SEM committee

Single Electricity Market

(SEM)

SEMO 2021 – 2024 Price Control

Consultation Paper

SEM-21-046

3 June 2021

EXECUTIVE SUMMARY

The development of the SEM in 2007 led to the requirement for a Single Electricity Market Operator (SEMO) to administer the market. SEMO exists as a contractual joint venture between EirGrid plc in Ireland and SONI Ltd in Northern Ireland.

Key roles and responsibilities of SEMO include:

- Balancing Market settlement
- Capacity Market settlement
- Administration and maintenance of the Trading and Settlement Code
- Agent of Last Resort function
- Fuel Mix Disclosure

SEMO is regulated by both the Commission for Regulation of Utilities (CRU) in Ireland and the Utility Regulator (UR) in Northern Ireland, collectively referred to as the Regulatory Authorities (RAs); the SEM Committee (SEMC) is an all-island governing body which makes decisions on SEM matters.

SEMO is subject to a regulated price control. The current SEMO price control (SEM-18-003) covers the period since Go-Live of revised SEM arrangements to September 2021. This consultation relates to the three-year period from 1 October 2021 to 30 September 2024.

For this price control SEMO submitted proposals relating to operating expenditure (opex), capital expenditure (capex) and modifications to its existing suite of Key Performance Indicators (KPIs) for review by the RAs. SEMO proposed amendments to the price control framework and approach to capital cost recovery, and also sought engagement with the RAs about the introduction of new margins in addition to its existing receipt of a WACC return, an amount for provision of a Parent Company Guarantee and a margin on collection agent revenues.

SEMO's Proposals

SEMO's total **opex proposal** for 2021-24 was estimated at €44.9M; this compared to actual[1] opex incurred during the 2018-21 period of €30.6M. SEMO's opex forecasts were dominated by projected labour costs due to a proposed 25% increase in staff levels and IT & Communications cost forecasts which continue to increase year on year. In addition, other operating costs relating to corporate and shared EirGrid Group services were included for review.

[1] Actual costs incurred for 2018/19 and 2019/20, but forecasted best estimates for 2020/21

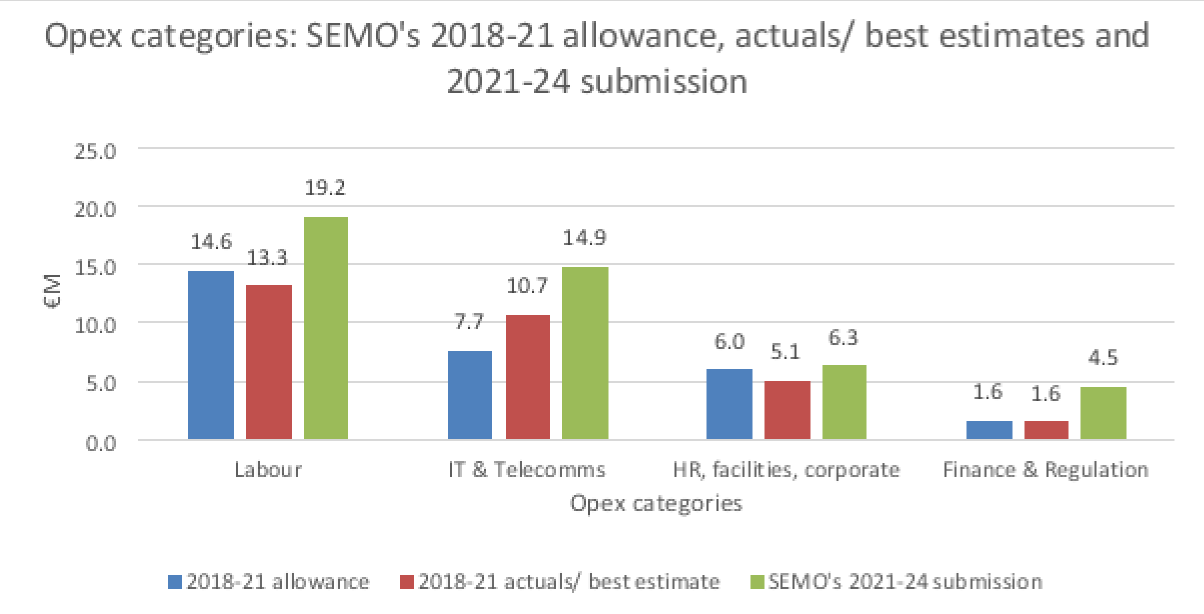


Figure 1: SEMO's 2018-21 allowance, actuals/ best estimates and 2021-24 submission

SEMO's proposed **capex programme** for 2021-24 included €29.3M of costs associated with market system releases and support, fourteen 'predictable' capital projects, and a proposal for 'unpredictable' capex. The total capex estimated by SEMO excluded any amount for what SEMO described as 'known unknowns' which are likely to need to be worked on during 2021-24 (to include work related to Brexit, the Clean Energy Package, the Electricity Balancing Guideline and battery storage facilitation).

With respect to **Key Performance Indicators (KPIs)**, SEMO proposed that the existing suite (determined by the SEM Committee in 2019) remain for 2021-24 with amendments to the upper and lower targets to make them more achievable.

SEMO proposed a **review of the framework** to underpin the price control; this suggested that an agile and flexible framework was necessary to focus on allocative rather than productive efficiency, and focused on recovery of actual capital costs incurred with the onus on the RAs to prove inefficiencies or wasteful expenditure.

SEMO also proposed that it should be rewarded in respect of **asymmetric capex risk** for potential disallowances by the regulators, claiming that it only faces downside risk as a result of any regulatory efficiency review. In addition, SEMO was open to engagement about additional remuneration in respect of **operational risk**.

The RAs' Approach

The RAs approached the price control review with a view to inclusivity and meaningful dialogue and were encouraged by open bilateral engagement with SEMO and SEMO's appetite to involve market participants in the review process.

In order to develop consultation proposals, a **Participant Consultative Forum** (consisting of nine members who represented a broad range of participants and industry bodies) was established by the RAs through open invitation to encourage insight and feedback through direct dialogue with SEMO. A number of workshops were convened and written feedback was provided by some members of the Forum. Forum members' feedback helpfully 'set the scene' in terms of lived experience and priorities. These included a desire for SEMO to stabilize existing market arrangements before focusing on future market design, and a general agreement that evolution rather than revolution is required in the 2021-24 period. Views of the Participant Consultative Forum are incorporated throughout this consultation paper.

The RAs' Proposals

The RAs propose to allow €32.7M of opex compared to SEMO's proposal for €44.9M. The RAs' proposals for 2021-24 align more closely with estimated outturn (€30.6M) during 2018-21 and a view from participants that SEMO should focus on stabilising its 'business as usual' before prioritizing market development.

	SEMO submission				RAs' proposals			
OPEX	**2021/22**	**2022/23**	**2023/24**	**Total € million**	**2021/22**	**2022/23**	**2023/24**	**Total € million**
Labour	5.9	6.5	6.7	19.2	5.4	5.4	5.4	16.2
IT & Telecommunications	4.6	5.0	5.3	14.9	3.3	3.3	3.3	9.9
HR, corporate and facilities	2.4	2.4	2.5	6.3	1.7	1.7	1.7	5.1
Finance & Regulation	1.5	1.5	1.6	4.5	0.5	0.5	0.6	1.5
				44.9				**32.7**

Table 1: Comparison of SEMO's opex submission with RAs' proposals

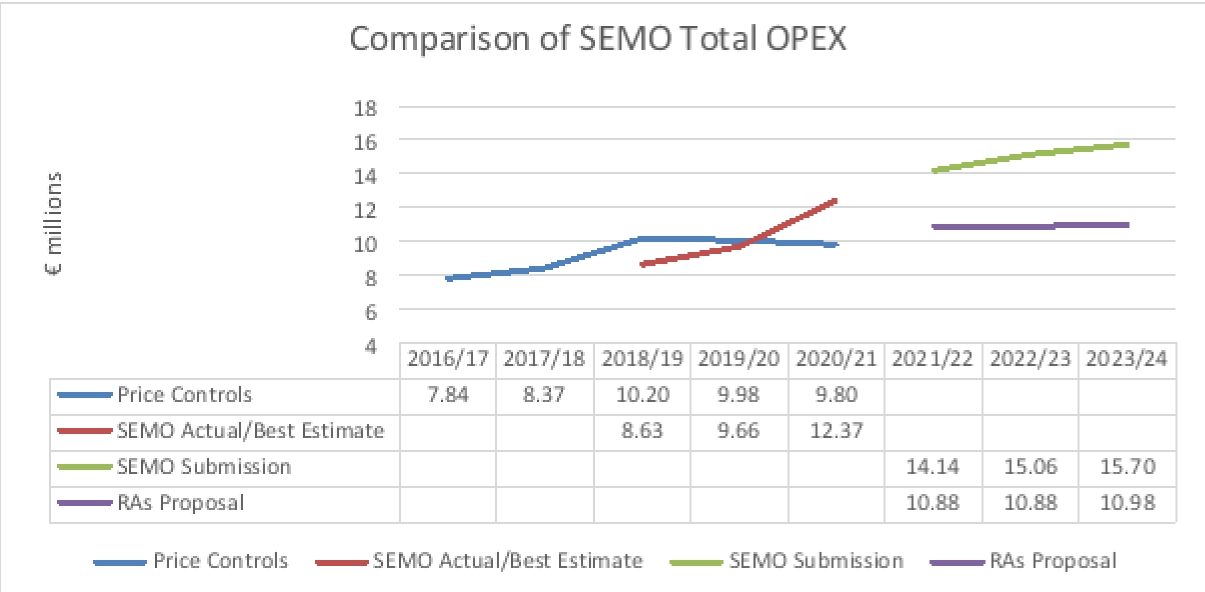


Figure 2: Comparison of SEMO's opex submission with RAs' proposals for 2021-24

Compared to SEMO's proposals for €29.3M of capex, the RAs propose to allow €28.1M. Capex other than that associated with biannual market system releases (proposed to be allowed in full at €17.2M) will be categorised as predictable (applying to 'more certain' projects) or unpredictable (to apply to projects which are uncertain, projects arising during the price control which were previously unforeseen, or projects labelled by SEMO as 'known unknowns', ie. Brexit/ Clean Energy Package/ Electricity Balancing Guideline/ storage facilitation related). €6.3M of a proposed allowance is allocated to the predictable capex pot; €4.7M of a proposed allowance is allocated to the unpredictable capex pot. The proposed unpredictable capex allowance is proposed to be provided as a cap, however, SEMO will have the ability to apply for additional funding should it foresee the cap being breached.

	Costs allowed 2018-21	**SEMO submission 2021-24**	**RAs' proposals 2021-24**
CAPEX	**Total € million**	**Total € million**	**Total € million**
Market System Releases	6.4	13.9	13.9
Market System Release Support	3.5	3.3	3.3
Predictable Business capex	2.4	11.8	6.3
Unpredictable Business capex	0	0.3	4.7
Total	**16.6**[2]	**29.3**	**28.1**

Table 2: Comparison of SEMO's capex submission with RAs' proposals

A **revised cost recovery framework is proposed for capex** to allow for actual costs incurred so long as evidenced by SEMO as efficient, demonstrably necessary and incremental to other price controls. The RAs have proposed a framework for SEMO in keeping with determinations made by the CRU and Utility Regulator for the most recent TSO price controls with a focus on results rather than input costs. An enhanced regulatory reporting regime on the capital investment programme will be introduced to include more market participant involvement.

Other key highlights of the RAs' review of opex and capex are:

- Compared to SEMO's request for 15.5 **additional internal FTEs** to bolster its existing 59.5 FTEs, the RAs propose to allow for 5. The majority of the new allowed FTEs focus on future planning and improved stakeholder communications. The RAs note that SEMO is now, in 2020/21, operating at full staff complement having experienced difficulties with staff turnover and recruitment over the past two years; this, along with additional resource, should help to stabilize operations to a steady state which is more reflective of what was expected in past years while also allowing for an element of future market development planning. It is important that SEMO

[2] This total also included an amount of €4.3M for I-SEM Day 1+ and Post Production Support capital

assesses its HR strategy, job specifications, current allocation of resources to core functions and targeted intake grade of staff to ensure efficient and effective operations going forward.

- An **average salary** per Full Time Equivalent (FTE) of €83.5K per annum is proposed compared to SEMO's proposal of €87K per annum. IT & Telecommunications costs have been proposed by the RAs at two-thirds (€9.9M) of SEMO's forecast (€14.9M) to reflect a reduction rather than increase in IT-related fixes going forward. In general, business cases for IT & Communications opex were not well justified. The lack of visibility of a Group-wide IT strategy made the submission difficult to analyse.
- Within **opex costs for HR, facilities and corporate services**, the RAs have proposed to allow for €5M compared to SEMO's request for €6.3M. Key areas of difference are that HR-related costs have been reduced on a pro rata basis to align with the allowed number of internal FTEs rather than with SEMO's request and the RAs' have assumed that travel costs for SEMO staff will reflect efficiencies and learning gained during the Covid-19 pandemic.
- **Finance and Regulation costs** within the opex submission were proposed at €4.5M by SEMO; the RAs have proposed to allow for €1.6M. Of note, two new initiatives ('Strategic Initiatives' and a 'High Level Design') within SEMO's proposal accounted for €2.7M of its submission; these have not been allowed as the business cases were brief and not well evidenced in terms of need or consumer benefit.

In terms of incentivisation, an ex ante approach to setting opex allowances will continue to apply to this price control and, consistent with the approach taken in previous SEMO price control decisions, the RAs expect to continue to incentivise SEMO's opex via Revenue Cap **(RPI-X)** regulation. SEMO did not propose any change to this existing framework.

The current **Key Performance Indicators** (KPIs) were put in place in 2019 to apply for a two year period. With regard to these, the RAs have focused on feedback received from participants about what a well functioning and fit-for-purpose market operation should look like. The RAs propose to allow SEMO the ability to achieve reward through a set of Key Performance Indicators (KPIs), but this is **contingent on two factors**:

- resolution of known issues which are still outstanding since I-SEM Go-Live in 2018 and
- improvements in both repricing and resettlement.

The KPIs have an upside only and the overall reward available is tiered so that €1.3M is available to SEMO if the pre-conditions are met by the end of Year 1, up to €0.9M is available if the pre-conditions are met by the end of Year 2, and up to €0.4M is available if the pre-conditions are not met until the end of Year 3.

After taking into consideration the findings of an externally commissioned report about **SEMO's financeability**, the RAs propose to **retain the WACC approach** applicable to

SEMO (ie. a blend of the EirGrid TSO and SONI TSO price control determinations), recognising that the return earned by SEMO will increase over the 2021-24 period compared to the last three year period as SEMO's RAB increases in size. The RAs also propose to allow for provision of an amount in respect of a **Parent Company Guarantee (PCG)** in respect of costs incurred for EirGrid providing SONI with a PCG under its Market Operator licence.

The **collection agent revenues margin**, which was introduced for the 2018-21 price control, **is proposed to be set to zero**; this removes an amount of c.€2.4M over the next three year period. During the 2018-21 price control process, SEMO was cognisant of the opening RAB being low and considered that the RAB would be relatively low in the future[3]. This was a key argument by SEMO in requesting the introduction of a margin at that time. In making the decision to include a margin, the SEM Committee recognised the need for this to be reviewed at the next price control. At September 2021, SEMO's RAB is expected to have increased from €0 to a closing value of €12M and is projected to increase to c.€22M by the end of year 2023/24. The RAB value during the 2021-24 period is more akin to the levels experienced in the legacy SEM before the RAB was ramped down in advance of the new market arrangements. The RAB/WACC projections for 2021-24 were important considerations in reviewing afresh a margin for SEMO for this price control. In addition to an increased return on the RAB, SEMO will also avail of the opportunity to earn through its KPIs; as noted above, the RAs have proposed to allow for additional resource on top of the existing full staff complement to ensure that achievability of the KPIs is realistic.

The RAs **do not propose to allow for** an **asymmetric risk premium in respect of capex disallowances** or a **margin in respect of operational risk**. SEMO did not provide evidence of historic disallowances and the RAs' proposals include a revised framework for capex recovery. It is the RAs' view that SEMO is a low-risk business.

[3] SEM-18-003 SEMO 2018-21 Price Control Decision Paper

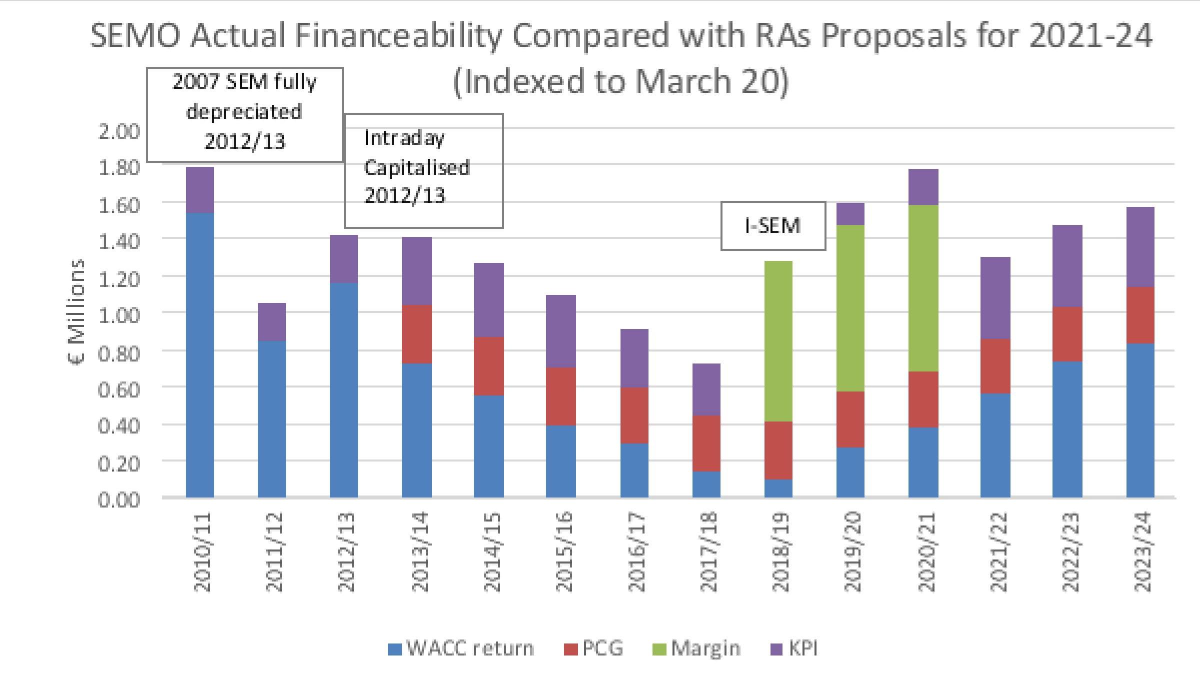


Figure 3: SEMO Actual Financeability compared with RAs' Proposals for 2021-24 period

All proposals within this document are subject to consultation.

Responses to this consultation should be sent to Karen Shiels (karen.shiels@uregni.gov.uk) and Conall Heussaff (cheussaff@cru.ie) by close of business on 21 July 2021.

A decision is expected to be published by the end of August 2021; this will inform the tariff process which takes place in summer 2021.

Contents

1. Introduction
   - 1.1 Background
   - 1.2 Roles and responsibilities of SEMO
   - 1.3 Approach to price control review process
   - 1.4 Principles and Assumptions
   - 1.5 Format and purpose of consultation
2. Participant Consultative Forum (PCF) insight
   - 2.1 Terms of Reference
   - 2.2 High level feedback on key themes explored
   - 2.3 Next Steps
3. Regulatory Framework
   - 3.1 Key points overview: Regulatory Framework
   - 3.2 Summary of current framework
   - 3.3 Summary of SEMO's submission
   - 3.4 Views of Participant Consultative Forum (PCF)
   - 3.5 RAs' analysis
   - 3.6 RAs' proposals for consultation
4. Operational Expenditure (OPEX)
   - 4.1 Key points overview: Opex
   - 4.2 Summary of SEMO's submission
   - 4.3 Resources (FTEs)
   - 4.4 Labour costs
   - 4.5 IT & Telecommunications Costs
   - 4.6 HR, Corporate and Facilities costs
   - 4.7 Finance and Regulation costs
   - 4.8 Agent of Last Resort (AoLR)
   - 4.9 Summary of Opex consultation proposals
5. Capital Expenditure (Capex)
   - 5.1 Key points overview: Capex
   - 5.2 Background
   - 5.3 Market System Release Capital
   - 5.4 Market System Release Support Capital
   - 5.5 Predictable capital projects

5.6 Unpredictable Capex
5.7 Summary of RAs' Total Capex Proposal
5.8 Regulatory Asset Base (RAB), Depreciation, WACC Return
6. Incentivisation
6.1 Key points overview: Incentivisation
6.2 Opex incentives
6.3 Capex incentives
6.4 Performance incentives
7. Financeability
7.1 Key points summary: Financeability
7.2 Background
7.3 SEMO submission
7.4 RAs' analysis
7.5 RAs' proposals for consultation
8. Summary Consultation Proposals and Next Steps
8.1 Summary of RAs' proposals
8.2 Consultation process
8.3 Regulatory reporting and involvement of market participants going forward
8.4 Licence modifications
Appendix A: SEMO Submission- FTEs and Roles
Appendix B: RAs' Proposal for FTEs and Roles
Appendix C: 2021/2024 SEMO Proposed KPIs
Appendix D: 2019/20 KPI Outturn Performance

1. Introduction

1.1 Background

The Single Electricity Market (SEM) is the wholesale electricity market for Ireland and Northern Ireland. It has been in existence since 2007 and revised market arrangements (developed under the 'I-SEM' project) took effect from 1 October 2018.

The development of the SEM in 2007 led to the requirement for a Single Electricity Market Operator (SEMO) to administer the market. SEMO exists as a contractual joint venture between EirGrid plc in Ireland and SONI Ltd in Northern Ireland.

The current SEMO price control (SEM-18-003) covers the period from SEM-Go Live in 2018 to September 2021 - these being the first three years of operation of the revised SEM arrangements. The SEM Committee's 2018–2021 price control decision approved allowances in respect of SEMO's operational expenditure (opex) and financeability. However, at the time of the SEM Committee's determination[4], only a limited capital expenditure (capex) allowance was approved. While all parties recognised that SEMO would require a capex allowance during this period, the SEM Committee decided to review this on an ex-post basis (ie. after expenditure had been incurred), acknowledging that it was difficult for SEMO to predict its capital expenditure requirements robustly prior to the new market arrangements.

Subsequent to the SEMO price control decision for 2018-21, the SEM Committee also conducted a separate consultation on SEMO Key Performance Indicators (KPIs). A decision (SEM-19-033) was published setting out the KPIs to apply to SEMO for the two-year period from 1 October 2019 to 30 September 2021.

The SEM Committee's ex-post review of SEMO's capex for the 2018-21 period was completed in Q4 of 2020; a decision (SEM-21-006)[5] was published in February 2021.

Due to commencement of the new SEM arrangements from 1 October 2018, the above mentioned consultations and decisions were staggered to manage the significant workload at that time within the RAs', SEMO and for market participants. However, now that the new market is in its third year of operations, this price control consultation will revert to covering all areas within one consultation.

The current 2018-21 price control recognised and provided allowances to SEMO based on its new range of roles and responsibilities which differed from the legacy SEM arrangements. These are outlined in the next section.

---

[4] SEM-18-003 was published February 2018. Go-live of new SEM arrangements was October 2018.
[5] SEM-21-006 SEMO 2018-2021 Capital Expenditure Decision Paper
https://www.semcommittee.com/publications/sem-21-006-semo-2018-2021-capital-expenditure-decision-paper

1.2 Roles and responsibilities of SEMO

SEMO is subject to licenses in both Ireland and Northern Ireland and to regulatory scrutiny; this includes the setting of price control allowances which are ultimately recovered from all-island electricity consumers.

Regulatory decisions

In advance of Go-Live of the revised SEM arrangements in 2018, the RAs completed a consultation process to determine roles and responsibilities for key parties. In some cases, assignment of roles was based on allocation as defined by the European Network Codes or Guidelines; for other roles, the SEM Committee gave consideration to stakeholder responses received to the preceding consultation, and to possible synergies which could be availed of in order to create an efficient market in terms of operational aspects and cost impact.

A decision[6] was published in 2015 (SEM-15-077) which outlined that key roles and responsibilities of SEMO include:

- Balancing Market settlement
- Capacity Market settlement
- Administration and maintenance of the Trading and Settlement Code
- Agent of Last Resort function
- Fuel Mix Disclosure

It is the Transmission System Operators (TSOs) rather than SEMO which act as balancing market operator and conduct capacity market delivery.

Licence obligations

EirGrid plc and SONI Ltd have both been granted Market Operator licenses[7] (in addition to their respective Transmission System Operator licenses) in Ireland and Northern Ireland respectively. As a result, they are regulated by the Commission for Regulation of Utilities (CRU) in Ireland, the Utility Regulator (UR) in Northern Ireland and the SEM Committee (SEMC) which is the decision making authority for all SEM matters and consists of representatives from both regulators and independent members.

SEM Trading and Settlement Code (TSC) obligations

[6] SEM-15-077 I-SEM Roles and Responsibilities Decision.pdf (semcommittee.com)

[7] EirGrid plc Market Operator Licence https://www.cru.ie/document_group/modifications-to-eirgrid-market-operator-licence-and-transmission-system-operator-licence-necessitated-to-implement-the-integrated-single-electricity-market-i-sem/cer17036a-eirgrid-market-operator-licence-march-2017/
SONI Ltd Market Operator Licence https://www.uregni.gov.uk/publications/soni-sem-operator-licence-updated-10-march-2017

In addition to compliance with the respective Market Operator licenses, SEMO's role in the market is explicitly defined in the SEM Trading and Settlement Code (TSC), which sets out the rules, procedures and terms and conditions which all parties must adhere to.

SEMO is responsible for entering into, and at all times, administering the SEM TSC. The TSC states that one of the main objectives for the Market Operator is "to facilitate the efficient, economic and coordinated operation, administration and development of the Single Electricity Market in a financially secure manner".

An overview of the areas which SEMO is responsible for under the TSC are outlined in the table below.

Outline of SEMO TSC Responsibilities	
Chapter B	Governance of the TSC Management of modifications to the TSC Management of disputes Queries Registration Deregistration Suspension & termination
Chapters C, D & Appendix G of TSC and Capacity Market Code	Publication of data REMIT obligations
Chapter E	Calculation of Imbalance Prices
Chapter F	Balancing Market Settlement Capacity Market Settlement Imbalance Settlement
Chapter G	Credit & collateral calculation Administration of settlement Reallocation

Table 1.2: Outline of SEMO Trading and Settlement Code Responsibilities

Included in the table above are Imbalance Settlement and Capacity Market Settlement activities which SEMO is also responsible for[8] given that there are synergies between the functions in terms of payments to generators and levying of charges on suppliers and energy imbalances. Also captured above are SEMO's responsibilities under REMIT.

In addition to the above mentioned roles and responsibilities there are other functions which SEMO will continue to undertake into the 2021-24 period. These are:

1) ***Fuel Mix Disclosure which is required in Ireland and Northern Ireland***
   Annual reports on the fuel mix of suppliers in the SEM are published by both the CRU and UR. SEMO administers and calculates the fuel mix figures from information

[8] SEM-15-077 Decision Paper on I-SEM Roles and Responsibilities

provided by electricity suppliers on a calendar basis and on behalf of the Regulatory Authorities (RAs). Suppliers are then obligated to publish their supplier fuel mix and environmental impact (CO^2 emissions) information alongside the average for the all-island market on their bills for comparison.

2) ***Agent of Last Resort (AoLR) function***
This is a relatively new requirement on SEMO since 1 October 2018. The SEM Committee[9] decided to include a transitional mechanism to help smaller players to access the market in ex-ante timeframes without necessarily needing to invest in trading capability of their own. The intention of this mechanism is to facilitate participation of smaller players in the day-ahead market and the intraday market, through the provision of bidding and settlement transaction services. This addresses a potential barrier to entry to their participation in these markets. The role of the AoLR is to act as a bidding agent in the ex-ante markets on behalf of eligible generators. SEMO is obligated under the Market Operator licences to develop, administer and maintain this activity. AoLR fees are published within SEMO's annual charging statement. While the function has not been availed of to date, it is the view of the RAs and SEMO that it is prudent to continue into 2021-24. This is discussed in more detail in section 4.8 of Chapter 4.

1.3 Approach to price control review process

The RAs established a price control review team in September 2020. Preparation and inception of the project took place from September – October with a high-level milestone timetable agreed with SEMO. A regulatory review and analysis of SEMO's price control proposals took place from December – April with a view to developing a 'minded-to decision' type consultation by the start of May 2021[10].

Kick-off engagement with SEMO commenced in September 2020 and a Business Plan Questionnaire (BPQ) and guidance for completion of business cases issued to SEMO in October; the BPQ had been provided to SEMO for advance review to ensure that the format aligned with internal processes to aid population.

SEMO submitted its price control submission in two tranches: the Opex submission was received in December 2020 and the Capex submission was received in mid February 2021.

Discussion between the RAs and SEMO on the price control submission followed in January 2021. An Opex and KPI workshop was convened in mid-January. SEMO SMEs (Subject Matter Experts) presented proposals with additional context to explain the backdrop for the

[9] I-SEM High Level Design
[10] Due to factors outside of the RAs' control, the date for consultation extended to the start of June 2021.

submission; this was carefully coordinated by SEMO and well received by the RAs. A Capex Q&A session and a Financeability workshop were held between the RAs and SEMO in mid-April 2021; two bilateral meetings about the appropriate regulatory framework for the price control also took place at the end of April/ beginning of May.

The RAs issued a series of Question Sets to SEMO from January to April; these encompassed over one hundred questions on issues for SEMO to provide additional explanation or clarity. All responses were received within agreed timeframes which aided the review.

In addition to bilateral engagement between the RAs and SEMO, a Participant Consultative Forum (PCF) was established in March 2021 to ensure that market participants' views were well considered in development of the price control proposals. An open invitation[11] issued for expressions of interest to participate; membership was discussed with SEMO and decided by the RAs. The participants on the Forum are noted below.

SEMO Price Control Participant Consultative Forum (PCF) membership
The Electricity Association of Ireland
Wind Energy Ireland
Renewables NI
Irish Solar Energy Association
Demand Response Association of Ireland
Federation of Energy Response Aggregators
Mutual Energy/ Moyle Interconnector
Electricity Storage Ireland
University College Dublin Energy Institute

Table 1.3: Participant Consultative Forum membership

The intention of the PCF was to provide insight to areas of support or disagreement with SEMO to enable both the RAs and SEMO to gain an understanding of issues in an open and transparent way. An introductory meeting of the Forum was held in March with three workshops in sequence during March and April; this allowed for open dialogue and constructive exchange of viewpoints about opex, capex and KPIs. The PCF was not privy to information on SEMO's proposed costs or financing information. Feedback received from the Forum has been incorporated throughout this consultation document and a high level summary of feedback can be found in Chapter 2.

In terms of approach to reviewing the price control proposals, the RAs reflected on the PCF feedback that there is no significant change expected to the balancing market during the 2021-24 period, and that implications of Celtic interconnector and microgeneration are beyond the timelines for this price control. Given the relatively recent Go-Live of the revised

[11] SEM-21-014 Invitation for expressions of interest to join a Participant Consultative Forum (PCF) for the SEMO Price Control 2021-24 review process | SEM Committee

SEM arrangements, there appears to be little appetite amongst participants for further major change at this juncture. However, there is an acceptance that the future needs to be planned.

1.4 Principles and Assumptions

Duration

The duration of the next SEMO price control will be three years (1 October 2021 to 30 September 2024), consistent with controls determined since 2010. The assumption of a three-year duration was shared with, and agreed to, by SEMO in advance of submission of its price control forecasts. Whilst a longer price control duration would increase tariff stability for customers, it would also be likely to increase incentives for productive efficiency but lower allocative efficiency. Greater uncertainty on the scale and nature of future investment would also exist.

The revised market arrangements have taken longer to bed down than expected; it therefore seems sensible to retain a three-year duration to allow SEMO to reach a more acceptable level of stability. The RAs expect the market to be in a much more steady state by the end of 2021 once the bi-annual system releases have taken place in 2021[12].

Form of the price control

Chapter 3 discusses SEMO's proposals and the RAs' considerations in developing a proposed framework to underpin the SEMO 2021-24 price control.

Efficiencies

SEMO stated in its submission that when it comes to incentivisation of efficiency by SEMO, the primary focus must be that of allocative as opposed to productive efficiency.

The RAs expect SEMO to strive to collectively seek:

(1) lower cost ways of doing things ('productive efficiency');
(2) the best way to use resources ('allocative efficiency'); and
(3) new and better ways of doing things ('dynamic efficiency').

The RAs do not agree that one component should be prioritised over or come at the expense of others.

Incentivisation

[12] Release G (June 2021) and Release H (October 2021)

The purpose of incentives is to put emphasis on the outputs being delivered while allowing SEMO the flexibility to operate, administer and develop the SEM in an efficient, economic and financially secure manner.

Cost incentives will allow SEMO to keep the difference between allowed and efficiently incurred operating expenditure; performance incentives will encourage enhanced service levels. Meanwhile, a flexible investment framework will allow SEMO access to funding in response to changing needs in order to facilitate a flexible approach to investment.

Chapter 6 discusses the opex, capex and performance incentives in relation to this SEMO price control for 2021-24.

Financeability

The price control proposals have been assessed with respect to the financeability of EirGrid Market Operator (MO) and SONI MO.

Chapter 7 provides insight to the RAs' assessment and proposals.

Indexation

All costs in this consultation are based on March 2020 prices, consistent with SEMO's submission.

An adjustment will be made within market operator tariffs to adjust for out-turn inflation. This is carried out as part of the k-factor trueing up adjustments undertaken each year as part of the tariff process. The indexation rate applicable will be a blended rate of the Consumer Price Index[13] in Ireland (75%) and the Consumer Price Index including owner occupiers' Housing costs (CPIH)[14] in Northern Ireland (25%).

This represents a change to indexation for Northern Ireland which previously was indexed using the Retail Price Index (RPI). The change is consistent with the indexation applied to the SONI 2020 – 2025 System Operator price control.

Revenue recovery apportionment

Consistent with previous SEMO price controls, the 2021-24 price control will be provided on a combined basis between EirGrid and SONI on a 75% and 25% basis respectively, with revenues being ascribed to EirGrid in its capacity as market operator for Ireland and to SONI in its capacity as market operator for Northern Ireland. The current apportionment is also detailed in the Market Operator Agreement[15] between EirGrid and SONI.

Other assumptions

[13] As published by the Central Statistics Office in Ireland
[14] As published by the Office for National Statistics in the UK
[15] Deed of Amendment and Restatement of the Market Operator Agreement Dated 2018

In addition to the principles outlined above, we provide a list of other key assumptions which may impact on the proposals within this consultation paper or impact the k factor trueing up adjustment process, which are:

- Business-as-usual approach to operating and maintaining the balancing market;
- Changes in legislation or regulation that impose unforeseen costs to SEMO's operations;
- Variations in market energy demand from the level assumed in tariffs will be treated on a pass through basis;
- Tariff revenue associated with accession or participation fees under the TSC is separately recoverable and declared in the annual k factor adjustment process;
- Foreign exchange rate assumed within SEMO's submission and this consultation paper is €1:£0.9 with actual foreign exchange rate gains or losses catered on a cost pass through basis as part of the k-factor adjustments;
- Interest on borrowings associated with the SEM business are catered on a cost pass through basis;
- Interest received on surplus funds associated with the SEM business are catered on a cost pass through basis.

1.5 Format and purpose of consultation

This document outlines the RAs' consultation proposals for the next SEMO price control, due to commence on 1 October 2021. The proposals have taken into consideration the outcome of detailed analysis of SEMO's proposals and feedback from a representative body of market participants (the Participant Consultative Forum (PCF)); our proposals are subject to consultation in advance of publishing a final decision at the end of August 2021.

We have prepared a 'key points' overview at the start of each chapter that discusses key building blocks of the price control to outline the principal points for stakeholders to be aware of:

- Chapter 2 provides an overview of key messaging from the Participant Consultative Forum (PCF) who represented a broad range of market participants in advance of publication of this consultation;
- Chapter 3 outlines proposals for an appropriate price control framework for SEMO going forward;
- Chapter 4 describes our review of SEMO's forecasted operating expenditure requirements during 2021-24;
- Chapter 5 discusses our review of SEMO's proposals for capital investment during 2021-24;

- Chapter 6 outlines the approach taken to incentivisation of SEMO, including consideration of the application of key performance indicators (KPIs);
- Chapter 7 provides views on SEMO's financeability;
- Chapter 8 closes the consultation with Conclusions and Next Steps.

Rather than pose specific questions to stakeholders within each chapter, we request that general views on the RAs' proposals are provided by respondents with a clear reference to each chapter/element of the price control (for example: 'Views on price control framework; Views on opex; Views on capex etc) to aid review. We welcome comments from all interested parties.

Responses to the proposals within this consultation should be sent to Karen Shiels (karen.shiels@uregni.gov.uk) and Conall Heussaff (cheussaff@cru.ie) by close-of business on 21 July 2021.

2. Participant Consultative Forum (PCF) insight

2.1 Terms of Reference

In February 2021, the RAs invited market participants to submit Expressions of Interest to join a newly established Participant Consultative Forum (PCF), specifically to provide insight to and feedback on the SEMO 2021-24 price control proposals.

A terms of reference was provided to interested parties[16].

The PCF was not privy to financial information or SEMO's forecasted costings; rather, the key concepts of SEMO's price control proposals were discussed in order to get a sense of the effectiveness of day-to-day operations, what works well, and where improvements might be required without being influenced by the magnitude of potential costs involved. The PCF was also a useful conduit to obtain an indication of appetite for future change and what SEMO's priorities over the next three years should be, while remaining cognisant of SEMO's operations being underpinned by a strict legislative and regulatory framework.

A welcome session, two workshops (to cover Opex, Capex and Key Performance Indicators) and a close-out session were held with the PCF over a two-month period. SEMO attended and participated in all. Members of the PCF were encouraged to provide written feedback after completion of the suite of engagement; any feedback from the PCF is not limited to that received in advance of this consultation and indeed further feedback is welcomed on the RAs' price control proposals.

2.2 High level feedback on key themes explored

Desired outcomes

SEMO introduced a helpful synopsis of its price control proposals to the PCF under the following four desired outcomes for the 2021-24 period:

(1) A well-functioning market (including the necessary systems to support it)
(2) Good service levels and user experience for participants
(3) Adherence to European Legislation, and Governmental and regulatory direction
(4) Under-pinned by a financeable regulatory settlement and framework

The PCF generally agreed with the sentiment of the desired outcomes. SEMO's key function of settlement of the market was acknowledged.

[16] SEM-21-014 Invitation for expressions of interest to join a Participant Consultative Forum (PCF) for the SEMO Price Control 2021-24 review process | SEM Committee

It was noted that participants would have expected to see a well-functioning market by this stage and that any improvements for business-as-usual need to be prioritised in the near-term rather than by the end of the 2021-24 period; it was suggested that providing sufficient computer hardware and high-quality personnel would go some way towards this.

There was general agreement that the markets are currently not able to perform an all-encompassing role as their designs have not evolved sufficiently for (for example) energy storage and Demand Side Flexibility; there was a view that this could be seen as being ‘not fit for purpose’. In addition to noting that a well-functioning market means enabling new generation types to be facilitated, participants noted that this includes reactivity/flexibility in respect of MO-related market rules or systems changes.

In terms of good service levels, there was acknowledgement that service levels are not acceptable at present, and workarounds should have been developed by this point; in particular, settlement emphasis should be placed on market participants’ needs rather than SEMO’s needs. It was also noted that the relationship with SEMO’s external contracted vendor must be addressed insofar as it affects the realization of service levels, user experience and good market function. There was also comment that maximum value must be extracted from SEMO’s vendor in terms of monies already spent and the cost of new arrangements.

Participants were keen on further inclusion of metrics/measurability against each desired outcome to allow them to be more meaningful. Clarity was requested regarding governmental targets and the extent to which they are incorporated, but the PCF generally accepted SEMO’s overall aspirations in terms of ‘desired outcomes’.

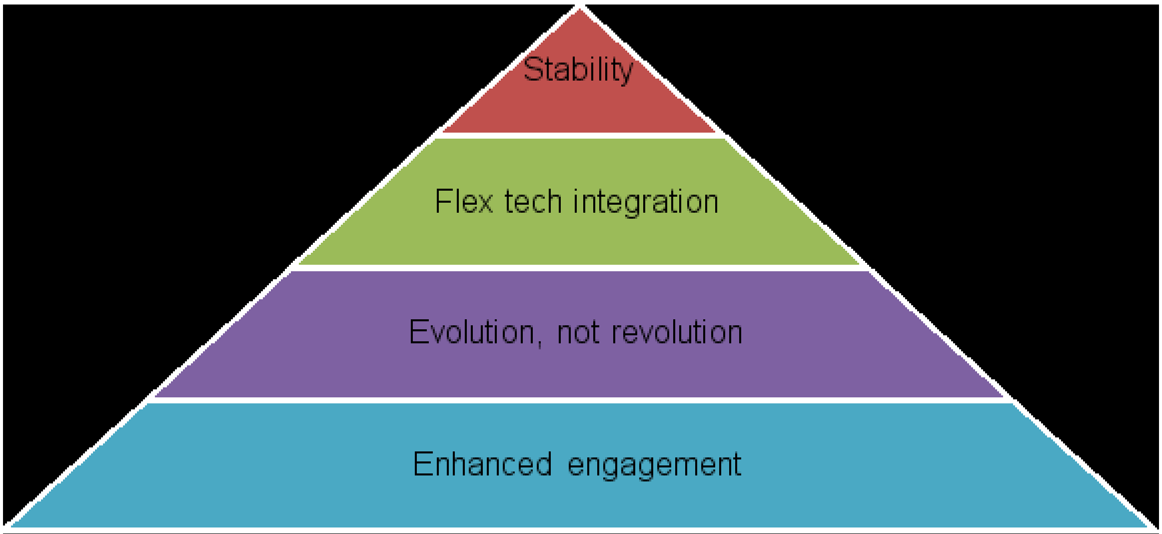


Figure 2.2: Key themes of the PCF discussions

Stability of current markets versus future markets development

One of the repeating themes of discussion during the PCF sessions was lack of stability of the current SEM, with acknowledgement that there needs to be a focus on planning for future developments so that participants know what change is coming and when. Participants recognised a need to ensure that the significant monies recently invested in SEM are used well and provide a tangible value-add with a focus on reducing balancing market outages, known issues and system release lead times. Participants agreed that a period of stability with no major changes is required to allow catch up and incorporation of existing technologies while ensuring that there were no premature attempts to focus on new market developments which would be harmful to existing participants. One participant suggested that third party verification could confirm levels of stability.

During dialogue with the PCF, it was established that there is a keen desire for SEMO to improve its business-as-usual operations to a level of stability expected after three years since Go-Live of the revised SEM arrangements, particularly where the settlement systems work as expected under the industry codes. There was also recognition that an improved testing and change management process is necessary, with sufficient resources to design, test and monitor post-deployment and with scope to involve participants.

Participants were sympathetic to the need for SEMO to be aware of potential future developments, however this should not be detrimental to focusing on improvements in the here and now. There was a view that Market System design changes can address future targets and additional interconnection at a later date and that getting current systems fixed and adjusted for current participants is enough of a challenge, without planning for too far into the future.

Feedback was received indicating that there must be a full review of all interacting and future activities that are considered within the scope of SEMO's work along with clear and defined deadlines and resources outlined to ensure that (a) current projects do not suffer and (b) there is certainty and confirmed delivery.

Despite the preference for focus on stabilizing the market, the PCF noted any requirement to adjust the trading and settlement systems to match rule changes should be planned well in advance of the rule change go-live.

Facilitation of flexible technologies

A number of participants raised the need for SEMO to be able to manage a diverse range of product including new technology and the need to facilitate the speed of change. There was a view that prioritisation of issues and changes required was crucial. Part of this may include enhancing SEMO's understanding of the technology perhaps through use of a subject matter expert (SME) assigned to help remove the existing barriers to entry. In addition, suggestions have been made by members of the PCF to establish a working/focus group approach going forward to apply to individual work areas or issues.

Evolution, not revolution

Following on from considerations about the need for stability versus planning for future development, the consensus amongst the PCF was that the market needs to evolve during the 2021-24 price control period, but not to undergo a complete reform akin to the introduction of Intraday Trading or the I-SEM programme. These comparative projects helped to put participants' expectations into perspective for the RAs.

It was also suggested that the market operation system is far behind where it is perceived to be, such that further change (too prematurely) could be harmful to existing participants or undermine investment signals throughout the market. The importance of any required changes building on the existing operational capability was noted. This should not however detract from SEMO meeting its primary objective to provide a well-functioning market for participants.

The PCF requested clarity on the extent of market changes that will be delivered during the 2021-24 price control period, acknowledging that SEMO's resources will need to be allocated to priority work areas, vendor capacity should be maximized, and synergies amongst the EirGrid Group should be availed of where possible to create efficiencies.

Engaging approach to dealing with 'known unknowns'

During the discussion with the PCF it was established that within current publications both by the RAs and EirGrid Group, it is difficult to conclude what is required and when but that the existing approach to unknowns is insufficient.

Feedback indicated that communication, risk and contingency planning were lacking particularly in relation to Brexit. It was also commented upon that the 'known unknowns' are an additional challenge for SEMO. However, it was felt that the RAs should question and resist, unless financial assistance is secured from outside of the revenue control.

Participants were keen that more communication and engagement is held by SEMO so that participants know what changes are coming and when.

2.3 Next Steps

While no further engagement is expected with the PCF during the price control consultation period, positive feedback was received about the establishment of this type of focus group for SEMO-related issues.

This consultation makes known the RAs' intention to introduce more market participant involvement going forward, particularly with respect to SEMO's capital expenditure, plans for market development and KPIs. This will allow visibility of what is being delivered which will improve all-round accountability.

3. Regulatory Framework

3.1 Key points overview: Regulatory Framework

The regulatory framework is the overarching structure to apply to key aspects of the price control such as opex and capex and impacts on how allowances are set in advance of the price control period and the k factor adjustment process which follows after the completion of each tariff year.

SEMO maintains that there are currently gaps within its regulatory framework which need to be addressed and that this adds a significant level of uncertainty to SEMO's proposals.

The recovery framework for opex will not change: an ex ante approach to setting opex allowances will continue to apply to this price control and, consistent with the approach taken in previous SEMO price control decisions, the RAs expect to continue to incentivise SEMO's opex via Revenue Cap (RPI-X) regulation. SEMO did not propose any change to the current framework.

In terms of capex, SEMO submitted to the RAs that a number of 'known unknowns' will occur during the 2021-24 SEMO price control period in addition to projects which it has provided business cases and estimated costs for; however, costs have not been projected by SEMO for any 'known unknown' projects. The RA's recognise the need to create a framework within which, in return for providing monopoly services to an acceptable quality, SEMO receives a reasonable assurance of a revenue stream for 2021-24 that will cover its costs including an appropriate rate of return on investments made and the recovery of capital invested.

The RAs have proposed a framework for SEMO in keeping with determinations made by the CRU and Utility Regulator for the most recent TSO price controls with a focus on results rather than input costs.

A revised framework will apply to SEMO's capital projects from 1 October 2021. This will involve:

- Continuation of provision (with a proposed allowance of €17.2M) for biannual market system releases and associated support.
- Re-categorisation of capital projects depending on how certain the business case is. If more certain, a project will be categorised as 'predictable'. If less certain, unforeseen or a 'known unknown', a project will be categorised as 'unpredictable'.
- The predictable capex 'pot' is based on project costs relating to 'more certain' projects as estimated by SEMO and provided for in business cases to the RAs. This equates to a €6.3M proposed allowance.

- The unpredictable capex 'pot' is based on project costs relating to less certain (but previously categorised as 'predictable') projects as estimated by SEMO and is expected to also cover unforeseen hardware and software upgrades and 'known unknowns'. It will be at SEMO's discretion to use the unpredictable capex allowance of €4.7M as appropriate, but legislative, regulatory and participant obligations or preferences should be taken into account in its considerations. This approach is to acknowledge uncertainty and allow SEMO flexibility to react to priorities in a timely manner without the need to seek additional regulatory approval.

In terms of capex recovery:

- Ex-post recovery for predictable (and certain) capex: ex-ante allowances will be provided as an estimate and an ex-post regulatory review will be conducted to assess if:
    1. Expenditure has been efficiently incurred;
    2. Expenditure was demonstrably necessary;
    3. Expenditure was incremental to existing price controls and capable of being robustly validated by the RAs.

- Ex-post recovery for unpredictable (uncertain, unforeseen or 'known unknown') capex:
    - An ex-ante allowance will be provided as an estimate, but to a cap due to the level of uncertainty involved. Should SEMO foresee exceeding the allowance, SEMO can approach the RAs for additional funding. The RAs may consult on any submissions for additional funding with stakeholders.
    - It is envisaged that any project updates be communicated with participants regularly, particularly to ensure appropriate prioritisation.
    - An ex-post regulatory review will be carried out by applying the same principles to that for predictable capex.

To bolster the framework, an enhanced regulatory reporting regime will be established. Enhanced regulatory reporting will be implemented to allow visibility to the RAs and participants of what SEMO is delivering and afford the opportunity to influence prioritization of projects; this will improve accountability and is particularly important in light of the recognised uncertainty over the 2021-24 period. SEMO suggested that a premium should be recoverable in respect of the 'downside only' risk which the business faces for capex disallowances after a regulatory review on an ex-post basis (ie. it is more likely that the RAs will reduce the amounts recoverable than increase them). This is discussed in Chapter 7 as part of the RAs' review of SEMO's financeability.

3.2 Summary of current framework

Under the current regulatory framework, SEMO is remunerated for what it spends efficiently. The current regulatory framework for SEMO involves:

Opex: Currently, SEMO is subject to revenue cap (RPI-X) incentive regulation with an X of 0.3 applied.

Essentially, for the duration of the price control any opex efficiencies/ savings are retained by SEMO; overspends must conversely be absorbed by them. This approach should encourage efficiency by SEMO (through lower costs) and the revealing of efficient costs over a three-year period which then inform the subsequent price control at which point the cost savings are passed on to consumers.

Capex: At present, SEMO is in receipt of a capex allowance which relates to market system releases, 'predictable' and 'unpredictable' capex.

(1) The predictable capex allowance is provided (generally)[17] by the RAs on an ex-ante basis after reviewing defined projects and associated capital costs, with ex-post adjustments via the annual tariff process. Predictable capex is depreciated over a five-year period and subject to rate of return regulation, whereby capital additions are placed on SEMO's regulated asset base (RAB) and attract a blended WACC (based on the specified proportions between EirGrid TSO and SONI TSO).

(2) The unpredictable capex allowance (for replacement servers and additional software licenses etc.) is provided to a defined cap annually and allowed on a pass through basis; this is provided for specific defined expenditure categories.

3.3 Summary of SEMO's submission

Opex: SEMO did not propose any changes to the framework which applies to opex recovery describing it as a basic and powerful incentive to reduce costs.

Capex: As discussed in more detail in chapter 5, SEMO's capex submission consists of the following categories:

- Market system releases and associated support
- Predictable capex
- Unpredictable capex
- Known unknowns

[17] Ex ante allowances were not provided for the 2018/19 and 2019/20 capex; actual costs incurred were instead reviewed by the RAs on an ex-post basis. This was a 'one-off' exercise for the SEMO price control review process, allowed by virtue of the extent of unknowns due to 'I-SEM' implementation.

Within the ‘known unknowns’ category, SEMO did not provide a cost estimate due to uncertainty but did assume that work related to Brexit (Loose Volume Coupling), the Clean Energy Package, the Electricity Balancing Guideline, and battery storage facilitation is likely to be required during the 2021-24 price control period.

No change is proposed by SEMO to the framework for unpredictable capex.

However, in addition to retaining the existing RAB/WACC recovery mechanism for the 2021-24 price control, SEMO proposes a number of new mechanisms in respect of predictable capex and ‘known unknowns’, including:

- Ex-post recovery of capex (ie. recovery of actual expenditure incurred) with the:
    - introduction of guidelines by the RAs for an assessment of ‘Demonstrably Inefficient and Wasteful Expenditure’ when carrying out an ex-post review of capex and with
    - introduction of a 3% asymmetric risk premium to account for the greater possibility of downside risk to SEMO;
- Net Present Value (NPV) adjustment, using the WACC, if SEMO is to bear the risk of cost recovery and RAB/WACC return until the capital project is complete and capitalised and included on the Fixed Asset Register;
- Applying a 20% ‘factorisation’ to reduce the overall total estimated capex costs;
- A flexible approach to capital expenditure.

The RAs note that the proposals by SEMO for an ex-post recovery of capex subject to a regulatory assessment of demonstrably inefficient and wasteful expenditure (DIWE) and the application of a NPV adjustment most closely aligns with the approach applied to I-SEM implementation costs. An Agreed Approach Document (AAD)[18], published in 2015 and agreed to by the RAs and EirGrid Group, included an Expenditure Recovery Framework which outlined the principles for I-SEM implementation cost recovery.

3.4 Views of Participant Consultative Forum (PCF)

The Participant Consultative Forum was not asked to consider SEMO’s price control framework, but brief discussion took place during SEMO’s presentation of its capex proposals. The PCF was encouraged by the necessity for a flexible framework for capital projects; no views were requested or provided about cost recovery.

[18] I-SEM Agreed Approach Document between the UR/CER and EirGrid and Engagement going forward | SEM Committee

3.5 RAs' analysis

Opex

RPI-X regulation already incentivises SEMO to reduce opex by increased efficiency of processes and lower input prices. Any efficiency and savings are retained by SEMO during the price control period; overspends must conversely be absorbed by them.

Within the current 2018–2021 SEMO price control an efficiency factor (X) of 0.3 is applied as a reduction to the indexation (RPI-0.3). No change to the opex recovery framework was suggested by SEMO and no change is proposed by the RAs to application of RPI-X for opex or to the factor for the 2021-24 price control.

Capex

The RAs have considered each element of SEMO's proposals in turn:

Ex-post recovery of capex

SEMO has proposed recovery of capex on an ex-post basis (ie. recovery of actual costs incurred, subject to regulatory review) based on uncertainty around cost projections. SEMO has not assigned forecasted costs to 'known unknowns' but SEMO has assigned costs to each of fourteen predictable capex projects and market system release and release support costs.

SEMO states that 'known unknowns' will lead to uncertain costs similar to the experience in forecasting costs for I-SEM implementation. In the case of I-SEM implementation costs, EirGrid and SONI presented a high level estimate of costs (to be incurred across the TSO and MO businesses) to the RAs on an ex ante basis and any revisions to that cost estimate were also presented in a timely manner; the RAs approved a high level 'cost envelope' so there was a known indication of costs involved.

Introduction of DIWE assessment (and guidelines) and 3% asymmetric risk premium

An ex-post approach to actual cost recovery with a DIWE assessment rests on the RAs disallowing inefficient or wasteful expenditure after it has been incurred. Such assessments may be considered to be strongly judgment-based and rely on being able to identify relevant evidence after the fact. A review at the end of the price control may create an uncertainty that could impact SEMO's financeability.

The RAs have considered perceived pros and cons of a DIWE assessment.

Perceived 'pros':

(1) RAs have the ability to discount some inefficient/wasteful expenditure in their subjective view;
(2) An ex-post recovery subject to DIWE would ensure SEMO does not try to minimize costs, delay investment and adopt risk averse behaviours which are not in the consumer interest.

Perceived ‘cons’:

(1) Information asymmetry would make DIWE assessment difficult for the RAs; ex-post review will be based on ex-ante information and options available to SEMO when the project is undertaken;
(2) On a relative basis the probability of disallowance by the RAs may be lower – this could have the perverse outcome of SEMO not trying to minimize costs, prematurely investing and adopting a more tolerant approach to risk;
(3) Resource intensive process for the RAs at certain points in the year; the essence behind the ‘DIWE’ concept is that the onus lies on the regulators to provide that expenditure has been demonstrably inefficient or wasteful, with the underlying assumption being that expenditure has been efficient.

The RAs have reviewed the cost recovery criteria which applied to I-SEM implementation costs. These were agreed amongst the RAs and EirGrid Group in 2015. Rather than develop new ‘DIWE’ guidelines where the onus lies on the RAs to evidence demonstrably inefficient or wasteful expenditure, the principles focus on demonstration of efficient, necessary and incremental (to other price controls) expenditure by SEMO.

Net Present Value (NPV) adjustment

This proposal by SEMO is similar to the approach taken in respect of I-SEM implementation costs in which a neutral NPV adjustment was applied. This was in recognition of the I-SEM project spanning a number of years and that the cost recovery and WACC/RAB return commenced when the project/asset had been completed and subsequently applied to the designated Regulatory Asset Base.

SEMO is proposing that the above approach be applied if cost recovery and RAB/WACC return are subject to project completion and capitalization/inclusion on the Fixed Asset Register.

This NPV adjustment, while appropriate for the I-SEM project, is not considered relevant to this SEMO price control. It is the intention of the RAs that both cost recovery (in the form of depreciation) and RAB/WACC return relating to the final capital cost will commence when a project/asset is commissioned and the total project/asset has been capitalized and included on the Fixed Asset Register.

However, as has been the case for SEMO over the years, an estimated depreciation and RAB/WACC return are included within SEMO's price control allowances and applied to tariffs allowing SEMO to recover an estimated capex which is adjusted to reflect the actual depreciation and return values as part of the k factor trueing up process. SEMO is not expected to bear the risk of funding the full project cost of all projects through to completion, thereby negating the need for a neutral NPV adjustment in this SEMO price control.

'Factorisation' of 20% applied to overall total estimated capex costs

SEMO outlined an estimated cost associated with each project relating to the market system releases and to the fourteen 'predictable' capex projects. SEMO then applied a 20% factorisation to the total overall proposed capex cost which *reduced* the total estimate by 20%.

The rationale for this factorisation adjustment is unclear both from the submission and from responses received from SEMO to the RAs' queries on this. For example, SEMO explains that "on balance, it is the view of SEMO that an overall factorisation of 20% represents a reasonable balance of the various factors".

In the absence of a clear explanation by SEMO of the percentage chosen and the uncertainty it may create in terms of risks[19] associated with SEMO's overall financeability the RAs have chosen not to consider this proposal any further.

In due course the estimated allowance will be adjusted to reflect actual costs where SEMO will be expected to provide evidence that the expenditure was efficiently incurred, demonstrably necessary and was incremental to existing price controls and capable to being robustly validated by the RAs.

Flexible approach to capital expenditure

The RAs recognise that SEMO will need to evolve over the next three year price control period to ensure it is well placed to respond to and aid the transformation of the electricity system over the coming decades to help facilitate net-zero. The RAs appreciate that elements of the capex programme are difficult to predict and forecast at this time for the 2021-24 period.

The RAs have reviewed the approach applied to flexibility in other price controls. The RAs do not want, through lack of funding, to prevent SEMO from meeting its obligations, supporting the energy transition, or delivering consumer value. Furthermore, the RAs do not want to encourage SEMO to minimize costs, delay investment and/ or adopt risk averse behaviours.

[19] SEMO note in their submission the application of a 20% factorisation does increase operational gearing of the licensee

The RAs agree that SEMO needs to have flexibility to adapt and find the best solutions to system challenges, particularly with respect to the 'known unknowns'. Any approach to unpredictable (including 'known unknown') capex should allow for flexibility and a more agile response by SEMO to requirements and obligations. The existence of an allowance for more uncertain initiatives with the option to substitute projects on a priority basis should alleviate the possibility of unnecessary delays rather than rely on an uncertainty mechanism.

Introduction of an uncertainty mechanism for SEMO as part of its revenue formula has been considered by the RAs; this would involve SEMO submitting individual business cases to the RAs on a project-by-project basis for approval. The approvals process could take many months which could affect SEMO's ability to invest in a timely manner.

We do consider that, going forward, it is in consumers' interests for the regulatory framework to encourage SEMO to provide strong evidence and supporting analysis as part of its revenue recovery submissions when seeking additional funding which ultimately comes from consumers. While the need for flexibility is appreciated, the RAs expect to receive reasonable cost estimates for projects which are claimed to be potentially significant in future.

3.6 RAs' proposals for consultation

The RAs do not want to restrict SEMO's ability to respond to developments but a straight cost pass-through for capex offers the weakest form of incentive for securing efficiency.

The RAs propose to provide an ex ante allowance for all capex. The allowance for unpredictable capex will be capped; if SEMO foresees exceeding the allowance, a submission for additional funding can be made to the RAs which may be subject to public consultation.

Actual costs for both predictable capex and unpredictable capex (to include 'known unknowns') incurred will be subject to final out-turn (ex post) efficiency review and adjusted in line with actual expenditure through the annual tariff process. The RAs' ex-post review will assess if:

1. Expenditure has been efficiently incurred;
2. Expenditure was demonstrably necessary;
3. Expenditure was incremental to existing price controls and capable of being robustly validated by the RAs.

For the avoidance of doubt, the onus will lie with SEMO to demonstrate that expenditure has been incurred in line with the criteria above. We do not propose to introduce DIWE guidelines, or allow for a 3% ‘asymmetric risk premium’ in this respect (this is discussed further in Chapter 7).

We consider that there is merit in conducting a review with the assistance of a market participant focus group for the unpredictable/uncertain/unknown projects during the price control period since many of SEMO’s proposals require further development. Further development of proposals would improve reliability of SEMO’s costings and ensure value-add for consumers. This will be considered further by the RAs over the coming months.

4. Operational Expenditure (OPEX)

4.1 Key points overview: Opex

SEMO's price control opex submission indicates a predicted 'over-spend' of c.2% on the regulated opex allowance for the 2018-21 period; this is based on actual expenditure for the first two years of that period (which collectively indicate an under-spend of €1.8M) and a forecast for the final year (projecting an over-spend of €2.6M), totaling €30.6M.

SEMO's opex proposals for 2021-24 total €44.9M; this represents an overall 46% increase on estimated costs incurred in 2018-21 with a 44% increase in labour costs, a 38% increase in IT & Communications costs, an increase of 25% for HR, Corporate and Facilities costs, and an increase of 191% for Finance and Regulation costs compared to costs incurred in the 2018-21 price control. The key reasons for the forecasted increases are:

- SEMO requested 15.5 additional FTEs to complement its existing staff of 59.5 FTEs.
- SEMO proposed an average salary of €87K to apply to all FTEs. This compared to an actual average salary of €83.5K for the 2018-21 period.
- SEMO's IT & Telecommunications cost forecasts included a new 'strategic initiatives' costline; the forecasts also included proposed increases in outsourced support and a new testing service.
- HR related costs increased in line with SEMO's proposed increase in headcount and travel costs were proposed to revert to 'pre-Covid' levels.
- SEMO proposed to introduce two new significant initiatives within the 'Finance and Regulation' costs which accounted for 15% of the category.

We expect that the SEM, on an operational day-to-day basis, will have matured early on during the 2021-24 price control period and that lessons will have been learned by SEMO's 'lived experience' and participant feedback in terms of improved operation, performance and service levels.

We recognise that SEMO has had difficulties in filling its allowed staff complement during the first two years of the current price control. Further to having achieved full allowed capacity, the RAs propose to allow an additional 5 FTEs (of 15.5 requested). The majority of proposed additional resources are in respect of future planning and associated stakeholder engagement.

Compared to SEMO's requested average salary of €87K p.a. per person, the RAs propose to allow €83.5K. This is based upon the average actual/best estimate values provided by SEMO for years 2018/19 (€82.3K), 2019/20 (€81.0K) and 2020/21 (€87.1K).

The IT & Telecommunications forecasts have been reduced by around one-third to reflect an expected reduction rather than increase in IT-related fixes since I-SEM Go-Live going forward. The RAs have also considered the IT & Telecommunications opex forecasts alongside SEMO's capex submission which has a heavy IT-focus; this is discussed in Chapter 5.

SEMO's forecasted costs in respect of HR, corporate services, facilities, finance and regulation have been adjusted in line with the approved internal FTE headcount and a number of 'new' initiatives have not been allowed for due to brief and not well evidenced business cases being presented.

	SEMO actuals/ best estimate 2018-21	**SEMO submission 2021-24**	**RAs' proposals 2021-24**	***Variance***
OPEX	***Total € million***	**Total € million**	**Total € million**	
Labour	*13.3*	19.2	16.2	*-16%*
IT & Telecommunications	*10.7*	14.9	9.9	*-33%*
HR, corporate and facilities	*5.1*	6.3	5.1	*-22%*
Finance & Regulation	*1.1*	4.5	1.5	*-66%*
	30.3	**44.9**	**32.7**	*-27%*

Table 4.1: Opex proposals by key categories 2021-24

4.2 Summary of SEMO's submission

SEMO made a submission for opex in December 2020 to the RAs requesting a total of €44.9 million for the 2021-2024 price control period. The forecasted costs reflect a 46% increase in operating costs compared to predicted costs incurred during the previous three-year period.

SEMO acknowledges in its submission that there is a significant initial increase in the requested opex, but noted that throughout the 3-year period from 2021-24 the revenue requirement remains relatively flat.

SEMO has stated that the forecasted level of opex during 2021-24 is to facilitate a 'business as usual' approach to operating the market. SEMO also states that the new market has not reached the level of maturity for operational and process efficiencies and that it is not expected to reach this level during the price control period, which ends in September 2024.

To provide context for SEMO's opex submission the RAs have carried out a comparison,(in March 2020 values), of the SEMO 2016 – 2021 price control annual opex allowances against the SEMO 2021-2024 opex submission. This is depicted below.

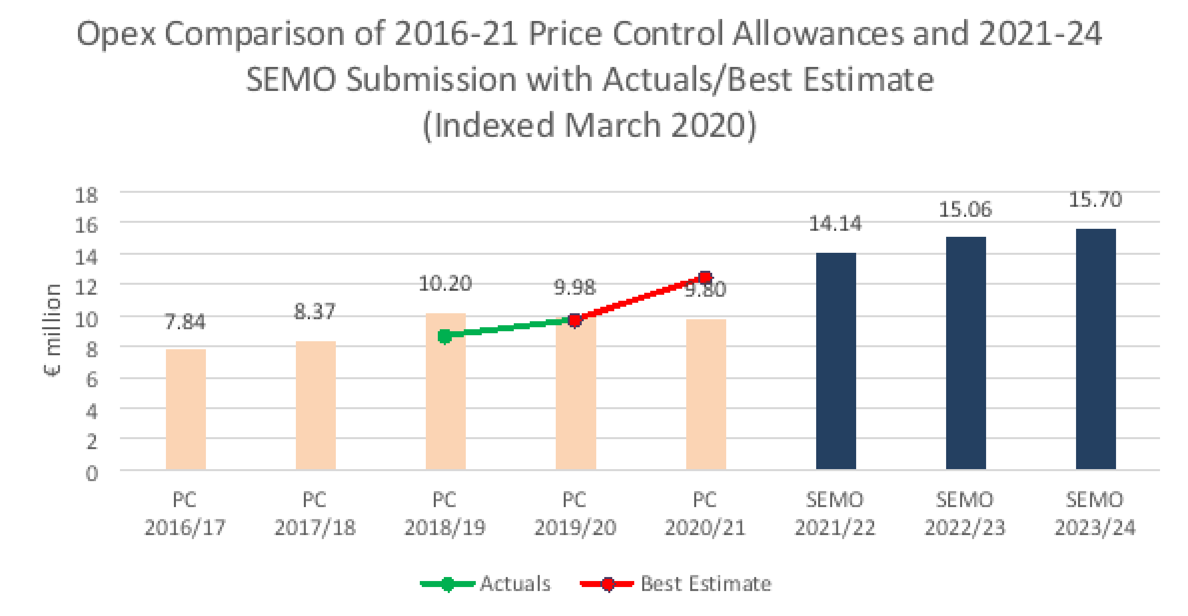


Figure 4.2a: Comparison of 2016-21 SEMO Price Control Allowances and 2021-24 SEMO Submission

Compared to a regulated opex allowance of €29.98M for the 2018-21 price control, SEMO's predicted actual opex was €30.66M[20] (representing a potential 'over-spend' of 2%).

The above comparison shows a steep rise in opex with the requested opex in year 2023/24 of €15.7m being double the allowance provided in 2016/17 of €7.84m. While the 2016/17 allowance related to the legacy SEM arrangements there has already been a notable step change of 30% for the opex allowance within the first full year of the new SEM arrangements being 2018/19. This step change recognised and took into account the greater complexity of the new SEM arrangements.

While 2017/18 is shown above, it intentionally has not been referred to, or used in the RAs' analysis, as the SEM Go-Live date moved during that year. It is also a combination of two price control decisions[21] (one relating to the ramping down of the legacy SEM and the other relating to the first period of operating the new SEM arrangements).

Within the 2021-24 price control submission, SEMO has provided actual costs incurred for years 2018/19, 2019/20 and SEMO's best estimate for year 2020/21 which is also shown in Figure 4.2a against the opex allowances set for those years. SEMO is of the view that

[20] Final year of 2018-21 price control is a forecasted cost rather than an actual cost incurred
[21] SEM-16-043 Price control decision relating to October 2016 to end of legacy SEM, including resettlement and decommissioning periods
SEM-18-003 Price control decision related to assumed go live of May 2018 through to September 2021

2020/21 most accurately reflects the required ongoing opex for 2021-24 since large scale external support was in place during the first and second years of the current 2018-21 price control. However, the RAs note that costs associated with this support were recovered only in the 2018/19 tariff year (ie. Year 1) via I-SEM capex projects[22].

In order to facilitate the ongoing development and the increased work volume in the market, SEMO proposes that its opex accommodates appropriate growth. SEMO's opex requirements for 2021-24 have been divided into the following high-level categories:

- Labour
- IT and Telecoms
- Corporate, HR and Facilities
- Finance & Regulation

To provide an overview in advance of looking in more detail at each of the cost categories the RAs have compared the opex allowances provided within the current 2018–2021 period[23] with the SEMO submission for 2021–2024. This comparison is shown below.

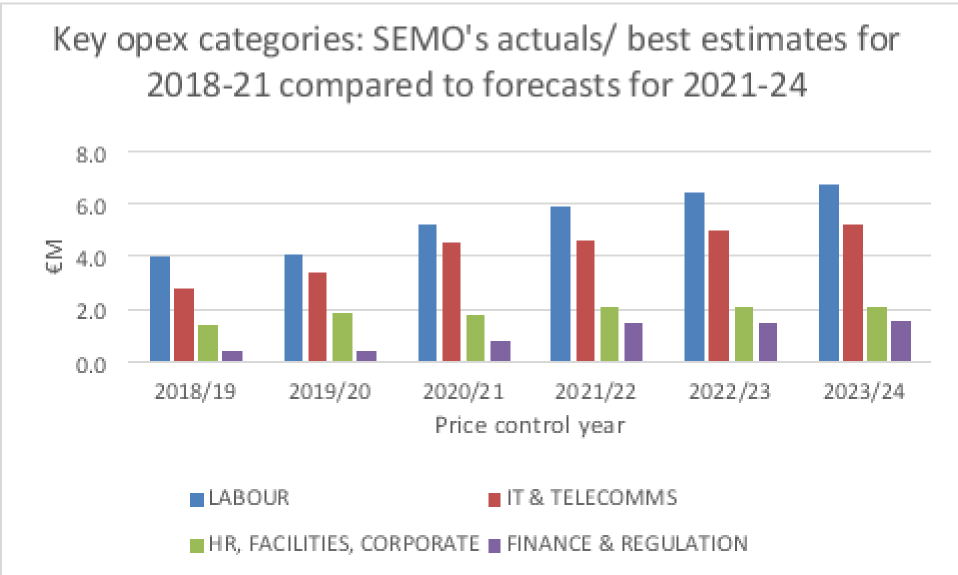


Figure 4.2b: Comparison of 2018-21 Price Control Allowances by category and SEMO 2021-24 Submission

The revised SEM arrangements over the past three years have increased transparency for all energy stakeholders, but further improvements are still required. In order to provide enhanced services (compared to the current state) for market participants, SEMO is of the view that continued investment in its people, systems and processes are vital. A significantly increased opex allowance is required to ensure that SEMO may continue to facilitate greater

[22] Capex projects: I-SEM Post Production Support Project and I-SEM Day 1+ Project (SEM-21-006)

[23] In March 2020 values

market transparency, increased stability of operations and quality of service. Table 4.2 below summarises the values associated with each opex category within the SEMO submission.

SEMO Submission (March 2020 Values)	SEMO 2021/22	SEMO 2022/23	SEMO 2023/24	Overall Total
Category	**€m**	**€m**	**€m**	**€m**
Labour Costs	5.925	6.498	6.748	19.171
IT & Telecoms	4.603	4.989	5.266	14.858
Facilities & Property Management	0.875	0.879	0.891	2.644
Recruitment, HR and Admin	0.393	0.393	0.393	1.179
Finance & Regulation	1.508	1.459	1.567	4.534
Corporate Costs	0.839	0.839	0.839	2.517
Total	**14.143**	**15.057**	**15.704**	**44.903**

Table 4.2: Summary of SEMO Opex Submission by Cost Category

The following chart provides an indication of the proportions of each cost category. This breakdown is generally in alignment with previous price controls. As a percentage of total opex requested, IT & Telecommunications has increased from 26% in the previous price control period to 33% in the forthcoming period. Consequently, Corporate, HR and Facilities and Labour costs have both slightly decreased as a percentage of total spend.

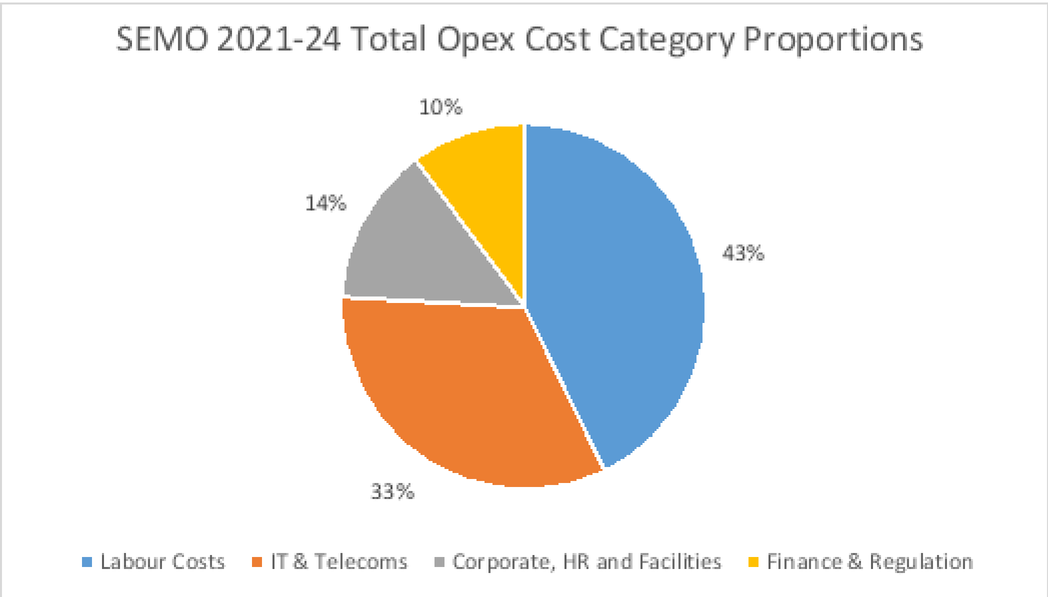


Figure 4.2c: SEMO Opex Submission by Cost Category Proportions

SEMO's opex forecast is underpinned by a significant increase in FTEs. This request is discussed in advance of each of the key cost categories in subsequent sections.

4.3 Resources (FTEs)

Summary of SEMO's submission

As part of the current 2018-2021 SEMO price control a labour cost allowance has been provided on an assumed 59.5 FTE baseline which is broadly categorised across the following areas in the table below.

Breakdown of FTEs and Roles	
Front Office (Registration/Customer Care/MO Reporting and Publishing on Website)	8
Trading (Balancing Market Oversight, AoLR, FMD, Market Surveillance & Reporting)	9
Settlement (Balancing & Capacity Settlement, Credit Assessment & Risk Management, Payments in Advance and Clearing)	20.5
Market Development (Market Modifications, Compliance, Secretariat, Market Modelling)	8.5
IT Support and Development (Application Infrastructure, Application Support Application DBA Support, Service Management)	7.5
Other (Legal, Finance, Regulatory)	6
Total FTE	**59.5**

Table 4.3a: Summary of FTE & Roles based on 59.5 FTE base

SEMO is seeking an additional 15.5 FTEs to raise the total complement to 75 FTEs. This increase is due to the resources required to accommodate the scope and scale of predicted change required rather than bolstering existing key functions of the Market Operator business. The RAs note that no new roles or responsibilities have been allocated to SEMO by the SEM Committee over the 2021-24 period and no new functions have been added to the Trading and Settlement Code.

A summary of the additional resources requested by SEMO is provided below in Table 4.3b while a more detailed breakdown of the total internal 75 FTEs and roles is provided in Appendix A.

Additional Resources Requested by SEMO	
Market Operations Functional Testing (change management and functional testing now an enduring resource requirement)	5
Future Markets (assist development and implementation of policy and navigate the financial signals e.g. Climate Action Plan, EU Directives, SEMC Decisions, Governmental Decisions)	3.5

Programme Delivery (Co-ordinate and monitor change across both business oversight and stakeholder engagement)	3.5
Cyber Security Specialist Security & Networks Support Specialist FTE to facilitate ongoing monitoring and management of IT security including improved ability to respond to an increasingly challenging cyber threat landscape)	1
Incremental Legal Resource (To support ongoing market development and disputes, Brexit and the need to review UK legislation and monitor contracts, review of Modifications Committee proposals, and Network Code compliance)	1
Strategic Initiatives (EirGrid Group wide initiatives such as cloud adoption, data and analytics services, cyber security, operating model)	1.5
Total Additional FTEs Requested	**15.5**

Table 4.3b: Additional Resources Requested in SEMO Submission

SEMO is of the view that operational investment is required, specifically in relation to activities which were not foreseen in 2017/18 and which relate more to market policy delivery than 'business-as-usual' operations. SEMO argues that the 2018-21 price control provided FTEs to operate and administer the market, but not to develop it. Furthermore, SEMO states that it has focused on resolving defects and hot fixes to date but claims that this has been to the detriment of market development.

Views of Participant Consultative Forum (PCF)

At a PCF workshop, it was suggested that there is little clarity as to how EirGrid, SONI and SEMO resources are shared, particularly as the same staff appear to work on a wide range of issues across these businesses. There was a view that whilst there is a need for the opex allowance to cater for additional FTEs there is also a need for EirGrid Group to review its HR strategy and approach.

The PCF was of the view that SEMO should continue to be well resourced from an IT perspective. In addition there was also comment that well experienced staff with the relevant technical expertise to address queries in a timely fashion are needed, particularly staff who are efficient and can 'double up' on activities to deliver outcomes. It was noted that SEMO should be resourced to deliver additional system capability and market changes over the 2021-24 period, and participants were keen that the settlement function is also adequately resourced.

A number of members of the PCF acknowledged that after I-SEM Go-Live, SEMO's responsiveness and communications were greatly improved and welcomed this given the complexity of the systems. There was an expectation that participants should be able to avail of information on a clear and holistic basis to include all current, forthcoming and possible changes within the 2021-24 period and more regular EU Network Code forums and stakeholder engagement regarding any changes. Feedback indicated that there should be leadership and oversight from design to delivery and information should be available to participants regarding timelines, but also that programme delivery goals should be achievable and realistic.

The PCF was generally encouraged by SEMO's proposal for Future Markets resources, but there was an overarching viewpoint that market stability should be prioritised before future planning with inclusion of existing technologies (such as Demand Side and storage) into settlement, as well as modifications of the rules before developing future markets. The PCF also commented that future markets design should be driven by Departments and Regulators and 'off the shelf' approaches to market design should be avoided. It was suggested that a minimum of four years should be allocated from design to delivery of new systems, including comprehensive participant testing before 'go live'.

PCF members supported the need for compliance with EU cyber security standards and Cloud adoption.

Some participants indicated a need for more focus on smaller technologies in the market (for example, DSUs) and the ability for such operators to have access to a Subject Matter Expert (SME) point of contact within SEMO to improve engagement.

RAs' analysis

Baseline FTEs

The RAs conducted a review of SEMO's FTE 'baseline' of 59.5 internal FTEs (whose costs are recovered as 'Labour' opex) in order to satisfy themselves of the 'starting point' for the 2021-24 price control. It should be noted that an additional 5 FTEs are outsourced by SEMO and recovered through the 'IT & Telecoms' opex allowance, and a further additional 14 FTEs are capitalized and recovered through the capex allowances.

SEMO has assumed an existing internal organizational structure (as per the SEM Committee's decision for the 2018-21 price control[24]) which allows for 59.5 FTEs. This is shown in the table below.

Summary of FTE requirements by function (SEMO Submission for year 2020/21)	
Function	**2020/21**
SEM Management	2.5
Registration	3

[24] Page 51 of the Consultation details FTEs for the 2018-21 price control [SEM-17-075 SEMO PC Draft determination.pdf (semcommittee.com)]

Market Rules and Agreed Procedure Document	3
Secretariat	2
Balancing Market Oversight	4.5
Credit Assessment	3
Credit Risk Management	3
Payments in Advance	1
Balancing & Capacity Market Settlement	6
General Queries and dispute analysis	4
Clearing (funds transfer)	3
Finance	3.5
Legal	1.5
Customer Care	3.25
SEM MO Reporting	1.25
Regulation	1
Compliance	1
Fuel Mix Disclosure	1
Market Modelling	2
Market Monitoring and Surveillance	2
AoLR	1
IT Service Management	2.5
Application Support	3
Application Infrastructure Support	1
Application DBA Support	0.5
Total Number of FTE's Requested and Approved by SEMC	59.5

Table 4.3c: SEMO's 2020/21 FTE request which SEM Committee Approved in Full (SEM-17-075 & SEM-18-003)

SEMO's submission, supporting documentation and responses to questions posed during the RAs' review flagged a number of issues. For example:

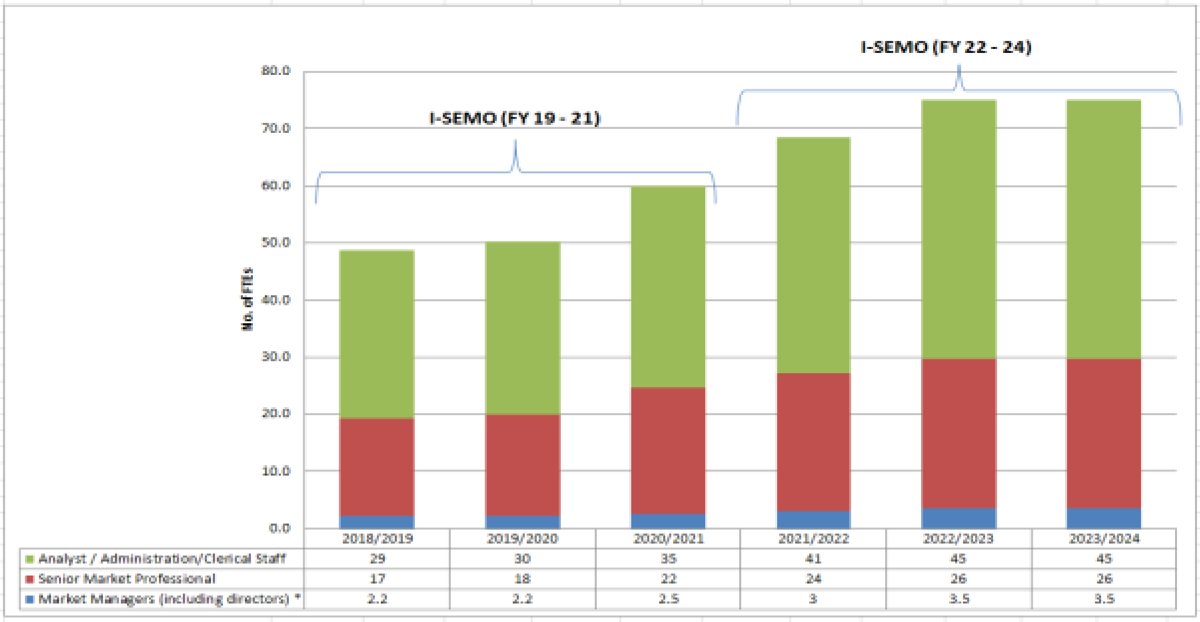
- On review of SEMO's 'functional' organizational structure which was provided to the RAs, 2 FTEs are allocated to the AOLR function, compared to the 1 FTE allowed to this function through the price control. The RAs note that the AOLR function has not been availed of to date yet SEMO has confirmed that 60 FTEs are in place at December 2020.
- In addition, the same amount of 'management' FTEs are allocated to each of SEMO's prescribed functions (0.5 FTEs). Settlement is the largest operation by far (with 20 internal FTEs) and an area which is the subject of regulatory and participant concerns yet it has the same amount of management allocated to it as other 'new' proposed functions (proposing between 3 and 5 manager FTEs).

Despite this, the RAs are satisfied that a baseline of 59.5 FTEs at the start of this 2021-24 price control is appropriate (see reasons outlined in 2018-21 decision[25]). It is at SEMO's discretion to allocate its quota of resources to roles as required to meet its core obligations, reviewing these to ensure efficiencies and allocation against priority/challenging work areas at a particular point in time during the price control.

Composition of FTEs

The RAs reviewed the composition of SEMO's proposed internal staff complement in terms of management hierarchy and allocated staff.

A comparison of existing resourcing to that requested by SEMO (as provided by SEMO) is illustrated below:



	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Analyst / Administration/Clerical Staff	29	30	35	41	45	45
Senior Market Professional	17	18	22	24	26	26
Market Managers (including directors) *	2.2	2.2	2.5	3	3.5	3.5

Figure 4.3a: Comparison of 2018-21 with SEMO's 2021-24 Submission by FTE Grade
(Source: SEMO submission in response to Opex queries)

In terms of FTEs recorded by SEMO in 2018-21, the RAs note that:

- The total FTEs at 2018/19 was 48.7. This compares to 57.25 allowed for in Year 1 of the 2018-21 price control.
- The total FTEs at 2019/20 was 50.3. This compares to 59.25 allowed for in Year 2 of the 2018-21 price control.
- The total FTEs at 2020/21 was 60.0. This compares to 59.5 provided for in the final year of the 2018-21 price control.

[25] Section 4.3 Pages 15-19 SEM-18-003: https://www.semcommittee.com/sites/semc/files/media-files/SEM-18-003%20SEMO%20Final%20Determination%20SEMC%20FINAL.pdf

The RAs note that the number of FTEs in situ was lower than the allowance for the first two years and have taken this into consideration when assessing an appropriate baseline and need for additional resources going forward to carry out SEMO's core functions.

The composition of staff has not changed since 1 October 2018 and may remain as is through to 30 September 2024, with around 60% of staff being 'analyst/ administration/ clerical staff', 35% being 'senior market professional' and 5% being 'market managers (including directors)'. SEMO should consider the calibre and expertise of staff being recruited to ensure the appropriate levels of skill and experience are included within the composition of its resources.

Additional FTEs requested

Underpinning SEMO's opex submission are arguments presenting challenges of day-to-day operations (affecting perceived stability of the market) and also future challenges.

Within its opex submission, SEMO has identified issues and concerns in a number of its functions. These include:

- The Market Interface Team (previously 'Front Office') is dealing with less but more complex queries (over 2000 per year) and needs process improvements to encourage a decrease in queries.
- Registration activity continues to increase, driven by the integration of multiple markets and audit & compliance responsibilities, as well as future challenges related to new technology types and the impacts of registering additional interconnectors.
- Market Operator User Groups (MOUGs) have seen much more complex agendas associated with the increased market complexity since the introduction of I-SEM.
- The Trading team is dealing with a significant increase in volumes since I-SEM go live, with 670 market analysis tickets resolved, while they are now also required to test market systems to support change requests and bi-annual system releases.
- There is a higher volume of settlement activities than originally forecast and this is set to continue into the 2021-24 price control due to defects and manifest errors that require wide scale repricing and ad-hoc resettlement.
- SEMO performs the Fuel Mix Disclosure calculations on behalf of the RAs for Ireland and Northern Ireland, calculating the All-Island fuel mix and individual Supplier fuel mixes. SEMO has experienced additional complexity in this calculation and state the process is an extremely resource intensive activity.
- SEMO's Trading and Settlement Code modification obligations in the coming years are anticipated to be very resource intensive with numerous challenging and far reaching changes to be managed, driven by EU legislations such as the Clean Energy Package, enduring solutions for battery storage, and new technologies required to provide system services in an evolving market.

Notwithstanding the issues and concerns identified above, the RAs note that SEMO has not proposed additional resources in any of these areas. This is despite feedback received from participants and SEMO's own observations that service levels are not at the standard expected. However, as recognised previously, SEMO is now operating at full staff complement unlike the first two years of the 2018-21 price control.

We have assessed SEMO's request for 15.5 additional internal FTEs and noted our observations against each relevant function. Our assessment of SEMO's request for 4 additional outsourced IT FTEs is considered separately in section 4.5:

- ***Testing (5 additional FTEs requested by SEMO; 0 proposed by RAs)***

We recognise that the legacy SEM consisted of a simpler set of market systems and technologies. In SEM, SEMO confirms that temporary contract staff were employed for a fixed term to support biannual releases.

SEMO now states that every market system change needs to be tested thoroughly by SEMO where possible. The process involves a number of testing activities and a testing regime to include factory acceptance testing, user acceptance testing, system integration testing, regression testing and defect/ hot fix testing.

SEMO outlines the long-term benefits of recruiting 3 (of the 5) additional resources for testing as:

- Increased market confidence and reduced financial uncertainty
- Avoid introduction of new defects or errors through the change process
- Reduction in number of defects and manifest errors in the operation of the market
- More efficient market system release processes and hence less disruption to the real time operation of the market
- Lowering the materiality of amounts being resettled in the M+4, M+13 and adhoc processes, thus allowing participants to close out their financial accounts in a timelier manner
- Ability to accommodate more market changes as a result of increased execution efficiency.

In additional to these 3 additional resources, SEMO will also have support from an external vendor.

SEMO has also requested a further 2 (of the 5) additional resources for 'business requirements' to help develop the market and enable SEMO to deliver on the following:

- Fulfil obligations to efficiently discharge obligations under the TSC
- Deliver efficient, cost-effective change management process
- More efficient Prime Contractor communications
- Drive down volumes of hot fixes and defects

- Further reduce number of emergency releases
- Higher quality market system delivery
- Deliver larger package of changes to the market systems.

SEMO's business case for 5 additional internal FTEs sits alongside a request for 1 outsourced testing resource which is requested under the 'IT & Communications' cost budget rather than the 'Labour' costs budget. SEMO states that testing requires a specific skillset "which operational and support resources cannot provide"; outsourced testing services are therefore included (at a projected cost of €152K per year) as part of the submission and are a continuation of the new testing services introduced in 2020/21 to provide business as usual testing effort for defects, hot fixes, patches and routine technical upgrades.

SEMO's business case for additional internal testing resources is at odds with SEMO's statement that, in terms of a testing function, 'Where there are larger changes to the Market Systems (e.g. bi-annual releases, CAPEX or ORACLE upgrades etc.) this capability can be scaled up appropriately under the associated (CapEx) change programme'.

Testing is a prominent feature of SEMO's capex submission (System Releases, Release Support and Automated Testing Capability projects) which includes capitalising internal FTEs (which are separate and additional to the numbers discussed in this opex section) and outsourcing a specialist testing team throughout the duration of the price control. The above mentioned capex projects are expected to be allowed for in full in recognition of the importance of testing the SEM systems throughout the year; this is discussed in Chapter 5. Similar justifications to that outlined above have been made by SEMO for including additional internal FTEs in opex as have been made in the capex submission for capitalising internal FTEs and outsourcing FTE support from external vendors. The RAs are concerned with duplication of resource requests and have proposed not to include the additional 5 FTEs requested in opex in the knowledge that testing and quality assurance of the systems is captured within the capex allowances together with the 'IT & Communications' opex submission. Capturing these costs in these categories more readily lends itself to being scaled up or down to flex with the number or complexity of changes being implemented into the Market Systems during 2021-24.

- ***Future Markets (3.5 additional FTEs requested by SEMO; 2 proposed by RAs)***

This is a relatively new function within the proposed SEMO organizational structure, established during the final year of the current price control in 2020/21.

SEMO has recently re-structured and an existing (and already approved) 2 internal FTEs have been redeployed to tackle the most pressing market design issues as part of the 'Future Markets' team. The Future Markets function will also employ the services of external energy sector expertise. In addition to this, SEMO has requested a further 3.5 FTEs to start assessing policy now to better understand how it should be implemented in future. The Future Markets function is expected to provide a clear SEMO programme of work (to be managed by a Programme Delivery Team – refer to the section immediately below).

We are minded to allow for an additional 2 FTEs (rather than 3.5) to support this function for the duration of the 2021-24 price control; the need for a Future Markets function funded through SEMO's opex allowance can then be reassessed. This means that the function will be allocated 4 FTEs in total (i.e. 2 existing and 2 new) along with external support. The Future Markets function should also benefit from EirGrid Group synergies to drive efficiencies.

In recognition of the clear feedback received from the PCF, we would expect the Future Markets Team to engage with market participants and other key stakeholders to develop a clear and targeted programme of work, with any perceived changes well communicated in advance. This Future Markets Team is expected to liaise closely with the existing Market Development Team in developing a programme of work and engaging with stakeholders.

- ***Programme delivery (3.5 additional FTEs requested by SEMO; 2 proposed by RAs)***

In legacy SEM, an 'I-SEM' project management office (PMO) which supported governance and stakeholder communications was established by the EirGrid Group.

SEMO notes that there will be a constant flow of transformational projects during 2021-24 and an enduring project management office is required to more effectively and efficiently coordinate and delivery SEMO's programme of work. A PMO will internally coordinate all market system changes between future markets (long term), market modifications (medium term) and market releases (short term).

As part of the PMO, a programme management function will have financial oversight and project reporting, and will track/ report on market changes. A programme office will track and report deliverables, produce a 5-year forward work plan and also regular updates, manage internal dependencies, track programme expenditure, carry out risk/ issue/ change management, and manage stakeholder engagement.

It is the RAs' view that while the 'I-SEM' project had a dedicated PMO and governance structure, this was for a finite period – the function was not open-ended. The 'transformational projects' which SEMO refers to are not yet defined; they are in fact categorised as 'known unknowns'. The RAs do not foresee the same extent and magnitude of change during 2021-24 as with the I-SEM reform. Based on observations and a need for quality stakeholder communications, the RAs are minded to allow 2 additional internal FTEs in this function for the 2021-24 price control. The RAs are encouraged by the tasks that the Programme delivery function will undertake.

- ***Cyber Security Specialist (1 additional FTE requested by SEMO; 1 proposed by RAs)***

In addition to the approved headcount for 2018-21, SEMO employed a cyber security specialist (equating to 1 internal FTE) at the start of 2020/21.

The RAs are minded to allow for this FTE going forward due to the global risk of cyber threat.

- ***Incremental Legal Resource (1 additional FTE requested by SEMO; 0 proposed by RAs))***

SEMO has requested 1 additional junior legal advisor to assist with an increasing number of disputes, formal queries and Brexit-related issues. The additional legal resource will be in addition to external support as required. SEMO foresees its existing workload as unlikely to decrease and provides examples of a review of the Dispute Resolution Board under the TSC, Brexit and Network Code compliance.

The RAs view this workload as short-term and do not foresee it impacting on the 2021-24 period to the extent that an additional legal resource would be required. A strong business case has not been provided for this request. Furthermore, SEMO has an allowance for professional legal fees which could be utilised for the perceived workload.

- ***Strategic Initiatives (1.5 additional FTEs requested by SEMO; 0 proposed by RAs))***

'Strategic Initiatives' is a new (and not previously approved) cost line although SEMO's allocation of these Group wide costs are already included/incurred in the 2020/21 year of the 2018-21 price control.

During 2020/21, SEMO incurred €164K. For 2018-21, SEMO has requested €1.5M in opex and €2.6M in capex.

Strategic Initiatives are aligned with a request for an additional 1.5 FTEs and include initiatives such as:

- Cloud Adoption
- Data and Analytics Services
- Cyber Security
- Operating Model

Cloud adoption is in the early stages of implementation for EirGrid Group and it will take a number of years until fully migrated. SEMO notes that 'a benefit seen from the migration to Cloud is large upfront capital investments being replaced with predictable ongoing Opex subscriptions'. This aligns with the RAs' understanding that adoption of the Cloud will be instigated with an initial capital investment with opex being incurred thereafter on a steady state basis. We do not expect opex to be associated with Cloud adoption in initial years of migration while capital investment is required. We would expect to see opex costs associated with the Cloud in the next price control. The RAs' proposals in relation to a capex-related allowance for Cloud adoption can be found in Chapter 5.

In terms of data analytics services, a capital expenditure requirement is also forecasted by SEMO. According to SEMO, the opex initiative will provide additional support, to undertake a scoping activity, to identify key data analytics requirements and assessments for improving overall functionality. However, SEMO also state in its capex submission that the data analytics projects will involve a scoping exercise to develop a data strategy and a modern data platform. There appears to be duplication in scope; the RAs' proposals in relation to data analytics services are located in Chapter 5.

In relation to Cyber Security, SEMO has already employed one cyber security specialist as of October 2020; this is included (and allowed) as one additional FTE request within the 2021-24 price control submission. SEMO has not provided a strong business case for any additional resource for this service under 'Strategic Initiatives'.

The fourth element of 'Strategic Initiatives' is the 'Operating model' which relates to centralized IT across the EirGrid Group. SEMO notes that the majority of server migration and associated cost optimization will not be completed until the next price control period and savings will only materialize in future price controls. However, SEMO also states in its capex submission that the 'Operating model' project is to remove on-premises infrastructure at the back-up data centres by outsourcing to a third party provider together with a portion being migrated to the Cloud over the price control period thereby saving on maintaining expensive data centre facilities with relatively high maintenance and energy costs.

The RAs are of the view that 1.5 FTEs for Strategic Initiatives as Opex is not necessary for the 2021-24 price control since a capex allowance is available for the four elements and an additional cyber security specialist (already employed) has been allowed within the new FTE headcount.

RAs' proposals for consultation

Of the 15.5 additional internal FTEs requested by SEMO, we propose an allowance commensurate with an uplift of 5 FTEs (1 cyber analyst on an enduring basis, and the other 4 in respect of future planning and improved stakeholder communications for the 2021-24 period; the need for these will be reviewed at the next price control review).

Additional Resources Requested by SEMO		RAs' proposal
Market Operations Functional Testing	5	0
Future Markets	3.5	2
Programme Delivery	3.5	2
Cyber Security Specialist	1	1
Incremental Legal Resource	1	0
Strategic Initiatives	1.5	0

Total Additional FTEs Requested	**15.5**	**5**

Table 4.3d: RAs' Proposals for Additional Internal FTEs

We note that in addition to an internal staff complement of 64.5 FTEs, SEMO also has an allowance for outsourced resources and has capitalized resources through its capital projects. It is at SEMO's discretion to allocate all resources in line with competing priorities over the duration of the price control. While we have used business cases presented by SEMO as the basis of our analysis, SEMO has flexibility to re-allocate or re-deploy resources as more information becomes known to allow more effective planning and operations. Any re-allocation should be capable of being well justified.

Appendix B shows a breakdown of the RAs' proposal of 64.5 FTEs for 2021-24 by role.

4.4 Labour costs

Background

Labour costs represent the largest category of opex, accounting for 43% of the total opex costs proposed by SEMO across the 2021-24 price control period. This percentage is lower in comparison to the current 2018-2021 price control allowances in which labour costs accounted for 49% of the total opex allowance.

In reviewing SEMO's labour cost submission it is important to consider the current 2018-21 allowance together with SEMO's actuals and best estimate for the same period. This is shown in Figure 4.4a below alongside the labour cost allowance provided in years 2016/17 and 2017/18 relating to the old SEM arrangements.

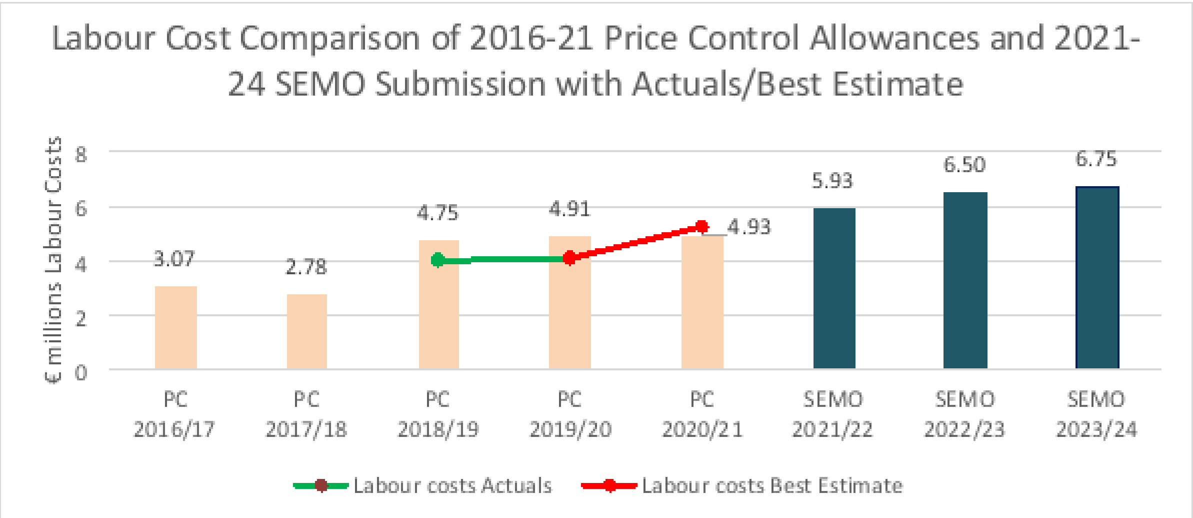


Figure 4.4a: Labour Cost Comparison of 2016-21 SEMO Price Control Allowances and 2021-24 SEMO Submission

Figure 4.4a shows the step change provided by the RAs in the labour cost allowances to reflect the move to the new SEM arrangements in 2018/19. It also shows a comparison of the labour cost allowances for the first three years of the new SEM arrangements (2018-2021) together with actual and best estimate costs provided by SEMO. Figure 4.4a clearly shows SEMO's request for an additional step change in labour costs for the three-year period 2021-24. SEMO's actual labour costs during the first two years of the new market (2018/19 and 2019/20) have come in under the allowance provided and are estimated to increase substantially during 2020/21 paving the way for a requested allowance of c€6M in 2021/22. This request represents a 50% increase (€2M) on actual labour costs during 2018/19 and 2019/20. The labour costs requested continue to rise throughout the three-year period to €6.75M in year 2023/24.

Summary of SEMO's Submission

In the first year since SEM Go Live SEMO had to operate in a state of hyper-care given the challenges faced post Go Live. This included an average of 12% staff turnover experienced across EirGrid Group[26] which SEMO states was not sustainable. SEMO moved out of the initial hyper-care phase into 2019/20 a future period of market stabilization, when SEMO resources were unexpectedly impacted by Covid 19, which included restrictions and delays in recruiting staff. As a result the average FTE numbers and actual outturn of payroll for 2018/19 and 2019/20 were lower than expected.

In 2020/21 SEMO is now starting to transition to a resource base that will support core market operation and settlement functions and provides the capacity to support the required market developments with a view to having the necessary resources in place for the 2021-24 period.

Included within labour costs are salaries, performance related payments, employer's PRSI/national insurance, employer's pension contributions, overtime, contract staff and other staff costs. SEMO has assumed an €87K actual average payroll cost per FTE in its submission, rising to €90K in year 2023/24. SEMO's submission is summarised below in Table 4.4a with actual and forecast information provided by SEMO for the years 2018/19 to 2020/21.

Labour Costs Summary of SEMO Submission								
€m	Actual 2018/19	Actual 2019/20	Forecast 2020/21	Actual/Forecast Total 2018-21 Period	Forecast 2021/22	Forecast 2022/23	Forecast 2023/24	Forecast Total 2021-24 Period
Salary	2.875	2.749	3.783	**9.407**	4.293	4.709	4.709	**13.711**
Bonus	0.207	0.292	0.294	**0.793**	0.333	0.365	0.365	**1.063**
Social Security	0.352	0.393	0.347	**1.092**	0.393	0.430	0.430	**1.253**
Pension	0.577	0.637	0.801	**2.015**	0.907	0.994	1.244	**3.145**
Total	**4.011**	**4.071**	**5.225**	**13.307**	**5.926**	**6.498**	**6.748**	**19.172**
Average Number of FTEs	*48.7*	*50.3*	*60*		*68.5*	*75*	*75*	
Average Cost per FTE (€000)	*82.3*	*81.0*	*87.1*		*86.5*	*86.6*	*90.0*	

Table 4.4a: Summary of Labour Costs included within SEMO's Submission

Views of the Participant Consultative Forum

[26] EirGrid collate Group wide statistics in relation to FTE turnover and not SEMO specific information.

The PCF was not privy to information about SEMO salaries during the workshops. No specific comments were received about this area other than those received more generally about resources, as noted in section 4.1.

RAs' Analysis

Across recent SEMO price controls the RAs have witnessed a shift within SEMO towards more junior roles. Based upon SEMO's submission the proposed high level structure of grades in terms of market managers, senior market professionals and analyst/ administration/ clerical staff is expected to remain consistent with the mix of grades provided for in the 2018-21 price control. The majority of proposed additional staff fall into the 'analyst/administration/clerical staff' category.

The RAs also note that the draft determination for the 2018-21 price control (SEM-17-075) recommended FTE proposals be provided on an activity basis and *therefore a clear activity based methodology will need to be considered in future price controls*; this was not provided for the 2018-21 price control nor for this 2021-24 price control.

In this section the focus is on setting the average FTE cost as discussions on the number of FTEs to form the labour cost allowance is considered above.

The average FTE cost within the 2018-21 SEMO price control for year 2020/21 is an indexed value of €83K[27] which is comparable for this 2021-24 SEMO submission, particularly since the grade mix proposed by SEMO remains consistent. As can be seen from Table 4.4a above, SEMO's actual outturn average FTE cost for 2018/19 is €82K and for 2019/20 is €81K, indicating that the level set within the price control was appropriate and reasonable.

Furthermore, SEMO provided 'best estimate' costs for the current 2020/21 year which reflects a substantial increase of 28% in total labour costs, compared to actuals for 2019/20 of €4.07M. The RAs note that these are best estimate values submitted to the RAs in December 2020 shortly after the commencement of the 2020/21 year and therefore the values provided may not be reflective of the eventual actuals for 2020/21. While this increase reflects both an increase in FTEs and in the average FTE cost, SEMO has provided little justification for the average FTE cost increase which has led it to seek an average FTE cost of €87.7K over the term of the 2021-24 price control.

The RAs are mindful of providing an efficient level to ensure the licence holders can finance their activities which includes recognizing that the average FTE cost is provided to SEMO as part of the overall opex regulatory revenue cap model which allows SEMO to retain cost savings until the next control at which point they are passed on to consumers.

[27] 2018-2021 Decision Paper (SEM-18-003) P18 states "€80,100 in 2020/21". Indexed from March 17 to March 20 values to arrive at €83k for comparison purposes within this paper.

The RAs are of the view that the €83K based upon the indexed value within the 2018-21 price control remains appropriate particularly as it will be increased for inflation in each year of this price control. However, the RAs propose taking an average of the outturn average FTE cost provided in SEMO's submission as a more robust baseline.

This value proposed is for the purposes of setting a price control labour cost allowance for SEMO. SEMO is ultimately responsible for the efficient and effective management of costs within the overall opex framework.

RAs' proposals for consultation

The average FTE cost proposed by the RAs is €83.5K across each year of the 2021-24 price control and subject to annual indexation from March 2020 prices.

This represents a robust baseline based upon the average actual/best estimate values provided by SEMO for years 2018/19 (€82.3K), 2019/20 (€81.0K) and 2020/21 (€87.1K).

4.5 IT & Telecommunications Costs

Background

IT and Telecommunications costs are the second largest category of opex within SEMO's submission for this price control, representing 33% of the total opex costs across the price control period.

SEMO's actual opex incurred for IT & Telecommunications during 2018-21 was significantly more than the approved allowance shown in Figure 4.5a below.

SEMO contends that the main reasons for the 2018-21 price control underestimating an IT allowance were due to an increase in outsourced resource costs, a significant increase in applications support and maintenance (due to actual contract outturn costs) and an increase in IT hardware and software support (due to additional licensing requirements).

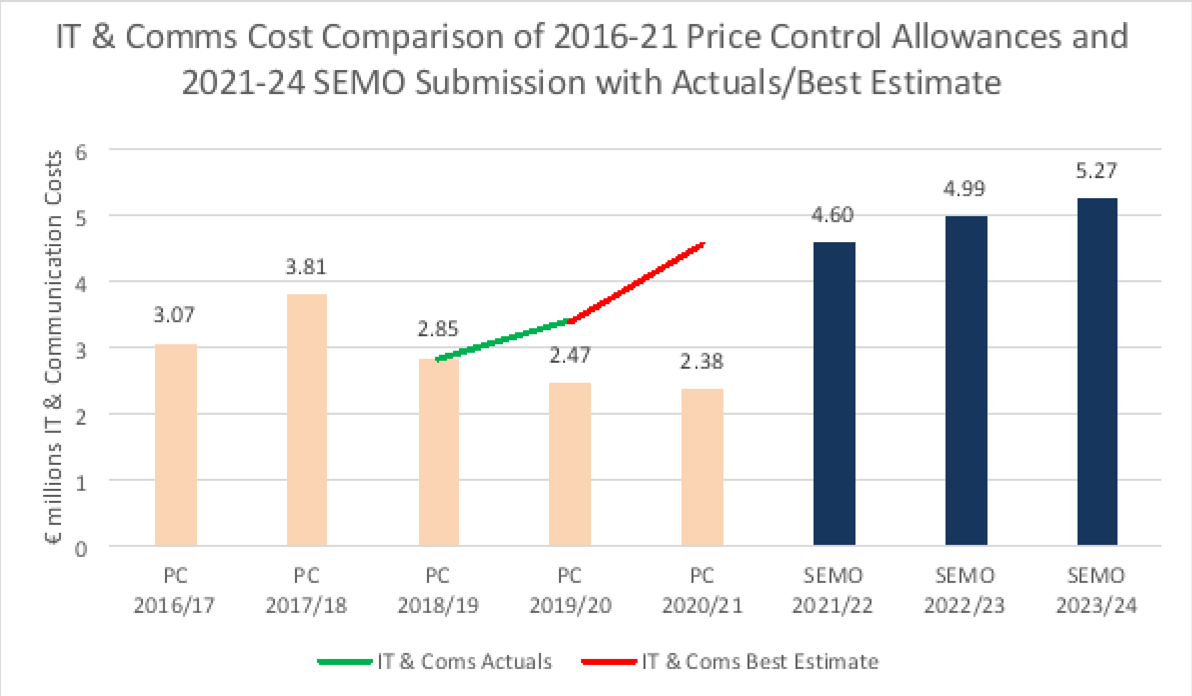


Figure 4.5a: IT & Communication Cost Comparison of 2016-21 SEMO Price Control Allowances and 2021-24 SEMO Submission

Summary of SEMO's submission

SEMO's submission requests a total allowance of €14.9M for IT and Telecommunications in 2021-24. This compares to €10.8M incurred during 2018-21 and is categorised in the following table with SEMO's best estimate of costs for the current year of 2020/21:

IT & Telecommunications Costs					
	2020/21 €m	2021/22 €m	2022/23 €m	2023/24 €m	Total €m
24/7 Support	0.221	0.221	0.221	0.221	0.663
Managed Services	0.839	0.839	0.839	0.839	2.517
Testing Services	0.152	0.152	0.152	0.152	0.456
Market Participant Technical IT Interface	0.348	0.342	0.347	0.347	1.036
Apps Support	1.978	1.898	1.955	2.043	5.896
IT Hardware and Software Support	0.683	0.742	0.779	0.818	2.339
Telecommunications	0.161	0.15	0.15	0.15	0.45
Strategic Initiatives	0.164	0.259	0.547	0.697	1.503
Total IT & Telecommunications	4.545	4.603	4.989	5.266	14.858

Table 4.5a: IT & Telecommunications Costs Category Breakdown

Outsourced resources (i.e. 24/7 support, managed services, testing services and market participant technical IT interface) account for €4.7M of SEMO's €14.9M IT & Communications submission. A description of these outsourced services is as follows:

- 24/7 Support to SEMO's customers to 'resolve incidents quickly and to proactively monitor'.
- Managed services for ongoing support and maintenance of Central Market Systems on a 24/7 basis. SEMO states that this is a flexible resourcing model where the vendor provides skilled resources to meet peaks and troughs of IT operational demands.
- Testing services: Under *Agreed Procedure 11 Market System Operation, Testing, Upgrading and Support* of the Trading and Settlement Code SEMO is required to ensure all changes to Market Systems are appropriately tested. This testing is necessary to ensure that any change to the Market Systems resolves the issue/defect in question and does not introduce unintended consequences that affect the SEM. The costs for testing services in the 2021-24 period are a continuation of the new testing services that were introduced in 2020/21, which provide business as usual testing efforts for defects, hot fixes, patches and routine technical upgrades.
- Market Participant Technical IT Interface: This cost category is a continuation of the Service Desk Provider that was introduced in 2019/20 to provide out-of-hours 365 days a year services including participant communications and issue management, limit communication failure, monitoring and event management, operational support, continual service improvement and knowledge management.

In addition to the above outsourced resources, SEMO's IT & Communications costs include:

- Apps Support and maintenance: The largest IT cost item (accounting for around 40% of total IT & Communications related costs), covers several different services. Market Management Systems (MMS) are described in SEMO's submission as ABB base vendor costs for application support and maintenance, including costs for the maintenance of third-party software embedded in the systems, software resilience arrangements and costs of support channels and support structures. The costs are split 50:50 between the TSOs and SEMO Balancing Market for the Market Management Systems. The current support contract with ABB expires in October 2022 and the requested values thereafter include an uplift of 10% of costs to cover an extended contract.
- IT Hardware and Software support: The key drivers for the €2.34M hardware and software support costs over the 2021-24 period are the complexity of the hardware, enhanced security measures, and the necessary resilience to support 24/7 market services. The forecasted increases are due to vendor licence renewals whose costs

have increased, including on Dell server & storage hardware, Oracle databases, Linux/Microsoft operating systems and security certs/security monitoring.

- Telecomms: These costs cover telecommunication links between SEMO's two sites in Dublin and Belfast to enable resilience in the event of a fault with market systems.
- Strategic initiatives: this is a new cost line which includes Cloud Adoption, Data & Analytics Services, Cyber Security and Operating Model. SEMO states that the initiatives are undertaken at an EirGrid Group level to capture cost efficiencies via economies of scale where possible and are procured through competitive tendering and contract negotiation to ensure optimal quality, delivery and pricing.
    - Cloud Adoption involves transitioning many of the IT services across the EirGrid Group to a cloud-based platform, such as servers and the use of cloud-based applications. SEMO notes that one potential benefit of this migration is large upfront capital investments becoming replaced with predictable ongoing opex subscriptions. Cloud Adoption will begin in the first year of the 2021-24 price control. This initiative is also included in SEMO's submission as a capital project.
    - The Data & Analytics Services costs will provide additional support to undertake a scoping activity with the goal of identifying key analytics requirements and assessments for improving overall functionality. This initiative is also included in SEMO's submission as a capital project.
    - Cyber Security investments are required to maintain pace with cyber threats, which SEMO anticipates will remain a routine cost for the EirGrid group going forward. This initiative is also included in SEMO's submission as a capital project and an additional FTE was requested in respect of cyber security in SEMO's labour allowance submission.
    - Evolution of EirGrid Group's centralized IT model is required to improve efficiencies across the group and optimize commercial management of major IT contracts. Since the cloud migration will be a gradual process across several years, ongoing investment in on-premises infrastructure will be necessary, such as in basic enablers, tooling, capabilities and skills, and ensuring on premise infrastructure remains robust and secure. This initiative is also included in SEMO's submission as a capital project.

Views of the Participant Consultative Forum

The PCF was not made aware of the detail of SEMO's IT & Telecoms submission.

RA's analysis

The RAs are conscious that IT-related costs for SEMO are generally Group-wide and allocated amongst the EirGrid Group of entities. SEMO states that 'where costs are shared they have been allocated across the licences based on consultations with Subject Matter Experts as IT is now managed on a Group-wide basis'. The RAs sought clarification on this point and were later advised that costs are allocated based upon an internal EirGrid plc cost allocation and recharge policy.

The RAs have reviewed proposed outsourcing costs in turn:

- 24/7 support: There is no change compared to the 2018-21 price control period expected in the extent of outsourced resources (who sit separately from the resources within the internal FTE headcount) allocated to this service that is used to quickly resolve incidents for market participants. Costs in this category are anticipated to remain steady and therefore the costs associated with 2 outsourced FTEs provided for under the previous price control are considered to be sufficient; the RAs see value in this service so the forecasted costs proposed by SEMO will be allowed in full.
- Managed Services: The average annual cost of managed services during the 2018-21 period was €0.647M; this has increased to €0.839M for 2021-24 (totaling €2.52M) because SEMO has requested four additional outsourced FTEs. As the market will enter its fourth year of operation, the RAs would expect the level of fixes to reduce so the need for Managed Services should re-stabilise/reduce. The RAs therefore propose not to allow for SEMO's proposal for 4 additional outsourced resources; funding will be provided for the existing 2 (and this is bolstered by 4 existing internal FTEs allocated to similar work areas).
- Testing Services: SEMO states that this requires a specific skillset which operational and support resources cannot provide. The RAs propose to approve the forecasted costs proposed by SEMO in full.
- Market Participant Technical IT Interface (Service Desk): SEMO's projected costs have remained stable since 2020/21 to the end of the 2021-24 price control. The RAs see value in this service and propose to allow forecasted costs in full but an enduring allowance will be considered in line with market participant feedback going forward.

In terms of other IT & Communications costs:

- Application Support and Maintenance: costs for the next price control period remain fairly consistent with previous years, forecasting only a 2% increase over the 2021-24 period compared to the 2018-21 period. However, SEMO indicate that the current support contract with its vendor is due to expire in October 2022; the forecast is based on a 10% uplift of costs thereafter to cover an extended contract. The RAs do not propose to allow for the 10% uplift and have based an annual proposed allowance on the average of costs incurred during 2018-21.
- IT Infrastructure – Hardware and Software Support: SEMO states that 'Dell costs have increased (during the 2018-21 price control period) as hardware is coming out of warranty'. The RAs expect that such hardware will be refreshed as part of the SEM infrastructure refresh capital project (discussed in Chapter 5), so will no longer

incur a higher cost as it will be within a new warranty period. We also expect EirGrid Group synergies, as recognised by SEMO, to be utilised to realize efficiencies. The RAs propose to allow an annual amount which represents the average cost incurred in 2018/19 and 2019/20. We have not included 2020/21 in our proposal because the projected cost for that year is €0.343M more than the average cost incurred in each of the preceding two years; SEMO did not explain this increase in its submission.

- Telecommunications: The total costs for Telecommunications across the 2021-24 period have increased by 87% compared to the 2018-21 period. The costs are forecasted to remain steady over the 2021-24 price control, with €0.150M requested for each year. SEMO states that the increase is due to increased connectivity due to off premises data centres in the IT operating model initiative. The RAs propose to allow for Telecommunications costs in 2021-24 which align with an average of costs incurred in 2018/19 and 2019/20.
- Strategic Initiatives: Strategic initiatives account for a number of group wide projects that were introduced from 2020/21 including Cloud adoption, cyber security, data analytic services and 'operational model'. As SEMO's business case for strategic initiatives within opex is brief, not well evidenced and does not outline clear benefits, the costs proposed by SEMO for this initiative within IT opex have not been allowed by the RAs. It is worth noting that these strategic initiatives are also within SEMO's capex submission and SEMO can access resources within the RAs' capex proposal.

In general, business cases for IT & Communications opex were not well justified. The lack of transparency of a Group-wide IT strategy has made the submission difficult to analyse.

SEMO has proposed an extensive capex programme during 2021-24 compared with 2018-21 and therefore investment in IT (for example, the SEM infrastructure refresh capex project, the release and release support capex projects and the Automated Test Capability capex project) would, in the RAs' view, ease the burden on IT opex.

RAs' proposals for consultation

For the 2021-24 price control period, the RAs are minded to allow for the following:

	SEMO submission				RAs' proposals			
	2021/22	2022/23	2023/24	Total € million	2021/22	2022/23	2023/24	Total € million
Apps support and maintenance	1.9	2.0	2.0	5.9	1.9	1.9	1.9	5.8
Hardware and software support	0.7	0.8	0.8	2.3	0.3	0.3	0.3	1.0
Telecomms	0.2	0.2	0.2	0.5	0.0	0.0	0.0	0.1
Strategic Initiatives	0.3	0.5	0.7	1.5	0.0	0.0	0.0	0.0
Outsourced resources								

24/7 support	0.2	0.2	0.2	0.7	0.2	0.2	0.2	0.7
Managed services	0.8	0.8	0.8	2.5	0.3	0.3	0.3	0.8
Testing services	0.2	0.2	0.2	0.5	0.2	0.2	0.2	0.5
Market Participant Interface	0.3	0.3	0.3	1.0	0.3	0.3	0.3	1.0
				14.9				**9.9**

Table 4.5b: RAs' IT & Telcomms proposals 2021-24

4.6 HR, Corporate and Facilities costs

Background

HR, Corporate and Facilities services are provided to SEMO on an EirGrid Group-wide basis rather than on a standalone business basis and a portion of EirGrid Group's costs are allocated to SEMO.

Summary of SEMO's submission

HR costs include those associated with recruitment, staff travel, payroll support, training coordination, HR support, internal communications and general admin. SEMO's HR-related forecasted costs for 2021-24 are €393K per year. This compares to an average cost of €227K in 2018-21.

Corporate costs capture a range of overheads and services which are provided to SEMO on a Group-wide basis. These relate to support provided by Boards, CEO, CFO, Group Finance, Group Regulation and Internal Audit, procurement and legal. We note that within the internal FTE headcount for SEMO, an allowance is already provided for 3.5 internal FTEs for Finance, 1 internal FTE is allocated to Regulation and 1.5 internal FTEs are allocated to Legal. Procurement services include procurement advice, support with tenders and the procurement process, and high-level vendor management. Legal services include director time, company secretary time, provision of external legal advice and corporate legal support regarding TSC/ disputes/ other SEMO queries. SEMO's corporate costs forecasted for 2021-24 are €839K per year. This compares to an average cost of €651K per year in 2018-21.

Facilities costs include 'all shared space' and includes cleaning services, maintenance, car parking, security, mail service, copy bureau, switchboard, catering and canteen, rent and utilities. It also includes maintenance of servers, routers etc'. These are forecasted at around €875-890K per year from 2021-24. This compares to an average cost of €807K in 2018-21.

	SEMO submission			
	2021/22	2022/23	2023/24	Total € million
HR Costs				
Recruitment	0.011	0.011	0.011	0.032
Training	0.045	0.045	0.045	0.135
Travel	0.267	0.267	0.267	0.801
General admin	0.070	0.070	0.070	0.210
Corporate costs				
Corporate	0.839	0.839	0.839	2.517
Facilities costs				
Facilities (property management)	0.860	0.864	0.876	2.599
Facilities (insurance)	0.015	0.015	0.015	0.045
				6.3

Table 4.5c: HR, Corporate and Facilities cost submission from SEMO

Views of Participant Consultative Forum (PCF)

The PCF was not provided with the detail of this part of SEMO's price control submission.

RAs' analysis

The RAs' analysis of each key cost line is as follows:

HR costs

- Recruitment costs remain static from 2020/21 throughout the 2021-24 period despite SEMO's proposed increase in internal FTEs; however, the RAs have reduced SEMO's projected costs on a pro rata basis by two-thirds in line with the reduced proposals for additional FTEs since less recruitment activity will be required if the allowed headcount is adhered to.
- The RAs propose to allow staff training costs in full and have not reduced these in line with proposed reduced headcount; the RAs are of the view that continuous improvement should be an aspiration and a training budget should allow for internal expertise thus reducing the need for externally sourced/outsourced support in future years. We are also mindful of the energy transition work which the Future Markets team will undertake and support the need to remain well informed of developments in industry and impacts on the all-island market.

- SEMO's proposed staff travel costs increase significantly to c.€270K each year in 2021-24, having incurred €150K in 2018/19, €92K in 2019/20 and an estimated €90K in 2021/21. The RAs note a reduction in travel in the past two years due to the Covid-19 pandemic. The RAs would expect SEMO's travel costs to reduce from those incurred in 2018/19, even if staff numbers increase, so propose to reduce travel cost allowances to €120K per year (ie. A 20% decrease to costs incurred pre-Covid to reflect more efficient use of technology such as video conferencing software).
- General administration costs forecasted by SEMO increase in 2021-24 but SEMO provides no explanation for this approach. The RAs assume that general admin should reduce in line with other 'people' related management costs since more staff are working from home. The RAs propose to reduce the general admin cost budget in line with actual costs incurred in 2019/20 and 2020/21, averaging €50K per year.

Corporate costs

- Corporate costs: SEMO explains that the forecasted increase in 2021-24 is due to the proposed increase in FTEs. SEMO has applied an average cost per FTE p.a. of €11.2K (which is a reduction from the €13.3K p.a. average in 2019/20 and 2020/21 and reflective of the increase in the Group FTE relative to the SEMO FTE over the price control period). The RAs have proposed to allow for one-third of the additional internal FTEs proposed by SEMO but expect a minimal effect on the cost per head applied. A cost of €11.2K per head has therefore been applied to 64.5 FTEs per year.

Facilities costs

- Facilities and property management costs: Facilities costs are allocated on a blended average per head basis of €11.6k over the price control period. This compares with €13.9k actual per the previous price control period. Similar to the approach to corporate costs, the RAs have not allowed all of the SEMO FTEs proposed but we expect a minimal effect on the cost per head applied. A cost of €11.6K per head has therefore been applied to 64.5 FTEs per year.
- There will be separate insurance policies for SEMO as well as an allocation of general insurance policies (e.g. employer liability) and the annual cost for SEMO is €15k over the price control period which is similar to the FY21 forecast and represents the most recent competitive tender process. The RAs propose to allow SEMO's proposed insurance costs in full.

RAs' proposals for consultation

	SEMO submission				RAs' proposals			
	2021/22	2022/23	2023/24	Total € million	2021/22	2022/23	2023/24	Total € million
HR Costs								
Recruitment	0.011	0.011	0.011	0.032	0.004	0.004	0.004	0.011
Training	0.045	0.045	0.045	0.135	0.045	0.045	0.045	0.135
Travel	0.267	0.267	0.267	0.801	0.120	0.120	0.120	0.360
General admin	0.070	0.070	0.070	0.210	0.050	0.050	0.050	0.150
Corporate costs								
Corporate (legal and procurement)	0.839	0.839	0.839	2.517	0.722	0.722	0.722	2.167
Facilities costs								
Facilities (property management)	0.860	0.864	0.876	2.599	0.748	0.748	0.748	2.245
Facilities (insurance)	0.015	0.015	0.015	0.045	0.015	0.015	0.015	0.045
				6.3				**5.112**

Table 4.6a: RAs' HR, corporate and facilities proposals 2021-24

4.7 Finance and Regulation costs

Summary of SEMO's submission

Costs attributed to the 'Finance and Regulation' cost category include audit fees (market audit, statutory audit, internal audit), Modifications Committee costs, Professional Fees, and Banking costs.

SEMO's forecasted costs for 2021-24 are as follows:

		SEMO submission			
		2021/22	2022/23	2023/24	Total € million
Audit fees		0.275	0.275	0.275	0.825
Mods Committee		0.03	0.03	0.03	0.09
Professional (external consultancy) fees	SEMO PC Professional fees	0	0	0.1	0.1
	Mifid	0.013	0.013	0.013	0.039
	legal fees	0.07	0.07	0.07	0.21

	Tax advice	0.01	0.01	0.01	0.03
	Disputes	0.07	0.07	0.07	0.21
	Audit and compliance	0.075	0.075	0.075	0.225
	Strategic initiatives	0.165	0.146	0.154	0.465
	HLD design	0.77	0.74	0.74	2.25
Banking		0.03	0.03	0.03	0.09
					4.5

Table 4.7a: SEMO's submission for Finance and Regulation costs 2021-24

A description of each cost line is as follows:

- Audit fees: include market audit fees, statutory audit fees and internal audit fees. These are forecasted by SEMO at €275K per year. This compares to an average cost incurred of €250K per year in 2018-21.
- Modifications Committee costs:
    - The Trading and Settlement Code Modifications Committee is assumed to continue to meet six times per year. Associated costs are forecasted at €10K per year as with previous years.
    - In addition, a new 'data purchase for modelling' cost is proposed at €20K per year. SEMO states that there may be a requirement to procure data for use in modelling the impact of a proposed change.
- Professional (external consultancy) fees: These include a number of costs lines for external support as follows:
    - Price control professional fees of €100K in the final year of the price control (while SEMO prepares for/supports the next review).
    - MIFID costs at €13K per year for advice to ensure that SEMO is compliant with changes to the Markets in Financial Instruments Directive.
    - External legal fees to support changes to industry codes/ rules at a cost of €70K per year.
    - Tax advice at a cost of €10K per year to support any tax related changes.
    - Disputes support for external legal advice and Dispute Resolution Board (DRB) panel costs at a cost of €70K per year. SEMO is of the view that given the changes being introduced into the market systems and the need to carry out a significant level of repricing and resettlement the number and complexity of disputes is likely to persist and potentially increase during 2021-24.
    - Audit & Compliance support at a cost of €75K per year towards specialist knowledge, independent expert reviews and consultancy as needed.
    - Strategic initiatives: the 'professional fees' element of this cost is not explained.
    - High-level analysis and design: this is a significant new proposed cost which makes up around half of the 'Finance and Regulation' costs. It is to allow for projects to move from the early phases of development into full capex projects

in a seamless manner at a cost of around €750K per year. SEMO states that it will be faced with a range of market development challenges that will either need to be delivered in the 2021-24 price control period or will have to be initiated and developed during this period in order for them to be implemented in future periods. SEMO is of the view that significant intellectual capital both in SEMO and harnessed through strategic partnerships will be required to develop policies into proposals and eventually a range of possible market system design solutions. SEMO believe this investment is modest and that it would shorten overall delivery timelines, provide design certainty earlier in a project, provide clarity to market participants, and ultimately yield stable market systems.

- Banking costs: these are forecasted at €30K per year. Costs incurred in 2018-21 ranged from €5-10K per year.

Views of the Participant Consultative Forum

The PCF was not made aware of the detail of this part of SEMO's submission.

RAs' analysis

Across the 2021-24 price control period, overall Finance and Regulation costs are 191% higher than those incurred in the 2018-21 price control period. The key reasons for this increase are: inclusion of a new 'high level analysis and design' service and inclusion of a new 'strategic initiatives' function. The RAs propose not to allow for either.

Our analysis of all 'Finance and Regulation' cost lines are outlined as follows:

- Audit fees: Market audit fees are estimated at €275K p.a. and are expected to be higher than historical costs due to a revised scope for the audit. External statutory audit fees are estimated at €25K p.a. while internal audit fees are estimated at zero. We would expect audit fees to have been higher in the early years of 'I-SEM' but then that such costs should stabilize to historic levels as the activity becomes business as usual, however, viewed in the round, it is proposed to allow for these costs as forecasted by SEMO.
- Modifications Committee costs are estimated to be €10K p.a. based on the assumption that there will be six committee meetings per year. The RAs propose to allow for this cost as reasonable and consistent. SEMO also projected a cost of €20K per year for a 'data purchase for modelling'; the RAs see value in this service and propose to allow for this cost.
- Professional fees cover:
    - SEMO price control professional fees: The RAs propose to provide for this allowance in full; this is a fair expectation to prepare for a price control review.
    - MIFID: To ensure compliance, the RAs propose to allow for this service in full.

- Legal fees: to ensure legal robustness for the reasons outlined by SEMO, the RAs' propose to allow for this service.
- Tax advice: The RAs propose to provide for this allowance in full.
- Disputes support: There is not enough evidence provided by SEMO to justify a repeated need for external legal support for disputes related issues. The RAs propose not to allow SEMO's forecasted cost. Should SEMO need to, the 'legal fees' professional fees budget can be utilised.
- Audit & compliance support: The RAs propose to provide for this allowance in full for the reasons outlined by SEMO.
- Strategic initiatives: the 'professional fees' element of this cost is not explained and is therefore not allowed for. High level analysis and design: This appears to be a duplication of activities carried out by other internal FTEs, specifically those within the Future Markets and Programme Delivery functions who will work with the existing Market Development Team. The business case for this initiative was brief and not well evidenced, particularly considering the amount of monies involved. The RAs propose to not to allow for this initiative.

- Banking costs: In line with costs incurred in previous years, the RAs propose to allow €10K per year; SEMO has provided no explanation for the proposed increase.

RAs' proposals for consultation

		SEMO submission				RAs' proposals			
		2021/22	2022/23	2023/24	Total € million	2021/22	2022/23	2023/24	Total € million
Audit fees		0.275	0.275	0.275	0.825	0.275	0.275	0.275	0.825
Mods Committee		0.03	0.03	0.03	0.09	0.03	0.03	0.03	0.09
Prof fees	SEMO PC Professional fees	0	0	0.1	0.1	0	0	0.1	0.1
	Mifid	0.013	0.013	0.013	0.039	0.013	0.013	0.013	0.039
	legal fees	0.07	0.07	0.07	0.21	0.07	0.07	0.07	0.21
	Tax advice	0.01	0.01	0.01	0.03	0.01	0.01	0.01	0.03
	Disputes	0.07	0.07	0.07	0.21	0	0	0	0
	Audit and compliance	0.075	0.075	0.075	0.225	0.075	0.075	0.075	0.225
	Strategic initiatives	0.165	0.146	0.154	0.465	0	0	0	0
	HLD design	0.77	0.74	0.74	2.25	0	0	0	0
Banking		0.03	0.03	0.03	0.09	0.01	0.01	0.01	0.03
					4.5				**1.5**

Table 4.7b: RAs' proposals for Finance & Regulation 2021-24

4.8 Agent of Last Resort (AoLR)

The SEM Committee decision on the High Level Design for the new SEM arrangements provided for an Agent of Last Resort (AoLR), to act on behalf of generator units where it considered that interaction with the ex-ante markets through the preparation and submission of orders would present a barrier to their participation in these markets. The role of the AoLR is to act as a bidding agent in the ex-ante markets on behalf of eligible generators.

The Agent of Last Resort is a licence obligation under Section 3B and Section15B of the EirGrid and SONI Market Operator Licences respectively. SEMO is therefore obligated to act as Agent of Last Resort to provide these AoLR trading arrangements.

As part of the new SEM arrangements that went live on 1 October 2018, a new AoLR charge was introduced as part of the I-SEM Aggregator of Last Resort Decision Paper (SEM-15-063). It stated that the AoLR would levy a fee for its services that would be subject to regulatory scrutiny to ensure that it does not create a barrier to entry and that a periodic review could be carried out on the fees associated with the AoLR. The AoLR fee is set annually and is currently set as a flat €0.33 per MWh[28].

In making the above decisions there was uncertainty as to how many participants may avail of the AoLR services. Since SEM Go-Live in 2018 it has been confirmed by SEMO that to date no participant has utilised the AoLR service provided by SEMO[29]. Given the uncertainty of cost recovery, the costs for SEMO providing the AoLR service are included within SEMO's opex allowance, specifically labour costs to facilitate participation and IT which includes using an AoLR simulation environment for testing and also regression testing to ensure continued synchronization across the systems. Any revenue generated from the AoLR fee being levied on those using the AoLR will be reflected in SEMO's k-factor adjustment at the end of each tariff year.

Within the 2018-2021 SEMO Price Control Decision (SEM-18-003), SEMO had advised that the estimated cost of providing this service was €1.14m across the three -year period. In the knowledge that to date this service has not been used by participants the RAs asked SEMO to include the AoLR for discussion in the recent 2021-2024 SEMO Price Control Participant Consultative Forum. It was clear from that discussion that this facility should continue to be provided for in some capacity. As it continues to be a licensable activity within both Market Operator Licences the costs for providing this service will be captured within this 2021-2024 SEMO Price Control.

[28] SEMO Statement of Charges 2020-2021 https://www.sem-o.com/documents/general-publications/2020-2021-SEMO-Charging-Statement.pdf

[29] https://www.sem-o.com/documents/general-publications/SEMO-AoLR-Annual-Report-Oct-2018-Sept-2019.pdf

In its submission, SEMO requested a reduction of almost half the IT cost reflected in 2018-2021 which is welcomed by the RAs. Previously, in the 2018-2021 decision, SEMO was provided with costs associated with 1 FTE to facilitate 0.5 FTE required to register units and a further 0.5 FTE in relation to Market Rules required for AoLR change requests. Within the 2021-2024 submission SEMO provided a functional organization chart which notes 2 FTEs allocated to this activity (with 1 FTE within trading, 0.5 FTE within registration and 0.5 FTE within market rules modifications) despite the SEMO organization chart recognizing only 1 FTE. The RAs are unable to justify allowing 2 FTEs for this function since this service has not been used by participants to date. Therefore, the RAs are minded to continue to provide an allowance for 1 FTE to cover AoLR services provided within registration, trading, market modifications and the secretariat support. As noted previously, it is at SEMO's discretion to allocate its FTE headcount quota to priority work areas.

A summary of the annual costs are shown in table 4.8a below which equates to €0.782m for the three-year period.

RAs' AoLR Proposal	2020/21 as per SEM-18-003 €m	2021/22 €m	2022/23 €m	2023/24 €m	Total for 2021-2024 €m
IT opex costs	300	171	177	185	533
Labour costs (1 FTE)	80	83	83	83	249
Total AOLR costs	380	**254**	**260**	**268**	**782**

Table 4.8a: RAs' Proposed AoLR Allowances Captured within the RAs' Proposed OPEX allowances

Further detail on the AoLR Charge to apply within the 2021/22 tariffs will be provided as part of the decision paper following this consultation paper.

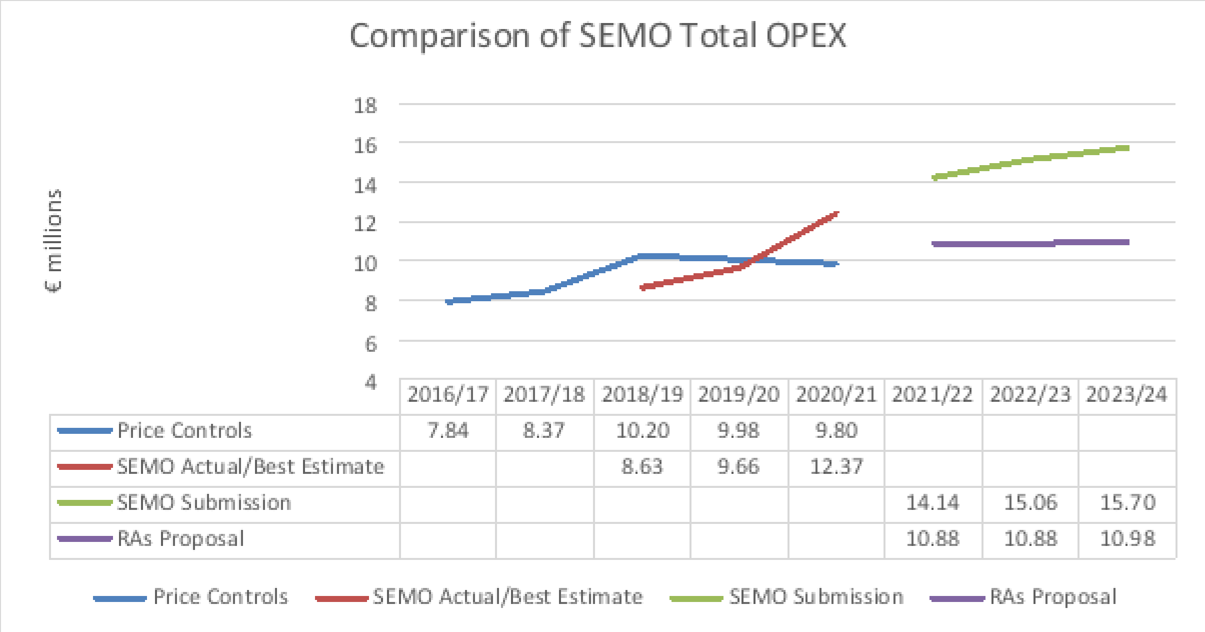
Views of the Participant Consultative Forum

The PCF indicated that this option should remain given uncertainties however there was a view that this function may not sit with SEMO in the future but that that was essentially a decision for the RAs.

4.9 Summary of Opex consultation proposals

	SEMO submission				RAs' proposals			
OPEX	**2021/22**	**2022/23**	**2023/24**	**Total € million**	**2021/22**	**2022/23**	**2023/24**	**Total € million**
Labour	5.9	6.5	6.7	19.2	5.4	5.4	5.4	16.2
IT & Telecommunications	4.6	5.0	5.3	14.9	3.3	3.3	3.3	9.9
HR, corporate and facilities	2.4	2.4	2.5	6.3	1.7	1.7	1.7	5.1
Finance & Regulation	1.5	1.5	1.6	4.5	0.5	0.5	0.6	1.5
				44.9				**32.7**

Table 4.9: Summary of overall opex proposals 2021-24



	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Price Controls	7.84	8.37	10.20	9.98	9.80			
SEMO Actual/Best Estimate			8.63	9.66	12.37			
SEMO Submission						14.14	15.06	15.70
RAs Proposal						10.88	10.88	10.98

Figure 4.9: Summary of overall opex proposals 2021-24

5. Capital Expenditure (Capex)

5.1 Key points overview: Capex

SEMO's capex submission is summarised as follows:

SEMO CAPEX Submission	2021/22	2022/23	2023/24	Total € million
Market System Releases	4.62	4.62	4.62	13.86
Market System Release Support	1.10	1.10	1.10	3.30
Predictable Business capex	3.32	5.53	2.96	11.81
Unpredictable Business capex	0.10	0.10	0.10	0.30
Known Unknowns	0.00	0.00	0.00	0.00
Total	**9.14**	**11.35**	**8.78**	**29.27**

Table 5.1a: Summary of SEMO's capex submission 2021-24

In terms of capex, SEMO has expressed considerable uncertainty in its forecasts, and posed the argument that the framework underpinning capital expenditure needs to be flexible and agile in order to respond to a changing environment.

The RAs have reviewed all projects proposed, assessed SEMO's level of certainty, and divided projects into the 'predictable capex' pot and a new 'unpredictable (uncertain) capex' pot. The 'known unknowns' presented by SEMO will be included in the unpredictable capex category. The proposed unpredictable capex allowance is capped but flexible and has capability to flex/ substitute priority projects as required. Should SEMO foresee the cap of this pot being breached, additional funding can be sought.

In addition to SEMO's 'uncertain' business cases, we note that our assessment of SEMO's 2018-21 capital expenditure indicated that the bulk of expenditure was predicted to take place in the last year of the control. We are mindful of feasibility/do-ability of the programme of forecasted capital projects and want to ensure that SEMO completes the 'must-dos' while also being afforded funding to progress with projects that would provide benefit to SEMO in 2021-24 and into the future.

RAs' CAPEX Proposal	2021/22	2022/23	2023/24	Total € million
Market System Releases	4.62	4.62	4.62	13.86
Market System Release Support	1.10	1.10	1.10	3.30
Predictable Business capex	1.88	2.93	1.49	6.30
Unpredictable/Uncertain Business capex	1.44	1.74	1.47	4.65
Total	**9.04**	**10.39**	**8.68**	**28.11**

Table 5.1b: Summary of RAs' Capex Proposals 2021-24

5.2 Background

Capital expenditure (capex) differs from operational expenditure (opex) because it is probable that future economic benefits will be associated with the expenditure spanning more than a one year period. Capital can be in the form of tangible (e.g. property, plant, equipment) or intangible assets (e.g. software, trademarks) so long as it is probable that there will be future economic benefits from the asset and the cost can be reliably measured.

Throughout the years, capex has been a key component for SEMO since it has a heavy reliance on IT systems and communications. Setting a capex allowance for SEMO enables it to recover the necessary resources to finance SEMO's investments from tariffs. The SEM revised market arrangements required significant capex associated with SEM Go-Live on 1 October 2018. The costs associated with the SEM Go Live are captured within the Regulatory Asset Bases associated with EirGrid and SONI as System Operator and a return is provided via the mechanisms in place for those separate system operator price controls.

In terms of SEMO, the commencement of the revised market arrangements in October 2018 represents a 'clean slate'[30] for SEMO capital expenditure and the associated Regulatory Asset Base (RAB). In February 2021, the SEM Committee published its decision on the capital expenditure to apply to SEMO for the period 2018-21 (SEM-21-006[31]). This ex-post approach was considered necessary as a one-off due to the level of uncertainty in setting an ex-ante capital expenditure allowance in advance of the revised market arrangements coming into effect. During the 2018-21 period the capital expenditure was predominantly required by SEMO to stabilize the new market. A total of €16.7M was allowed for the three-year period to 30 September 2021.

This price control consultation paper focusses on informing an appropriate capital expenditure allowance, for the three-year period 2021 to 2024 representing years 3 to 6 of the revised SEM arrangements. SEMO identified projects totalling €29.3M for the 2021-24 period as summarised below.

SEMO CAPEX Submission	2021/22	2022/23	2023/24	Total € M
Market System Releases	4.62	4.62	4.62	13.86
Market System Release Support	1.10	1.10	1.10	3.30
Predictable Business capex	3.32	5.53	2.96	11.81
Unpredictable Business capex	0.10	0.10	0.10	0.30
Total	**9.14**	**11.35**	**8.78**	**29.27**

Table 5.2a: Summary of SEMO Capex Submission 2021-24

[30] The legacy SEM assets and associated RAB have been captured within the SEM Decommissioning Costs

[31] SEMO 2018-2021 Capital Expenditure Decision Paper SEM-21-006 https://www.semcommittee.com/news-centre/semo-2018-2021-capital-expenditure-decision-paper

SEMO states that it has done its utmost to provide accurate and realistic estimates for the proposed predictable capex requirements. It should be noted that while SEMO identified a total cost of the capital projects as €29.3M, SEMO applied a 20% factorisation, thereby reducing requested capex to €23.4M. Given that SEMO has, as stated, done its utmost to provide accurate and realistic estimates for most projects together with market participants concerns raised in the PCF regarding challenges faced by them in recent years and the challenges expected regarding future changes to the market, the RAs have not applied the 20% factorisation within the proposal.

In 2019, EirGrid Group established a Market Development Programme Board across multiple licensees and price controls. The Programme Board sets the direction for the capital programme and facilitates SEMO's decision making in relation to capital projects. The Programme Board monitors both the progress of projects and the actual and budgeted spend for capital expenditure by price control area. In its submission, SEMO has emphasized a proposed capex framework for the period 2021-24 which includes a range of new aspects to the SEMO price control approach. This capex chapter will outline key elements of SEMO's capex submission and the RAs' proposed capex allowance for the 2021-24 period. The proposed capex framework is set out in detail in Chapter 3.

5.3 Market System Release Capital

Summary of SEMO's Submission

Following SEM Go-Live, SEMO has returned to bi-annual market system releases since April 2020. This approach allows for a range of changes to be packaged into each release. According to SEMO, and its recognition that changes to the market systems need to be implemented in a timely and accurate manner, this involves deploying larger releases, typically on a six-month deployment cycle whilst still retaining the capability of delivering Emergency Releases.

These regular and planned IT release schedules allow SEMO to co-ordinate IT and business resources and retain vendor expertise and support for the development of the Market Systems. This release strategy also provides additional clarity to participants allowing internal planning and design activities to be scheduled in advance.

A bi-annual release typically involves a 13-month delivery lifecycle with this market release capital covering the costs for design, development and factory acceptance testing of the release software package. SEMO have estimated a typical release capacity of 7,000 hours for each of the six releases across the three-year period. Within this framework SEMO has a level of flexibility in terms of:

- Prioritizing the scope of each release depending on approved TSC modifications, SEM Committee decisions etc, i.e. how the vendor hours are allocated for each release; and
- Unused hours can be carried over to a future release or alternatively additional hours can be secured from a future release.

Within SEMO's submission and at the RAs' Participant Consultative Forum held in March 2021 SEMO recognised the potentially significant level of change expected in the coming years, some of which may predominantly fall within the 2021-24 price control period. Market System changes may be required for the following:

1) TCA[32] Implementation – Loose Volume Coupling
2) Integration of new generation technology (e.g. Batteries) and system services
3) Clean Energy Package (CEP) Article 12
4) Clean Energy Package (CEP) Article 13
5) Electricity Balancing Guidelines (EBGL)

SEMO termed the above as 'Known Unknowns' as there is an expectation that these projects may specifically require market system changes. Currently the scope and implementation method has not been decided, and uncertainty exists concerning delivery timelines and costs. SEMO has chosen not to include these as separate projects within its capex submission.

Instead, the framework that SEMO intends to put in place, in addition to the flexibility outlined above within this market release capital project, is to also have the option to purchase additional market capacity (additional vendor hours) secured at the same commercial rate where larger changes may emerge that would require additional investment and vendor effort. There will, however, be an upper limit to what can be accommodated and changes may have to be prioritised in terms of timeframes for delivery. The purchase of any additional hours would be in addition to the bi-annual release costs mentioned above.

Views of Participant Consultative Forum

As discussed in Chapter 2, a key theme of the PCF discussion was integration of flexible technologies to market systems and a desire for pre-planning for uncertain workstreams involving Brexit, Clean Energy Package and the Electricity Balancing Guideline. The PCF was of the view that the magnitude of change required was more akin to evolution than revolution, but appreciated that a flexible approach would be needed to capital investment.

In terms of individual projects, the PCF had visibility of high-level examples rather than detail on individual projects. The PCF was encouraged by such a comprehensive list, but comments were received regarding the feasibility of delivering on all. Feedback was

[32] The EU-UK Trade and Cooperation Agreement

received indicating that improved testing processes are required going forward and that software capex should be designed in such a way that facilitates participant testing in advance of market releases. There was general appetite for participants to be more involved in the testing phase.

Participants were keen for improved visibility and sharing of market data to improve confidence.

RAs' comments

The RAs support the bi-annual release model for the SEM systems recognizing the flexibility it provides SEMO in terms of prioritizing the scope of each release to best utilize the vendor hours secured for the advancement of the SEM. This is particularly relevant for this price control period given the level of uncertainty regarding future changes.

Upon enquiry by the RAs, SEMO indicated that each of the areas termed as 'known unknowns' span, to varying degrees, across both the system operator and market operator roles and subsequently their associated price controls. In addition, the Brexit/ Loose Volume Coupling and curtailment projects may also impact the SEMOpx role and price control.

SEMO has indicated that the earliest release for which these 'known unknown' areas could be scoped is Release I which is scheduled for deployment in spring 2022. However their inclusion in release I and subsequent releases will be subject to the ongoing prioritization process once the full requirements have been identified.

RAs' proposals for consultation

The RAs are minded to approve the full requested amount of €13.86M for the releases during the 2021-24 price control period, recognizing that contract negotiations have yet to commence. However, given the close integration of systems and the level of uncertainty associated with changes during the price control period, the approval would be subject to:

1. Assurances from SEMO that the c7,000 vendor release hours for each release are utilised on changes driven by the market operator licensable activities. Changes driven by system operator licensable activities, such as scheduling and dispatch processes, should be funded through the EirGrid and SONI system operator price controls and therefore an appropriate cost adjustment should be applied; and
2. Reporting to the RAs in the same month as the release takes place, including, as a minimum, the following:
    a. finalized scope for that release;
    b. detailing each change and the assigned vendor hours;
    c. clear indication of those changes which are market operator driven and those which are system operator driven

d. clearly set out the hours and costs applicable to the market operator, showing the adjustments as necessary for the system operator driven changes e.g. scheduling and dispatch processes within the ABB systems.

The RAs had considered the possibility of SEMO having to seek approval from the RAs before each release takes places, similar to what had been carried out within the legacy SEM, but has chosen the above approach to allow SEMO to focus on delivery of each release while understanding the need for the above proposed reporting requirement.

5.4 Market System Release Support Capital

Summary of SEMO's Submission

Release Support capital relates to the incremental project resources such as professional fees/consultancy and internal resources needed to support the ongoing change programme for the market systems.

This release support capital includes the following associated with each release:

1) Planning: gather, develop, investigate and analyse various changes;
2) Review and approve: detailed design and baseline set of documentation;
3) Testing: partake in the vendor Factory Acceptance Testing phase;
4) Testing: Defining and executing all phases of testing post-Factory Acceptance Testing which includes System Integration Testing, User Acceptance Testing (UAT), Operational Acceptance Testing (OAT) and Market Test/Trial (when required);
5) Deployment Planning and Execution; and
6) Formal handover to Support and Maintenance Teams.

Given the volume of change and the complexity and scale of the market systems, the resources captured within this capital project include the following:

- **Senior Project Manager**

SEMO proposes the provision of a senior Project Manager (also referred to as IT Programme Manager) to ensure the appropriate controls, execution plans and reporting is in place to manage this change programme. Activities performed by this function include planning and oversight of all activities related to change and release management.

- **Business Analysis Team**

SEMO proposes the establishment of a team of four internal full-time business analysts to ensure the accurate and efficient delivery of change under a release programme. Key activities include, but are not limited to, defining the detailed requirements for all Market System changes as well as reviewing the vendors proposed design and verifying it accurately reflects the business requirement. Testing support would be provided to ensure the software delivered meets the requirements, aligns with the agreed vendor design and is of a high quality. The team would support the Modifications Committee in carrying out impact assessments for all changes in terms of cost, schedule and impact.

- **Testing and Quality Assurance (Test Analysis Team)**

SEMO continues to require three full time project test analysts to deliver the volume of change required over the lifetime of the price control. This resource is expected to continue to be outsourced and therefore provided by a managed service provider. Key activities include the preparation of detailed test conditions, scripts and execution plans and the following testing phases:

  - Factory Acceptance Testing (FAT): Ensures vendors have delivered the requirements and software to a high quality before releasing it to SEMO;
  - System Integration Testing (SIT): Performance of multiple cycles of detailed testing of all changes to the systems. Includes an end-to-end Regressions test cycle ensuring the functionality of the systems and interfaces with up/downstream systems has not been adversely impacted by change;
  - User Acceptance Testing (UAT): Involves the test team supporting the users verifying that the systems are fit for the operational environment;
  - Operational Acceptance Testing (OAT): Verifies that the systems, at a technical level, operate as expected. This testing includes performance and failover testing of the systems.
  - Market Test/Trial: Testing with market participants and other stakeholders ensuring the “industry-level solution” is verified and all stakeholder processes align.

- **Infrastructure Support**

SEMO is seeking provision for a part-time (50%) internal infrastructure analyst to manage the infrastructure, which includes servers, databases, storage devices, networking devices, traffic balancers and firewalls across multiple sites, throughout the release lifecycle particularly in preparation for the release testing phases.

RAs’ comments

In supporting the bi-annual release model, the RAs recognise the need to ensure the design and testing of each release is of a high standard before being incorporated into the SEM systems.

SEMO has confirmed that the project manager, business analysts and infrastructure analyst are assumed to be internal capitalized staff while the test analysts are provided by a managed services contract. The RAs recognise the importance of testing the SEM systems throughout the year as part of the release cycle and are proposing to provide extensive capital allowances, which includes numerous testing staff together with contracted test expertise both within this project and other capital projects e.g. the automated test capability capital project.

As part of the RAs' enquiries, SEMO was asked to indicate to what extent the market rules and systems need to be revised to accommodate new energy sources. SEMO's response was that there may not be a large number of changes to the market rules but acknowledged the pricing and settlement systems and perhaps the imbalance pricing and settlement formula within the Trading and Settlement Code may need updated to facilitate battery storage (implementation of negative Physical Notifications (PNs)). SEMO also mentioned possible changes being needed to facilitate additional interconnection, solar and off-shore wind. Such system changes for the SEM will relate to both the bi-annual market release capital and also this release support capital.

The RAs welcome the commitment to supporting the Modifications Committee in terms of supporting new energy sources and carrying out impact assessments of proposed modifications in terms of costs scheduling and impact. The RAs therefore expect these assessments to be carried out in a more timely manner than has been experienced in recent years by the Modifications Committee.

RAs' proposals for consultation

The RAs are minded to approve the full requested amount of €3.30M for the release support during the 2021-24 price control period. This provides SEMO with sufficient resources and flexibility to fully support a high quality roll-out of the releases and testing within the SEM systems.

Similar to that set out above under the Market System Release Capital project the RAs would expect the release support costs to follow the same cost apportionment between market operator driven changes and system operator driven changes.

5.5 Predictable capital projects

Summary of SEMO's Submission

A wide range of predictable capital projects were submitted by SEMO. SEMO considers the predictable business capital allowances provided in the price control enable it to plan for hardware and software upgrades, the implementation of operational support systems, improved security arrangements, the provision of market participant training and the development of market applications that will improve the availability and transparency of market data.

Table 5.5a below summarises the predictable capital projects submitted by SEMO. SEMO states that it has done its utmost to provide accurate and realistic estimates for the proposed predictable capex requirement, however there is still a high level of uncertainty associated with these costs.

SEMO Predictable Capital Submission	2021/22	2022/23	2023/24	Total € million
SEM Infrastructure Refresh	1.32	1.52	1.22	4.06
SEMO Finance System	-	2.00	-	2.00
Data & Analytics Services	0.60	0.60	0.55	1.75
Automated Test Capability	0.33	0.27	0.27	0.87
Market Analysis Tools	0.10	0.30	0.30	0.70
Cloud Adoption	0.08	0.33	0.28	0.69
Website Development	0.23	0.10	0.10	0.43
Oracle Middleware Upgrade	0.35	-	-	0.35
Registration Development	0.10	0.10	0.10	0.30
Fuel Mix Disclosure	-	0.20	-	0.20
Participant Training Content	0.05	0.05	0.05	0.15
Cyber Security	0.05	0.03	0.03	0.11
Operating Model	0.08	-	0.03	0.11
Compliance Management	0.03	0.03	0.03	0.09
Total	**3.32**	**5.53**	**2.96**	**11.81**

Table 5.5a: SEMO's Predictable Capex Submission 2021-24

SEMO stated that these predictable projects are inherently uncertain. This is due to the high level of uncertainty associated with the inability to fully predict the market developments and also a high level of uncertainty associated with the estimated costs. Therefore, in SEMO's view, there remains an element of risk associated with these predictable capital project requests at this stage.

RAs' comments

Given SEMO's hesitancy to commit fully to its proposed list of predictable capital projects within the period 2021-24, citing the level the uncertainty surrounding future market developments and a high level of uncertainty regarding costing, the RAs have chosen not to set out each capital project in turn. Instead, the RAs have focused on a small number of projects which the RAs expect will take place during the 2021-24 price control period. These are set out below.

- **SEM Infrastructure Refresh Capital Project**

Summary of SEMO's Submission

Within SEMO's submission, there is a recognition of a drive to move certain services and applications to a cloud based service reducing the need for onsite hardware etc. However, the core Market Management System (MMS) will remain in the data centres and will not be moving to a cloud based solution as the systems are not available as yet together with the complexity that would be involved.

SEMO states that the SEM systems are deployed on a wide range of infrastructure, all of which must be operating optimally to ensure the delivery of robust and resilient market services and that the term 'infrastructure' covers a broad range of devices, including servers, network devices, firewalls, traffic balancers, storage and telecommunication links.

SEMO outlines that the market systems for the revised SEM arrangements were built in 2016 and are now effectively five years old. Adequate support for End-of-Life devices and components may not be provided by vendors and therefore SEMO operates a 5-year refresh policy. SEMO monitors its infrastructure closely for slowing capabilities or failures that may signal the need for a refresh or upgrade.

In addition to the hardware and 'non-core' third party software covered by this capital project, SEMO is also seeking specialized capex FTE resources to support this SEM infrastructure refresh including:

- senior project manager
- security and network specialist
- database administrator
- infrastructure specialist
- server and storage resource

RAs' comments

Given SEMO's reliance on IT and the supporting infrastructure, the RAs are in support of SEMO's five year refresh policy and the need to ensure that SEMO has the skilled resources to monitor and upgrade the underlying infrastructure and software. Upon enquiry by the RAs, SEMO has confirmed the above resources being sought relate to capital and are not captured within the opex FTEs requirement.

The RAs note that SEMO has a separate Oracle Middleware Upgrade project (€0.35m). In the RAs' view, this could sit within this project as part of the software upgrades captured within the 'non-core' third party software and also the hardware upgrade. In relation to this, SEMO has indicated that the Oracle Middleware Upgrade project relates to an upgrade of the software which is now End of Life and must be upgraded, whereas the refresh of the underlying hardware that supports the Oracle Middleware software is captured within this SEM Infrastructure Refresh capital project.

The RAs are minded to allow the full amount of €4.06M being requested to ensure that, inter alia, sufficient storage is provided for the expected volume of data and that more generally the various software and hardware is maintained to a high standard. Given the drive to use cloud solutions where possible (including the SEMO finance system) the expectation for future price controls is that this capital Infrastructure Refresh cost should see a sizeable reduction in future price control submissions.

- **SEMO Finance System Capital Project**

Summary of SEMO's Submission

The SEMO finance system is a custom solution for managing the clearing of the all-island energy market. Extended support for this system is due to end in January 2023 after which the provider will no longer issue security updates. The next version of Microsoft Dynamics AX solution is cloud based and, in order to ensure that there is continued support, the SEMO finance system will need to be migrated to a cloud based solution.

Migrating the custom SEMO finance system and its interfaces (including registration system and counterparty settlement billing system) to the cloud will be a significant project and SEMO expect this to take approximately one year to implement. This will require extensive analysis and design of the core requirements and interfaces. The transition is from installing versions on-premises to a cloud based Software as a Service (SaaS) solution where the software is owned, delivered and managed by the provider with its use on a pay-for-use or subscription model. Whilst it will be delivered as SaaS, it is a pre-requisite that the underlying cloud platform (cloud tenant and connectivity) is developed to ensure the appropriate level of security and operation.

In SEMO's view, migrating the SEMO finance system to the cloud has clear advantages for the resilience of the system and SEMO's ability to meet customer, stakeholder and regulatory expectations. This is the only production system that will move to the cloud during the 2021-24 price control period. As it is central to the functioning of the energy market, the transition will be crucial.

RAs' comments

The RAs sought further information on the estimated cost of the project. The majority of the cost (€1.9M) is associated with the specialist external expertise to carry out the extensive analysis and design of the core requirements and interfaces along with implementing the structure required to facilitate the SEMO finance system as a cloud based solution. The remainder relates to licensing costs. The RAs view licensing costs as an operational expense and note that SEMO have included Microsoft Dynamics Axapta licensing and support and maintenance within their IT opex submission.

The RAs' note that EirGrid TSO was provided an allowance of €0.76M associated with this Dynamic AX upgrade. The additional cost information provided to the RAs outlined the vendor's estimated costs based on their experience of migrating other customers to the cloud. The RAs are concerned this is a significant cost and it has not been made clear how the vendor's estimate costs is to be shared between the System Operator business and the Market Operator business.

The RAs are therefore minded to allow €1.14M, this being the estimated market operator capital element associated with this project. This includes an adjustment to acknowledge the allowance provided as part of the EirGrid TSO PR5 price control decision for the Dynamic AX upgrade.

- **Automated Test Capability**

Summary of SEMO's Submission

Based upon SEMO's submission this capital project is for the development of automated test capability to ensure that mission critical market systems remain fit for purpose and that purely manual testing is no longer a viable option.

In SEMO's view, automation of the software testing step would deliver major operational value and increase resource utilization benefitting both the market participants and EirGrid Group[33] through:

1. Enhanced efficiency with reduced risk, delivering increased test coverage and software release confidence; and
2. Quality and accuracy through simplification of specific use cases.

The advantages of automating repetitive test cases and operational test processes include the potential to greatly increase the quality and capacity of testing performed. Examples include the ability to run automated testing out of hours allowing 24/7 execution and the reduction in human error during repetitive tests.

SEMO does intend to continue to require a significant manual test effort with existing resources being freed up for complex manual testing such as testing and verification of market calculations and testing of market algorithms.

SEMO has carried out the initial investigation into automation capability and intends to engage third parties for an independent assessment of the application landscape and feasibility of tools for specific automation use cases.

The proposed tools within this capital project are:

1. Enterprise Robotics Process Automation (RPA) Tools to automate, for example, regression testing on each release and processing of settlement data;

[33] SEMO has stated that regression testing of SEMO systems for changes made in SEMOpx or TSO business rules and systems will be required even if those changes are not directly changing pricing or settlement functionality.

2. Enterprise Test Tool to automate and standardise regression testing across the wider application landscape to provide immediate baseline confidence of applications ahead of manual testing;
3. A custom automated environment maintenance proof of concept (PoC) platform for management of test data to stabilise market systems and simulation of specific market conditions.

While the Robotic Process Automation tool is proposed, its suitability and final use case(s) are to be validated through implementation of an automation pilot programme in 2022. The intention within this capital project is to then extend and establish the automated capability by delivery of the enterprise test tool and delivery of the Enterprise RPA tool for automation of complex balancing market manual testing and operations.

RAs' analysis

The RAs are supportive of additional test capabilities within capex given the challenges faced by SEMO and market participants in recent years. The RAs are therefore minded to allow the full amount of €0.87M on the basis that the above mentioned tools are developed and rolled out during this price control period with the benefit of improving the accuracy and quality of the testing as well as enabling accelerated test phases and increasing the capacity of testing performed.

- **Website Development**

Summary of SEMO's Submission

SEMO intends to carry out further development of the website to enhance reporting capability with a particular focus on a dynamic reporting capability. This would include a 'bulk download' facility to download data/reports more efficiently. Furthermore, it would allow for data to be interrogated more intuitively using a range of advanced filters which will enable the user to compile specific and custom data sets to assist with their data analysis requirements. SEMO intends to deliver this functionality within the 2021/22 year.

Within 2021/22, SEMO intends to carry out a review of the website structure in the context of how data is displayed on the site and recommendations from this review will be implemented. SEMO also seeks provision in years 2022/23 and 2023/24 to facilitate emerging changes, for example, developing application programming interfaces (i.e. mobile apps), provision of a pre-production test environment, implementing new reports, ensuring security of the website is maintained and improving page structures and dashboards.

RAs' comments

The RAs welcome this website development project and the commitment made by SEMO to have the dynamic reporting capability available to market participants and other stakeholders within the 2021/22 year.

The RAs noted the clear feedback received from market participants within the 2018-21 SEMO capital expenditure consultation (SEM-21-006) and the need for dynamic reporting as part of the website functionality. On that basis the RAs are minded to allow the full amount being sought in year 2021/22 of €0.23M, as being predictable capex, which is consistent with the cost estimate SEMO provided for the 2018-21 submission.

The amount of €0.2M being sought in total for years 2 and 3 of this price control appear to be more discretionary in nature, particularly given SEMO may need to re-prioritise projects as more becomes known on priorities during the price control period. Therefore, this €0.2M has been moved to the unpredictable capital category to allow SEMO the flexibility for such reprioritization of certain projects. More information is provided later in this chapter.

RAs' proposals for consultation

Based upon a review of each of SEMO's capital project business cases within SEMO's submission, the RAs have set out above what they view as predictable and necessary capital expenditure for this price control period. This is summarised in the table below:

RAs' Proposed Predictable Capital	**2021/22**	**2022/23**	**2023/24**	**Total € million**
SEM Infrastructure Refresh	1.32	1.52	1.22	4.06
SEMO Finance System	-	1.14	-	1.14
Automated Test Capability	0.33	0.27	0.27	0.87
Website Development	0.23			0.23
Total	**1.88**	**2.93**	**1.49**	**6.30**

Table 5.5b: RAs' Proposed Predictable Capex Projects for SEMO

5.6 Unpredictable Capex

Summary of SEMO's submission

SEMO has advised that there is a requirement to have a level of unplanned expenditure pertaining primarily to costs associated with:

- replacement of failing or obsolete software or hardware components;
- new business requirements that demand a different set of components;
- the availability of new products on the market that would address longstanding issues;
- the fact that a software upgrade on one side of the EirGrid Group business may mean that existing software on another side may be incompatible;
- the need to provide for corporate developments which are emerging from EirGrid/SONI to which SEMO would contribute.

In SEMO's view it is necessary to have the flexibility/agility to react to any of these changes in a timely fashion so that the expected level of service can be provided to stakeholders. SEMO view this as a minor value for unpredictable capex, to be used as a discretionary fund with costs recoverable on a pass-through basis.

RAs' comments

The RAs are proposing an alternative arrangement for unpredictable/ uncertain capital. This would provide SEMO with a level of certainty regarding a set allowance which can provide additional flexibility during the price control period that can be utilised on capital projects which are not specifically captured in the predictable capex allowances above, depending on the prioritisation of capital projects during the price control period.

This can be utilised for the 'known unknowns' mentioned earlier for example if additional vendor hours are required for a bi-annual release to facilitate, for example, battery storage within the market.

Those projects which SEMO submitted as predictable capital but which were not captured by the RAs' proposed predictable allowance above (for reasons such as a lack of clarity around the need for the project in this price control period, or the benefits and the actual asset delivered from the project) have instead been captured within this proposed unpredictable capex allowance.

RAs' proposals for consultation

The RAs' proposed unpredictable capex allowance is €4.65M.

This is provided to SEMO to facilitate capital projects which SEMO deems necessary for the market operator business during the price control period which have not been captured within the other allowances. SEMO will have the flexibility to prioritise projects within this category without being confined to a definitive list. We expect that market participants will be involved in annual reviews of SEMO's capex plans going forward to improve accountability.

This flexible framework would be provided on the following basis:

1. the unpredictable allowance is treated as a revenue cap and is not on a pass-through basis;
2. SEMO must report to the RAs annually detailing each project. This detail must include the need for the project, the final cost, detail of the asset delivered and the expected future benefit to be obtained from the asset.
3. SEMO must report to stakeholders/market participants annually on the use of this allowance.
4. Each project cost will be subject to RA approval (as part of the k-factor process) with the onus on SEMO to prove that the expenditure has been efficiently incurred, demonstrably necessary for the purposes of the market operator business and

expenditure is incremental to existing price controls and capable of being robustly validated by the RAs.

5.7 Summary of RAs' Total Capex Proposal

To summarise the above capex projects, the RAs are proposing to allow SEMO €28.1M as a capital allowance for the three-year period 2021-24.

RAs' CAPEX Proposal	2021/22	2022/23	2023/24	Total € million
Market System Releases	4.62	4.62	4.62	13.86
Market System Release Support	1.10	1.10	1.10	3.30
Predictable Business capex	1.88	2.93	1.49	6.30
Unpredictable/Uncertain Business capex	1.44	1.74	1.47	4.65
Total	**9.04**	**10.39**	**8.68**	**28.11**

Table 5.7a: Summary of RAs' total capex proposals 2021-24

SEMO had set out a request for €23.42M, being the total of the projects outlined above of €29.27M with a 20% factorisation applied. However, SEMO acknowledged that additional monies would be required during the price control period for 'known unknowns' relating to Brexit/Loose Volume Coupling, Clean Energy Package Articles 12 and 13 and the European Balancing Guidelines but did not propose a cost for such 'known unknowns'.

The RAs have not applied the factorisation proposed by SEMO, and instead have taken into consideration the concerns raised by market participants at the PCF regarding the challenges faced by participants in recent years and the challenges to be faced regarding future changes to the market during the price control period.

Therefore the allowance proposed is to ensure market participants concerns are addressed and also to ensure SEMO has sufficient capital expenditure available with a good degree of flexibility to manage both the predictable and unpredictable (including known unknowns) capex throughout the three year period.

5.8 Regulatory Asset Base (RAB), Depreciation, WACC Return

The commencement of the revised SEM arrangements on 1 October 2018 represented a 'clean slate' for SEMO capex and the associated Regulatory Asset Base (RAB). This is evidenced in the table below which shows SEMO's 2018/19 opening RAB value as €0.

The SEM Committee carried out an ex-post review of SEMO's capex for the period 2018-21 for which a decision (SEM-21-006) was published in February 2021[34]. Table 5.8b below reflects this decision which comprises of actual capex for years 2018/19 (€4.45M), 2019/20 (€4.18M) and an estimate for the current year 2020/21 of €8.06M.

At September 2021, which represents the end of the current three-year price control, SEMO's RAB is expected to have increased from €0 to a closing value of €12M. This is projected to increase to €22M by the end of year 2023/24 based upon the RAs' total capex proposal of €28M across the three-year period.

It is worth noting that the RAB value during the 2021-24 period is more akin to the levels experienced in the legacy SEM before the RAB was ramped down in advance of the new market arrangements. During the 2018-21 price control process, SEMO was cognisant of the opening RAB being low and considered that the RAB would be relatively low in the future[35]. This was a key argument by SEMO in requesting the introduction of a margin. The RAs recognised the RAB/WACC return was expected to be low during the 2018-21 period and this contributed to the decision (which was made in advance of SEM Go Live in October 2018) to also include a margin of 0.25% on collection agent revenues (capacity market, socialization fund and residual error). This margin equated to an actual value of €863k for year 2018/19 and is expected to be similar for years 2019/20 and 2020/21. In making the decision to include a margin the SEMC recognised the need for this to be reviewed at the next price control i.e. 2021-24 period. The RAB/WACC projections for 2021-24 below in Table 5.8b are important considerations in reviewing afresh a margin for SEMO for this price control.

The Weighted Average Cost of Capital (WACC) is a weighted average of the cost of debt and the cost of equity. The application of a WACC to a Regulated Asset Base (RAB) aims to represent a fair balance between exposure to risk and return earned.

The RAs propose to continue with the current WACC mechanism, which blends the two System Operator WACCs in accordance with the specified proportions, currently 75% for EirGrid and 25% for SONI[36].

Table 5.8a below shows the WACC applied in the current price controls[37], for both EirGrid and SONI in their capacity as system operators for Ireland and Northern Ireland respectively.

[34]SEMO 2018-2021 Capital Expenditure Decision Paper SEM-21-006 https://www.semcommittee.com/news-centre/semo-2018-2021-capital-expenditure-decision-paper

[35] SEM-18-003 SEMO 2018-21 Price Control Decision Paper

[36] Per the Market Operator Agreement between EirGrid and SONI

[37] The WACC may change slightly during the period due to e.g. changes in assumed corporation tax rates

WACC Rate	TSO WACC Decisions	Specified Proportion	SEMO WACC
Eirgrid TSO[38]	3.80%	75%	2.85%
SONI TSO[39]	4.03%	25%	1.01%
Blended Rate for SEMO WACC			**3.86%**

Table 5.8a: Blended WACC based on SEMO Submission and RAs' Proposal

The provision of a blended WACC for SEMO is advantageous to SEMO in that the risk attached with carrying out the market operator activities is viewed as lower risk than the activities of EirGrid and SONI as system operators.

Table 5.8b below summarises SEMO's RAB for the period 2018-21 and expectations based on the RAs' proposals within this consultation for the period 2021-24. The RAB value is expected to increase from €12m to €22m creating an annual WACC return increasing from €0.56M to €0.84M during the period. Depreciation is calculated on a 5 year straight-line basis and estimated annual depreciation charges are also provided in Table 5.8b.

RAB Depreciation WACC	SEMO Price Control 2018 - 2021			SEMO Price Control Proposals 2021 - 2024		
	Actual 2018/19	Actual 2019/20	Estimated 2020/21	Forecasted 2021/22	Forecasted 2022/23	Forecasted 2023/24
Opening RAB (€m)	-	3.996	6.651	12.181	16.977	21.180
Additions (€m)	4.454	4.184	8.064	9.040	10.390	8.680
Depreciation (€m)	**0.457**	**1.529**	**2.534**	**4.244**	**6.187**	**7.637**
Closing RAB (€m)	3.996	6.651	12.181	16.977	21.180	22.223
Average RAB (€m)	1.998	5.324	9.416	14.579	19.079	21.701
Blended WACC	5.18%	5.18%		3.86%	3.86%	3.86%
WACC return (€)	**103,509**	**275,778**	**383,247**	**562,761**	**736,432**	**837,670**

Table 5.8b: SEMO's Expected RAB, Depreciation and WACC Return based on RAs' Price Control Proposals

[38] Pre-tax WACC as defined in EirGrid TSO PR5 Transmission Revenue for 2021 to 2025
[39] Pre-tax WACC as defined I SONI TSO Final Determination for 2020 to 2025

6. Incentivisation

As discussed in Chapter 3, it is the view of the RAs that customers should benefit from a regulatory framework which puts emphasis on the outputs being delivered while allowing SEMO the flexibility to deliver this. Cost incentives will allow SEMO to keep the difference between allowed and efficiently incurred expenditure, while performance incentives will encourage enhanced service levels and a flexible investment framework will allow SEMO access to funding in response to changing needs in order to facilitate a flexible approach to investment.

6.1 Key points overview: Incentivisation

A range of incentives are proposed for the 2021-24 price control period with differing approaches to incentivise opex, capex and SEMO's outturn performance.

Opex costs will continue to be incentivised via the revenue cap (RPI-X) regulation. This provides an incentive for SEMO to make opex cost efficiencies which can be retained during the price control period. Such cost efficiencies are then to be captured by the RAs in setting the next price control and passed on to consumers.

Capex costs will be incentivised via a new approach focused more on outputs. This reflects recognition of the need for a flexible and agile capex framework for the 2021-24 period. All capital expenditure by SEMO will be recoverable subject to SEMO proving the spend has been efficiently incurred, demonstrably necessary, is incremental to existing price controls and capable of being robustly validated by the RAs. In addition, the unpredictable capex allowance is proposed to be provided as a cap. SEMO will have the ability to apply for additional funding should it foresee the cap being breached. Enhanced reporting will also be required which should involve market participants. This capex incentivisation framework is aimed at incentivising SEMO to spend efficiently and prioritise capex workload for the advancement of the SEM.

Key Performance Indicators (KPIs) aim to encourage high performance and are an effective mechanism to encourage benefits to stakeholders with better quality and service. The incentives should evolve with the organisation and represent a challenging target which is attainable with the utilization of resources provided. With this in mind, the RAs are proposing to retain four of the existing six KPIs with a KPI incentive reward of €1.3M (based on 4% of the total opex allowance) for the three year period. However, it is proposed that the KPI reward will be conditional on SEMO first closing out specific known issues and making certain improvements to resettlement and re-pricing by the end of the first year of this price control (ie. by September 2022). The detail associated with this proposal is outlined below. The RAs are seeking feedback on the appropriateness of KPIs associated with the SEM systems fully incorporating existing technologies (for example, battery storage and the ability to make energy payments directly to DSUs). Feedback on all aspects of the KPI proposals below is welcomed.

6.2 Opex incentives

Since 2010, SEMO's opex has been subject to revenue cap (RPI-X) regulation; the RAs propose no change to this for the 2021-24 price control. This is a means of providing appropriate incentives for a regulated organisation like SEMO to achieve efficiencies and reveal information to the regulator. An ex-ante opex allowance is set by the RAs at the start of a price control period and is designed to protect from inefficient cost rises. The regulated company has an incentive to achieve at least the efficiencies anticipated by the regulator because if it fails to do so it will not recover its costs. It also has an incentive to achieve greater efficiencies because it will enjoy additional profits for the remainder of the control period. At the next price control, the regulator benefits from the information the company has revealed about its efficient costs and takes this into account when setting allowances for the next price control. This approach provides the companies with incentives to become more efficient and reveals information to the regulator. It therefore helps to address the problem of asymmetry of information, which results from the fact that the company will always know more about its costs than the regulator.

6.3 Capex incentives

For the 2021-24 price control, the RAs have proposed a revised framework for cost recovery. This involves the setting of a cap on 'unpredictable capex' which, if SEMO envisages will be breached, will be subject to further regulatory scrutiny.

All capital expenditure will be assessed by the RAs to ensure SEMO prove that:

1. Expenditure has been efficiently incurred;
2. Expenditure was demonstrably necessary;
3. Expenditure was incremental to existing price controls and capable of being robustly validated by the RAs.

The onus is on SEMO to evidence these three criteria to allow for full recovery of costs incurred; SEMO is therefore incentivised to spend in this manner.

In addition, the RAs have proposed that an enhanced regulatory reporting regime will be initiated for this price control with involvement of market participants; this should further incentivize SEMO to drive down costs and prioritise workload.

6.4 Performance incentives

Background

Key Performance Indicators (KPIs) have been a regular feature of the SEMO Regulatory Framework across previous SEMO price control decisions. KPIs were paused for year 2018/19 to allow a bedding in period for the first year from SEM Go-Live. The SEM Committee introduced a set of six KPIs, within the SEMO Key Performance Indicators decision paper (SEM-19-033)[40], applicable to the revised SEM arrangements from 1 October 2019 to 30 September 2021 to align with the end of the current price control period.

Incentives should encourage high performance and are an effective mechanism to encourage benefits to stakeholders with better quality and service. The incentives should evolve with the organisation and represent a challenging target which is attainable with the utilization of resources provided.

The current financial incentive for KPIs has been linked to a maximum award of 4% of the total operational expenditure (opex) allowance in each year. In recent years this has equated to an incentive pot of approximately €400K per annum.

Views of the Participant Consultative Forum

As part of the PCF sessions, SEMO touched on KPIs at a very high level.

During those discussions and also taking account of PCF feedback the emphasis was placed on the need for the existing SEM systems to be stabilized. This should then allow for KPIs to be met or alternatively an incentive/penalty should be put in place which is clearly defined (including timelines) as to what is meant by a well-functioning market and stabilization of the SEM systems.

Participants recognised a need to ensure that the significant monies recently invested in the revised SEM are used well and provide a tangible value-add with a focus on reducing known issues. The PCF feedback placed importance on a period of stability with no major changes being required, this would allow for catch up and incorporation of existing flexible technologies whilst ensuring that no prematurely sought attempts to focus on new market developments would be harmful to existing participants.

The PCF expressed a view that there was an expectation for SEMO and indeed participants to perform in a prudent and effective manner. There was comment that KPIs should not be used to cover obligations; rather they should recognise extra service beyond the basic. SEMO indicated its difficulties with achievability of targets. There was concern as to the

[40] SEMO Key Performance Indicators Decision Paper SEM-19-033

underperformance against the current KPIs as well as SEMO's expectation that they would be a challenge to achieve even as a more stable market nears.

RAs' comments

Upon the commencement of this price control period the revised SEM arrangements will have been in place for three years. With this in mind, along with the feedback received from the PCF, the KPIs have been reviewed afresh by the RAs.

In its price control submission, SEMO proposed KPIs in a similar format to those currently applied (i.e. SEM-19-033) with a proposed KPI pot of €1.8M for the three-year period. These are outlined in Annex C for information and transparency; however, the proposed definitions and targets in some cases are not conducive of the high performance that would be suitable for setting a KPI.

SEMO has recently published a 2019/20 KPI report[41] on the SEMO website during May 2021. A summary of SEMO's 2019/20 KPI performance and reward is provided in Annex D. The RAs have taken the information within the report along with views of the PCF into account, in arriving at the proposed approach to KPIs for the 2021-24 price control period. The RAs are interested in receiving stakeholder feedback in relation to KPIs.

It is worth outlining the RAs' observations and comments on SEMO's 2019/20 outturn KPI performance.

The 2019/20 overall average of 30% KPI performance is consistent with what was a challenging year for SEMO. The RAs are encouraged that three (System Availability, General Queries, and Credit Cover Increase Notices) of the six KPIs were met to some extent within each quarter. The notable improvement in quarter 4 (July – September 2020) where the invoicing KPI was met for the first time, together with known invoicing issues due to be resolved in Market System Release G (June 2021), is also encouraging for the general performance of the invoicing function.

The current SEMO KPI decision (SEM-19-033) recognised that SEMO is now responsible, due to the revised market arrangements, for Capacity Market and Imbalance Settlement as well as Balancing Market Settlement. This has been reflected within the current Resettlement Query KPI which was increased to 15 incidents per quarter[42]. While the resettlement function has been challenging during 2019/20 the RAs' expectation is that this will greatly improve following the implementation of Market System Release G (June 2021). In addition, the Resettlement Query KPI should benefit from the capital expenditure (€0.6M)

[41] SEMO 2019/20 KPI Report https://www.sem-o.com/documents/market-operator-performance/SEMO-KPI-Performance-2019-2020_Final.pdf

[42] Previously in legacy SEM the lower bound target was set at 9 incidents per quarter for 2016 – 2019 (SEM-16-043)

allowed for in 2018/19 and 2019/20 which was to provide a future economic benefit by resolving significant issues within the settlement system post SEM Go-Live. SEMO stated[43] that it was “to bring the settlement and resettlement functions in line with their intended use i.e. to settle and resettle the market in a timely fashion”.

The timely publication of accurate and complete market information is a fundamental part of SEMO’s reporting obligations. This KPI is aimed at recognizing the importance placed on the market information by stakeholders including market participants. It is therefore disappointing to learn that SEMO has chosen not to assess any aspect of this KPI, particularly as nine of the reports included in this KPI were put forward by SEMO in 2019[44] as being assessable under this KPI. Given this outcome the RAs enquired as to the functionality of the ‘Reporting and Market Surveillance’ interface within the SEM systems architecture to which SEMO responded that it was de-scoped from I-SEM project delivery.

RAs’ proposals for consultation

The RAs are sympathetic to market participants’ views and the need for improved market confidence particularly as this price control will cover the third to sixth year of the revised SEM arrangement. It is important that the SEM is sufficiently stabilized to appropriately settle the current market and to incorporate existing technologies during this period in advance of the magnitude of change which is expected post 2024 (for example, Electricity Balancing Guidelines, interconnection with Europe (Celtic Interconnector), Security of Supply on the Island, Climate Change policies for 2030 and beyond and also the EirGrid Group’s initiative on ‘Shaping our Electricity Future’).

This may, in part be achieved through the KPI framework, in addition to the significant capex allowance of €28.1M being proposed by the RAs in this consultation.

In summary, the RAs are proposing to reduce the number of existing KPIs from six to four, however the KPI reward would be conditional on SEMO closing out specific known issues and making certain improvements to resettlement and re-pricing by the end of year 1 being September 2022. While the detail associated with this proposal is outlined below, the RAs would welcome feedback on all aspects of this proposal.

The weekly known issues report published by SEMO contains known issues which have existed since SEM Go-Live and remain unresolved at the time of writing this paper in May 2021. The RAs are keen that these be closed out as soon as possible and have identified those known issues listed within the Known Issues Report[45] which have been added to the

[43] SEMO response to SEM Committee Consultation on SEMO 2018-2021 Capital Expenditure (SEM-20-086)
[44] SEM-19-011a SEMO Key Performance Indicators Response Paper published alongside SEMC Consultation Paper
[45] Known Issue Report Published by SEMO on 7 May 2021

report within the first two years since SEM Go Live i.e. October 2018 to September 2020. These are listed in Table 6.4a below.

Known Issue ID	Description	Date Added	Resolution Date
107468 (5796)	REPT_042 Forecast Imbalance Report is not calculating the sum of the data within the reports correctly.	15/11/2018	TBC
147516 (5952)	REPT_008: Imbalance Price Report	01/03/2019	Release G June 2021
147526 (5942)	VTOD Changes Taking Effect on Approval	15/03/2019	Release G June 2021
147498 (5977)	REPT_082 PUB_AvgOutturnAvail is publishing data for de-registered units	29/03/2019	Release G June 2021
147300 (5998)	Differences in BOA values between OUI and CSB intermittently	12/04/2019	Release G June 2021
147496 (5980)	CRM Unit Capacity values being knocked off following Reg import due to overlaping date ranges	17/05/2019	TBC
135352	Updated PMO market prices cannot be made effective for Tariff Year (only 1st January onwards)	04/10/2019	TBC
157930 (136475 & 6148)	Settlement Document Creation is limited to four Billing Periods	18/10/2019	Release G June 2021
147192 (6165)	Pseudo DIs not being created for DSU Desync Instructions in Settlement IP. Resulting in incorrect BOAs within Settlement.	08/11/2019	Release G June 2021
146721 (5318)	Settlement Calendar Publication times of statements	13/12/2019	Release G June 2021
146749 (5447)	Currency Jurisdiction being set to NULL where jurisdiction is not ROI or NI.	13/12/2019	TBC
146978 (6185)	REPT_035: PUB_DailyRegisteredUnits	10/01/2020	Release G June 2021
156674 (153771 & 206073)	ISEM CSUR Heat States incorrectly. Affects CSUR and CNL calculations when scenario occurs.	21/02/2020	TBC
157093	Minor inconsistencies in Generation Schedule for wind units within RTD	13/03/2020	TBC
179136 (168634)	Incorrect application of COD in Imbalance Pricing.	22/03/2020	TBC
172107	CFC CSU Not Processed Correctly.	12/06/2020	In part Release G & Future Releases
177362	CFC missing CSU payments intermittently	25/09/2020	Release G June 2021
191950 (SF 1462042)	Unexplained IP QBOA Slope Error	25/09/2020	Release G June 2021

Table 6.4a: List of Known Issues falling with the first two years since SEM Go Live.

The RAs note that Release G, scheduled in June 2021, is expected to resolve a number of these known issues in advance of the commencement of this price control on 1 October 2021 and may be resolved when the RAs come to making a decision on this price control in August/September 2021.

This list is aimed at identifying those known issues which SEMO should have resolved by the end of year 2021/22, in addition to improvements in re-settlement and repricing being achieved (outlined below), in order to be eligible for a KPI reward against the suite of 4 KPIs. The RAs would welcome feedback on the list of known issues as there may be high priority known issues, which could be resolved by September 2022, but which have not been captured.

In addition to the resolution of specific known issues, the RAs are keen that improvements are made in relation to the backlog that exists within resettlement and re-pricing and that these improvements are made by the end of 2021/22.

The RAs understand that M+4 and M+13 resettlement is up to date. However, ad-hoc resettlement timelines are a concern as SEMO is currently carrying out ad-hoc resettlement for December 2018 being approximately a 2 ½ year lag. SEMO has indicated it will continue to assess and review the ad-hoc schedule once Release G (June 2021) is deployed[46]. In relation to SEMO KPIs, the RAs are proposing an improvement of 12 months on the current ad-hoc schedule by the end of year 2021/22 as being necessary before any KPI reward can be provided.

[46] As presented by SEMO at the Market Operator User Group (MOUG) on 27 May 2021

Re-pricing commenced on 4 February 2021 and at 27 May 2021 SEMO is approximately 65% through the re-pricing schedule with repricing published up to February 2020[47]. This is encouraging and therefore the RAs can reasonably expect that repricing would be up-to-date during 2021/22 if not before.

The RAs view the resolution of both the known issues and resettlement/repricing as necessary in rebuilding market confidence and this paves the way towards a well functioning market with stabilised SEM systems.

Subject to SEMO closing out the above mentioned known issues and resettlement/repricing issues by the end of the first year of this price control i.e.by September 2022, the proposed suite of four KPIs are taken from the existing suite of KPIs currently in place for SEMO[48].

RAs' Proposed Annual KPIs 2021-2024				
Metric	**Weighting**	**Target**	**Upper Bound**	**KPI Reward per annum**
Invoicing	30%	97%	100%	€ 130,548
SEMO Re-settlement Queries	40%	<15 per Qtr	<5 per Qtr	€ 174,064
General Queries (resolved within 20 business days)	10%	95%	99%	€ 43,516
System Availability	20%	99%	99.9%	€ 87,032
Maximum Available Reward Per Year based on 4% of Opex Allowance for 2021/22	100%			€ 435,160

Table 6.4b: RAs' proposed suite of KPIs for SEMO during 2021 - 2024

The RAs are proposing that for the above four KPIs, the upper and lower bound targets remain consistent with the targets currently in place; the RAs view these are challenging but achievable by SEMO for the period 2021-24, particularly acknowledging the increase in resources available to SEMO.

The underlying assumptions would remain unchanged.

However, SEMO advised the RAs in 2019 that the market monitoring system was not yet operational so the availability of the Market Participant Interface (MPI) was to be monitored in its place. Based upon SEMO's KPI submission for 2021-24 the RAs understand this continues to be the case so the MPI availability will be monitored instead.

Two of the existing KPIs have been removed. The RAs have chosen to remove the KPI associated with 'Timely Publication of Key Market Information'. This was removed as SEMO has not sought a reward for this KPI in 2019/20 as SEMO states that the appropriate information to measure this KPI cannot currently be compiled. The KPI associated with

[47] As presented by SEMO at the Market Operator User Group (MOUG) on 27 May 2021

[48] SEM-19-003 SEMO KPI Decision Paper for 2019 - 2021

Credit Cover Increase Notices (CCINs) has also been removed as the processes are sufficiently bedded in and this is evidenced by SEMO meeting the target in each quarter during 2019/20. While the RAs note SEMO's strong performance in 2019/20 in relation to system availability, the RAs are of the view this remains an important area to continue to provide an incentive.

With the removal of two KPIs the weighting associated with the remaining four KPIs has changed. In all cases, the weighting has been doubled with the exception of system availability which has increased from a weighting of 15% to 20%.

The KPIs have an asymmetric structure in that there is only an upside reward available to SEMO with no risk of financial loss or penalty. The incentive reward available to SEMO, subject to SEMO resolving the specific known issues and making the improvements to resettlement and repricing by September 2022, is 4% of the total proposed opex allowance provided across the three-year period (equates to €1.3M). The total KPI reward is therefore tiered depending on which year SEMO meets the pre-conditions, with up to €0.9M available if the pre-conditions are met by the end of Year 2, and up to €0.4M if the pre-conditions are not met until the end of Year 3.

The PCF gave particular focus to the need for the SEM systems to fully incorporate and facilitate existing technologies such as battery storage. In addition, enduring arrangements associated with DSUs directly receiving energy payments, as required by State Aid, remain outstanding. The RAs are of the view that the capex allowances and capex framework (including reporting) proposed in this consultation should not hinder these areas during the 2021-24 period. However, it may be worth considering if these areas should also be included in the suite of KPIs. The RAs would welcome feedback on this in the context of SEMO's market operator activities as they may require policy development and implementation when extends beyond SEMO's responsibilities.

In relation to KPI reporting, the RAs have given consideration to the following. Each year SEMO produces and publishes a Market Operator's Annual Performance Report, the most recent report relates to year 2019/20[49]. EirGrid plc and SONI Ltd, operating as SEMO are required under their respective Market Operator Licenses to provide an annual report on Market Operator Performance to the RAs for approval with publication required both within the Trading and Settlement Code (B.16.2) and the SONI MO and EirGrid MO licence conditions.

Reflecting on feedback received from the PCF, the RAs see merit with the performance criteria associated with the annual performance report also include a detailed outturn of the KPI(s) together with any expected (subject to RA review) financial reward. This would provide stakeholders with greater transparency of SEMO's performance on a timely basis.

[49] 2020 Market Operator's Annual Performance Report

The RAs would welcome consultation feedback on all aspects of the KPI proposals including the proposed approach relating to incentivising the resolution of specific known issues and improve the resettlement/re-pricing functions. Feedback on the possible inclusion of KPIs associated with facilitating existing technologies e.g. battery storage and providing energy payments direct to DSUs would also be welcome.

7. Financeability

7.1 Key points summary: Financeability

One of the considerations of the RAs and stated 'desired outcomes' of SEMO for the 2021-24 price control is to achieve a financeable framework under which SEMO can effectively operate.

The next SEMO price control sets the amount of money (allowed revenue) that can be earned by SEMO during 2021-24. Allowed revenues have to be set at a level which covers SEMO's costs and allows it to earn a reasonable return subject to incurring efficient and demonstrably necessary costs which are incremental to other price controls.

In its price control submission, SEMO stated that there were gaps in the price control framework which could affect its financeability. In addition to receiving a WACC return, an amount each year in respect of a Parent Company Guarantee, and a margin on collection agent revenues, SEMO requested consideration of a premium in respect of asymmetric capex risk and a margin in respect of operational risk.

The RAs' appointed consultants to review SEMO's financeability and each of the components which provides or could provide SEMO with a revenue stream. A summary of our proposals is as follows:

- Recalling that SEMO exists as a contractual joint venture between EirGrid plc in Ireland and SONI Ltd in Northern Ireland and the WACC applicable to SEMO, as determined previously by the SEM Committee, is a blend of the WACC applicable to EirGrid TSO (set by CRU) and the WACC applicable to SONI TSO (as set by UR), our review of this blended WACC for SEMO is that it is advantageous to SEMO in that the risk attached with carrying out the market operator activities is viewed as lower risk than the activities of EirGrid and SONI as system operators.
- Similarly, the amount allowed for a Parent Company Guarantee (PCG) could be viewed as ample, and the WACC for SEMO would be reduced to offset this. However, the RAs do not propose a change to the existing approach to SEMO's WACC or PCG at this time.
- While the RAs recognise that a small theoretical risk of disallowance of capital expenditure exists, SEMO has provided no convincing evidence of significant cost disallowances in its capital programme to warrant receipt of a guaranteed premium going forward. As noted in Chapter 3, the RAs have provided for a capex framework which allows SEMO to recover all capital expenditure as long as specific criteria are met. For this reason, no additional premium will be afforded to SEMO in respect of asymmetric capex risk.

- The 2018 SEMO price control decision allowed for a margin on collection agent revenues but noted that *'Given the potential for an initial period of uncertainty in the operation of certain aspects of the ISEM, the SEM Committee considers that a margin of 0.25% is appropriate in this case. This will be reviewed at the next price control, given that any risk will have been mitigated through experience of the performance of the new I-SEM'*. While SEMO received a margin for collection agent revenues during 2018-21, the RAs propose to remove this going forward. Any residual risks associated with SEMO collection agent costs are entirely managed by the working capital facility.
- SEMO has not been and should not be remunerated for operational risk beyond the usual WACC/RAB remuneration as the RAs do not view SEMO as a high-risk business.
- SEMO's ability to make efficiencies within opex is discussed in Chapter 4.
- SEMO's ability to earn additional monies by performing well and achieving targets through KPIs, as discussed in Chapter 6.

7.2 Background

One of the considerations of the RAs and stated 'desired outcomes' of SEMO for the 2021-24 price control is to achieve a financeable framework under which SEMO can effectively operate.

At present, SEMO receives a Weighted Average Cost of Capital (WACC) return on its Regulatory Asset Base (RAB). SEMO's WACC is a blend of the WACC applied to EirGrid TSO and SONI TSO respectively, in line with a SEM Committee determination.

SEMO also receives a margin of 0.25% in respect of Collection Agent Revenues[50]. SEMO states it is to allow for cashflow volatility, working capital and liquidity risk. SEMO states that this is consistent with the framework for the EirGrid and SONI TSOs.

In addition, SEMO receives provision for the cost of EirGrid providing SONI with a Parent Company Guarantee as required under the SONI Market Operator Licence. This equates to €300K per year.

A suite of KPIs, discussed in Chapter 6, also allows SEMO opportunity to boost its revenue stream if set targets are reached.

Furthermore, the revenue cap regulation applied to opex incentivises efficiency savings which are retained by SEMO during the price control period. SEMO made it clear in its

[50] Margin applied to Capacity Charge, Residual Error Volume Charge and CRM Difference Payment Socialization Charge.

written responses to questions from the RAs' consultants that it is not submitting for provision for asymmetric risks in respect of opex.

In its price control submission, SEMO outlined categories of risk which it believes it is subject to under the following categories:

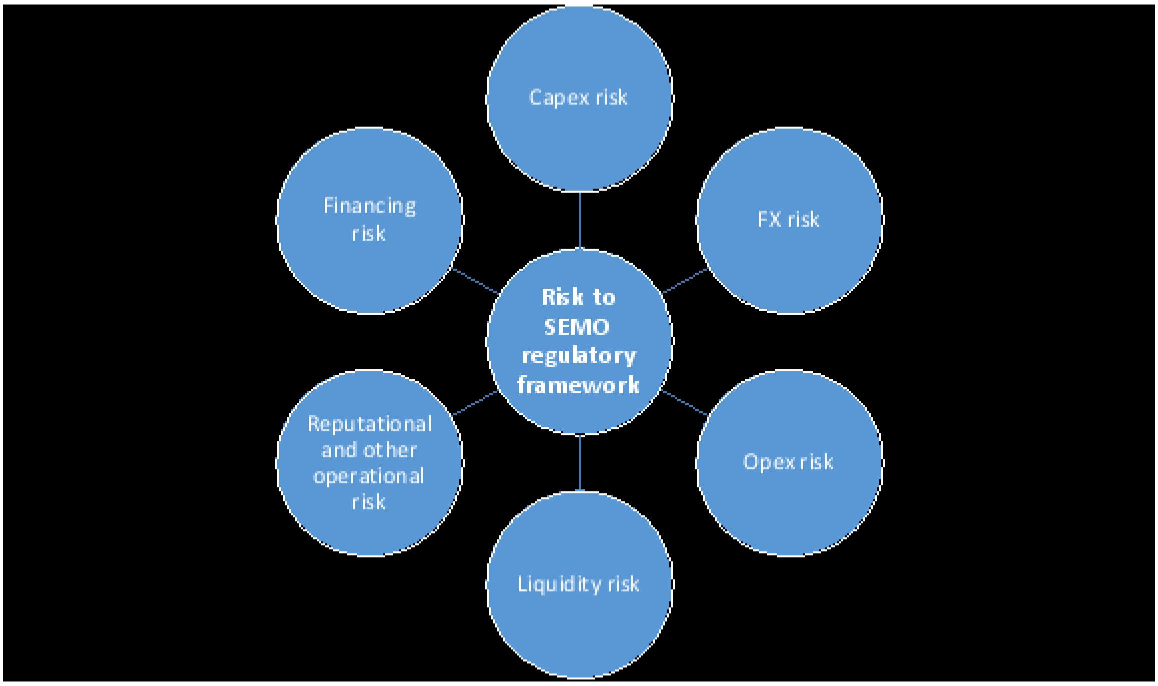


Figure 7.2: Risk to SEMO regulatory framework
Source: SEMO price control submission

Of the above categories, SEMO states that there are gaps in SEMO's regulatory framework especially in relation to Capex risk, Opex risk and Reputational/other operational risk.

SEMO states that the framework which applies to the 2018-21 period is one where the ex-ante revenue cap was inadequate and where the ex -post capex framework is asymmetric. SEMO's submission focusses heavily on decisions of the Competition and Markets Authority (CMA) in 2017 for the SONI TSO price control.

7.3 SEMO submission

RAB WACC approach

SEMO receives a Weighted Average Cost of Capital (WACC) return on its Regulatory Asset Base (RAB). SEMO's WACC is a blend of the WACC applied to EirGrid TSO (set by CRU) and SONI TSO (set by UR) respectively, in line with a previous SEM Committee determination. SEMO proposes no change to this approach for 2021-24.

Parent Company Guarantee (PCG)

The SONI Market Operator licence requires SONI to have a Parent Company Guarantee (PCG) in place, provided by EirGrid plc.

SEMO argues that an allowance of €300K per annum (ie. 2.5% of £10M, converted to €) is justified for the cost that SEMO claims is incurred in providing the PCG. The provision of an allowance is consistent with the SONI TSO price control. The PCG was applied by the SEM Committee to the 2018-21 price control and SEMO proposes no change for 2021-24.

Asymmetric capex risk of disallowances

SEMO has stated that it is subject to asymmetric risk in respect of capex due to the risk that capex will be spent but then disallowed by the RAs, but there is no corresponding circumstance where capex is allowed but not spent. SEMO proposes that the capex allowance be increased by 3% to allow for an expected disallowance (based on the 2017 CMA determination for the SONI TSO price control).

Collection agent revenues margin

SEMO manages cashflows for the capacity market charge, capacity socialisation fund and residual error charge. A 'collection agent revenues' margin of 0.25% on these revenues was applied in 2018-21 in recognition of potential for variances/volatility.

SEMO proposed that the margin introduced in 2018 in respect of collection agent revenues be retained into the 2021-24 price control.

Operational risk

SEMO states that no framework applies to SEMO to address operational risk and that SEMO is an opex intensive business. Such risks include:

- The risk that the scale of requirements may be greater than was forecast ex-ante;
- The risk that costs may evolve in an adverse manner and exceed those forecast;
- The risk that new activities may eventuate during the price control;
- The risk that given the newness of the activities that are forecast that they may not be well specified;
- The risk that there may be positive skew in the expected cost distribution.

SEMO asserts that its opex is subject to material systematic risk. SEMO places weight on 'operational gearing' (which was not defined) which relates to a range of consequences from having a lot of opex relative to capex. The consequences are, according to SEMO, difficult to evaluate so a margin approach is proposed as an alternative.

SEMO does not propose any explicit provision in respect of operational risk (citing a range for a margin of 0.25 – 3.5%) but welcomed engagement with the RAs.

7.4 RAs' analysis

The RAs appointed external consultants to assess SEMO's financeability. The RAs and their consultants assessed SEMO's price control submission, written responses from SEMO to targeted questions, responses received during a Financeability workshop and further written responses received from SEMO to afford the opportunity to provide better explanation.

Any assertion that SEMO may not be financeable amounts to an assertion that either lenders will not lend to SEMO or that equity investors will not invest. The RAs and their consultants therefore considered SEMO's arguments from a debt an equity investment perspective, as well as a standard regulatory framework.

RAB WACC approach

The RAs' review of this blended WACC for SEMO is that it is advantageous to SEMO in that the risk attached with carrying out the market operator activities is viewed as lower risk than the activities of EirGrid and SONI as system operators. This is due to high equity risk premiums and the existence of a blended WACC using those determined for EirGrid TSO and SONI TSO.

Parent Company Guarantee (PCG)

The Parent Company Guarantee (PCG) has formed part of SEMO's financeability since 2013 in recognition of licence requirements for EirGrid plc to provide SONI Ltd with a PCG. Since then SEMO have been remunerated €300K p.a. for the provision of this PCG.

Following the 2017 CMA determination for the SONI TSO price control, an allowance was introduced and continues to be provided for in the SONI TSO price control for the same PCG. In light of this, the RAs considered an updated review of the PCG and any associated allowance in this SEMO price control from the perspective of the SONI market operator licence.

The RAs' consultants were asked to test the feasibility of a continued provision for PCG.

The consultants examined the effect of changes in the gearing which are equivalent to putting in place a PCG.

The cost of financing SONI is broadly unchanged regardless of how much it is financed with debt and how much with equity. Increasing the amount of equity may have second order costs such as tax and inefficiencies in raising finance, such as financing fees. On the basis that the PCG is posted by EirGrid without obtaining a Letter of Credit, it may be argued that there are no second order costs.

Whether the PCG is drawn or not, the transaction is equivalent to a change in SONI's gearing. A change in gearing does not change the overall cost of capital, and so posting the PCG has no first-order costs on the investor. Thus, the only costs are the second-order effects mentioned above. These are purely associated with the transaction, and do not include any reward for financial risk.

The RAs' consultants considered the PCG from a range of perspectives which included the PCG aspect of the SONI TSO CMA determination. The consultants are of the view that an allowance for the PCG is not justified, other than in respect of any second-order costs.

As set out in section 7.5 below the RAs have proposed to continue to provide SEMO with an allowance towards the PCG for this 2021-24 price control.

Asymmetric capex risk of disallowances

The RAs' consultants asked SEMO why it expected that an average 3% of its capital investment would be disallowed, and also asked for evidence supporting this view. While in principle an element of risk exists, the only evidence that SEMO provided was of a number of capital projects that had been deferred or related to the TSO business (rather than being disallowed) from the 2018-21 to 2021-24 period, in the recent SEM Committee decision on SEMO's capital expenditure (SEM-21-006).

Collection agent revenues margin

At the RAs' request the consultants carried out an assessment of the margin of collection revenues which SEMO was in receipt of in 2018-21. They were mindful that the 2018 SEMO price control decision noted that 'Given the potential for an initial period of uncertainty in the operation of certain aspects of the ISEM, the SEM Committee considers that a margin of 0.25% is appropriate in this case. This will be reviewed at the next price control, given that any risk will have been mitigated through experience of the performance of the new I-SEM'.

The RAs' consultants observed that:

1) The Trading and Settlement Code (TSC) requires SEMO to use "reasonable endeavours" to establish a 'Market Working Capital Credit Facility' of an amount at least equal to the 'Contingent Capital Requirement', which is €150m or such other amount as is proposed by SEMO and approved by the SEM Committee. The TSC requires SEMO to keep a running check on the 'Available Working Capital Amount', being the amount of working capital SEMO determines is available plus the amount that is available to be drawn down on the Market Working Capital Credit Facility plus amounts payable by SEM participants less amounts payable to SEM participants. The TSC further states, "*the maximum aggregate amount that the Market Operator is required to pay Participants in respect of any Billing Period by way of Settlement Payments is equal to the Available Working Capital Amount for that Billing Period to*

the extent that amount is positive" and "*the Market Operator shall have no liability to pay Settlement Payments in respect of a Billing Period to the extent that doing so would result in the Available Working Capital Amount for that Billing Period being negative*". While acknowledging that these provisions do not include Difference Payments and Difference Charges, which are part of the operation of the capacity market, a separate mechanism, the Socialisation Fund, is designed to ensure that either there are sufficient funds to pay Difference Payments to Suppliers or to calculate Achievable Difference Payments when there isn't.

2) The notes to EirGrid's financial statements, which includes its SEMO business, describes the EirGrid Group as being exposed to only "*credit risk from the counterparties with whom it holds its bank accounts*" and "*counterparty risk on undrawn facilities and interest rate swap instruments*". It further states, "*Management does not expect any significant counterparty to fail to meet its obligations*". More specifically, as regards SEMO, the notes to EirGrid's financial statements state, "*For the balancing market, under the terms of the Trading and Settlement Code for the Single Electricity Market ("SEM") each participant is required to provide credit cover at a level notified to it by the Market Operator. Such credit cover can be provided by means of an irrevocable standby letter of credit or a cash deposit held in a SEM collateral reserve account (security accounts held in the name of market participants). Any bad debt arising in the SEM, to the extent that it exceeds the available credit cover, is shared by market participants and is not borne by the Market Operator.* "

The RAs and their consultants concluded that the provisions of the TSC are drafted specifically to ensure that SEMO is never under any obligation to make payments under the TSC to SEM participants that cannot be funded from payments from SEM participants and the amounts of working capital available to it. Also, the collection agent activity does not expose SEMO to any risk, other than the possibility of failure of the SEM Bank.

Operational risk

SEMO was of the view that its financeability must be considered holistically and investigation of individual risks would be erroneous. SEMO argued that individual risks should not be examined using established methodology and instead a holistic financeability case requires a holistic method of remuneration by means of a margin.

The RAs and their consultants do not agree with this position.

Some individual risks were explored during engagements between SEMO, the RAs and respective consultants. Examples included reputational risk and cyber risk: the RAs' consultants are of the view that reputational risk does not justify remuneration because investors regard reputation as 'binary', i.e. they will simply not invest in business without adequate practices that are necessary to maintain a good reputation. In addition, reputational risk is not generally considered a risk to be taken in return for remuneration of capital.In terms of cyber risk, the RAs' consultants noted that this is a finite risk which should be dealt with by insurance and other risk mitigation measures. It does not justify, or contribute to the justification for, paying SEMO a margin.

In addition, the RAs and their consultants are of the view that SEMO's arguments about a margin to reflect the risks associated with operational gearing were not justified and the risks were overstated.

7.5 RAs' proposals for consultation

The RAs were mindful of the SEM Committee's decision in 2018 which noted that '*The RAs and SEMC acknowledge the need to secure that SONI Ltd and EirGrid PLC, as market operator licensees, are capable of financing their market operator activities. The SEMC has ensured this requirement through the approach set out in this decision paper. It should be noted that this approach is particular to this price control and the period covered by it and cannot be seen as precedent for any future determination by the SEMC*.'

A robust assessment of SEMO's financeability has led the RAs to propose that:

- There will be no change to the pre-determined approach to SEMO's WACC (in SEM-17-44).
- Similarly, we propose no change to the provision of an amount for the cost to EirGrid Group in providing SONI a PCG through its Market Operator licence. The continuation of an allowance at €300K p.a. is proposed for the duration of the 2021-24 price control as a means of capturing any perceived [low] risks which may transpire during 2021-24.
- While recognising that a theoretical element of risk exists, the RAs propose not to allow a premium for asymmetric capex risk. SEMO provided no evidence of disallowances. In addition, the RAs' proposals for a revised capex cost recovery framework mean that SEMO can recover actual capital costs incurred subject to meeting specific criteria; in addition, SEMO can apply for additional funding for its 'unpredictable capex' if it foresees breaching the cap. We have also not reduced the cost of capital projects by a factorised rate of 20% as suggested in SEMO's capex submission.
- We propose to remove the margin on collection agent revenues as the activity does not expose SEMO to any risk.

No additional margin will be provided for other operational risk. It is worth noting that SEMO can increase its profits by making efficiencies within opex (revenue cap regulation) and also by achieving KPI targets but based on analysis of external consultants, the RAs are of the view that SEMO is a very low risk business and a number of its claims regarding financeability are unjustified.

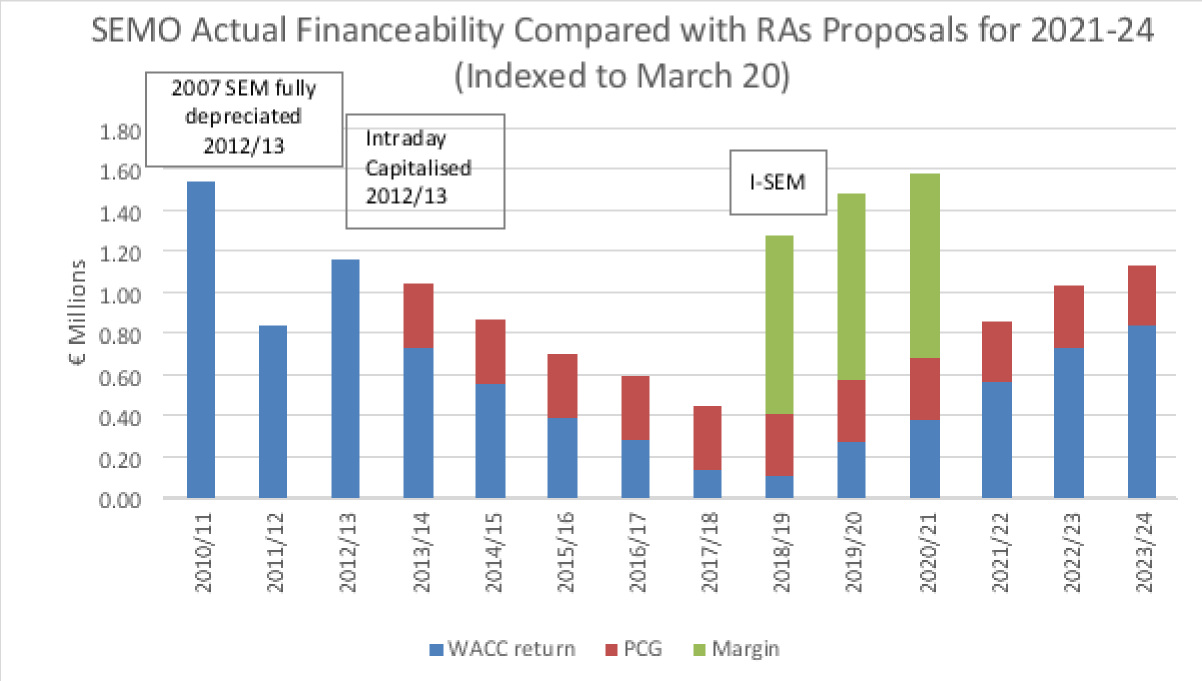


Figure 7.5: Comparison of SEMO Financeability and RAs Proposals for 2021-24

8. Summary Consultation Proposals and Next Steps

8.1 Summary of RAs' proposals

Underpinning the RAs' proposals for the SEMO 2021-24 price control is a backdrop of views and feedback provided by the Participant Consultative Forum (PCF)[51] which was established in March 2021.

The PCF acted independently but members' feedback helpfully 'set the scene' in terms of lived experience and priorities. The RAs' chaired each session and SEMO was in attendance for discussion.

Key priorities reflected in discussions by the PCF were:

- Stability of current markets versus future markets development
- Facilitation of flexible technologies
- Evolution, not revolution
- Well planned approach to dealing with 'known unknowns' (eg. Brexit)

The RAs propose to allow €32.7M for opex (which represents a 27% reduction on SEMO's submission of €44.9M).

	SEMO submission				RAs' proposals			
OPEX	**2021/22**	**2022/23**	**2023/24**	**Total € million**	**2021/22**	**2022/23**	**2023/24**	**Total € million**
Labour	5.9	6.5	6.7	19.2	5.4	5.4	5.4	16.2
IT & Telecommunications	4.6	5.0	5.3	14.9	3.3	3.3	3.3	9.9
HR, corporate and facilities	2.4	2.4	2.5	6.3	1.7	1.7	1.7	5.1
Finance & Regulation	1.5	1.5	1.6	4.5	0.5	0.5	0.6	1.5
				44.9				**32.7**

[51] The Forum was represented by The Electricity Association of Ireland, Wind Energy Ireland, Renewables NI, Irish Solar Energy Association, Demand Response Association of Ireland, Federation of Energy Response Aggregators, Mutual Energy Ltd/ Moyle Interconnector Ltd, Electricity Storage Ireland and University College Dublin Energy Institute.

Table 8.1a: RAs' proposals for SEMO opex 2021-24

The RAs propose to allow €28.1M for capex compared to SEMO's request for €29.3M.

p	SEMO submission				RAs' proposals			
CAPEX	**2021/22**	**2022/23**	**2023/24**	**Total € million**	**2021/22**	**2022/23**	**2023/24**	**Total € million**
Market System Releases	4.62	4.62	4.62	13.86	4.62	4.62	4.62	13.86
Market System Release Support	1.10	1.10	1.10	3.30	1.10	1.10	1.10	3.30
Predictable Business capex	3.32	5.53	2.96	11.81	1.88	2.93	1.49	6.30
Unpredictable Business capex	0.10	0.10	0.10	0.30	1.44	1.74	1.47	4.65
Total	**9.14**	**11.35**	**8.78**	**29.27**	**10.04**	**11.39**	**9.68**	**28.11**

Table 8.1b: RAs' proposals for SEMO capex 2021-24

A modified suite of KPIs is proposed (removing two of the existing six), however the KPI reward would be conditional on SEMO closing out specific known issues and making certain improvements to resettlement and re-pricing by the end of year 1 being September 2022. An associated reward would be tiered so that SEMO could achieve up to 4% of total opex as a performance incentive, depending on how early in the 2021-24 period the improvements to resettlement and re-pricing are evidenced. In addition, we note that opex will continue to be incentivised via revenue cap (RPI-X) regulation. This provides an incentive for SEMO to make opex cost efficiencies which can be retained during the price control period.

A revised cost recovery framework is intended to recognise the need for flexibility and will allow for actual costs incurred so long as evidenced by SEMO as efficient, demonstrably necessary and incremental to other price controls (in line with the principles agreed for the I-SEM Agreed Approach Document with the onus on SEMO, rather than the RAs, to prove). A cap will be applied to unpredictable capex, but should SEMO foresee breaching the cap it can apply for additional funding which may be subject to public consultation. An enhanced regulatory reporting regime will be introduced to include more market participant involvement. This will allow regular visibility of what SEMO is delivering and improve all-round accountability.

In terms of a review of SEMO's financeability, the RAs propose to leave the approach to WACC and Parent Company Guarantee as is, but remove the margin for collection agent revenues. We also do not propose to introduce a margin for asymmetric capex risk or for operational risks.

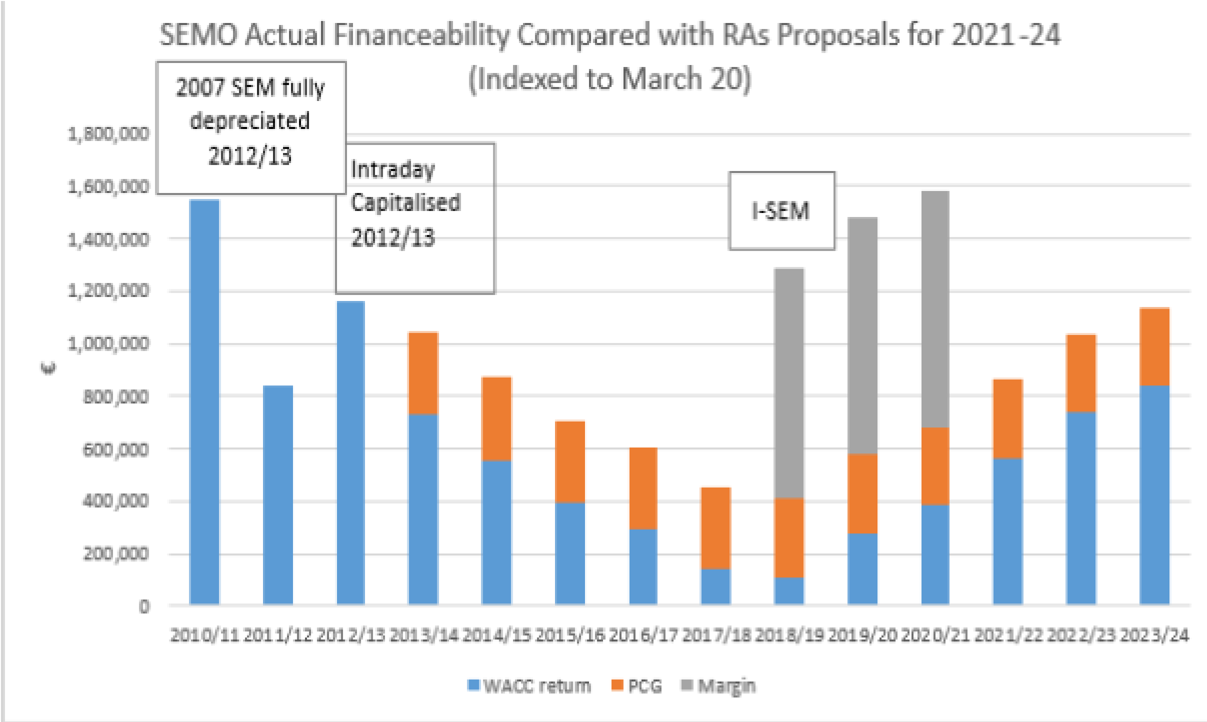


Figure 8.1: Comparison of SEMO Financeability and RAs Proposals for 2021-24

8.2 Consultation process

The proposals presented within this document are subject to consultation. The consultation is open for six weeks.

Rather than pose questions to stakeholders within each chapter, we request that general views on the RAs' proposals are provided by respondents with a clear reference to each chapter/ element of the price control (for example: 'Views on price control framework; Views on opex; Views on capex etc) to aid review.

Responses to the proposals within this consultation should be sent to Karen Shiels (karen.shiels@uregni.gov.uk) and Conall Heussaff (cheussaff@cru.ie) by close-of business on 21 July 2021.

8.3 Regulatory reporting and involvement of market participants going forward

Throughout this document, the RAs have proposed enhancements to SEMO's reporting regime to include (but not limited to) capital projects, market system release vendor hours, and KPIs; we envisage that this will include more involvement from and engagement with market participants as appropriate.

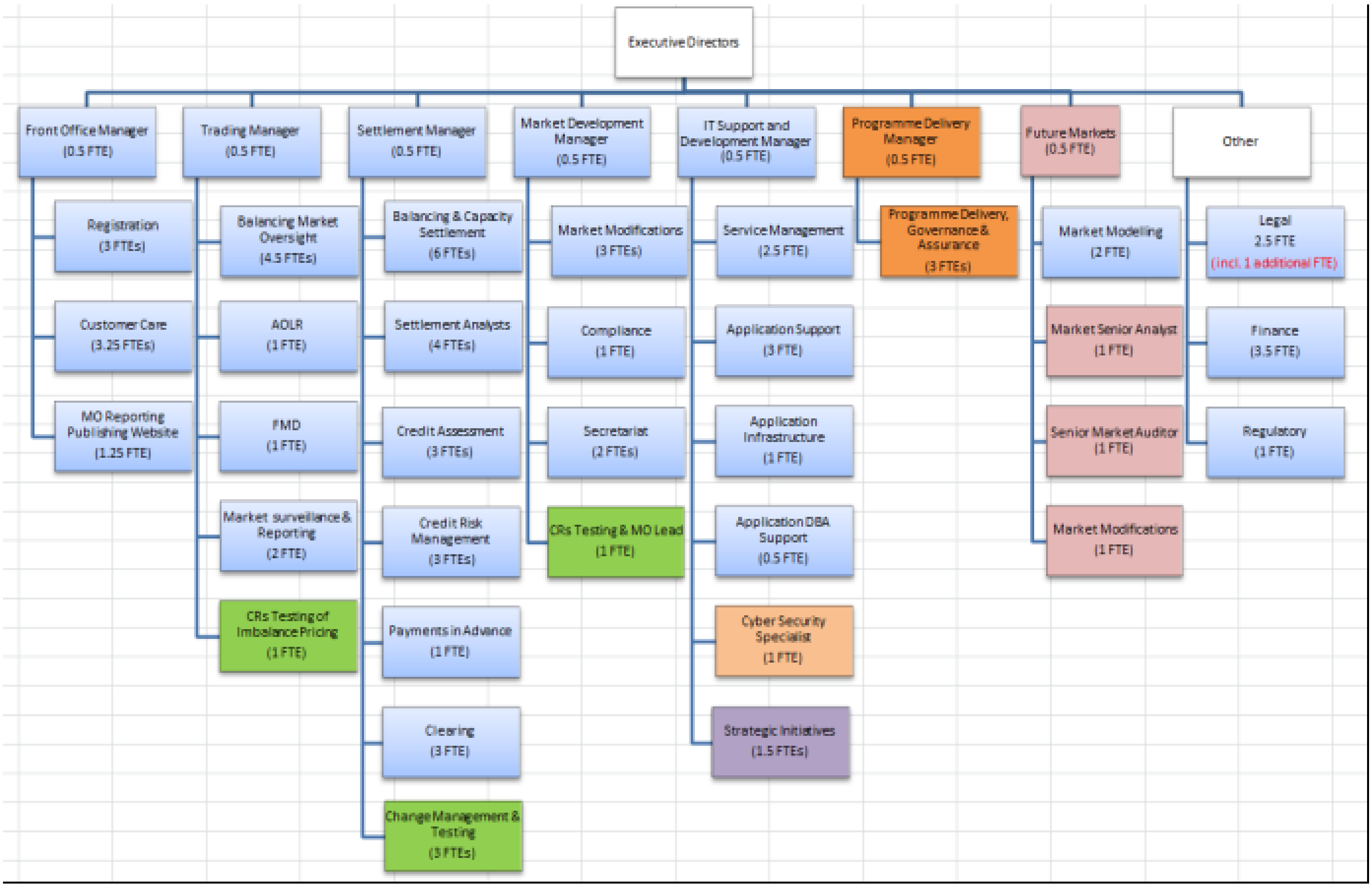
The RAs will engage with SEMO over the coming months to review the current suite of reporting arrangements and discuss what changes can be implemented. We expect that, in advance of any change, participants will be asked for views.

We consider that there is merit in conducting a review with the assistance of a market participant focus group for the unpredictable/uncertain/unknown projects in each year of the price control period since many of SEMO's proposals are insufficiently well-developed and thought out at this stage. Further development of proposals would improve reliability of SEMO's costings and ensure value-add for consumers. This will be considered further by the RAs' over the coming months.

8.4 Licence modifications

The RAs will review the need for modifications to the Market Operator licences. We have discussed the potential to review the format of the Market System Development Plan (MSDP) with SEMO over recent months; the RAs agreed that no MSDP would be published by SEMO this year while the content is being considered. We will also carry out a review of all licence conditions in general. Any modifications will be subject to statutory consultation. We expect engagement to commence with SEMO in summer 2021 and a consultation will follow in autumn.

Appendix A: SEMO Submission- FTEs and Roles



Colour Key New FTEs	
5	Market Operation Testing Resources
1	Cyber Security Specialist
3.5	Programme Delivery
3.5	Future Market
1	Legal
1.5	Strategic Initiatives
15.5	**Additional FTEs**

Appendix B: RAs’ Proposal for FTEs and Roles

Summary of RAs FTE Proposals by Function	
Function	**2021-24**
SEM Management	2.5
Registration	3
Market Rules and Agreed Procedure Document	3
Secretariat	2
Balancing Market Oversight	4.5
Credit Assessment	3
Credit Risk Management	3
Payments in Advance	1
Balancing & Capacity Market Settlement	6
General Queries and dispute analysis	4
Clearing (funds transfer)	3
Finance	3.5
Legal	1.5
Customer Care	3.25
SEM MO Reporting	1.25
Regulation	1
Compliance	1
Fuel Mix Disclosure	1
Market Modelling	2
Market Monitoring and Surveillance	2
AoLR	1
IT Service Management	2.5
Application Support	3
Application Infrastructure Support	1
Application DBA Support	0.5
Cyber Security Specialist (enduring basis)	1
Future Markets - manager (3 year fixed term)	2
Programme Delivery (3 year fixed term)	2
Total Number of RAs’ Proposed FTEs	64.5

Appendix C: 2021/2024 SEMO Proposed KPIs

SEMO proposed in its price control submission, KPIs in a similar format to those currently applied (i.e. SEM-19-033) together with a proposed KPI pot of 4% of opex (€1.8M) for the three -year period. These are outlined below for information and transparency, however the proposed definitions, targets and assumptions, in some cases, are not conducive of a high performance that would be suitable for setting a KPI.

Table C1 below summarises SEMO's KPI proposals and associated proposed financial incentive award.

SEMO KPI Proposals for Price Control Period 2021-24 including Proposed Weighting and Proposed Reward									
SEMO KPI Proposals	Lower Bound Target	Upper Bound Target	Proposed Weighting			Incentive reward per KPI as Proposed SEMO			
			2021/22	2022/23	2023/24	2021/22 €	2022/23 €	2023/24 €	Tota €
Invoicing	90%	95%	25%	15%	15%	141,427	90,341	94,224	325,99
Credit Cover Increase Notices	97%	100%	10%	10%	10%	56,571	60,227	62,816	179,61
SEMO Resettlement Queries	<150 per Qtr	<50 per Qtr	35%	30%	20%	197,997	180,681	125,632	504,31
General Queries (resolved within 20 business days)	95%	99%	5%	5%	5%	28,285	30,114	31,408	89,807
System Availability	99%	99.9%	15%	15%	15%	84,856	90,341	94,224	269,42
Timely Publication of Specified Key Market Information	90%	100%	10%	25%	35%	56,571	150,568	219,857	426,99
Total Incentive Reward based on 4% of Opex requested in SEMO Submission						565,706	602,270	628,162	1,796,

Table C1: Summary of SEMO Proposed KPIs including proposed targets, weightings, and award

Each of SEMO's KPI proposals are set out below and can be compared with those currently in place as set out in the SEM Committee's KPI Decision Paper SEM-19-033.

Invoicing KPI – SEMO Submission

SEMO proposes continuing with the targeted Invoicing KPI. While the specific definition is maintained, SEMO proposed reducing both the lower and upper bound targets and also suggesting varying the financial weighting across the three-year period. Table C2 below summarised SEMO's Invoicing KPI proposal.

KPI	Definition	Proposed Lower Bound	Proposed Upper Bound	Proposed Weighting
Invoicing	The percentage of occurrences where invoices to participants are published on time. • The target for the weekly energy markets and **Variable Market Operator Charge** invoices is 12:00 each Friday.	90%	95%	2021/22 - 25% 2022/23 - 15% 2023/24 - 15%

	• The target for **Capacity settlement documents** is 12:00 seven working days after the end of each month. • The target for the **Fixed Market Operator Charge** settlement documents is the first Friday after the end of the month at 12:00.			

Table C2: SEMO's Proposed Invoicing KPI

Credit Cover Increase Notice (CCIN) KPI – SEMO Submission

SEMO proposes maintaining the CCIN KPI definition, including maintaining the same lower and upper bound targets and weighting. Table C3 below summarised SEMO's CCIN KPI proposal.

KPI	Definition	Proposed Lower Bound	Proposed Upper Bound	Proposed Weighting
Credit Cover Increase Notice	The percentage of occurrences where credit cover increase notices are published on time. • Three credit reports should be issued each day, with publication of each required by 9.45am, 12.45pm and 4.15pm.	97%	100%	10%

Table C3: SEMO's Proposed CCIN KPI

Resettlement Queries KPI – SEMO Submission

While the definition of this KPI has remained unchanged, SEMO has proposed significant changes to both the lower and upper bound targets and also proposed increasing the weighting associated with this Resettlement KPI. Table C4 below summarised SEMO Resettlement Queries KPI proposal.

KPI	Definition	Proposed Lower Bound	Proposed Upper Bound	Proposed Weighting
SEMO Resettlement Queries	The number of upheld formal queries from market participants which have identified errors in settling the market which are attributed to SEMO's operations and processes, including defects and pricing issues. Correction of such errors is completed in either scheduled Resettlement (M+4 and M+13) or in an ad hoc Resettlement. Measurement of this KPI is related to the number of SEMO upheld query incidents and Resettlements per Quarter. Multiple Upheld Queries for one incident shall be classified as one Upheld Query Incident. A Formal Query referencing a number of days shall be classified	<150 incidents per quarter	<50 incidents per quarter	2021/22 - 35% 2022/23 - 30% 2023/24 - 20%

	as Multiple Upheld Queries Incidents.			

Table C4: SEMO's Proposed Resettlement Queries KPI

General Queries KPI – SEMO Submission

SEMO proposes maintaining the General Queries KPI definition, including maintaining the same lower and upper bound targets and weighting. Table C5 below summarised SEMO's General Queries KPI proposal.

KPI	Definition	Proposed Lower Bound	Proposed Upper Bound	Proposed Weighting
General Queries	The percentage of occurrences where a General Query is not **resolved** within 20 business days. A General Query is defined within this metric as any request logged at the SEMO helpdesk.	95% resolved within 20 business days	99% resolved within 20 business days	5%

Table C5: SEMO's Proposed General Queries KPI

System Availability KPI – SEMO Submission

SEMO proposes maintaining the System Availability KPI definition, including maintaining the same lower and upper bound targets and weighting. Table C6 below summarised SEMO's System Availability KPI proposal.

KPI	Definition	Proposed Lower Bound	Proposed Upper Bound	Proposed Weighting
System Availability	Availability of central market systems which the Market Operator has responsibility for according to their required availability. This is the ratio of the time systems are said to be in a functioning condition to the total time they are required to be available and covers the following; 1. Balancing Market systems on a 24-hour basis Monday to Sunday. 2. Settlement and Credit Clearing system between 9am - 5pm Monday to Friday. 3. Reporting and Market Monitoring system between 9am-5pm Monday to Friday. 4. Registration system between 9am-5pm Monday to Friday.	99%	99.9%	15%

	5. Website availability between 8am-6pm Monday to Friday.			

Table C6: SEMO's Proposed System Availability KPI

Timely Publication of Specific Key Market Information KPI – SEMO Submission

SEMO proposes maintaining the essence of this KPI definition, however changes have been proposed which significantly reduce the market information to be captured within this KPI from that currently in place[52]. SEMO proposed to maintain the current lower and upper bound targets while proposing an annual variation in the weighting to apply ranging from 10% in year 1 to 35% in year 3.

Table C7 below summarised SEMO's Timely Publication of Specific Key Market Information KPI proposal.

KPI	Definition	Proposed Lower Bound	Proposed Upper Bound	Proposed Weighting
Timely publication of specific key market information	Publication of complete and accurate market information as specified below in a timely manner. This will be measured based on the percentage of occurrences where the market information listed as part of the KPI is published on time and is accurate and complete at the time of publication. 2021/22 - 1 or 2 reports TBD 2022/23 - a further 2 reports to be added - TBD 2023/24 - wider list of specified reports - TBD	90%	100%	2021/22 - 10% 2022/23 - 25% 2023/24 - 35%

Table C7: SEMO's Proposed Timely Publication of Specified Key Market Information KPI

52 SEM-19-033 SEMO Key Performance Indicators Decision Paper

Appendix D: 2019/20 KPI Outturn Performance

SEMO provided its 2019/20 KPI performance levels within its 2021-24 price control submission. 2019/20 being the second year since SEM Go-Live. No KPIs were in place for year 2018/19 to allow the revised SEM arrangements to bed in. The PCF requested sight of SEMO's KPI performance within the revised SEM arrangements. Since then SEMO have published a 2019/20 Outturn KPI Report on the SEMO website[53].

The table below summarises SEMO's performance against the six KPIs currently in place for SEMO while Table D2 also below reflects SEMO's outturn incentive in Euro terms.

SEMO KPI Outturn 2019-2020								
SEMO KPIs - as per SEM-19-033				Performance by Quarter				Overall Performance
Metric	Weighting	Target	Upper Bound	Oct-Dec Q1	Jan-Mar Q2	Apr-June Q3	Jul-Sept Q4	2019/2020
Invoicing	15%	97%	100%	91.7%	84.7%	62.3%	100%	84.67%
Credit Cover Increase Notices	10%	97%	100%	98.3%	99.3%	99.3%	98.7%	98.90%
SEMO Resettlement Queries	20%	<15 per Qtr	<5 per Qtr	147	1148	234	404	1933 (total)
General Queries (resolved within 20 business days)	5%	95%	99%	99.1%	99.2%	98.1%	98.6%	98.75%
System Availability	15%	99%	99.9%	100%	100%	100%	100%	100%
Timely Publication of Key Market Information	35%	90%	100%	-	-	-	-	0%

Table D1: SEMO KPI Outturn Performance against Targets 2019/2020

Incentive earned per Quarter							
Performance Indicator	Weighting	Incentive €	Oct-Dec Q1 €	Jan-Mar Q2 €	Apr-June Q3 €	Jul-Sept Q4 €	2019/2020 €
Invoicing	15%	59,882	0	0	0	14,971	14,971
Credit Cover Increase Notices	10%	39,922	4,436	7,763	7,763	5,545	25,505
SEMO Settlement Queries	20%	79,843	0	0	0	0	0
General Queries	5%	19,961	4,990	4,990	4,005	4,579	18,564
System Availability	15%	59,882	14,971	14,971	14,971	14,971	59,882
Timely Publication of Key Market Information	35%	139,725	0	0	0	0	0
KPI reward per Quarter €			24,397	27,724	26,738	40,065	118,922
Maximum Available Reward in Quarter €	100%	399,215	99,804	99,804	99,804	99,804	399,215
Percentage of Total Achieved in Quarter			24.44%	27.78%	26.79%	40.14%	29.79%

[53] SEMO 2019/20 KPI Report https://www.sem-o.com/documents/market-operator-performance/SEMO-KPI-Performance-2019-2020_Final.pdf