

RIIO-3 Team

Ofgem
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Subject: EA Technology Response to the ED3 Framework Consultation

Dear RIIO-3 Team,

We are pleased to submit our response to the ED3 Framework Consultation, contributing to the ongoing discussion on the future of electricity distribution networks in the UK. As a proudly **UK-based company headquartered in the North of England**, EA Technology has supported the UK energy sector for over **58 years**, delivering innovation and technical excellence that has driven the evolution of smarter, more efficient, and sustainable electricity networks.

Our location in the North positions us uniquely to support the **levelling-up agenda**, ensuring that this transformative period in the UK's energy transition delivers growth and opportunities for regions that have historically faced underinvestment. EA Technology is proud of its track record in creating **high-value jobs** and fostering innovation that not only strengthens the electricity network but also contributes to regional and national economic growth.

EA Technology has a long history of collaborating with Distribution Network Operators (DNOs) to deliver cutting-edge solutions and expertise. From pioneering **asset monitoring innovations** to developing world-leading technologies that **predict and prevent faults** before they impact supply, our mission is to enable electricity networks to deliver the best possible outcomes for consumers at the lowest cost.

As the industry faces immense growth opportunities presented by **net zero targets**, the shift toward **electrification**, and the need for **sustainable energy systems**, we are committed to supporting the sector through this critical transformation.

In light of discussions around UK economic growth initiatives, such as those highlighted by government in the recent calls to regulators to drive UK growth, we recognise the vital role that innovative UK businesses can play in driving **sustainable UK growth**. EA Technology is well-positioned to support this agenda through:

- **Scaling LV monitoring production capacity:** Our manufacturing processes can be expanded rapidly to meet the growing needs of network operators, ensuring the deployment of critical infrastructure is both timely and effective.

- **Reducing costs and improving efficiency:** Leveraging predictive monitoring solutions, we enable proactive network management, reducing operational costs and improving reliability for consumers.
- **Creating high-value jobs:** As a Northern-based innovator, our expansion directly contributes to job creation and supply chain growth in the UK, aligning with the levelling-up agenda.
- **Collaborating with DNOs:** Our strong partnerships with DNOs allow us to understand and address operational challenges effectively, ensuring our solutions align with their strategic objectives.

These capabilities directly support Ofgem’s vision for a **resilient, sustainable, and future-ready electricity distribution system** while also advancing national priorities for economic reform and regional equality.

In our consultation response, we address **21 of the 65 questions posed**, providing insights and recommendations that reflect our extensive experience and expertise in this sector.

Thank you for the opportunity to contribute to this important consultation. We look forward to continuing our collaboration with the sector to deliver smart, cost-effective, and consumer-focused solutions for the UK’s electricity networks.

Yours faithfully,

Robert Davis

Chief Executive Officer

EA Technology

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Q3. Do you agree that the network investment elements of the framework should be more input based?

EA Technology Response:

We support the proposal to make the network investment elements of the ED3 framework more **input-based**, particularly in the context of **load enablement**. Establishing clear input requirements ensures that a minimum volume of critical interventions are delivered, enabling the proactive capacity expansion necessary to meet net zero and decarbonisation targets.

However, it is important to recognise the role that **incentives** play in driving efficiency and innovation in these businesses. A balanced approach that combines input-based planning with incentive mechanisms will be critical to achieving efficient long-term outcomes for both the supply chain and consumers.

Input-Based Approach: Benefits and Considerations

An input-based approach could offer the following key benefits:

- **Assured Delivery:** By mandating specific inputs, such as investment in critical infrastructure, this approach ensures that necessary network capacity upgrades are delivered to meet future demand.
- **Supply Chain Stability:** Clear input requirements provide greater certainty to the supply chain, enabling better long-term planning and reducing delivery risks.

However, an overly rigid input-based framework could limit the flexibility required for innovation and cost efficiency. Therefore, any input-based frameworks are best complemented by incentives that encourage DNOs to exceed baseline expectations and deliver value through innovative methods.

Role of Incentives in the Framework

Incentives remain a vital tool for driving efficiency and innovation. To strike the right balance, the framework should include mechanisms that:

1. **Encourage Innovation:** Introduce a targeted incentive mechanism (e.g., **TIM(i)**) that rewards DNOs with a higher proportion of cost savings when they deploy innovative approaches to meet input requirements. For example:
 - Deploying new technologies to reduce costs or improve efficiency in load-related projects.
 - Leveraging data analytics and advanced methodologies to optimise investment strategies.

2. **Promote Efficiency through Ex-Ante Allowances:** Provide strong **ex-ante allowances** that incentivise DNOs to outperform cost benchmarks. This creates room for DNOs to deliver inputs efficiently while encouraging competition and performance improvement.
3. **Balance Standard TIM with TIM(i):** Fund the innovation-derived TIM(i) by marginally reducing the **standard TIM** for all other ex-ante investments. This redistribution ensures the overall cost of incentives remains neutral, while placing greater emphasis on innovative approaches.

Recommendations

To ensure the success of a more input-based framework, we recommend the following:

1. **Balanced Framework:** Combine input-based requirements with robust ex-ante allowances and incentives to promote both assured delivery and innovation.
2. **Innovative Incentives:** Introduce a TIM(i) mechanism to reward innovative approaches, funded by adjustments to standard TIM rates.
3. **Supply Chain Confidence:** Provide clear and consistent input targets to enable long-term supply chain planning and minimise delivery risks.
4. **Accountability Mechanisms:** Establish robust reporting and accountability systems to monitor progress against input targets and evaluate the impact of innovative solutions.

Q8. Do you agree that the regulatory framework for ED3 should have features of the Plan and Deliver model for network investment and Incentive Regulation model for other elements?

EA Technology Response:

We agree that the regulatory framework for ED3 should incorporate features of both the Plan and Deliver model for network investment and the Incentive Regulation model for other elements. However, we believe that a **balanced hybrid approach**, combining the strengths of these models, is the optimal way to meet both strategic goals and consumer-focused outcomes.

Key Points of Consideration

1. The Need for a Hybrid Framework

The **Plan and Deliver model** is well-suited for large-scale, long-term network investments aligned with strategic priorities such as the Regional Energy Strategic Plans

(RESPs). However, relying solely on this model risks diminishing the benefits of Incentive Regulation, which has been instrumental in driving efficiency, innovation, and accountability in previous regulatory frameworks.

A hybrid approach allows for:

- **Strategic alignment:** Proactive investments guided by RESPs and other strategic objectives.
- **Performance-driven outcomes:** Retaining financial and reputational incentives to ensure DNOs strive for optimal outcomes for consumers.

2. Risks of Opex and Capex Separation

One significant concern is the potential **separation of Opex and Capex** in a Plan and Deliver framework. Such a separation could hinder the adoption of innovative approaches that deliver overall efficiencies and long-term benefits.

For example:

- **EA Technology's fault prediction tools** enable DNOs to detect pre-fault activity on LV feeders, identifying and addressing potential faults proactively. This proactive intervention, categorised as Capex, prevents supply interruptions and reduces ongoing Opex fault costs.
- Without the ability to transfer funds between Opex and Capex, such opportunities for cost-effective and consumer-friendly solutions may be lost.

To mitigate this risk:

- The framework could **retain flexibility to allow Opex-to-Capex transfers**, particularly where innovative solutions can demonstrate clear cost savings and improved consumer outcomes.
- If Totex is removed, mechanisms could be established to enable cross-category investments.

3. Retaining Incentives to Innovate

The **Incentive Regulation model** has historically driven innovation by rewarding DNOs for outperforming baseline expectations. Retaining these incentives within ED3 is essential to:

- Encourage the exploration of **non-traditional solutions** that could deliver superior outcomes at lower costs.
- Maintain focus on measurable **network and customer outcomes**, such as reduced losses, improved service quality, and faster connections.

A well-designed hybrid framework should:

- Link Plan and Deliver investments to **clear, measurable outcomes** tied to consumer and network performance.
- Provide room for **incentive mechanisms** that reward DNOs for adopting innovative approaches and outperforming the baseline plan.

Recommendations

1. **Hybrid Model:** ED3 should integrate elements of Plan and Deliver and Incentive Regulation, leveraging the strengths of both models while addressing their limitations.
2. **Flexible Opex-to-Capex Transfers:** Any move away from Totex should consider flexibility for DNOs to transfer funds between Opex and Capex where justified by efficiency or consumer benefits.
3. **Incentives for Innovation:** Retain incentive mechanisms to encourage DNOs to adopt non-traditional solutions and deliver superior outcomes compared to the baseline plan.
4. **Outcome-Based Metrics:** Align investments with clear performance indicators that reflect both network and customer outcomes, ensuring transparency and accountability.

Q11. To what extent are global supply chain and workforce pressures contributing to longer lead times for delivery network reinforcement?

EA Technology Response:

Global supply chain and workforce pressures undoubtedly pose challenges to the timely delivery of network reinforcement and connection-driven projects. We recognise the complexities DNOs face in aligning supply chain timelines with regulatory and operational constraints, and EA Technology is committed to providing flexible and scalable monitoring solutions that adapt to evolving demands while complementing DNOs' efforts to manage workforce and procurement challenges effectively.

As a UK-based supplier, we have taken significant steps to mitigate these risks and support the evolving needs of Distribution Network Operators (DNOs):

1. Proactive Capacity Expansion

In response to increasing market demand, we have scaled our manufacturing capacity for LV monitoring hardware 10X. This proactive measure ensures that the supply chain

can keep pace with the growing need for network monitoring solutions, which are critical to efficient and timely decarbonisation requirements.

- Currently, we maintain over 40% standby capacity, enabling us to scale rapidly.
- This flexible capacity model ensures that supply chain bottlenecks are minimised, particularly for critical technologies that play a key role in maintaining network resilience and reliability.

2. The Role of Long-Term Contracts

Longer-term contracts with UK-based suppliers are needed for ensuring that the domestic supply chain can meet the reinforcement needs of DNOs in the coming years. Such contracts provide certainty and confidence, enabling suppliers like EA Technology to:

- Invest in additional manufacturing capacity and advanced technologies.
- Recruit and train a skilled workforce, ensuring readiness for future demand surges.
- Develop resilient, localised supply chains that reduce reliance on global markets, thereby mitigating risks associated with geopolitical or logistical disruptions.
- Secure manufacturing slots for the UK well in advance of other geographies booking up the supply capacity.

3. Supporting the UK Workforce and Supply Chain

The establishment of longer-term agreements between DNOs and UK suppliers will foster a more stable and scalable supply chain ecosystem. This approach offers the following benefits:

- **Alignment with market needs:** Suppliers can ramp up production and workforce capacity in a phased, predictable manner, avoiding sudden shortages or overcapacity.
- **Economic resilience:** Strengthening the UK supply chain reduces dependence on international suppliers and ensures that reinforcements are delivered on time, even amidst global disruptions.
- **Innovation:** With the security of longer-term contracts, suppliers are better positioned to innovate, enhancing the efficiency and reliability of their products.

- **UK Job creation:** EA Technology is a UK born and bred company, having grown by over 200%, with long term contracts we are committed to continue growing our UK workforce.

Recommendations

1. **Encourage Long-Term Partnerships:** Ofgem and DNOs could prioritise longer-term contracts with UK-based suppliers to provide the stability needed to scale supply chains and workforce capacity.
2. **Promote Flexible Supply Chains:** The inclusion of adaptable capacity models, such as maintaining standby manufacturing capacity, could be incentivised within the ED3 framework to mitigate delays caused by sudden demand spikes.
3. **Support Domestic Manufacturing:** Policy measures to support UK-based manufacturing and workforce development in the electricity distribution sector will further enhance supply chain resilience.

By taking these steps, the industry can minimise the impact of global supply chain and workforce pressures on lead times for network reinforcement, ensuring timely delivery and sustained progress toward decarbonisation goals.

Q14. What do you see as the role of distributed flexibility, both in the short and longer term, to manage distribution network constraints?

EA Technology Response:

Distributed flexibility plays a crucial role in managing distribution network constraints, particularly in the context of increased demand driven by the electrification of transport and heating. Its application spans both the short and medium term, providing a valuable tool for ensuring reliability and efficiency in the electricity distribution network.

Short-Term Role of Distributed Flexibility

In the short term, distributed flexibility is indispensable for bridging the gap between the immediate need for network capacity and the delivery of long-term infrastructure solutions efficiently.

1. Time-Critical Applications:

- The **volume driver mechanism** in RIIO-ED2 has proven effective in adjusting funding automatically (based on agreed unit costs). This mechanism allows DNOs to add capacity through flexibility solutions or traditional reinforcement to accommodate rising demand from electric vehicle (EV) chargers and heat pumps.

- At the **Low Voltage (LV) network level**, flexibility provides a time-critical solution to manage demand peaks and avoid supply disruptions before physical reinforcements can be implemented.

2. Temporary Measure to Mitigate Delays:

- Distributed flexibility can act as a **bridging solution**, ensuring continued reliability while infrastructure upgrades are in progress. For instance, deploying flexibility at constrained points in the network can defer outages or the need for immediate costly interventions.
- However, it is essential to recognise that flexibility to defer local reinforcements may be more of a **short-term measure** than a final solution. Its role at this stage is to stimulate DER liquidity and buy time for planning and implementing permanent reinforcements rather than fully deferring investments indefinitely.

Medium-Term Role of Distributed Flexibility

In the medium term, distributed flexibility can continue to play an important, albeit more targeted, role in managing wider distribution system constraints and enabling an efficient, decarbonised energy system.

- **Optimising Network Utilisation**- As the energy system integrates more intermittent renewable generation and decentralised energy resources, flexibility could be critical for optimising the use of existing assets and bridging the uncertainty gap. This includes balancing supply and demand in real time and enhancing grid stability.
- **Supporting System Resilience**- Distributed flexibility can complement traditional reinforcements by reducing strain on the network during periods of extreme weather or unanticipated demand surges. This enhances resilience while minimising the risk of stranded assets.
- **Enabling Market Participation**- Flexibility services, such as demand-side response and vehicle-to-grid technologies, will empower consumers and businesses to participate actively in balancing the system. This democratisation of flexibility markets will be essential for achieving long-term system efficiency.

Recommendations

1. Time-Based Valuation:

- The **value of time** should not be underestimated as a driver, especially at the LV network level. Flexibility provides a critical buffer that allows DNOs

to address immediate constraints while planning and executing infrastructure upgrades.

2. **Balanced Approach to Investment:**

- While flexibility solutions are valuable, they should not replace high certainty reinforcements. A **balanced approach** that integrates flexibility as a complementary tool alongside traditional reinforcements will ensure a robust and future-ready network.

3. **Incentivising Innovation:**

- Regulatory frameworks should continue to incentivise the development and deployment of innovative flexibility solutions, ensuring they are used where they deliver the greatest value for consumers and the system.

By leveraging distributed flexibility effectively, DNOs can manage short-term constraints while laying the groundwork for a resilient and decarbonised electricity distribution network. This approach aligns with the overarching objectives of ED3 and ensures the network remains fit for purpose as demand patterns evolve.

Q15. How do we ensure that network flexibility is used only when it is in consumers' long-term interests in ED3?

EA Technology Response:

Network flexibility is a critical tool in enabling the efficient operation of smart electricity distribution networks, particularly during periods of rapid demand growth, uncertainty and network constraints. However, it is important to balance the **short-term consumer interests** with the **long-term network and system requirements**, ensuring flexibility solutions are implemented in a way that delivers enduring value.

Recognising Short-Term Consumer Benefits

While long-term outcomes often guide regulatory frameworks, there are **immediate consumer interests** that should not be overlooked:

- **Service Level Agreements (SLAs):** Network flexibility often plays a vital role in bridging short-term capacity gaps, enabling timely access to the grid. For consumers, this means guaranteed service levels without delays, which is particularly crucial as we transition to increased electrification of transport and heating.

- Flexibility mechanisms can address immediate network constraints while allowing for the strategic efficient delivery of permanent infrastructure upgrades over a longer timeframe.

Time-Capped Allocation for Flexibility

One potential solution is to implement a **time cap** on the use of flexibility for specific network constraints:

- Time-capped allocation ensures that flexibility is employed as a transitional measure, preventing over-reliance on temporary solutions that may delay necessary network investments.
- This approach guarantees that flexibility is used efficiently while promoting long-term investments in sustainable capacity solutions.

Automation and Efficiency in Flexibility Deployment

Solutions such as **LV Autoflex** provide an excellent opportunity to enhance flexibility deployment while maintaining consumer-focused outcomes:

- LV Autoflex could automate up to **80% of the end-to-end process** for deploying local LV constraint driven network flexibility, significantly reducing costs and time to implementation and increasing the speed of response cover to such constraints.
- By automating routine tasks, this approach ensures that flexibility solutions are deployed efficiently, minimising administrative burdens while maintaining high service levels for consumers.

Recommendations

1. **Incorporate SLAs in the Flexibility Framework:** The ED3 framework should explicitly recognise the role of flexibility in meeting short-term consumer interests, particularly for ensuring timely network access within SLAs.
2. **Time-Capped Use of Flexibility:** A defined time cap for using flexibility solutions on specific network constraints should be introduced. This will encourage the transition to permanent infrastructure solutions where appropriate, balancing short- and long-term interests.
3. **Leverage Automation in Flexibility:** The use of automated approaches, such as LV Autoflex, should be encouraged to enhance the efficiency of flexibility deployment and maximise consumer benefits.

By adopting these measures, the ED3 framework can ensure that flexibility solutions are used judiciously, meeting immediate consumer needs while aligning with long-term

objectives. This balanced approach will provide a reliable and efficient network that supports the transition to net zero without compromising on consumer outcomes.

Q19. Do you agree that investment optioneering should aim to reduce the lifetime costs by sizing elements of works for long-term need, including considering the impact of thermal losses?

EA Technology Response:

We agree that sizing assets at the point of renewal—either due to deterioration or increased demand—can be an effective way of reducing lifetime costs. However, there are significant challenges in anticipating long-term requirements, particularly when the planning horizon extends over decades. This approach must balance the risk of oversizing assets, which may result in unnecessary costs, against the potential benefits of long-term capacity provision.

Key Considerations for Asset Sizing and Long-Term Planning

1. Balancing Risks of Oversizing and Underutilisation

- While sizing assets to meet long-term needs may seem prudent, there is a **risk of oversizing**, especially when additional capacity is not required within a reasonable timeframe. Oversized assets may lead to higher upfront costs without delivering proportional benefits, compared to like-for-like replacements.
- For many asset types, there is a **correlation between workload and ageing**. Assets with surplus capacity often age less quickly when underutilised, as they operate under lower stress conditions. However, since all assets will inevitably deteriorate due to environmental and operational factors, there is **limited value in oversizing assets** where additional capacity is unlikely to be needed within a practical time horizon.

2. Condition-Related Investments (CNAIM/NARM)

- Understanding condition-related investment needs for **CNAIM (NARM) asset categories** is a well-established, consistent, and effective process across all Distribution Network Operators (DNOs).
- Investment decisions for condition-based needs—whether refurbishment, like-for-like replacement, or non-like-for-like replacement—are aligned with stakeholder requirements, such as the need for increased capacity. This ensures a structured approach to

evaluating asset needs, minimising oversizing risks while accommodating foreseeable requirements.

3. Short-Term vs. Long-Term Load Needs

- **Short-term load-related needs** can often be evaluated with reasonable confidence, as they are based on observable trends like local load growth or electrification rates. However, **long-term load-related needs** are more uncertain and depend heavily on external factors, including:
 - Government policies on electrification and net-zero targets.
 - Consumer adoption rates for technologies like EVs and heat pumps.
- DNOs are therefore required to make **least-regret decisions** in the face of these uncertainties. The regulatory framework should provide flexibility and support for such decisions, ensuring that DNOs are not penalised for making prudent investments in the absence of clear long-term signals.

4. Thermal Losses and Lifetime Costs

- Considering the impact of **thermal losses** as part of investment optioneering is critical for reducing lifetime costs. Reducing losses through asset sizing can provide long-term efficiency benefits, but these must be balanced against the upfront costs of larger or higher-efficiency assets.
- A **standardised methodology** for evaluating the trade-offs between thermal losses, upfront investment, and long-term capacity needs would improve decision-making consistency across DNOs.

Recommendations for Developing Investment Optioneering

To ensure investment optioneering reduces lifetime costs while balancing risk and uncertainty, we recommend the following:

1. Common Methodology Across DNOs

- Develop a standardised evaluation methodology with input parameters based on:
 - Asset characteristics (e.g., age, condition, type).
 - Customer profiles (e.g., load characteristics, criticality of supply).
 - Local network requirements and growth projections.

- A **common methodology** across all DNOs would improve decision-making consistency and ensure that investment optioneering is applied equitably. CNAIM provides a world leading base to develop from.

2. Flexibility to Address Uncertainty

- The regulatory framework should support **least-regret decisions**, allowing DNOs to prioritise investments that balance near-term requirements with long-term uncertainties. This includes provisions for adapting plans as electrification rates and government policies evolve.
- Mechanisms such as **re-openers** or mid-period reviews can provide DNOs with the flexibility to adjust their investment plans in response to changing circumstances.

3. Integration of Stakeholder Requirements

- Investment decisions should continue to be aligned with stakeholder needs, incorporating input from local communities, businesses, and government policies. This ensures that network investments deliver tangible benefits while addressing the diverse requirements of stakeholders (RESP)

4. Incorporating Thermal Loss Analysis

- A structured approach to evaluate the **impact of thermal losses** should be embedded in the investment optioneering methodology. This analysis would quantify the lifetime cost savings of reducing losses versus the upfront costs of more efficient or larger assets.

Conclusion

We support the principle of reducing lifetime costs by sizing assets for long-term needs, including consideration of thermal losses. However, it is key to address the risks of oversizing and underutilisation, particularly given the uncertainties associated with long-term demand growth. A common methodology across DNOs, supported by a flexible regulatory framework, will enable effective investment optioneering that balances cost efficiency, asset performance, and consumer outcomes.

Q20. Is a 5-year price control (2028-33) the right duration to achieve the objective of securing timely network capacity for the net zero transition at least cost to consumers over the long run?

EA Technology Response:

We respond to this question from the perspective of a long standing supplier to the electricity distribution industry, with a focus on the impact that price control durations have on contracting frameworks, supply chain stability, and overall cost efficiency.

Balancing Stability and Performance with a 5-Year Cycle

A 5-year price control cycle provides a structured framework that aligns well with shorter-term contracting approaches widely used within the industry. Many of our customers adopt a **2+2+1 contract format**, which balances the need for performance accountability with the stability required for effective planning and delivery. This format mitigates the risks associated with poor contract performance while offering flexibility to adjust contracting terms as needed.

The alignment of contract lengths with regulatory cycles is classed as the norm given the DNO inherent **funding risks** associated with these frameworks across price controls. A 5-year price control ensures that funding and contractual obligations can be closely matched, minimising exposure to financial uncertainty for both network operators and their suppliers.

Opportunities with Longer Contractual and Regulatory Periods

While the 5-year model has merits, there are scenarios where longer regulatory or contractual cycles may deliver greater value, particularly when considering the need to build confidence across the supply chain. For example:

- **10-Year Contracts:** We have observed cases where 10-year contracts have been placed to leverage better value across the Tier 1–3 supply chain. These longer commitments provide suppliers with greater certainty of recurring income, which is weighted highly when making discount and investment decisions in capacity, skills, and innovation.
- **Economies of Scale:** Longer regulatory and contractual periods can unlock economies of scale and cost efficiencies, particularly for capital-intensive projects or the delivery of innovative solutions that require upfront investment.
- **Supply Chain Confidence:** A longer horizon provides stability for Tier 1–3 suppliers, enabling them to invest in their operations, workforce, and infrastructure with confidence. This can help mitigate issues like supply chain

constraints and workforce shortages, which are critical risks during the net zero transition.

Recommendations for Flexibility Within a 5-Year Framework

While a 5-year price control strikes a reasonable balance between stability and adaptability, we believe that incorporating **flexibility mechanisms** within this framework is important to maximise its effectiveness:

1. **Option for 5+5 Flexibility:** Introducing a mechanism to extend certain projects or programs into a second 5-year period (where justified) could deliver greater long-term value without requiring a complete overhaul of the price control framework.
2. **Encourage Longer-Term Contracting:** Where feasible, encourage placing longer-term contracts with their supply chain for certain investments. This can provide the stability needed for suppliers to optimise costs and deliver innovative solutions.

Conclusion

In summary, a 5-year price control remains a practical and effective duration for the electricity distribution industry, particularly when aligned with flexible contracting frameworks like the 2+2+1 model. However, for certain programs and investments, longer regulatory horizons or contractual commitments—such as 10-year contracts—can deliver additional value by building supply chain confidence and unlocking cost efficiencies. Incorporating mechanisms to extend timeframes where needed, while maintaining the accountability and adaptability of the 5-year cycle, will best serve the objective of securing timely network capacity for the net zero transition at least cost to consumers over the long run.

Q21. To what extent should the price control be more directive on specific anticipatory and strategic investments to achieve the 'networks for net zero' consumer outcome?

EA Technology Response:

We support a more directive approach in the ED3 framework for specific anticipatory and strategic investments aimed at achieving the "Networks for Net Zero" consumer outcome. However, this directive should not focus solely on adding capacity but also on deploying **innovative, smart solutions** that deliver **stackable, complementary value streams**. These investments can simultaneously address network capacity, reliability, and asset condition, ensuring benefits are unlocked for both the short and long term.

Addressing the Challenge of Capacity Uncertainty

Historically, the key challenge has been **ensuring sufficient capacity is available where and when it is needed**, a challenge underpinned by significant uncertainty. Strategic investments in ED2, such as **LV monitoring**, have demonstrated the value of data-driven approaches to address this challenge. These solutions have enabled Distribution Network Operators (DNOs) to:

- **Understand real-time network utilisation:** Bridging the gap between modelled and monitored network conditions, including identifying periods of high or low asset utilisation.
- **Identify voltage excursions:** Highlighting capacity constraints and providing early warnings of network stress, which helps inform both immediate operational decisions and longer-term planning.

Such investments illustrate how innovation in monitoring and analytics has allowed DNOs to better understand their networks, helping them plan and invest with greater confidence and precision.

Unlocking Stackable Value Streams Through Strategic Investments

To achieve the "Networks for Net Zero" consumer outcome, anticipatory investments must be designed to **unlock multiple, complementary benefits** across capacity, reliability, and asset condition. These investments should not be constrained by traditional silos, such as "load" versus "non-load" expenditure, but instead leverage innovative, smart solutions. For example:

1. Capacity Expansion for Future Needs:

- Future-proofing the network for increased electrification (e.g., EVs, heat pumps).
- Proactively addressing potential constraints before they materialise.

2. Improved Reliability Today:

- Reducing faults and outages through proactive interventions enabled by data-driven insights.
- Enhancing consumer trust by delivering consistent and dependable service.

3. Optimised Asset Condition:

- Prolonging the life of assets by identifying and addressing early signs of wear or stress (e.g., through pre-fault identification tools).

- Lowering operational costs by reducing emergency repairs and reactive maintenance.

Examples of Strategic Investments with Stackable Benefits

Strategic investments can unlock significant value when designed to deliver multiple outcomes. For instance:

- **LV Monitoring and Automation:** Provides insights into real-time utilisation, enabling DNOs to balance loads dynamically and defer unnecessary reinforcement while also improving reliability and network visibility.
- **Predictive Maintenance Solutions:** Tools that identify pre-fault conditions not only reduce operational costs by shifting from reactive to proactive maintenance but also improve network reliability by preventing unplanned outages.
- **Flexible Network Solutions:** Deploying smart technologies like dynamic voltage control or demand-side response enables DNOs to manage peak loads effectively while ensuring consumers receive consistent power quality.
- **Asset Condition Monitoring:** Strategic investments in asset monitoring allow DNOs to better allocate Capex and Opex, balancing short-term reliability with long-term asset sustainability.

Recommendations should a Directive Approach in ED3 be taken

1. **Consider Strategic, Multifunctional Investments:**
 - Encourage investments that address multiple challenges—capacity, reliability, and asset health—within a single solution. This approach ensures maximum value for consumers.
2. **Incentivise Innovation over Traditional Silos:**
 - Move away from rigid classifications of "load" versus "non-load" investments. Enable DNOs to adopt smart, cross-functional solutions that provide stackable benefits.
3. **Leverage Data and Digitalisation:**
 - Expand on ED2's success in LV monitoring by mandating further deployment of monitoring and analytics solutions. These investments will reduce uncertainty and support both short- and long-term planning.
4. **Anticipatory Investments for Net Zero:**

- Recognise the critical role of anticipatory investments in enabling decarbonisation. Providing regulatory guidance and support mechanisms to reduce the risk of over- or under-building.

5. Encourage Collaboration:

- Promote partnerships between DNOs and technology providers to accelerate the deployment of innovative solutions that align with strategic objectives.

Conclusion

A more directive approach to strategic investments in ED3 is important for ensuring the sector are ready to support net zero while delivering value to consumers today. By prioritising **innovative, stackable solutions** over traditional silos, the ED3 framework can unlock benefits across capacity, reliability, and asset condition, making the network transformation both future-proof and cost-effective.

This approach aligns with consumer outcomes and positions the UK energy system as a leader in sustainable and innovative network management.

Below is an example of how LV Monitoring at scale can unlock multiple stacked value from a single enabling Strategic Investment.

Strategic Investments can unlock stacked benefits

Distribution Network Value Stack RELIABILITY	Smart Meter	Monitored	Distribution Network Value Stack CAPACITY	Smart Meter	Monitored	Dist Value Stack HEALTH	SM	Monitor
Basic Power on/ off at domestic	Y	N	Voltage threshold/ Limit compliance	N	Y	Tx Oil temperature-RTTR	N	Y
Basic Power on / off at LV feeder	Y	Y	Undervoltage average	Y	Y		Substation access security	N
Basic Power off by Phase on feeder	Y	Y	Undervoltage Instantaneous	N	Y	Smoke detection		N
Neutral fault identification	Y	Y	Overvoltage average	Y	Y		Real-time asset condition data	N
Fuse Blown alerts by phase	N	Y	Overvoltage Instantaneous	N	Y	THD		N
LV automation enablement	N	Y	Feeder/phase overload - short term	N	Y		Fault magnitude and network stress	N
Transient fault alerts	N	Y	Feeder/phase overload - Long term	Modelled	Measured	Losses		N
Fault likelihood categorisation	N	Y	Feeder phase imbalance	N	Y		Energy Theft (Meter Bypass)	Y
Fault location and impedance	N	Y	Feeder and TX reverse powerflow	Modelled	Measured			
Fault history on transient and pre-fault activity	N	Y	TX utilisation rate	Modelled	Measured			
Fault magnitude and shape for fault categorisation	N	Y	Feeder utilisation rate	Modelled	Measured			
HV Automation	N	Y	Optimised DSO constraint identifications	N	Y			
Low cost RTU	N	Y	Auto market signaling	Modelled	Measured			
			Auto dispatch of LV flex	Modelled	Measured			
			Verification of flex service provision	Modelled	Measured			
			Capacity Headroom	Modelled	Measured			

Q31. Has the BMCS incentive served its purpose in driving performance improvements and how can we adapt the metrics to better incentivise performance across a wider range of interactions between DNOs and their customers, particularly relating to connections?

EA Technology Response:

The **Broad Measure of Customer Service (BMCS)** has been instrumental in driving substantial improvements in Distribution Network Operators' (DNOs) customer service performance. The focus and prioritisation it has fostered have resulted in **world-leading utility performance standards**. It would be a significant risk to remove this mechanism altogether, given its effectiveness in ensuring high levels of customer satisfaction and accountability within the industry.

However, while BMCS has achieved its original objectives, there is an opportunity to **evolve and expand its scope** to incentivise broader customer and social outcomes. This would ensure that the momentum achieved in customer service excellence continues to deliver value, not just in satisfaction metrics but in other areas critical to the energy transition and social priorities.

The Success of BMCS

The BMCS incentive has:

1. Driven **focused and consistent performance improvements** across the DNO sector.
2. Positioned DNOs as global leaders in customer service within the utilities industry.
3. Embedded a culture of accountability and responsiveness to customer needs.

Removing this measure could jeopardise the significant progress made and dilute the emphasis on service quality. Therefore, retaining BMCS in its core form is still very much needed.

Opportunities for Evolution

1. **Broadening the Scope to Include Social and Environmental Outcomes**
 - BMCS could be refined to focus a portion of the incentive on outcomes that align with wider societal and environmental goals. For example:
 - **Vulnerability Support:** Encourage DNOs to enhance service for vulnerable customers, who experience greater impact from a power outage.

- **Low Carbon Technologies (LCTs):** Incentivise DNOs to streamline processes for connecting LCTs (e.g., EV chargers, heat pumps, PV and storage) and to ensure customers benefit from these technologies once connected. This could include proactive guidance, improved communication during connection processes, and differentiated post-connection support.
- This shift would use the existing BMCS momentum to drive **second-order outcomes** that deliver tangible benefits for society and the energy transition.

2. Introducing a Metric for Customer Effort

- While customer satisfaction is a key performance indicator, it often overlooks the **effort customers must expend** during their interactions with DNOs. For example, a customer may be satisfied with the final outcome of a connection request but may find the process overly complex, time-consuming, or difficult to navigate.
- A metric assessing customer effort, such as how easily and efficiently a customer can engage with a DNO, would:
 - Highlight areas for improvement in processes and digitalisation.
 - Provide insights into the customer experience beyond satisfaction, identifying barriers that hinder accessibility and ease of use.
 - Support alignment with the **digitalisation agenda**, encouraging DNOs to adopt technologies that simplify and automate customer interactions.

Recommendations for Adaptation

1. Retain the **core BMCS incentive**, ensuring continued focus on customer satisfaction and world-leading performance.
2. Allocate a portion of the incentive to **new metrics** that address:
 - Vulnerability support and impact aligned service delivery.
 - Enabling and supporting LCT adoption, both during connection and post-connection.
 - Customer effort, emphasising simplicity, accessibility, and alignment with digitalisation goals.

3. Ensure any adaptations build on the **momentum already achieved**, leveraging BMCS as a platform for further innovation and progress.

By retaining the BMCS as a foundational mechanism while evolving it to reflect broader outcomes and customer priorities, Ofgem can ensure the wider industry continue to focus on delivering **world-class service** while addressing the challenges and opportunities of the energy transition.

Q34. How can we drive further service improvements under the TTC incentive?

EA Technology Response:

As customer expectations for faster and more transparent connections to the electricity network increase, coupled with a significantly higher volume of customer to DNO interactions driven by Low Carbon Technologies (LCTs), it is critical for DNOs to adopt **digital solutions** to enhance service efficiency and customer satisfaction. The adoption of automated, self-serve solutions is a key enabler to meeting these demands, while also addressing the growing complexity of connection requests.

Key Opportunities for Service Improvements with Digital Tools

1. Streamlining General Enquiries and Small Works

- Technology now exists which has the potential to automate a high proportion of **general enquiries assessments and small works connection requests** using innovations such as **self-serve Connect software**, freeing up critical engineering resources to focus on more complex and bespoke connections requests.
- **Case Example:** A DNO recently implemented a self-serve system for connections up to **1MVA** (HV) and budget quotes up to **2.5MVA**, enabling customers to process their applications autonomously while the DNO concentrates on high-impact projects.

2. Significant Time Savings

- **LCT Assessments:** Customers typically wait 2-5 weeks to assess if they can connect an LCT to the grid. With automated self-serve Connect systems, this time is reduced to **minutes**, drastically improving customer experience and enabling quicker decision-making whilst avoiding spiralling overhead costs.
- **Domestic Service Alterations:** Overloaded grid operators can automate over **80% of this workload**, allowing customers to receive and accept

connection offers, accept and pay within **minutes**, with no human interaction required.

3. Enhanced Accessibility and Availability

- Using self-serve innovations such as VisNet Connect, customers can apply for connections **24/7**, essentially running the equivalent of three shifts per day at a fraction of the cost of a single manual shift. This increases throughput by over **200%**, ensuring scalability as demand grows.

4. Resource Optimisation

- Processing a typical **LV connection** manually requires 2-4 hours of an engineer's effort. With automation, this can be reduced to **minutes**, avoiding approximately **90% of the cost** and allowing DNO engineers to focus on high-complexity tasks.
- Grid operators can reduce the workload associated with unprogressed connection applications (Optioneering) by empowering customers to **autonomously pioneer** scenarios ahead of accepting their best-fit connection, minimising unnecessary administrative effort and clogging queues.

5. Cost Efficiency

- The average cost to process an LV connection offer manually is approximately **£1,500**, and with a majority of applications not progressing to acceptance, this represents a significant inefficiency. By automating this process, grid operators can reduce costs and reallocate resources to meet growing demand.

Addressing the Growing Complexity of Connections

1. Scaling for EV Uptake

- For an **average home EV charger installation**, a customer interacts with a DNO approximately four times. As EV adoption scales, current manual processes will be unable to cope. **Self-Serve Connections software** ensures scalability, enabling DNOs to meet this demand while maintaining quality and reducing costs.
- High-powered EV chargers are driving a significant **increase in 11kV grid connection requests**. Using solutions such as **self-serve HV Connection tools**, DNOs can autonomously process fully acceptable

grid offers up to **1MVA** and budget quotes up to **2.5MVA** within minutes, significantly reducing the timeframe from months to hours.

2. Improved Customer Satisfaction

- Faster processing times, greater transparency, and self-service options enhance the customer experience, boosting satisfaction and reducing frustration from long wait times.

Supporting the TTC Incentive with Digital Solutions

The **Time to Connect (TTC) incentive** is a valuable driver for improving customer service in the connections process. By adopting self-serve and automated solutions DNOs can:

- **Drastically improve connection timelines**, reducing wait times from weeks to minutes for many connection types.
- **Avoid increased costs to serve**, freeing up engineering resources for high-priority tasks.
- **Enhance scalability**, ensuring DNOs can meet the growing demand for connections driven by LCT adoption.
- **Improve overall customer satisfaction**, aligning with the TTC incentive's objectives.

Summary

To drive further service improvements under the TTC incentive, it is imperative to leverage the latest digital tools that enable automation, self-service, and efficiency. While not all connection offers can be fully automated due to their complexity, deploying these tools for the vast majority of interactions ensures faster, scalable, and more cost-effective service delivery. By doing so, DNOs can align with increasing customer expectations and LCT-driven demand, while simultaneously achieving the goals of the TTC incentive.

Q35. Should the TTC also apply to domestic connection upgrades ie fuse/cutout/service cable upgrades, including unlooping?

EA Technology Response:

We believe the **Time to Connect (TTC)** incentive should also apply to domestic connection upgrades, including **fuse replacements, cutout upgrades, service cable upgrades, and unlooping**. These activities are becoming increasingly critical as the

adoption of **Low Carbon Technologies (LCTs)** such as electric vehicle (EV) chargers and heat pumps accelerates. Expanding the scope of the TTC incentive to these upgrades will drive improvements in customer service, efficiency, and scalability across the distribution network.

Why Include Domestic Connection Upgrades in the TTC Incentive?

1. Alignment with Customer Expectations

- The demand for faster, more efficient service is increasing as customers adopt LCTs. Connection upgrades such as fuse replacements and unlooping are often prerequisites for customers to connect EV chargers or heat pumps.
- Expanding the TTC incentive to include these upgrades ensures that customers receive the same high standard of service for enabling upgrades as they do for standard new connections.

2. Volume and Scale Challenges

- The **volume of domestic connection upgrades** is rising rapidly. For example, unlooping requests alone are significantly increasing due to EV charger installations and other LCT-driven needs.
- Including upgrades under the TTC incentive can drive process efficiencies and encourage investment in tools and systems to manage the growing workload.

3. Impact on Decarbonisation Goals

- Timely upgrades are critical to achieving net zero targets. Delays in upgrading service cables or unlooping connections can hinder LCT adoption and slow down decarbonisation efforts.
- Applying the TTC incentive to upgrades drives focus in these processes, supporting the rapid deployment of LCTs.

4. Customer-Centric Approach

- For most customers, fuse replacements, unlooping, and similar upgrades are indistinguishable from a standard connection process. They expect the same level of service and timeliness, regardless of the technical nature of their request.
- Including these upgrades under the TTC incentive ensures a **consistent customer experience** across all types of connection services.

Benefits of Including Domestic Upgrades in the TTC

1. Efficiency Through Digital Solutions

- Tools such as automated **self-serve Connect tools** can automate over **80% of domestic service alterations** and upgrades, allowing customers to self-serve and accept offers in minutes.
- Automating these processes ensures that domestic connection upgrades can meet the same ambitious timelines as new connections, improving overall service levels.

2. Reduction in Engineering Bottlenecks

- Domestic upgrades, particularly unlooping and service cable replacements, are resource-intensive and can often create bottlenecks in DNO operations.
- Incentivising faster completion of these upgrades will require investment in process improvements and resource allocation, enabling DNOs to reduce average times.

3. Scalability to Meet Growing Demand

- As EV charger installations and heat pump adoption accelerate, domestic upgrades will scale exponentially. Including these activities under the TTC incentive ensures the industry is prepared to handle this growth effectively.

4. Improved Customer Satisfaction

- Customers typically experience significant frustration when delays in domestic upgrades prevent them from proceeding with LCT installations. Expanding the TTC incentive to upgrades will help reduce wait times and enhance customer satisfaction.

Recommendations for Implementation

- **Define Clear Standards:** The TTC incentive should include measurable and enforceable timeframes for completing domestic upgrades, similar to existing TTC targets for standard connections.
- **Enable Self-Service Options:** Encouraging DNOs to adopt digital self-serve solutions for upgrades will streamline processes and improve efficiency.

- **Support for Complex Upgrades:** For more complex domestic upgrades, such as extensive service cable replacements, the TTC framework should account for additional time or resources required, while still incentivising timely delivery.
- **Monitor and Report Performance:** Performance metrics for domestic upgrades under the TTC incentive should be transparently reported to ensure continuous improvement.

Conclusion

Expanding the TTC incentive to include domestic connection upgrades is a natural progression to meet the challenges of the energy transition. As customer expectations rise and the volume of upgrades increases, incentivising timely delivery will ensure that the industry remain focused on delivering high-quality, efficient, and scalable services. This approach not only aligns with customer needs but also directly supports the UK's decarbonisation and net zero goals.

Q38. In the context of greater electrification, is our current approach towards regulating reliability appropriate for ED3?

EA Technology Response:

We believe the current approach to regulating reliability, particularly through mechanisms such as the **Interruptions Incentive Scheme (IIS)**, has delivered significant improvements in reliability over time. However, in the context of greater electrification of customer day to day needs, evolving customer expectations, and advancements in monitoring and digitisation, it may be an opportune time to refresh to include a more nuanced approach to reliability regulation in ED3.

Key Considerations

1. Changing Customer Expectations

As society becomes increasingly reliant on electricity—powering transportation, heating, and a wide array of daily activities—the impact of power outages on consumers has grown significantly. A short interruption today can have far-reaching consequences, affecting not just comfort and convenience but also productivity, safety, and well-being. The regulatory framework must recognise these changing dynamics and prioritise investments in reducing Customer Interruptions (CIs) and Customer Minutes Lost (CMLs) across all voltage levels.

2. Traditional HV-Centric Focus

Historically, much of the reliability improvement under IIS has focused on the **high voltage (HV) network**, achieving excellent results. However, reliability on

the **low voltage (LV) network**—has seen relatively less progress. This gap presents a substantial opportunity for targeted improvement as digitisation and monitoring tools become increasingly available.

3. **Leveraging LV Monitoring and Digitisation**

Under ED2, most DNOs have started deploying **LV monitoring and digitisation solutions**, uncovering significant opportunities to improve reliability at the LV level. By focusing on CI/CML improvements, these investments are beginning to unlock a new layer of proactive and reactive reliability enhancement that benefits customers directly. The ED3 framework should look to support and incentivise further deployment and utilisation of these innovative technologies.

4. **Opportunities in Proactive LV Reliability**

The supply chain, including innovative solutions providers like EA Technology, has developed scalable, cost-effective products to address this next level of reliability improvement. These solutions are built on real-world data and experiences with network operators, demonstrating the potential to achieve transformative results on the LV network.

Benefits of Proactive LV Reliability Measures

We are keen to share insights based on our work with several DNOs, which demonstrate the tangible benefits of proactive reliability strategies:

- **Restoration Time Reduction**

Starting restoration activities immediately after a fault occurs driven by proactive LV alerts, rather than waiting for the first customer to report it, reduces downtime by up to 120 minutes. This proactive approach is critical during the winter months to reduce customer impact and significantly reduce overall CMLs.
- **PreFault Prediction Accuracy**

PreFault Reliability solutions identify cable circuit defects exhibiting discharge activity that are likely to cause faults and accurately predicts when these faults will occur. This enables DNOs to act proactively, preventing outages altogether. The service has demonstrated the ability to predict 71% of LV faults that subsequently occur within a year, empowering DNOs to prioritise and address the most urgent reliability risks proactively.
- **Post-Fault Restoration Efficiency**

Using Prefault data to pre-locate fault sites significantly shortens restoration and repair times by 40% while reducing fault-related costs by over 30%. This delivers substantial CI and CML improvements while optimising operational budgets.

- **Targeting Problematic Circuits**
60-80% of LV faults originate from just 15% of circuits. Our solutions precisely identify these circuits, enabling DNOs to focus efforts where they are most needed and impactful.
- **Predictive Accuracy for Imminent Failures**
Over 30% of feeders flagged as "Failure Imminent" by pre-fault monitoring experience faults within the following month. This highlights the critical role of predictive technologies in enabling pre-emptive interventions.
- **Optimised Use of Reclosers**
Deploying Alvin LV reclosers on circuits identified through our Proactive Reliability App reduces customer interruptions and downtime by 50% compared to deploying the recloser after the first non-damaging fault. Applied to the worst 10% of LV circuits, this strategy delivers an additional 3% annual CML savings.
- **Comprehensive Fault Visibility**
Our tools provide near-complete visibility of faults before they happen, enabling DNOs to intervene early or deploy protective solutions like Alvin LV reclosers. This results in significant improvements in overall network reliability.

Recommendations for ED3 Reliability Regulation

1. **Expand Focus on LV Networks**
The regulatory framework could prioritise **LV network reliability**, ensuring that CI and CML targets reflect the critical importance of low-voltage networks in delivering reliability improvements directly to customers.
2. **Incentivise Proactive Measures**
ED3 should incentivise DNOs to adopt **proactive reliability solutions** that leverage predictive technologies, enabling them to prevent faults before they occur and reduce restoration times significantly.
3. **Encourage Innovation**
Regulatory mechanisms should reward DNOs for deploying innovative solutions, such as **fault prediction services** and **proactive restoration tools**, that provide long-term reliability benefits and operational cost savings.
4. **Recognise Strategic Investments**
The framework should align reliability improvements with broader strategic investments in **capacity** and **power quality**, ensuring that these efforts complement and enhance each other.

Conclusion

As greater electrification reshapes consumer expectations and demands on the network, it is imperative that the reliability regulatory framework evolves to reflect these changes. By focusing on **LV network improvements**, incentivising **proactive measures**, and encouraging **innovation**, ED3 can build on the success of IIS while unlocking the next wave of reliability advancements. We are confident that the lessons learned and technologies developed by the supply chain can support DNOs in delivering these outcomes efficiently and effectively.

Q48. How should the price control encourage ongoing development of the DSO role and activities to optimise whole system benefits for existing and future consumers?

EA Technology Response:

We believe that the price control for ED3 should continue to encourage the evolution of the Distribution System Operator (DSO) role, leveraging its capacity to optimise whole-system benefits for existing and future consumers. The following points outline our key considerations and recommendations:

Leveraging the Secondary Reinforcement Volume Driver for Capacity

The **secondary reinforcement volume driver** employed in ED2 has demonstrated its value by adjusting funding automatically based on agreed unit costs. This mechanism enables DNOs to respond dynamically to increased demand from electric vehicle (EV) chargers, heat pumps, and other load growth, either through traditional reinforcement or flexibility solutions.

However, while flexibility plays a vital role, it should be viewed as a **temporary measure to bridge the gap** between the immediate capacity need and the time required to build infrastructure. Flexibility should not serve as a full deferral mechanism but as a strategic stopgap solution. To ensure effectiveness- **Flexibility to bridge connection capacity risks** should be incentivised, but with a **clear cap on duration**. The introduction of a Guaranteed Standards of Performance (GSOP) for the DSO role could ensure that timelines are adhered to, minimising prolonged reliance on temporary measures.

The Importance of Low Voltage Monitoring

Investment in **Low Voltage (LV) monitoring** is fundamental to unlocking not only capacity but also broader system benefits, including reliability, power quality, and resilience. While Ofgem has highlighted the progress made in LV monitoring, it is

essential to recognise that this is only the **beginning of a longer-term strategic monitoring program**.

To maximise value:

1. **Coordinated LV Monitoring Program:** Drive a program that ensures DNOs roll out LV monitoring strategically, with a **quantitative framework** to address local constraints and enhance system visibility.
2. **Beyond Capacity:** LV monitoring should not only target capacity constraints but also address service reliability, power quality, and operational efficiencies to ensure the business case for customers stacks up from the outset.
3. **Strategic Support Continuation:** Ofgem should continue to support LV monitoring development in ED3 until its broader benefits are fully realised and integrated into **business-as-usual (BAU)** processes. This includes making LV monitoring essential for delivering on decarbonisation capacity and reliability targets.

Quantifying Whole-System Benefits

The DSO role should consider the **second-order impacts** of network reliability on interconnected systems, such as water infrastructure. Evidence from the water sector highlights how electricity reliability issues can create cascading effects in their system.

We recommend incorporating a **quantitative framework** to evaluate the second-order impacts of electricity system reliability on interdependent systems, such as water, transportation, and healthcare. This would allow DSOs to:

- Demonstrate the broader value of investments in system monitoring and optimisation.
- Justify interventions aimed at mitigating interconnected risks and improving resilience across sectors.

Flexibility and Capacity Risk Management

Flexibility solutions can play a critical role in managing capacity risk, particularly in bridging the gap between demand growth and infrastructure build-out. To ensure effectiveness, the following measures should be considered:

1. **Time-Limited Use of Flexibility:** Flexibility measures should have defined timelines to prevent them from becoming permanent solutions. This aligns with the importance of minimising long-term risks associated with deferred investments.

2. **Incentivising Innovation:** The price control should incentivise DNOs to explore innovative approaches to flexibility, such as demand-side response (DSR) and dynamic reconfiguration, while also focusing on the timely delivery of infrastructure.

Recommendations

1. **Retain and Enhance the Secondary Reinforcement Volume Driver:** This mechanism remains critical in ensuring that DNOs can dynamically respond to demand growth while protecting consumers.
2. **Encourage a scaled Strategic LV Monitoring Program:** Ofgem could consider funding a coordinated approach to LV monitoring, ensuring it addresses broader benefits beyond capacity, including reliability and power quality.
3. **Quantify System-Wide Benefits:** The price control should incorporate a framework that quantifies the impact of DSO activities on interconnected systems like water and transportation, highlighting their societal and environmental value.
4. **Cap Flexibility Duration:** Introduce limits on how long flexibility solutions can be used to bridge capacity risks, coupled with GSOP metrics for the DSO role.

By fostering a more holistic, evidence-based approach to the DSO role, ED3 can ensure that network operations deliver optimal benefits not only for electricity consumers but also for the wider ecosystem of interdependent infrastructure.

Q50. Our historic approach to publishing and sharing datasets has been stakeholder led and focused on establishing good digital foundations in the DNOs. With the rapid pace needed for enhanced data and digitalisation, should we instead be considering incentives around strategic priorities, such as network planning, flexibility, and connections?

EA Technology Response:

We acknowledge the increasing pace of digitalisation and the growing need for enhanced data transparency in network planning, flexibility, and connections. While the historic stakeholder-led approach has laid strong digital foundations within DNOs, the shift to a data-centric energy system demands a more strategic and standardised framework.

Self-Serve Connection Quotes: A Path to Standardisation

EA Technology has demonstrated the value of enhanced digitalisation through its **self-serve connection quotes**. These are available within minutes across various DNO groups in the UK, covering General Enquiries (GE), Minor Works up to 1MVA. This service represents a significant improvement in efficiency and user experience for customers.

However, there is opportunity to standardise across the industry in terms of:

- **Which journeys should be self-serve** and
- **Which remain optional**

Recommendation: Incentives tied to standardised self-serve journeys could help achieve a consistent and improved UK-wide offering. By stating clear requirement for self-serve functionality, supported by measurable outcomes, Ofgem can drive alignment across the sector.

Public Access to Network Data: Scalability and Coverage

EA Technology supports initiatives that enhance public access to network data, particularly for **LV monitored data**:

1. **LV Insights Portal:** Currently provided to some DNOs, this portal offers communities visibility into the state of their local LV network.
2. **Load Monitoring Data Portal:** This portal, deployed in the Cheshire region showcases data from all ground-mounted secondary substations, offering valuable insights to local communities and authorities accountable for decarbonisation.

These initiatives provide tangible benefits by:

- Enhancing transparency.
- Enabling local authorities, developers, and community groups to make informed energy decisions.
- Supporting the transition to a data-driven energy system.

However, these efforts are currently localised and limited in scale. **Incentives** tied to the rollout of similar digital transparency across the UK could drive:

- Greater consistency in public data availability.
- Broader coverage across all regions.
- A stronger alignment with the needs of local communities and other stakeholders.

Recommendation: Ofgem should consider incentivising DNOs to develop and maintain public-facing data portals, contingent on a robust value case that demonstrates benefits for local stakeholders and the wider system.

Strategic Incentives: Driving Consistency and Value

While incentives have the potential to standardise approaches and accelerate progress, historical evidence suggests they can also lead to **divergence in offerings** where flexibility is permitted. To avoid this:

1. Strategic incentives should be aligned with **clear priorities**, such as network planning, flexibility, and connections.
2. Ofgem should provide guidance on the **expected minimum standards** for digitalisation initiatives, such as data coverage, public access, and self-serve functionalities.

Conclusion

Incentives focused on strategic priorities, such as network planning, flexibility, and connections, can play a pivotal role in achieving greater standardisation and coverage of enhanced digitalisation efforts. By:

- Encouraging standardised self-serve connection journeys.
- Incentivising scalable public data access initiatives.

Ofgem can drive a more consistent and impactful approach to data and digitalisation, benefiting consumers, local communities, and the energy system as a whole.

Q52. How should network companies use AI to improve network insight and decision making (both operating expenditure (opex) and capital expenditure (capex)) and how should we be encouraging this through the ED3 framework?

EA Technology Response:

We acknowledge that artificial intelligence (AI) holds transformative potential for the electricity distribution sector and could become a critical tool for improving network insight and decision-making across both operating expenditure (Opex) and capital expenditure (Capex). However, careful consideration must be given to the timing, risks, and methodologies for its adoption to ensure it delivers value while minimising operational and reputational risks.

The Role of AI in 2028 and Beyond

While AI in its generalised form currently presents significant risks, particularly for asset condition or load-driven applications, its rapid development and the long-term outlook of this consultation (targeting the ED3 framework beginning in 2028) suggest that AI could become a **game-changer for network businesses**. By 2028, advancements in AI may provide highly accurate and reliable tools for addressing critical network challenges.

AI's potential spans a wide range of activities, to name but a few:

- Predictive maintenance and **asset condition monitoring**, leveraging real-time data to identify and address issues before they escalate.
- Enhanced **load forecasting** and capacity planning to support decarbonisation and electrification goals.
- **Automated decision-making** for investment prioritisation, using large-scale data analysis to deliver cost-efficient outcomes.
- Improved consumer engagement through personalised services and responsive feedback mechanisms.

To unlock this potential, significant effort must be invested now in understanding **how to best utilise AI for accurate and valuable outcomes**, while addressing current limitations and risks.

Machine Learning (ML) as a Bridge to AI

In the near term, **machine learning (ML)** should continue to play a pivotal role in advancing network insights. ML offers several advantages, including:

- Easier control and management compared to generalised AI, as it is inherently limited to the models being trained.
- Proven applications in condition monitoring, photographic data interpretation, and investment decision-making.

For instance:

- ML is currently used effectively for interpreting **aerial photographs** and identifying asset defects, enabling precise targeting of maintenance activities.
- It is also applied in **condition monitoring systems**, helping network operators detect and address early signs of failure.

The success of ML in these applications underscores its importance as a **stepping stone** towards broader AI adoption. The ED3 framework should encourage the

continued development and deployment of ML while simultaneously preparing the groundwork for AI integration.

Recommendations for the ED3 Framework

1. Support Structured Development of AI:

- Fund **research and pilot projects** to explore AI's potential in key areas such as predictive maintenance, load forecasting, and investment planning.
- Develop frameworks to manage AI risks, focusing on transparency, accountability, and reliability in decision-making.

2. Expand ML Applications:

- Encourage wider adoption of ML for applications such as condition monitoring, photographic interpretation, and predictive analytics.
- Build on ML's proven track record to deliver immediate benefits, while preparing for future AI integration.

3. Establish Best Practices and Standards:

- Collaborate with stakeholders to define **standards for AI and ML use** in network operations, ensuring consistent and reliable outcomes.
- Incorporate industry feedback to identify the most impactful use cases and prioritise their development.

4. Provide Incentives for AI and ML Innovation:

- Use the ED3 framework to reward DNOs that adopt innovative technologies like AI and ML in ways that improve network efficiency, resilience, and consumer outcomes.
- Facilitate knowledge sharing across the sector to ensure best practices are disseminated and adopted.

5. Balance Risk with Opportunity:

- Recognise that AI's reliability will continue to improve, but its deployment should remain focused on **high-value, low-risk applications** until it reaches a sufficient level of maturity and security.
- Encourage a measured approach that leverages ML's current strengths while exploring AI's future potential.

By fostering the development of AI and ML, the ED3 framework can position network companies to capitalise on emerging technologies in a way that delivers **maximum value and minimal risk**. This balanced approach will ensure that innovation continues to drive improvements in network insight and decision-making, while safeguarding consumer interests and operational integrity.

Q53. Our aim is for the ED3 framework to be structured to deliver high impact, transformative innovation – do you think that further changes, alongside those proposed for the other sectors in our RIIO-3 SSMD, are required to deliver this?

EA Technology Response:

We agree with the aim of structuring the ED3 framework to deliver **high-impact, transformative innovation**. However, to meet pressing decarbonisation goals, such as **Clean Power by 2030**, further adjustments to the innovation framework will be necessary to address the current pace of innovation-to-deployment and support the transition of projects into Business as Usual (BaU).

Challenges with Current Innovation Mechanisms

1. Strategic Innovation Fund (SIF):

- SIF is highly effective for addressing **long-term unknowns**, offering a rigorous structure to explore and develop transformative innovations. However, the current timeline from idea to commercial deployment (often **4+ years**) is **too slow** for critical, shorter-term priorities such as achieving Clean Power by 2030.
- The SIF process, especially in the **Discovery phase**, while valuable in identifying failures early, can be **administratively burdensome**, limiting the agility needed for early-stage projects.

2. Network Innovation Allowance (NIA):

- NIA is an **agile and impactful tool**, enabling faster-paced projects with a greater likelihood of transitioning into BaU.
- **Over 80% of our innovation products** have been developed through the NIA mechanism, showcasing its value in delivering solutions rapidly.
- However, the challenge remains in the **transition from innovation to BaU**, particularly regarding supply chain scaling and attrition rates. Current processes do not effectively drive the scaling and rollout of successfully developed innovations.

Recommendations for Enhancing Innovation in ED3

1. Expand NIA for Faster Project Delivery:

- **NIA should be scaled up** to deliver a greater volume of high-priority, fast-paced projects that address near-term (5y) needs.
- Encourage mechanisms to **transition projects to BaU more rapidly**, including:
 - Increased flexibility to adapt project outcomes for BaU applications.
 - Support for supply chain scaling to ensure successful innovations are deployed effectively.

2. Streamline the SIF Discovery Phase:

- The **Discovery phase** should adopt a **Use-It-Or-Lose-It (UIOLI)** funding model to reduce administrative burden and enable quick experimentation and failure.
- The transition from the **Discovery phase to the Alpha phase** should be simplified, building on efforts like the SIF Round 4 **NIA-to-Alpha option**. Further **relaxation of requirements** could foster a smoother and faster pipeline.

3. Support Technical and Commercial Integration:

- Transformative innovation in ED3 must address **both technical and commercial solutions** to ensure a future-ready network.
- Mechanisms to encourage early integration of commercial considerations into technical innovation projects will enhance scalability and BaU adoption.

4. Preserve Pace and Learning in NIA:

- NIA projects must remain **fast-paced**, allowing for **rapid mobilisation** and **quick failure** to minimise wasted resources.
- While increased monitoring may enhance oversight, it must not slow innovation or discourage **sharing of learning from failures**. Sharing failure insights reduces duplication of efforts and maximises the value of funding.

Transformative Innovation for the Network of the Future

The ED3 framework must foster **transformative change** to deliver the **network of the future**. This requires:

- A dual focus on **fast-paced, practical solutions** (enabled through NIA) and **long-term transformative innovation** (enabled through SIF).
- Stronger mechanisms to support the transition of successful innovation to **BaU**, particularly in light of scaling challenges within the supply chain.
- Streamlined processes that reduce administrative burden, particularly in early-stage innovation, without compromising the quality of project outcomes.

By adopting these recommendations, the ED3 framework can accelerate the pace of innovation, transition successful solutions to BaU, and effectively deliver the transformative change needed to meet both **short-term priorities** and **long-term net zero goals**.

Q54. Are there any factors particular to DNOs that facilitate or challenge deployment of innovation on their own and across networks?

EA Technology Response:

Distribution Network Operators (DNOs) face unique opportunities and challenges in deploying innovation and digitalisation across their networks. These challenges stem from the scale of their operations, their proximity to end-users, and the need to address diverse regional needs while meeting ambitious decarbonisation targets. Below, we outline key factors that facilitate or challenge innovation and digitalisation, alongside targeted recommendations to enhance their deployment under the ED3 framework.

Facilitators for Innovation and Digitalisation Deployment

1. Introduction of a Totex Incentive Mechanism for Innovation [TIM(i)]:

- The existing Totex Incentive Mechanism (TIM) has proven to be a strong regulatory construct under the RIIO framework, incentivising DNOs to deliver cost-effective solutions across capital (Capex) and operating (Opex) expenditures.
- To further drive innovation deployment, we recommend evolving TIM to include a **dedicated Totex Incentive Mechanism for Innovation [TIM(i)]**, specifically for digital and innovative solutions deployed in place of traditional approaches.

- For example, introducing an alternative sharing factor (e.g., 70/30) for innovation during the current price control period could encourage faster adoption of innovative technologies and solutions. Over time, this could transition to a sliding scale that aligns with standard TIM incentives as innovations mature and transition to Business as Usual (BAU).
- Impact: TIM(i) would accelerate the adoption of efficient, innovative solutions and "pull through" innovation projects to BAU, ensuring they deliver tangible value to consumers and networks.

2. Encouraging Investment in Digitalisation (Including Software):

- Digitalisation is a foundational enabler for network transformation, yet software adoption often faces barriers due to its treatment as Opex, upfront costs, and perceived operational complexity.
- **Recommendation:** Introduce mechanisms to incentivise digitalisation investment, including software platforms for real-time monitoring, fault prediction, and customer engagement tools. Possible structures include:
 1. Treating software as Capex through Totex to ensure parity with hardware investments.
 2. Allowing accelerated depreciation for digital tools, reducing financial barriers to adoption.
 3. Expanding innovation allowances (e.g., Strategic Innovation Fund or Network Innovation Allowance) to include software projects and advanced data analytics.
 4. Collaborating with the government to provide tax shields or credits for digitalisation investments.
- **Impact:** These mechanisms have the potential to encourage DNOs to adopt and scale digital tools, overcoming traditional hurdles and accelerating the sector's transformation.

3. Standardisation of Data and Processes:

- Inconsistent data structures and processes across DNOs creates barriers to efficient innovation deployment, particularly for digital solutions like flexibility services and DER (Distributed Energy Resources) integration.
- **Recommendation:** Collaborate with all stakeholders to establish standardised data formats, reporting requirements, and digitalisation platforms to enable consistent and scalable innovation across DNOs.

- **Impact:** Standardisation would ensure interoperability, transparency, and greater customer engagement.

4. Differentiating Between Distribution and Transmission Innovation:

- Innovation at the distribution level requires scalability, replicability, and shorter timelines compared to the bespoke, long-term projects typically associated with transmission networks.
- **Impact:** Recognising this distinction allows regulatory mechanisms to better support DNO-specific innovation needs, particularly in deploying scalable digital solutions across their networks.

Recommendations to Enhance Digitalisation and Innovation Deployment

1. Expand Totex Incentives for Digitalisation:

- Consider TIM(i) as an evolution of the current Totex Incentive Mechanism, explicitly rewarding the deployment of innovative digital solutions, including software, over traditional methods.
- Specifically establish clear pathways for transitioning digitalisation projects into BAU, ensuring funding certainty for scaling successful pilots.

2. Encourage Alternative Incentive Structures for Digitalisation:

- Enable mechanisms like accelerated depreciation for digital tools, innovation allowances, and possible tax / procurement regulation shields to reduce the financial barriers to adopting digital technologies.

3. Standardise Data and Processes Across DNOs:

- Support standardisation efforts on data formats, reporting, and platforms to ensure digitalisation projects can scale efficiently across regions and networks.

4. Recognise the Unique Role of DNO Innovation:

- Design regulatory mechanisms that reflect the operational realities of DNOs, including scalability and shorter project timelines, ensuring the ED3 framework maximises the impact of innovation and digitalisation at the distribution level.

By addressing these factors, the ED3 framework can empower DNOs to continue being world leaders in network innovation, accelerating the adoption of digital solutions, driving efficiency, and enhancing reliability and consumer benefits across the electricity

distribution system. With over 58 years of experience supporting network innovation, EA Technology is committed to collaborating with Ofgem, DNOs, and stakeholders to ensure ED3 delivers a future-proof, digitally-enabled energy network.

Q55. Do you agree that we should retain the Network Asset Risk Metric (NARM)? How should it further evolve in ED3?

EA Technology Response:

We strongly support the retention of the Network Asset Risk Metric (NARM) as a key element of the ED3 framework. NARM provides a robust and consistent methodology for assessing and managing non-load-related risk across 61 asset categories. This framework is essential for ensuring accountability, comparability, and transparency among Distribution Network Operators (DNOs).

Retention of NARM

The NARM framework has proven to be a vital tool for:

- **Standardised Risk Management:** Assets within the NARM framework are rigorously assessed for condition and failure risk using a unified methodology. This ensures that DNOs operate under a consistent standard, eliminating subjectivity in asset management practices.
- **Transparency and Comparability:** The documentation of the NARM approach within the **Common Network Asset Indices Methodology (CNAIM)** and supporting Good Practice Guide ensures alignment among DNOs. This comparability is critical for benchmarking performance and fostering best practices.
- **Incorporation of Long-Term Risk:** The introduction of **CNAIM v2.1** has enhanced the framework by including long-term risk assessment. This simple yet effective mechanism quantifies the risk benefit of any investment, calculating the delta between long-term risk before and after investment. This approach ensures investments deliver value for money and supports transparent investment justification.

Areas for Evolution in ED3

While NARM is effective, there are opportunities for improvement and expansion:

1. **Inclusion of Additional Asset Categories:**
 - Currently, **43 asset categories** under the RIGs framework are classified as 'Non-NARM' and require individual Engineering Justification Papers

(EJPs). This places a burden on DNOs to justify their approach and introduces challenges in achieving benchmarking consistency. Including these assets in NARM would provide greater certainty and alignment for DNOs.

- **Proposed Evolution:**

- **Readily Adoptable Categories:** Some categories could be integrated into NARM/CNAIM without significant changes to the existing methodology.
- **Modified Adoption:** Certain categories may require modifications to methodology principles, such as placing greater reliance on age or alternative model parameters.
- **Developmental Approach:** For complex categories where sufficient data is currently unavailable, a common risk assessment framework could be developed, with a view toward future inclusion in NARM. These assets should initially remain exempt from output targets until robust methodologies are established.
- **Individual Assessment:** A subset of diverse or unique assets may require tailored assessments before investment and may not be suitable for NARM inclusion.

2. Enhanced Data Standardisation:

- Greater standardisation of data collection, processes, and platforms across DNOs could enable single-platform aggregation for customer use, reducing geographic barriers and improving system transparency.

Recommendations for the Evolution of NARM

1. **Broaden the Scope of NARM:** Expand NARM to incorporate additional asset categories, providing a more comprehensive framework for DNO asset management.
2. **Adopt a Phased Approach:** Develop a roadmap for integrating non-NARM categories, prioritising those that align closely with existing CNAIM principles while allowing time for data collection and methodology development for more complex categories.
3. **Foster Standardisation:** Support further standardisation of data and processes across DNOs to enable greater transparency, consistency, and customer accessibility.

By retaining and evolving the NARM framework, the ED3 regulatory model can ensure a robust, forward-looking approach to risk management while supporting DNOs in delivering value for money and maintaining reliable, resilient networks. Having over 58 years of expert experience in asset management, we welcome the opportunity to continue working alongside Ofgem and industry stakeholders to refine and enhance NARM for ED3 and beyond.

Q56. Do you agree that we should consider a more integrated approach to managing asset health, together with load-driven expenditure, given the need to future proof for resilience (climate, cyber and physical security) and future demand? What might the risks and benefits of this approach be?

EA Technology Response:

We agree that Ofgem should consider a more integrated approach to managing asset health alongside load-driven expenditure. However, this approach must balance the benefits of efficiency and future-proofing with the need to maintain clarity, objectivity, and fairness in investment decisions. Below, we outline the risks, benefits, and key considerations for implementing such an approach.

Key Considerations for Integration

1. Combining Asset Health and Investment Drivers for Efficiency

- To achieve a “touch the network once” philosophy, investment needs arising from **asset condition** (as identified through CNAIM/NARM) should be combined with other drivers such as load growth, policy requirements, and environmental risks. This integrated approach will minimise disruptions, optimise resource allocation, and reduce costs for consumers.
- **Example:** Replacing an asset due to both condition deterioration and anticipated load growth offers efficiency savings compared to addressing these needs separately.

2. Preserving the Integrity of CNAIM/NARM

- **CNAIM/NARM Framework:** CNAIM and NARM are robust tools for identifying and quantifying asset health and risk. They provide Key Performance Indicators (KPIs) for **Health Indices (HI)** and **Criticality Indices (CI)**, ensuring consistent and objective assessment of non-load-related risks across 61 asset categories. These tools should retain their

specificity and not be diluted by combining them directly with other investment drivers.

- **Risks of Dilution:** Overlapping priorities might lead to a skewed focus on assets where multiple drivers converge, potentially increasing the risk of unplanned failures for assets where condition-based risks are critical but do not align with other drivers. Selecting the most appropriate weightings for each driver could mitigate the risk of dilution.

3. Developing a Broader Resilience Framework

- To support integration, a broader **resilience framework** should incorporate KPIs for other drivers (e.g., load, environmental factors such as PCB/SF6 contamination, flood risk). These KPIs should work alongside CNAIM/NARM without undermining their rigor.
- **Unified Scoring System:** A resilience framework could assign scores for each asset based on condition, load, and environmental drivers. This would enable DNOs to identify overlaps and prioritise investments where multiple needs converge while retaining the flexibility for single-driver investments.

4. Safeguarding Single-Driver Investments

- **Condition-Based Investments:** Investment decisions driven purely by asset health must not be delayed while waiting for alignment with load or other drivers. Similarly, replacing assets in good condition purely for capacity expansion should require robust justification to avoid unnecessary costs for consumers.
- **Balancing Trade-Offs:** A clear methodology is needed to ensure that DNOs can differentiate and justify investments for single-driver or overlapping needs, ensuring reliability, affordability, and accountability.

Evolution of NARM and CNAIM

1. Expanding NARM to Non-NARM Assets

- Currently, **43 asset categories** fall outside the scope of CNAIM/NARM and are assessed through Engineering Justification Papers (EJPs), which can introduce variability and subjectivity in investment decisions. Expanding NARM to include more asset categories would improve consistency and comparability across DNOs.
- **Approach to Expansion:**

- **Readily Adoptable Assets:** Certain non-NARM categories could be integrated into CNAIM/NARM without significant changes to the methodology.
- **Adapted Methodology:** Some categories may require modifications to accommodate age-based or other indicators.
- **Data Development:** For challenging categories, a standardised approach should be developed to guide DNOs in collecting data and building robust risk assessment models.

2. Enhancing Data and Processes

- **Standardised Platforms:** Greater standardisation of data and processes is critical to support a unified framework for resilience and asset health. Single platforms or aggregated data systems could enable cross-geographic benchmarking and better consumer-facing transparency.
- Specific inclusion of LV and HV cables is key to understand condition in a consistent way across this asset class.

3. CNAIM Long-Term Risk Extension

- **CNAIM v2.1:** The introduction of Long-Term Risk assessments provides a valuable mechanism for quantifying risk reductions and investment benefits. This consistent methodology ensures value for money while avoiding additional complexity in investment justification.

Benefits of Integration

Benefits

- **Efficiency:** Combining drivers allows for cost savings and reduces the need for multiple network interventions.
- **Resilience:** A comprehensive framework ensures the network is better prepared for climate, cyber, and physical security risks.
- **Improved Transparency:** A unified resilience framework provides clear, standardised metrics for decision-making.

Recommendations

1. Retain CNAIM/NARM as the core framework for non-load-related risk while incorporating its KPIs into a broader resilience methodology.
2. Develop a unified resilience framework that integrates condition, load, and environmental drivers, ensuring flexibility for single-driver investments.

3. Expand NARM to include additional asset categories, prioritising those that can be integrated with minimal disruption to existing methodologies.
4. Standardise data and processes across DNOs to enhance consistency, scalability, and comparability.

By adopting a balanced, integrated approach, Ofgem can future-proof the electricity distribution network while maintaining reliability, affordability, and transparency for consumers.

Q62. What specific issues are network companies facing in relation to the skills and capacity of their workforce and what measures should we take through the regulatory framework to mitigate these issues?

EA Technology Response:

The electricity distribution sector faces significant challenges in ensuring that its workforce has the skills and capacity required to deliver on the ambitious objectives of ED3, particularly in the context of the increasing electrification of heat and transport, the integration of renewable energy sources, and the rapid adoption of low-carbon technologies (LCTs).

We believe that these challenges can be addressed effectively through targeted measures within the regulatory framework, building on successful initiatives from RIIO-ED2.

Current Issues Faced by Network Companies

1. **Skills Shortages:** With the growing demand for technical expertise in the sector, there is a significant shortfall in skilled engineers and technicians. The increased complexity and scale of network upgrades require a workforce equipped with specialised skills to deliver both traditional reinforcement projects and innovative solutions like flexibility services.
2. **Workforce Capacity Constraints:** The ramp-up in network investments during ED3 will require a larger workforce capable of meeting both the volume and quality demands of planned infrastructure projects. This includes addressing challenges such as supply chain bottlenecks and ensuring timely delivery of connections and upgrades.
3. **Ageing Workforce:** A substantial portion of the current workforce is approaching retirement age, creating an urgent need to recruit and train a new generation of skilled professionals.

Supporting the Workforce Through the Regulatory Framework

EA Technology is proud to play a key role in addressing these challenges. As a leading provider of technical apprenticeship training and advanced engineering qualifications, we currently support approximately 50% of the DNO market needs. Over the past 18 months, we have scaled up our training operations significantly to respond to workforce needs and are planning significant further expansion of our training business during ED2 to support the sector address workforce capacity and skills challenges.

We have achieved this by leveraging the **Workforce Resilience Plans** published by networks during ED2. These plans have been instrumental in helping us align our training offerings with the sector's needs, enabling the rapid development of a highly skilled workforce that supports the delivery of the ED2 and ED3 objectives.

Recommendations for ED3 Framework

1. Continuation and Enhancement of Workforce Resilience Plans:

- The publication of workforce resilience plans should remain a requirement for DNOs in ED3. These plans provide critical insights into the sector's workforce needs, enabling the supply chain to ramp up capacity and tailor offerings to meet demand effectively.
- More granular, long-term forecasts of workforce needs, allowing training providers and the wider supply chain to plan and invest accordingly would be most useful.

2. Support for Training Providers and Partnerships:

- Encouraging collaboration between DNOs and training providers, like EA Technology, will be crucial in scaling up workforce capacity. This could involve long-term contracts to de-risk investments in training facilities and programs.
- Recognising the role of external providers in meeting workforce resilience goals will ensure the entire sector is aligned in addressing these challenges.

Conclusion

The workforce challenges facing the electricity distribution sector require a coordinated and proactive approach. By continuing to require the publication of **Workforce Resilience Plans**, the ED3 framework can support DNOs and the supply chain in building the skilled and resilient workforce needed to deliver on the sector's ambitious objectives.

EA Technology is committed to expanding our training programs and capacity to support the sector in overcoming these challenges, and we believe that a collaborative approach between regulators, networks, and the supply chain will be critical to achieving success.

This focus on workforce development will not only ensure the timely delivery of ED3 objectives but also foster sustainable economic growth and long-term resilience within the electricity distribution sector.

Q63. What specific issues are supply chains facing and what measures should we take through the regulatory framework to mitigate these issues?

EA Technology Response:

The supply chain could face significant challenges that could impede the timely delivery of investments and the achievement of key objectives under the ED3 framework. Below, we outline specific issues and recommend measures to address them effectively through the regulatory framework.

Key Issues Facing Supply Chains

1. Lack of Long-Term Visibility and Contracts

- Supply chains require **long-term visibility and contracts** to provide confidence and stability, enabling them to ramp up production capacity and make necessary investments.
- Without such visibility, manufacturers may hesitate to commit resources, leading to delays in scaling production capacity and meeting growing demand.

2. Mismatch Between Production Ramp-Up and Workforce Capacity

- Ramping up supply chain production must be synchronised with **workforce growth plans**. If production increases too quickly without adequate installation capacity within DNOs, material storage levels risk becoming overloaded, resulting in inefficiencies and bottlenecks.
- EA Technology has developed LV Monitoring installation capacity to support DNOs with overflow requirements, ensuring materials can be deployed efficiently without overloading existing workforces.

3. Lack of Annual Volume Forecasts

- **Early publication of planned annual volumes** is critical to enabling supply chains to align their production with demand. Other geographies, such as those in the EU, provide annual volume forecasts and secure manufacturing slots years in advance, which could jeopardise the competitiveness of serving the UK supply chain if similar practices are not adopted.
- Without accurate forecasts, DNOs may lose out to international markets that offer greater predictability, potentially creating supply shortages and delays in project delivery.

4. Uncertainty in Sustainability Requirements

- Supply chains would benefit from better visibility on the sectors roadmaps for imposing sustainability requirements. Design cycles for manufacturing can take years, so expressing future requirements today can influence design priorities and product development efforts in the short term.
- A lack of clarity around sustainability standards risks creating a reactive environment, where manufacturers struggle to adapt their processes and products in time.

Proposed Measures to Mitigate Supply Chain Issues

1. Consideration for Long-Term Contracts

- DNOs could establish **long-term contracts** with supply chain partners. This would provide stability, enable capacity investments, and reduce risks associated with short-term demand fluctuations.

2. Integrate Workforce Growth Planning

- Require DNOs to publish **workforce growth plans** alongside their investment plans. This would ensure that production ramp-up aligns with installation capacity, reducing the risk of overloading material storage levels and avoiding delays caused by insufficient workforce capacity.

3. Annual Volume Forecasts

- Transparency and **early publication of annual volume forecasts** for all planned investments. This would enable manufacturers to plan production and secure necessary resources well in advance, fostering stability across the supply chain.

4. **Clear Sustainability Roadmaps**

- Require DNOs to publish clear and detailed roadmaps for future **sustainability requirements** within their supply chains. These roadmaps should include timelines, anticipated changes, and specific expectations for product designs.
- Early signaling of future requirements will allow manufacturers to incorporate these considerations into their product design cycles, ensuring compliance and reducing last-minute disruptions.

5. **Support for Overflow Solutions**

- Promote the use of innovative solutions, like those developed by EA Technology, to **augment DNO capacity** and support overflow requirements. This approach ensures that materials and equipment are deployed efficiently, even during peak demand periods, without overwhelming existing systems.

Conclusion

Addressing supply chain issues requires a multifaceted approach that combines long-term planning, greater transparency, and proactive alignment between production and workforce capacity. The regulatory framework should encourage the sector to:

- Establish long-term contracts,
- Publish annual volume forecasts,
- Provide clear sustainability roadmaps,
- Collaborate with the supply chain to manage capacity constraints.

These measures will enhance supply chain resilience, mitigate risks, and support the timely delivery of investments necessary for the ED3 framework's success.