of projects in the 2024/25 T-3 and 2025/26 T-4.

These options include, inter alia, the CSO's wholesale construction index proposed by one of the respondents to the second Call for Evidence. However, the SEM Committee notes that whilst this index may be appropriate for capacity providers in Ireland, it is not appropriate for capacity providers in Northern Ireland, whose costs are denominated in Sterling as opposed to Euros.

Wholesale construction indices are likely to be more reflective of the capex cost inflation faced by 2024/25 T-3 and 2025/26 T-4 auction winners. However, the SEM Committee recognises that it will not be possible to find one index which is perfectly cost-reflective match for all relevant projects in Ireland or a single index which is a perfectly cost-reflective match for all projects in Northern Ireland.

In developing and evaluating further indexation options to be considered alongside the HICP/CPI "strawman" set out in SEM-23-014, the SEM Committee considered a number criteria to inform the assessment, specifically:

- Cost reflectivity (accuracy) - Is the index likely to capture changes in the construction costs of projects? Will it capture local cost pressures - e.g., materials, labour, and plant supply?
- Credibility - Is the index from a credible source that the SEM Committee can potentially rely upon for an important public decision?
- Transparency - Is this price index from a source that can be referenced and the source data understood and investigated?
- Simplicity - Does use of the price index support as simple a regulatory decision as possible for the SEM Committee in indexing capacity prices?

The Ireland/Northern Ireland wholesale construction indices described in further detail in Section 5, score better than HICP/CPI in terms of cost reflectivity, and are relatively credible, transparent and simple (being published by the CSO of Ireland and the UK Office for National Statistics).

The SEM Committee considered using a bespoke (tailored) index, which would have the potential to include different weightings for different commodities/sub-indices to reflect specific technology types[15]. However, the SEM Committee has decided against this approach, as it would lack transparency and simplicity and may need to rely on certain indices that lack credibility.

Risk sharing

The SEM Committee considers that the principle of risk-sharing is appropriate, but that risk-sharing parameters need to be set so that risk-sharing does not frustrate the objectives of indexation. A key concern in implementing indexation after the auction has taken place, is that it will create moral hazard i.e., encourage future auction participants to ignore the risk of inflation and not to take prudent steps to manage their inflation exposure. Risk-sharing reduces the moral hazard.

The objective of indexation is to mitigate the impact of inflation on a significant number of projects, which would otherwise have terminated, and to avoid other more costly impacts on the consumer. More costly impacts include some combination of increased incidence of expected unserved energy (also commonly called lost load) and/or the requirement to contract more expensive Temporary Emergency Generation (TEG). If risk-sharing parameters are set such that the proportion of inflation risk borne by 2024/25 T-3 and 2025/26 T-4 auction winners remains too high, the indexation intervention will not prevent financially jeopardised projects from terminating, so frustrating the objectives.

The appropriate level of risk-sharing needs to be considered in conjunction with the choice of index. To the extent that the chosen index is a stronger proxy for the inflation risk faced by investors, the investor is better able to bear a share of the risk.

In SEM-23-014, the SEM Committee considered two different forms of risk-sharing:

[15] which could be very different for batteries, OCGTs with the need for significant new gas transportation pipelines, OCGT without the need for significant new gas transportation pipelines

1. 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
2. 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.

There was limited feedback from respondents between the choice of these two options. The first option is simpler to implement, and has precedent in the Irish Inflation/Supply Chain Delay Cooperation Framework Agreement[16] for public procurement, which envisages 70% pass-through of inflation. The first option may also have a stronger effect in reducing moral hazard, as investors bear a proportion of the risk even at higher levels of inflation. For these reasons, the SEM Committee has decided to implement the first option.

Increase cost of non-delivery through increase in termination charges

The SEM Committee considered whether it would be appropriate to require investors to sign-up to higher termination payments as a quid-pro-quo for indexing contracts. However, increases in termination payments would need to be large in relation to current levels to outweigh the effects of inflation, and may merely cause more projects to terminate early to avoid the increase. The SEM Committee has decided not to increase termination charges for capacity awarded in auction that have already taken place.

The SEM Committee will continue to keep the level of termination payments and performance security under review – typically these parameters are consulted on prior

[16] In which "both parties will share the burden in recognition that neither party is responsible for the events that have already transpired and will continue to evolve. Where costs are identified it is proposed that parties will share these costs with the State bearing up to 70% of the additional costs."

to each auction. Future values may be adjusted, depending on how the new capacity projects in the current delivery pipeline perform.

Longer term approach to future auctions

The SEM Committee notes that there was majority support amongst investors for moving to a GB style contract in which multi-year contracts are indexed for inflation each year of the contract (which is consistent with the intent of version 3 of Mod_07_22).

The SEM Committee will consider whether to prioritise a workstream on an enduring indexation mechanism for capacity contracts in the context of the SEM Committee's Forward Work Programme for 2023/24. For the avoidance of doubt, there should be no expectation that any form of enduring indexation that might be introduced in the future would necessarily replicate any element of the indexation mechanism set out in this paper.

4. Options considered following consultation

4.1 Introduction

Taking into account the responses received to the consultation on the "strawman" proposals, five options were developed for consideration by the SEM Committee. At a high level, these options were:

- Option 0: No indexation. In this option, contract price would remain as awarded at auction.
- Option 1a and b: HICP/CPI based indexation, which was based on the "strawman" proposals consulted upon in SEM-23-014. SEM-23-014 considered the possibility of explicit risk-sharing mechanisms. Two variants of Option 1 were developed:
    - Option 1a with 100% pass-through of "unexpected" inflation; and
    - Option 1b with 70% pass-through of "unexpected" inflation.

- Option 2a and b: Wholesale Construction Index based indexation, which was based on the Central Statistics Office's (CSO) Wholesale Price Index for Building and Construction (materials)[17], and its nearest UK equivalent index published by the UK National Statistics Office, (the UK Office for National Statistics' Construction Output Price Index (OPI) for New Work (Infrastructure)[18]). Two variants of Option 2 were considered:
    - Option 2a with 100% pass-through of "unexpected" inflation; and
    - Option 2b with 70% pass-through of "unexpected" inflation.

The SEM Committee's Decision Paper, SEM-23-038, published on 11 May 2023, made clear that the decision is based on the use of wholesale construction indices, with explicit risk-sharing, i.e., Option 2b.

As the purpose of this paper is to explain the SEM Committee rationale in coming to this decision, Options 1a, 1b, 2a and 2b are set out in more detail below.

4.2 Options 1a and b: HICP/CPI Indexation

Options 1a and 1b were consistent with the "strawman" proposals set out in the second Call for Evidence. The key features of these options are that they would:

1. Apply only to new projects that were awarded 10-year contracts in the 2024/25 T-3 and the 2025/26 T-4 auctions
2. Be based on separate HICP/CPI indices for Ireland and Northern Ireland as applicable
3. Account for inflation from the date of the auction to the start of the capacity year only (i.e., during the build period) and not over the 10 years of the contract
4. Be based on inflation variance from an assumed level of 2%, such that outturn inflation higher than this would increase the capacity payment price,

[17] See link here and data in Appendix 2 of SEM-23-038

[18] See link here and data in Appendix 2 of SEM-23-038

while lower outturn inflation would decrease it (meaning that the developer takes on the risk that inflation might outturn lower than 2%)

In SEM-23-014, the SEM Committee considered an additional risk sharing mechanism, with not all of the variance in HICP/CPI (from 2% p.a.) being passed through to capacity units. There is precedent for this in the treatment of public procurement contracts in Ireland under the Inflation Co-Operation Framework where only 70% of variances from inflation are passed through[19].

As shown in Table 3 below, the weighted average price paid for multi-year New Capacity contracts in the 2024/25 T-3 auction was €147.03/kWd/yr[20], and the weighted average price paid in the 2025/26 T-4 was €145.38/kWd/yr. It was forecast that, if there was no additional risk sharing, the weighted average 2024/25 T-3 contract price for units in Ireland would increase by around 13% to €165.58/kWd/yr, but if there was a 70:30 risk-sharing, the weighted average contract price would increase by around 9% to €160.01/kWd/yr.

Table 3: Forecast impact of Options 1a and 1b on contract prices

	Awarded contract price			Option 1a (CPI, 100% pass-through)			Option 1b (CPI, 70% pass-through)		
	IE	NI	Weighted average*	IE	NI	Weighted average*	IE	NI	Weighted average*
	€/kW$_d$/yr	£/kW$_d$/yr	€/kW$_d$/yr	€/kW$_d$/yr	£/kW$_d$/yr	€/kW$_d$/yr	€/kW$_d$/yr	£/kW$_d$/yr	€/kW$_d$/yr
2024/25 T-3	146.92	130.87	147.03	165.43	148.18	165.58	159.88	142.99	160.01
2025/26 T-4	141.34	130.79	145.38	155.55	142.56	159.29	151.29	139.03	155.12

* Based on exchange rate of €1.15=£1

[19] However, it should be noted that the Inflation Co-Operation Framework appears to be a much more tailored approach whereby developers are able to claim 70% of the inflation exposure they have actually faced, rather than basing the indexation on a proxy such as HICP, which may not be cost reflective.

[20] When NI contract prices are converted to Euros at an exchange rate of €1.15 = £1, approximately the current exchange rate

The values shown in Table 3 are based on published outturn inflation rates from the auction date to January 2023, and the latest[21] Central Bank of Ireland (CBoI) / UK Office of Budget Responsibility (OBR) projections of CPI/HICP inflation between January 2023 and 2025[22]. The forecast values which were reflected in the decision taken in April 2023, were the latest forecasts available at Q1 2023. Actual values could vary significantly, if Irish HICP or UK CPI inflation outturns significantly differently from the projections used. The forecast indexation for the 2025/26 T-4 contracts was lower than projected values for the 2024/25 T-3 contracts because the CBoI and UK OBR inflation forecasts dropped significantly in 2024 and 2025, and in the case of the UK OBR, forecasts turned negative in 2025. These proposals would result in downward adjustments to contract prices when inflation falls below the "expected" level of 2% p.a.

Prices for capacity in NI are fixed at the time of the auction in GBP based on the final auction exchange rate, and UK CPI inflation would be applied to the GBP denominated prices.

4.3 Options 2a and b: Wholesale construction price index

A number of respondents stated that HICP/CPI inflation indices did not capture the extent of inflation faced by capacity developers, and using HICP/CPI would be insufficient to allow them to earn their hurdle rates. Options 2a and 2b were developed to reflect consultation feedback that investors require use of indices which better match the capex inflation they have faced.

One investor responding to SEM-23-014 proposed using the Wholesale Price Index for Building and Construction published by the CSO in Ireland. The CSO index reflects

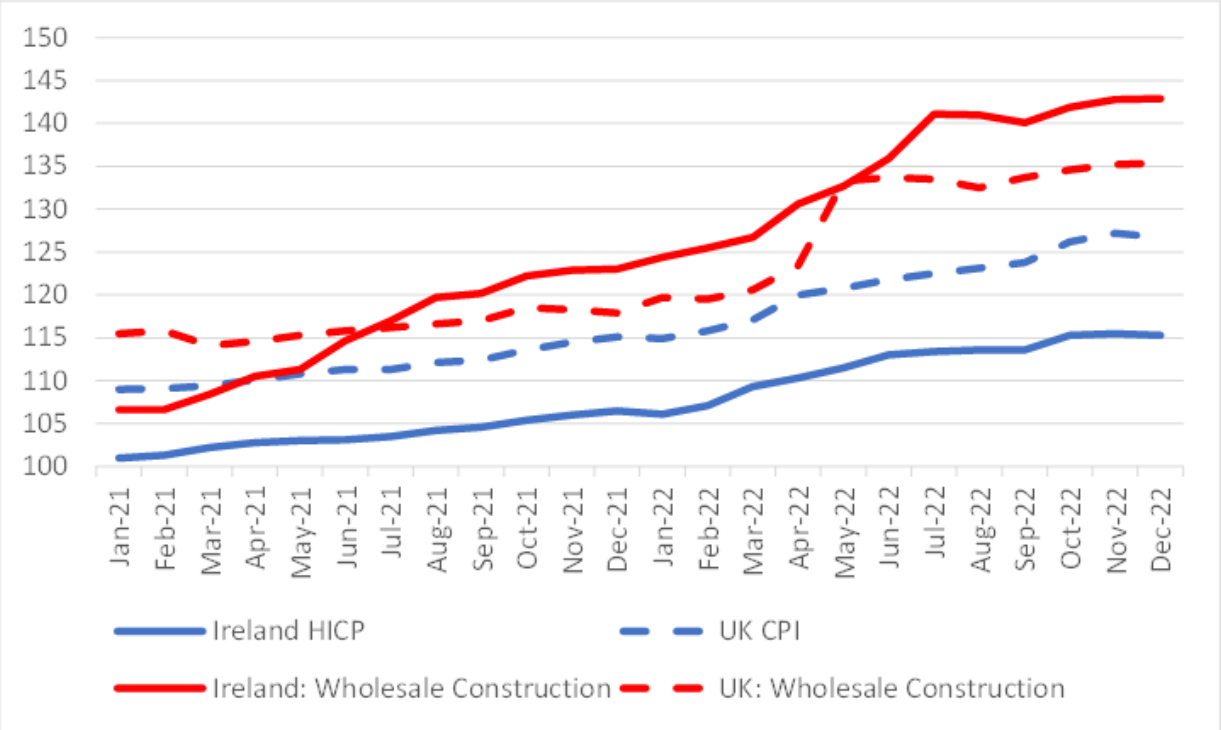
[21] Using the inflation projections in the Central Bank of Ireland's Q4 2022 Quarterly Bulleting and the UK OBR's November 2022 Economic and Fiscal Outlook

[22] Projection for Capacity Year 2024/25 contracts are based on the latest forecast inflation to September 2024. Projections for Capacity Year 2025/26 contracts are based on forecast inflation to September 2025.

a range of inputs such as cement, steel, electrical equipment and other materials, which they stated is a better proxy for the inflation they faced than Ireland's HICP measure. To turn this into an appropriate workable solution, the SEM Committee decided to use the nearest equivalent index published by the UK National Statistical Office's Construction Output Price Index (OPI) for New Work (Infrastructure), to apply to contracts awarded in Northern Ireland.

These Irish/UK wholesale construction indices are compared to HICP in Ireland and UK CPI in Figure 2. The wholesale construction materials indices rose more quickly in 2021 than the HICP/CPI measures, and continued to rise more steeply in the first half of 2022 than the HICP/CPI measures. However, the rate of increase of the wholesale index declined in the UK in the second half of 2022. The Irish index declined in Q3 2022, before increasing again in Q4 2022.

Figure 2: Comparison of indices, 2021-2022, 2015=100



Options 2a and 2b are like Options 1a and 1b in all other respects, i.e., they:

- Apply only to new projects that were awarded 10-year contracts in the 2024/25 T-3 and the 2025/26 T-4 auctions;

- Are based on separate wholesale building and construction indices for Ireland and Northern Ireland as applicable;
- Account for inflation from the date of the auction to the start of the capacity year only (i.e., during the build period) and not over the 10 years of the contract;
- Are based on index variances from an assumed level of 2% p.a.

Table 4 illustrates the forecast impact of Options 2a and 2b on contract prices. The forecasts are based on the actual change in the value of the indices between the auction date and January 2023, and projections of inflation between January 2023 and the start of the relevant capacity year. In the absence of any specific forecasts for these indices, the CBoI HCPI/UK OBR CPI forecasts have been used as a proxy to project the impact on contract prices and consumer bills.

Table 4: Forecast impact of Options 2a and 2b on contract prices

	Awarded contract price			Option 2a (Wholesale construction, 100% pass-			Option 2b (Wholesale construction, 70% pass-		
	IE	NI	Weighted average*	IE	NI	Weighted average*	IE	NI	Weighted average*
	€/kW$_d$/yr	£/kW$_d$/yr	€/kW$_d$/yr	€/kW$_d$/yr	£/kW$_d$/yr	€/kW$_d$/yr	€/kW$_d$/yr	£/kW$_d$/yr	€/kW$_d$/yr
2024/25 T-3	146.92	130.87	147.03	173.53	151.49	173.55	165.55	145.31	165.60
2025/26 T-4	141.34	130.79	145.38	165.04	147.42	167.04	157.93	142.43	160.54

Option 2a is forecast to result in an uplift of around 17-18% to contract prices in Ireland, and 13-16% in Northern Ireland. The forecast level of uplift under Option 2a is slightly higher than under Option 1a, which was forecast to uplift contract prices by around 10-13% in Ireland and 9-13% in Northern Ireland. However, there is significant uncertainty around these estimates depending on inflation between now and 2025. The forecast uplift to NI prices is lower, because the wholesale building and construction index has not grown as fast in NI.

5. Cost benefit analysis

5.1 Introduction

In considering whether to index contracts, and which indexation option to implement, the SEM Committee has sought to quantify the costs and the benefits of the different indexation options (Options 1a, 1b, 2a, 2b), relative to the status quo (Option 0).

At the same time, the SEM Committee recognises that not all pros and cons are readily quantifiable – such as the possibility of creating moral hazard in the long term, and the value of credibility/transparency/simplicity of certain indices.

5.2 Costs

The key quantifiable cost of indexation options is the incremental cost to consumers in terms of higher CRM payments over the 11 years 2024/25 to 2034/35, is set out in

Table 5: Forecast cost of options

	Option 1a	Option 1b	Option 2a	Option 2b
Total cost of indexation, 2024/25 to 2034/35, €m	339	237	495	346
Annual cost, typical year, €m	33.9	23.7	49.5	34.6
Cost for typical household, 2026, € p.a.	2.88	2.01	4.20	2.94

As shown in Table 5, it was estimated, if all 1,972MW$_d$ of contracted multi-year new capacity delivers that:

- Option 1a: would cost €339 million over the 11 years from 2024/25 to 2034/35, costing consumers €33.9m in a typical year[23], which equates to about €2.88 per domestic household p.a. in 2026[24]

[23] Less in 2024/25 when capacity awarded in the 2025/26 T-4 auction will not be paid, and less in the last of the 11 years (2034/35) when capacity awarded in 2024/25 is not expected to be paid under the fixed price terms.

[24] Calculated as €33.9m / 49.5TWh x4.2MWh. Based on an annual average household consumption of 4,200kWh p.a. and the TSOs' median estimate of all-island consumption of 49.5TWh in 2026. In subsequent years the average cost per household will depend on the growth rate of all-island consumption, compared to the growth rate of annual average household consumption (e.g., due to electrification of heat and transport)

- Option 1b: would cost €237m over 11 years, costing consumers €23.7m in a typical year, which equates to about €2.01 per domestic household p.a.
- Option 2a: would cost €495m over 11 years, costing consumers €49.5m in a typical year, which equates to about €4.20 per domestic household p.a.
- Option 2b: would cost €346m over 11 years, costing consumers €34.6m in a typical year, which equates to about €2.94 per domestic household p.a.

If a proportion of the 1,972MW$_d$ terminates anyway, the cost to the consumer will be proportionately less.

5.3 Benefits

The key benefit is "saving" projects, i.e., ensuring projects that would otherwise have terminated, proceed to deliver the contracted capacity. The SEM Committee has quantified the benefit in terms of the avoided cost of either lost load or Temporary Emergency Generation (TEG).

To do so, the SEM Committee has analysed the following further questions:

1) On the balance of probabilities, is there reasonable evidence that the different indexation options could lead to projects being "saved"?
2) On the balance of probabilities, is the likely benefit to consumers of indexing contracts, and hence "saving" projects likely to outweigh the costs?

To what extent will different indexation options "save" projects?

The SEM Committee has analysed the confidential financial data provided by the respondents and concluded that:

- Without indexation, there are a number of new capacity projects which are unlikely to recover their costs of capital, and which are therefore at material risk of termination;
- The proposed indexation options have the potential to materially improve project returns, with some options having more potential than others;

- With indexation, some of these projects are likely to earn their costs of capital, or a reasonable approximation to their costs of capital under some of the indexation options;
- Indexing the contracts may therefore mean that some projects that would not otherwise proceed, will actually deliver, i.e., “save” some projects.

In the SEM Committee’s judgement, on the balance of probabilities, there is a reasonable prospect that some of the indexation options could save two or three of the key projects. A number of the key projects are approximately 250MW$_d$, so two or three projects could equate to around 500MW$_d$ to 750MW$_d$.

Those indexation options which are expected to better reflect the capex inflation faced (e.g., Option 2a) are more likely to “save” more projects, than those that do not mitigate project capex risks to the same extent (e.g., Option 1b).

In making the judgement that the indexation options have the potential to “save” projects, the SEM Committee recognises that respondents have an incentive to overstate their costs of capital, and understate their expectations of residual value beyond the ten-year fixed price CRM contract. The SEM Committee therefore has also therefore taken into account the views of its appointed independent experts, as set out in the BNE Decision (SEM-23-016) with respect to these factors. The SEM Committee also recognises that for some projects, a significant proportion of the investment cost is already sunk, so that a rational investor should discount sunk costs, and only terminate where it has no realistic prospect of earning its cost of capital on avoidable future investment.

Will likely quantified net benefit to consumers outweigh the costs?

If projects are “saved”, the benefits are either the avoided cost of lost load[25] or the avoided cost of an equal amount of Temporary Emergency Generation (TEG) capacity.

[25] valued at the Value of Lost Load (VoLL)

In practice, analysis showed that TEG is the cheaper option[26]. For the purpose quantifying the benefit, it has been assumed that if CRM capacity terminates, it will be at least two Capacity Years before it can be replaced via market mechanisms[27], so the TEG cost will need to be borne for two years. For the purposes of estimating the avoided cost, two years is a relatively conservative assumption[28].

The SEM Committee has compared the cost of the indexation options, and estimated how many MW_d of relevant capacity would have to be "saved" for the additional cost of indexation to equal the savings, in terms of avoid TEG. In evaluating the costs and benefits of the various options, the SEM Committee considered how likely the various options were to "save" different projects, and the likely consumer benefit in terms of avoided TEG costs. The SEM Committee then compared the cost to consumers of the different indexation options, with the avoided TEG costs, to assess whether Options 1a, 1b, 2a and 2b were likely to deliver positive net benefits to the consumer. It was noted that there are a number of New Capacity projects which won in the 2024/25 T-3 or the 2025/26 T-4 auction which are around $250MW_d$. If Options 1a or Option 2b, "saved" only one of these projects, then indexation would be of net benefit to the consumer. Option 2a has a higher cost to the consumer, and would require more than one $250MW_d$ project to be saved in order to yield net benefits to the consumer. Option 1b, which is not expected to have as big an impact on contract prices, is judged less likely to "save" projects.

Overall, the SEM Committee considers that Option 2b is most likely to yield positive net benefits to the consumer, relative to the no-indexation option (Option 0), and likely to yield the highest positive quantifiable net benefits of the four indexation options considered.

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[26] because given the size of the capacity gap identified in Section 1.2, each additional MWd of terminated capacity is likely to lead to many hours of additional lost load.

[27] For instance, if a 2024/25 T-3 new capacity unit fails to meet SFC due in July 2023, the unit is unlikely to be "replaced" until 2026/27 at the earliest

[28] For instance, if 2024/25 capacity did not terminate until the T-3 auction SFC date of July 2023, it would be difficult to hold a new auction and expect new (non-temporary) capacity to be built by October 2026.

In the above analysis, the SEM Committee has only sought to directly quantify the net capacity benefits, i.e., comparing avoided TEG capacity cost with additional CRM indexation costs. However, if projects are “saved”, the “saved” capacity is also likely to reduce energy prices- an additional benefit to consumers, which the SEM Committee has not sought to quantify directly. The “saved” projects can be expected to put downward pressure on energy market prices because:

- There will be more, new, efficient capacity, with lower variable costs than existing older inefficient gas turbines;
- There will be fewer incidents of scarcity or near scarcity, resulting in more hours of the year where there is a high degree of competition between generators in the energy market, and fewer incidence of price spikes caused by the effects of scarcity.

By “saving” newer more efficient capacity, indexation will also be supporting decarbonisation objectives.

6. Summary evaluation of options

The pros and cons of the different indexation options are summarised in Table 6 below.

Table 6: Summary of pros and cons of indexation options

	Pros	Cons
Option 0	• No additional cost to consumers, and no "deadweight" • No moral hazard issue	• Highest risk of projects terminating, with requirement for TEG or resulting lost load • Low downward pressure on energy prices resulting from new entry
Option 1a	• More likely to "save" projects than Option 0, or 1b • Downward pressure on energy prices, by "saving" projects Based on index produced by credible institutions, with high degree of transparency and simplicity	• Additional cost to consumers of €339m in cash-terms over 11 years, with significant potential "deadweight" • Less reflective of capex cost inflation than Options 2a and 2b, due to lower cost reflectivity of HICP/CPI • Higher moral hazard than options with risk-sharing
Option 1b	• May "save" some projects • Lowest potential "deadweight" of intervention options • Some downward pressure on energy prices, by "saving" projects Based on index produced by credible institutions, with high degree of transparency and simplicity • Lower moral hazard than options without risk-sharing	• Additional cost to consumers of €237m in cash-terms over 11 years • Least reflective of capex cost inflation of intervention options, due to lower cost reflectivity of HICP/CPI, and risk-sharing • Least likely to "save" projects of all the intervention options • Higher moral hazard than Option 0
Option 2a	• Most likely to "save" projects and avoid TEG or lost load costs • Most reflective of capex cost inflation • Greatest downward pressure on energy prices, by "saving" projects • Based on index produced by credible institutions, with reasonable degree of transparency and simplicity	• Additional cost to consumers of €495m in cash-terms over 11 years, with greatest potential "deadweight" • Less transparency over weightings that comprise index than HICP/CPI • Higher moral hazard than options with risk-sharing
Option 2b	• More likely to "save" projects than Option 0 or Option 1a • More reflective of capex cost inflation than Option 1a/1b • Downward pressure on energy prices, by "saving" projects • Based on index produced by credible institutions, with reasonable degree of transparency and simplicity • Lower moral hazard than options without risk-sharing	• Additional cost to consumers of €346m in cash-terms over 11 years, with significant potential "deadweight" • Less transparency over weightings that comprise index than HICP/CPI • Cost reflectivity somewhat blunted by risk-sharing • Higher moral hazard than Option 0

On balance, the SEM Committee has decided to implement Option 2b, on the basis of the pros and cons summarised in Table 6.

The SEM Committee is satisfied that the capex inflation faced by new capacity investors in the 2024/25 T-3 and 2025/26 T-4 auctions is greater than what may reasonably have been expected or mitigated by a prudent investor, and is sufficiently material to jeopardise a significant number of projects - with potentially adverse consequences for security of supply.

The SEM Committee notes that if Option 2b "saves" only one of a number of the projects in the development pipeline which are contracted for around 250MW$_d$ it would deliver net benefits to the consumer. Based on the analysis of financial data, the SEM Committee has concluded that Option 2b is likely to achieve the best balance between the quantifiable net benefits and other less quantifiable costs, such as moral hazard. The SEM Committee sees risk-sharing as a key component of limiting the effect of moral hazard.

Option 2b (and 2a) are based on indices produced by reputable agencies, and are based on indices that have a reasonable degree of credibility, transparency and simplicity, even if the indices are less widely used than HICP/CPI.

The SEM Committee has taken the decision to proceed with Option 2b, cognisant of the fact that, it is likely that some extra money will be given to projects that would progress anyway, i.e., there will be some economic "deadweight". The SEM Committee has taken the view that it is neither feasible nor desirable to seek to identify those new capacity projects in the 2024/25 T-3 and 2025/26 T-4 which are likely to proceed even without indexation, and deny them indexation.

The "deadweight" cost, is factored into the estimate of consumer cost, and into the "break-even" analysis.

7. Decisions

The SEM Committee has decided to apply indexation to multi-year New Capacity contracts awarded in the 2024/25 T-3 and 2025/26 T-4 auctions, based on Option 2b.

7.1 Overview

As set out in SEM-23-038, the form of indexation to be applied therefore is as follows:

- Indexation will only be applied based on the calculated change in the indices during the Build Period;
- The Build Period is defined as the period starting on the relevant auction date (i.e., 20 Jan 2022 for the 2024/25 T-3 and 24 Mar 2022 for the 2025/26 T-4), and finishing on the last day of the Capacity Year prior to the year in which projects are due to deliver (i.e., 30 Sept 2024 or 30 Sept 2025 respectively);
- Indexation will be applied on a currency zone basis. The relevant indices are:
    - Ireland: The Central Statistics Office's (CSO) Wholesale Price Index for Building and Construction (materials)[29];
    - Northern Ireland: the UK Office for National Statistics' Construction Output Price Index (OPI) for New Work (Infrastructure)[30];
- Explicit risk-sharing mechanism: There will be an explicit risk-sharing percentage, which will result in 70% of Unexpected Inflation being passed through to the capacity price;
- "Unexpected Inflation" means variances in the relevant indices from an assumed expected level of 2%[31] annual growth during the Build Period;

[29] See link here and data in Appendix 2 of SEM-23-038

[30] See link here and data in Appendix 2 of SEM-23-038

[31] In SEM-21-110 the SEM Committee decided to inflate the Auction Price Cap for the 2024/25 T-3 and 2025/26 T-4 auctions by 2% per annum, reflective of the "standard target level of inflation".

A one-off Indexation Factor will be calculated based on cumulative Unexpected Inflation during the Build Period, with the 70% risk-sharing proportion applied to it. The Indexation Factor will be applied to the capacity price awarded to each unit at auction for all ten years of the contract;

- Different Indexation Factors will apply to:
    - Contracts denominated in Euros and contracts denominated in Sterling; and
    - Contracts awarded in the 2024/25 T-3 and 2025/26 T-4 auctions, which have different Build Periods.

The Indexation Factor to be applied will be calculated only up until the last day of the Capacity Year prior to the year in which projects are due to deliver, and as such, developers will be exposed to inflation risk during the period of any delay in delivery beyond the start of the Capacity Year.

In addition to the above decision published in SEM-23-038, the SEM Committee can clarify a number of points of detail.

7.2 Option to base indexation on Substantial Financial Completion Date

Whilst indexation will, by default, be calculated based on the whole of the Build Period, a participant with multi-year awarded New Capacity will have the option to choose between this, and indexation calculated only until the project reaches Substantial Financial Completion i.e. to choose between:

1) An indexation factor based on “unexpected” inflation between the Auction Date and the Substantial Financial Completion (SFC) date of the project; or
2) An indexation factor based on “unexpected” inflation between the Auction Date and the end of the Build Period.

If the participant wishes to exercise the option to base the indexation factor on the SFC date, it must exercise this option by notifying the System Operators by the later of:

1) The date on which it reports to the System Operators that it has achieved SFC; or
2) One month after this decision is published.

This option will ensure that any investor which is able to fix its capex costs at the time it signs its key contracts need not be exposed to inflation risk on its CRM contract price beyond the SFC date. However, an investor which is not able to fix its capex costs at the time it signs its key contracts, or is only partially able to do so, may choose to base the indexation calculation on the whole of the Build Period.

Investors wishing to base the indexation calculation on the period up to the SFC date, must notify the System Operator by the later of the SFC Date, or within one month of the publication of this document. The rationale for having this “exercise date” is to prevent investors having a “look-back” option, i.e., being able to wait until they can see which option would be most financially advantageous and then opting for that based on hindsight. The lack of a “look-back” option should incentivise them to better reflect their actual inflation exposure in their choice of whether to base the indexation on the whole Build Period, or the shorter period.

If a Participant with Awarded Capacity fails to notify the System Operators of their preference for an indexation period ending on the SFC date by the exercise date specified above, the indexation period will default to ending at the end of the Build Period, that is, the last day prior to the start of the first capacity delivery year.

7.3 Build Period and calculation of inflation

For the purposes of calculating the indexation the following points of detail will apply:

- 2024/25 T-3 auction: the auction took place on 20 January 2022, with provisional result published on 4 February and final results published on 4 March 2022. The Build Period is defined as starting on 20 January 2022 and finishing on 30 September 2024:
    1) Expected inflation: the SEM Committee will ignore the part month of January 2022, and calculate expected inflation over 2 years and 8 months, so expected inflation will be $(1 + 2\%)^{2.667} = 5.42\%$; and
    2) Outturn inflation will be calculated based on the published value of the chosen Ireland/UK indices for September 2024 divided by the value of the index in January 2022.

- 2025/26 T-4 auction: the auction took place on 24 March 2022, with provisional result published on 1 April 2022 and final results published on 6 May 2022. The Build Period is defined as starting on 24 March 2022 and finishing on 30 September 2024:

    1) Expected inflation: the SEM Committee will ignore the part month of March 2022, and calculate expected inflation over 3 years and 6 months, so expected inflation will be $(1 + 2\%)^{3.5} = 7.18\%$; and

    2) Outturn inflation will be calculated based on the published value of the chosen Ireland/UK indices for September 2025 divided by the value of the index in March 2022.

8. Next Steps

The SEM Committee will bring forward such TSC and any other modifications as may be required to implement this indexation policy in the near future and will work with the TSOs to ensure any necessary systems changes are implemented in time to reflect in settlement, starting from October 2024.

In SEM-23-014 the SEM Committee consulted on whether it is appropriate to move to a GB style contract in which multi-year contracts are indexed for inflation each year of the contract (which is consistent with the intent of Mod_07_22). There was majority support amongst investors for this approach. The SEM Committee will consider whether to prioritise a workstream on an enduring indexation mechanism for capacity contracts in the context of the SEM Committee's Forward Work Programme for 2023/24.