

Issue Report

Issue 97 “Meter shortage risk driven by global materials availability and supply chain challenges”

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About This Document



Not sure where to start? We suggest reading the following sections:

- Have 5 mins? Read section 1
- Have 15 mins? Read sections 1 and 4
- Have 30 mins? Read all sections
- Have longer? Read all sections and the annexes and attachments

You can find the definitions of the terms and acronyms used in this document in the [BSC Glossary](#)

This document is the Issue 97 Group’s Report to the BSC Panel. Elexon will table this report at the Panel’s meeting on 12 May 2022.

There are two parts to this document:

- This is the main document. It provides details of the Issue Group’s discussions and proposed solutions to the highlighted issue and contains details of the Workgroup’s membership.
- Attachment A contains the Issue 97 Proposal form.



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1. Summary

Issue 97 was raised by Elexon on 20 August 2021 to review the Meter shortage risk.

What is the Issue?

Due to a global shortage of materials and the on-going impacts of COVID-19 on global supply chains, there is a shortage of semi-conductors among other crucial components, which impacts the ability of Meter manufacturers to produce and supply Meters. Through feedback from Meter Operator Agents (MOAs), and subsequent discussion at the Performance Assurance Board (PAB), we became aware that this is impacting on the availability of various types of electricity Meters including those required for Settlement under the BSC. This shortage of Settlement Meters could impact on new connections and fault resolution for Supplier Volume Allocation (SVA) and Central Volume Allocation (CVA) and consequently impact integrity and accuracy of Settlement.

The early data from Meter Operators suggested the availability of Current Transformer (CT) Metering, which has the highest potential for material impact on Settlement (due to usually being installed at higher consumption/higher voltage sites) was particularly problematic. Issue 97 was therefore raised to:

- Assess the scale of the issue;
- Decide whether any BSC Changes need to be progressed in order to address the issue; and
- Decide what other mitigating actions should be taken forward.

What did the Issue Group consider?

The Issue group considered data received from three Requests For Information (RFIs), designed to assess the scale and impact of the issue. This allowed the group to determine the key affected areas of the market.

The Issue group considered a number of mitigation options within and outside of the BSC, including Metering Dispensations to help mitigate the impact of Meter shortages.

Conclusions and Recommendations

The Workgroup collaborated with Elexon to standardise and improve RFIs to monitor the availability of Settlement Meters. Based on this information, Elexon worked with the Issue 97 group to identify the risks and issues posed by Meter shortages and the possible mitigating actions.

The main conclusions from the RFI data were:

- CT Metering was and is showing significant shortages
- Automatic Meter Reading (AMR) Metering is facing shortages which are also worsening

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- Shortages are driving increases in Settlement Risk associated with New Connections and Faults for both CVA and SVA, however aged CVA Faults remain at a record low following increased transparency of the CVA Faults Log
- Smart Metering is not currently facing significant impacts however Elexon will be closely monitoring this area in anticipation of impacts of associated components within the Smart ecosystem

Following engagement with the Department for Business, Energy and Industrial Strategy (BEIS) and Ofgem, we have been keeping them updated with the group's findings and recommendations.

The Issue 97 group are not recommending any BSC Changes are raised to address the risks and issues within scope of Issue 97. This is largely because it is outside of market participants', including Elexon, control to directly address supply chain and availability of material issues. Further, many of the options to reduce the burden on Meter demand would likely have costs and impacts that outweigh the benefits of those actions, such as a Dispensation for the requirement to install Meters. Many are also outside of the BSC, for example requiring legislative or licence changes.

However, the Workgroup recommended that two BSC Metering Dispensations be progressed to mitigate some of the risks posed to the BSC:

- An 18 month Metering Dispensation ([D/535](#)¹) from the new requirements due to be implemented in June 2022 via [CP1527 'Increase the minimum data storage capacity for Settlement Outstations and mandate specific selectable integration periods for Metering Codes of Practice'](#)². This Dispensation creates a transition period whereby MOAs will be able to use up old stock and stock that they may have ordered to the pre CP1527 version of the Code of Practices (CoPs). It also allows MOAs to install Meters compliant with the latest version of the CoPs post June 2022 when they become available; and
- An 18 month Metering Dispensation ([D/536](#)³) from the requirement in CoP4 to recalibrate CoP3 and CoP5 Meters. This will reduce the demand for Meters, as MOAs will temporarily not be required to replace the Meter before the maximum period for recalibration is reached.

D/535 and D/536 were progressed as MOAs were concerned that they might not be able to meet the new requirements as set out in CP1527 due to the Meter shortage. This was the same reasoning for progressing the CoP4 recalibration.

The Workgroup agreed that these dispensations should be kept under review and extended, if necessary, using the latest RFI data to inform the decision.

The Workgroup also proposed and Elexon agreed that the collection of industry data should continue, so that the ongoing situation can be monitored under normal BSC assurance operations, including engagement with the PAB. The data, forecasting the availability of different types of Meters (CT, Smart, Advanced etc.) and assessing the severity of the situation will be published by Elexon on the BSC Website. This will continue until Elexon and the PAB, supported by the data, suggest the situation is returning to normal. The Workgroup agreed that the key indicators of the impact of Meter availability on Settlement was on the New Connections and the resolution of Meter Faults (requiring a Meter Exchange) processes.

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¹ <https://www.elexon.co.uk/consultation/consultation-on-metering-dispensation-d535-enabling-meter-installation-to-earlier-cops-for-18-months/>

² <https://www.elexon.co.uk/change-proposal/cp1527/>

³ <https://www.elexon.co.uk/consultation/consultation-on-metering-dispensation-d536-on-re-calibration-of-meters-registered-against-cops-3-and-5/>

2. What is the Issue?

Background

The Issue 97 Workgroup was established to consider the risk presented by the wide scale shortage of semi-conductors and electronic components required to manufacture Meters and the disruption to the associated supply chains caused by current market conditions, triggered by COVID-19. The scope of the Issue Group's discussions and recommendations included:

- Risk to security of supply and impacts on end consumers
- The potential impacts of this risk on Settlement Accuracy and BSC processes
- The associated financial risk presented to market participants
- The extent of that impact and therefore the proportionate level of investment to mitigate those impacts
- Options to mitigate any identified impacts on Settlement Accuracy and BSC processes
- The sharing of information, data and recommendations cooperatively with other Codes and Regulatory bodies
- Wider impacts on other Codes and the economy

The scope of Issue 97 was further expanded to include specific impacts on Smart Energy Code (SEC) (e.g. ability to meet Smart Meter rollout obligations) and Retail Energy Code (REC) (e.g. Metering Equipment Managers (MEMs) able to meet REC obligations).

Workgroup members noted the Issue wasn't just caused by a shortage of semi-conductors; there were many other issues resulting in a shortage of Meters, including wider economic issues, supply chain issues such as transportation and logistics and shortages of Metering Equipment components. These issues were also affecting long term planning and investment decisions, as well as potentially limiting new connection work being undertaken.

The Issue 97 group agreed to consider the impact on the BSC and Settlement of a potential shortage of Meters (whatever the cause of the shortage). Any other impacts from the causes of these shortages are discussed and captured as part of this Issue. The Workgroup also agreed that the impact on consumers should be at the forefront of considerations and it was therefore important to keep BEIS and Ofgem engaged on the group's findings.

The affected Settlement risks include:

- [SVA Risk 003 – Metering Equipment installation \(New Connections\)](#)⁴
- [SVA Risk 005 – Fault Resolution](#)⁵
- [CVA Risk 020 - Metering Equipment installation \(New Connections\)](#)⁶

⁴ <https://www.elexon.co.uk/reference/performance-assurance/performance-assurance-processes/003-sva-risk-metering-equipment-installations-are-incorrect/>

⁵ <https://www.elexon.co.uk/reference/performance-assurance/performance-assurance-processes/005-sva-risk-metering-equipment-faults-are-not-resolved/>

⁶ <https://www.elexon.co.uk/reference/performance-assurance/performance-assurance-processes/performance-assurance-risk-evaluation-register/020-cva-risk-cva-metering-equipment-installation-and-commissioning/>

- [CVA Risk 023 - Fault Resolution](#)⁷

Issue Group Meetings

Three Meetings were held:

- [Meeting 1](#) was held on 28 September 2021. The purpose of this meeting was to review the scope of the Issue and discuss the data received from the first RFI. The outcome of the meeting was to expand the scope to include impacts on the end user and economy, and to include specific impacts on SEC and REC. Additionally the group concluded that more insight was required to understand the depth of the problem and so agreed that Elexon should send out more RFIs.
- [Meeting 2](#) was held on 15 November 2021. This meeting was to discuss the most recent RFI responses and decide what mitigation options should be progressed. The outcome of the meeting was that the Workgroup agreed that Elexon progress two Metering Dispensations.
- [Meeting 3](#) was held on 7 March 2022. The purpose of this meeting was to discuss the latest RFI responses and decide whether to close the Issue group. The outcome of the meeting was that the Issue group should be closed and that Elexon should continue to monitor the situation by sending out monthly RFIs. Data from RFI responses will be published on the Elexon webpage.

⁷ <https://www.elexon.co.uk/reference/performance-assurance/performance-assurance-processes/performance-assurance-risk-evaluation-register/023-cva-risk-cva-fault-resolution/>

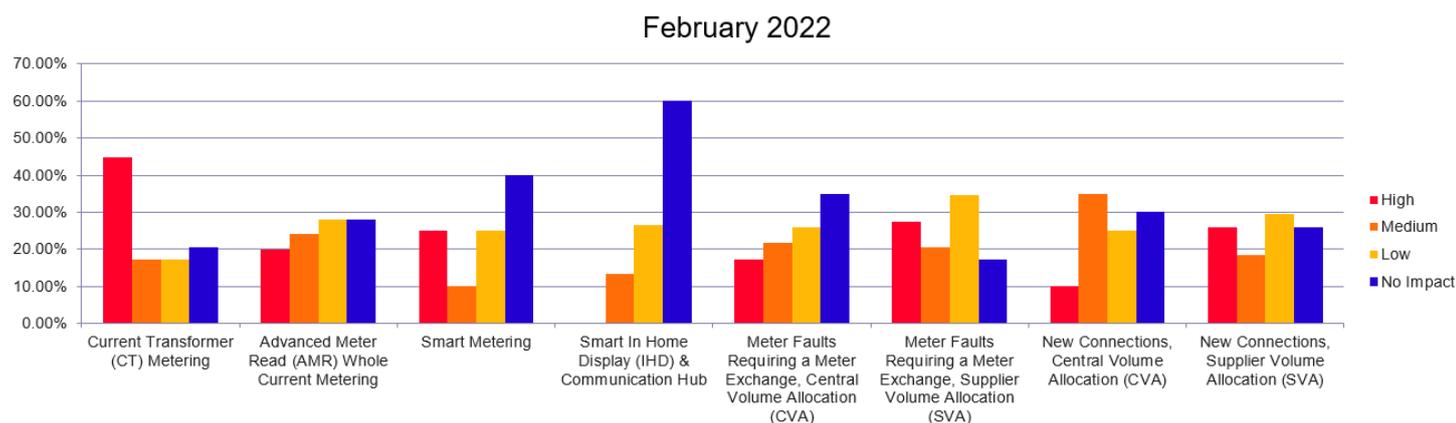
3. Reporting and mitigation options

Monitoring and reporting

The Workgroup sent out a total of three RFIs to industry (August 2021, November 2021 and February 2022) to understand if participants were experiencing a shortage of CT, AMR and Smart Meters, as well as requesting them to forecast their Meter availability for future months. The requests were sent to MOAs, Suppliers and Meter Manufacturers. Details of the RFI data can be found within the slide packs on the Issue 97 Workgroup meeting pages [1](#)⁸, [2](#)⁹ and [3](#)¹⁰.

As the Workgroup progressed, Elexon refined the RFIs in terms of data requested and analysis. Forecasting information and data from Meter manufacturers were realised to be most reflective due to them having visibility of stock levels at an earlier point in the supply chain. This allowed Elexon to produce forecasts of risk impacts, which reflected a representative view of market wide impact.

Responses consistently suggested an even spread of high, medium and low impact forecasts across all Meter types other than Smart Meters.



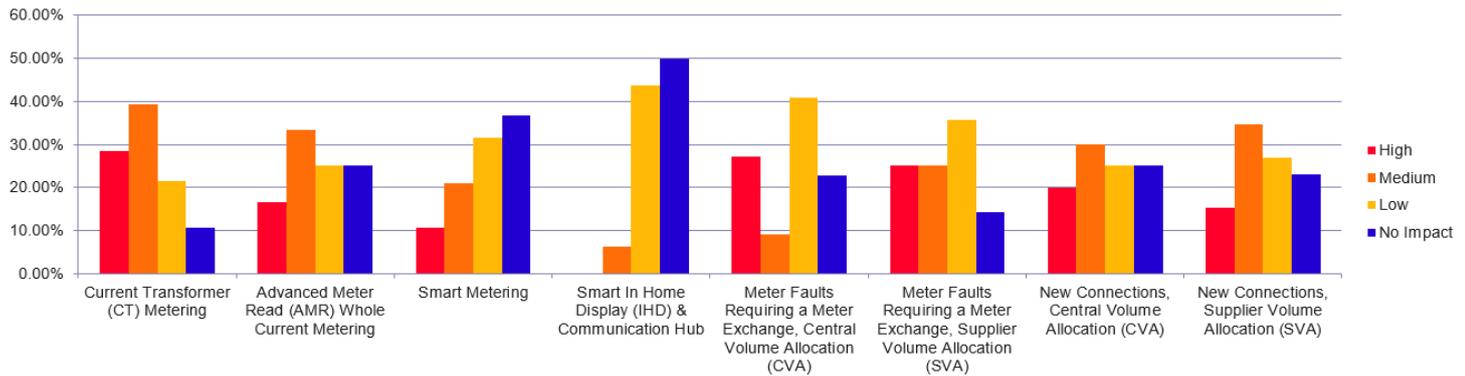
Category	High	Medium	Low	No Impact
Current Transformer (CT) Metering	44.83%	17.24%	17.24%	20.69%
Advanced Meter Read (AMR) Whole Current Metering	20.00%	24.00%	28.00%	28.00%
Smart Metering	25.00%	10.00%	25.00%	40.00%
Smart In Home Display (IHD) & Communication Hub	0.00%	13.33%	26.67%	60.00%
Meter Faults Requiring a Meter Exchange, Central Volume Allocation (CVA)	17.39%	21.74%	26.09%	34.78%
Meter Faults Requiring a Meter Exchange, Supplier Volume Allocation (SVA)	27.59%	20.69%	34.48%	17.24%
New Connections, Central Volume Allocation (CVA)	10.00%	35.00%	25.00%	30.00%
New Connections, Supplier Volume Allocation (SVA)	25.93%	18.52%	29.63%	25.93%

⁸ <https://www.elexon.co.uk/meeting/issue-97-workgroup-1/>

⁹ <https://www.elexon.co.uk/meeting/issue-97-workgroup-2/>

¹⁰ <https://www.elexon.co.uk/meeting/issue-97-workgroup-3/>

Forecast next 12 months (from February 2022)



Category	High	Medium	Low	No Impact
Current Transformer (CT) Metering	28.57%	39.29%	21.43%	10.71%
Advanced Meter Read (AMR) Whole Current Metering	16.67%	33.33%	25.00%	25.00%
Smart Metering	10.53%	21.05%	31.58%	36.84%
Smart In Home Display (IHD) & Communication Hub	0.00%	6.25%	43.75%	50.00%
Meter Faults Requiring a Meter Exchange, Central Volume Allocation (CVA)	27.27%	9.09%	40.91%	22.73%
Meter Faults Requiring a Meter Exchange, Supplier Volume Allocation (SVA)	25.00%	25.00%	35.71%	14.29%
New Connections, Central Volume Allocation (CVA)	20.00%	30.00%	25.00%	25.00%
New Connections, Supplier Volume Allocation (SVA)	15.38%	34.62%	26.92%	23.08%

As the chart above indicates, there is still an expected shortage across the 12 months from February 2022. This forecasting data helped the group to decide on a recommendation to progress 18 month Metering Dispensations.

The overlap between SVA and CVA Meters indicated that a shortage in the SVA market, could mean a shortage in the CVA market. From Committee feedback and through the RFIs, it was shown that there are serious issues in respect of the availability of CT Metering for CVA which could have a significant impact on the resolution of CVA Faults. While aged CVA Faults are currently at a record low (sitting at around 15, all of which are being reviewed and chased by Elexon and we have confidence that none of these faults are driving significant error within the market), Elexon will continue to monitor this closely. We will also be working with CVA MOAs, Registrants and the Transmission Operator to drive improvements in respect of controls and processes, along with mitigating the potential impact of Metering Equipment availability on timely fault resolution in the CVA market especially where the fault presents significant risk to Settlement accuracy.

Following the meeting on 15 November 2021, industry was optimistic about the situation improving however, as the chart above shows, February 2022 data indicated that impacts had worsened across the board except in the case of Smart Meters and communications hubs.

Smart Metering was shown to be unaffected by such challenges, with high stock levels across the market. The data showed that it is unlikely that the supply chain challenges will seriously impact on the availability of Smart Meters. However, the availability of communication hubs were shown to be impacted. The SEC is leading with this issue.

Mitigations and potential solutions

The Workgroup discussed a number of mitigation options to alleviate the pressures of the Meter shortage. The Workgroup provided an initial analysis of the criteria to assess mitigation options, using a high, medium and low scoring (H* denotes where it might be unfeasible to revert 100% since there would be no obligation on customers to facilitate the replacement of the Check Meters which presents the risk that it might not be practicable to revert in all cases):

Criteria	Option A (Derogation to install Meters)	Option B (Derogation to install Settlement approved Meters)	Option C (Derogation to install Check Meters for CoPs 1-3)	Option D (Remove Check Meters for use where a Meter is required but unavailable)
Cost to implement	H	L/H	L/H	H
Complexity to implement	H	H*	L/M	H
Cost to operate	H	L/H	L/M	L
Effectiveness of mitigation against Settlement Risk	L	L	L	L
Effectiveness of mitigation against operational and financial impacts	M	H	M/H	M/H
Timescale to deliver	H	L/H	L/M	H
Legislative Change Required	H	L/H	MH	H
Cost to revert	H	H	M/H	H
Time to revert	H	H	H*	H*

Non-BSC options

Option A (a Dispensation for the requirement to install Meters) was suggested as if there was a severe shortage and no Meters were available, sites might need to be energised without a Meter in place. The Workgroup recommended that this option should be viewed as a last resort given its high cost and impact. This option was seen to have a high cost and impact as it would require changes to primary legislation and would result in extremely high Settlement inaccuracy.

Option B (a Dispensation for the requirement to install a Settlement approved Meter) would allow sites to at least have a Meter installed in a situation where there are no Settlement approved Meters available. This option was disregarded because supply chain issues are across the board and so different types of Meters are also unlikely to be available. Therefore there are unlikely to be non-Settlement approved Meters available to replace Settlement approved Meters.

Overall, the mitigation options considered were all seen as having significant challenges to overcome. The group did not want to pursue any options that would introduce as many or more issues than they sought to solve. For example, although Option C (the proposal to derogate the need to install Check Meters for CoPs 1 to 3) would solve non-compliances in the case where there are no Check Meters available, it would also create a large queue of meter installs and sustain the demand for Meters.

The Workgroup discussed whether the delay in Meter approvals may be an additional cause to the shortage so expedition of Meter approvals may be a beneficial solution, potentially alleviating a bottleneck. This was based on feedback from two Meter Manufacturers who believed components used in new Meters were more likely to be readily available compared with older components. The Group noted that finalising commercial arrangements was more likely to act as a bottleneck. The Workgroup suggested that Data Collectors (DCs) could be encouraged to expedite approvals both for the benefit of industry but also to grow in this part of the market. Elexon has spoken to DCs via direct engagement and have managed to progress two more meter type approvals.

BSC options

The Workgroup discussed the implementation date of CP1527 due to Meter Manufacturers reporting that the supply chain challenges could impact their ability to comply with this Change Proposal (CP). The group suggested that the benefits seen from the implementation of CP1527 did not outweigh the cost to users so a dispensation should go ahead.

Finally, the Workgroup recommended that Elexon progress a dispensation for CoP4 recalibration requirements as the risk of some Meters being outside of the accuracy requirements is much less than having Meters unavailable for faults or new connections. This Dispensation should therefore have minimal impact on Settlement, whilst making new Meters available for higher priority jobs, such as new connections or faults.

Other potential causes for the Meter Shortage

Elexon engaged with Meter manufacturers outside of the Issue 97 Workgroup discussions. This suggested that DC third party service providers were causing a bottleneck in bringing new Meters to market thereby exacerbating the shortages. They noted that commercial arrangements are stopping Meters being offered to the market by manufacturers which are not experiencing supply chain issues.

These commercial arrangements are therefore frustrating the industry's ability to mitigate some of the risks the Issue group discussed. Some manufacturers reported that the only outstanding step for protocol approvals was with DCs' systems to accept these new Meters. Some of the commercial issues reported, related to incumbent manufacturers, who provide the vast majority of DCs' systems, charging excessive fees for protocol approvals. If these commercial challenges could be resolved, the Workgroup Members who contacted Elexon following the final Workgroup meeting believed the Risks associated with Issue 97 could be

significantly mitigated. The Group noted these commercial issues were outside the scope of the BSC and would not be straightforward to solve.

4. Conclusions and Recommendations

The Workgroup collaborated with Elexon to standardise and improve requests for information to monitor the availability of Settlement Meters. Based on this information, Elexon worked with the Issue 97 group to identify the risks and issues posed by Meter shortages and the possible mitigating actions. Following engagement with BEIS and Ofgem, we have been keeping them updated with the group's findings and recommendations.

The Issue 97 group are not recommending any BSC Changes are raised to address the risks and issues within scope of Issue 97. This is largely because it is outside of market participants, including Elexon, control to directly address supply chain and availability of material issues.

However, the Workgroup recommended that two BSC Metering Dispensations be progressed to mitigate some of the risks posed to the BSC:

- An 18 month Metering Dispensation ([D/535](#)¹¹) from the new requirements due to be implemented in June 2022 via [CP1527](#)¹² 'Increase the minimum data storage capacity for Settlement Outstations and mandate specific selectable integration periods for Metering Codes of Practice' ; and
- An 18 month Metering Dispensation ([D/536](#)¹³) from the requirement in CoP4 to recalibrate CoP3 and CoP5 Meters.

D/535 was raised due to a number of Meter manufacturers expressing concerns that they would not be able to produce Meters compliant to the new requirements within the CoPs due to be implemented via CP1527 in June 2022. D/535 proposes to allow the installation of Meters to the pre-CP1527 version of the CoPs for a period of 18 months. D/535 was approved on 1 February 2022 by the Supplier Volume Allocation Group (SVG).

D/536 was raised because allowing MOAs to leave Meters installed without the need for re-calibration will help alleviate the pressures currently faced with attempting to replace Meters under the current Meter shortage conditions. Most MOAs replace the Meter before the maximum period for re-calibration is reached (particularly for CoP3 and CoP5 Metering Systems). D/536 was approved on 1 February 2022 by the SVG.

The Workgroup agreed that these dispensations should be kept under review and extended, if necessary.

The Workgroup also proposed and Elexon agreed that the collection of industry data should continue, so that the situation can continue to be monitored under normal BSC assurance operations, including engagement with the PAB. The data, forecasting the availability of different types of Meters (CT, Smart, Advanced etc.) and assessing the severity of the situation will be published by Elexon on the BSC Website. This data will be updated quarterly for Meter manufacturers and monthly for MEMs/SVA MOAs and CVA MOAs. Publication on the website will continue until Elexon and the PAB, supported by the data, suggest the situation is returning to normal.

¹¹ <https://www.elexon.co.uk/consultation/consultation-on-metering-dispensation-d535-enabling-meter-installation-to-earlier-cops-for-18-months/>

¹² <https://www.elexon.co.uk/change-proposal/cp1527/>

¹³ <https://www.elexon.co.uk/consultation/consultation-on-metering-dispensation-d536-on-re-calibration-of-meters-registered-against-cops-3-and-5/>

Appendix 1: Issue Group Membership

Issue Group membership and attendance

Issue 97 Group Attendance				
Name	Organisation	28 Sep 21	15 Nov 21	07 Mar 22
Lawrence Jones	Elexon (<i>Chair</i>)	✓	✓	✓
George Crabtree	Elexon (<i>Lead Analyst</i>)	x	✓	✓
Jon Spence	Elexon (<i>Design Authority</i>)	✓	✓	✓
Jason Jackson	Elexon (<i>Proposer</i>)	✓	✓	✓
Andrew Grace	Elexon	✓	x	x
Christopher Day	Elexon	✓	✓	x
Katharine Higby	Elexon	✓	✓	✓
George Player	Elexon	x	x	✓
Craig Fricker	ASL Holdings	✓	x	✓
Thomas Hayton	ASL Holdings	✓	x	x
Stewart Ramsay	Dataserve	✓	✓	✓
Daniel Lewis	EDF	✓	✓	✓
Darren Conley	EDF	✓	✓	✓
Rufus Harris	EDF	✓	x	x
Tom Beach	EDF	✓	x	x
Paul Taylor	EM-Lite	✓	✓	✓
Chris Hooper	EON Energy	x	✓	x
Adeel Kazi	EON Energy	✓	x	x
Clare Hannah	IMServ	✓	✓	✓
Tony Townley	Honeywell	x	✓	x
David Brown	PDA	x	✓	✓
Tom Chevalier	PDA	✓	✓	✓
Mike Forber	Scottish Power	x	x	x
John Marshall	Scottish Power	x	✓	✓
Neil Merrall	Siemens	✓	x	✓
Tom Newholm	Siemens	✓	✓	✓
Carrie-Anne Lewis	SMS-Plc	✓	✓	x

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Christopher Pitt	SMS-Plc	✓	✓	✓
Jordan Watkins	SMS-Plc	✓	x	x
John Greene	SSE	✓	✓	✓
Meg Wong	Stark	✓	✓	✓
Simon Wilcox	Stark	✓	x	✓
Michael Slater	Total Energies	✓	✓	✓
Graham Edwards	Scottish Power	x	x	✓
Tom Morgan	Kaifa Metering	x	x	✓