

Ofgem RIIO-ED3 Framework Consultation

BEAMA Response

Who we are

BEAMA is the trade association for electricity infrastructure and systems, representing 200 manufacturers of electrical equipment and products across networks, flexibility and low carbon buildings:

- equipment for distribution networks and transmission networks;
- low-voltage equipment including LV boards, cutouts, wiring accessories and feeder pillars;
- building electrical infrastructure products;
- smart energy products such as smart meters, smart home devices, EV chargers; and
- heating & ventilation products including heat pumps, thermal storage, and electric heaters

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Summary

- **Networks for Net Zero:** We welcome Ofgem's shift in risk profile to put more emphasis on avoiding underinvestment in networks and moving to encourage early reinforcement ahead of need rather than a reactive approach. Moving beyond a '*flexibility first*' principle is also right because deferring investment bears a risk of heightened pressure on supply chains and insufficient network capacity. A "*prescriptive and programmatic approach*" to load-driven and asset health investments, based on strategic energy planning and asset risk information is good, and has the potential to help the supply chain invest in sufficient capacity, if DNOs change their procurement behaviour to provide greater visibility and earlier firm commitment to volumes of work. **DNOs need a reformed incentive structure** so that they engage with the supply chain to place firm orders earlier and invest on schedule rather than delaying works. Investment ahead of need in increasing network capacity will also help address the backlog in request for network connections (see [section 2](#)).
- **Supply chain resilience and growth:** DNOs must move to a **new procurement model that provides visibility of a pipeline of future orders, and commitment to volumes of equipment and work procured** in framework contracts, so that the supply chain can invest with confidence in growing manufacturing capacity and workforce. DNOs must also move from a stop-start approach to procurement that slows down at the start of every price control to a steadily growing profile based on a strategically planned ramp-up to Net Zero. This means that **funding mechanisms should span price controls**.

Ofgem should encourage **DNOs to procure more local content** – with a sufficient transition and notice period, with input from the supply chain. This could incentivise tier-1 suppliers to, as they grow their operations, procure more components of products locally and invest in a more UK-based supply chain. Incentives for local content could encourage new players to enter the market as tier-2 suppliers, resulting in a more diverse tier-2 and tier-3 supply chain. More local content would support both resilience of the supply chain, and growth in the UK, in line with Ofgem’s new growth duty. (see [section 8](#))

To reduce unnecessary burden on the supply chain, **DNOs must collaborate more on how they request data from their suppliers**. Across several areas, notably in the area of environmental reporting and cyber security, DNOs have created added costs and burden for the supply chain because data is requested in varying formats and using different assumptions. It is important that data is requested in uniform formats, and hence more coordination and collaboration between DNOs and cooperation with the supply chain is necessary to create alignment. By reducing overheads and time spent, this could also support increasing the capacity to produce more.

- **SF6: Ofgem should promote DNOs beginning to purchase SF6-free switchgear where available during ED2**, and signal that it will provide funds to cover additional costs, if these are prohibiting DNOs from embracing alternatives. Some DNOs have begun to buy SF6-free already, now the other DNOs need to follow suit. Ofgem embracing SF6-free will have the benefit of reduced cost and complexity, as the industry can forego running two parallel product lines. It will also increase investment confidence to grow capacity in the UK. Moreover, DNOs embracing SF6-free across the board will encourage further market development of alternatives – otherwise, manufacturers will not necessarily have reasons to continue developing all their product range suitable for the UK market (which has specific requirements and standards), leaving the UK behind the rest of Europe (see [section 6](#))
- **Environmental reporting:** Ofgem should provide further guidance, so that DNOs’ interpretation of Ofgem requirements don’t continue to lead to incomparable data, numerous different data collection tools, and practices in data collection that don’t align with suppliers’ needs. Moreover, DNOs should not weight embodied carbon in procurement until the required standardisation in data sources, measurement methodologies and reporting has been accomplished. Otherwise, competition in the market will be severely distorted on the basis of incomparable data - ultimately to the detriment of consumers. DNOs and TOs should collaborate with their supply chain to support the required standardisation and alignment via industry-wide initiatives, and they should align the tools with which they request data from their suppliers to follow the same format and assumptions (see section 6, [Environmental reporting framework](#))
- **Reliability and resilience:** With the energy transition, the reliability of electricity distribution networks is growing in importance and is critical to economic and social welfare. Retaining and updating strong incentives for reliability under the Interruption Incentive Scheme will be critical to delivering appropriate levels of performance for customers during RIIO-ED3. NARM should be further developed. We support Ofgem

developing a specific ‘resilience incentive’ as has been previously considered - more work is needed to address major weather events within the overall incentive framework including the Interruption Incentive Scheme (IIS) (see section 3 [Responsible business](#) and section 5 [Resilient and sustainable networks](#)).

- **Data, digitalisation and cyber resilience:** Ofgem should consider how the regulatory framework, benchmarking approach, funding and incentives, and perhaps relevant technical standards, can be adjusted, so that DNOs embed digital capabilities and state-of-the-art solutions across all of their infrastructure and investments. At the moment, DNOs and their Digitalisation strategies, driven by Ofgem’s regulatory framework, are focused mainly on the needs of stakeholders and customers, and how DNOs can improve their services to them. There is an important gap in terms of drivers for DNOs to invest in digitalisation to improve performance across all other areas – such as asset health and resilience, environmental performance, network planning, and overall efficiency of operations. DNOs need to digitalise across all operations and assets to reap the benefits, and digitalisation strategies should be redesigned in this vein. It may be that a different funding model is required, given the payback of these innovations cannot always be realised within the price control period, and investment in digital capabilities are not sufficiently incentivised by the TIM. In some cases, misplaced fears of reduced cyber resilience are holding back DNOs from digitalising, so here the industry may need to come together to provide more information and assurances that new digital solutions are no less resilient than traditional options. Moreover, DNOs need to build capacity and expertise to promote digitalisation of their networks, as they currently lack expertise and skills in this domain (see section 4 [Smarter Networks](#) and section 7 [Cyber resilience](#)).

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1. Regulatory Framework

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

We agree that the model should shift to a plan-and-deliver model if this involves holding DNOs to account for inputs, so that required reinforcement happens on time and to schedule.

“Implementing investments consistent with the longer-term strategic planning of the system” is important and has potential to benefit the supply chain if this approach translates into a new model of procurement for DNOs characterised by greater long-term visibility and earlier firm commitments and orders placed with suppliers. Such a change in procurement behaviour will allow the supply chain to invest in meeting the large increase in demand for products and services expected in future years. We note that the use of Price Control Deliverables (PCDs) itself does not provide assurance for delivery – so this form of control alone will not change the incentives on DNOs to ensure delivery is on time, and the supply chain has been given early enough notice and commitments. Ofgem will need to supplement controls like PCDs with other tools and, or other reforms to the overall incentive structure.

2. Networks for Net Zero

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

Global supply chain pressures are certainly contributing to longer lead-times for certain network components such as power transformers. We cannot confirm that the longer lead-time for equipment in turn is what has led to the delay in reinforcement work. However, there are reports of:

- Lack of sufficient workforce available for DNOs to install equipment they have purchased. This is leading to firstly, equipment suppliers and DNOs having to store equipment in large quantities longer than initially agreed, and secondly it leads to the entire programme of work being delayed.
- suppliers noting that DNOs are purchasing significantly less than initially projected they would purchase during ED2. This aligns with Ofgem reporting that DNOs are spending less than half of their load-allowances in year 1 of ED2.
- DNOs having under-resourced procurement teams – with suppliers participating in tenders reporting constraints in the administration to deliver the programmes DNOs are running, or are announcing they will run.

Manufacturers of network equipment also report workforce constraints. Clearer visibility of future orders and DNOs committing to volumes of work that will be purchased in the medium and long-term (see response to question 63) would support manufacturers in investing in training, recruitment and retention. Furthermore, it is important that government takes a strong leadership role, and puts in place a framework for the sector as a whole to invest, and to resolve workforce constraints across the industry.

There may also be a need for Ofgem to change its policy on funding network company investments in workforce and training – to ensure that a lack of trained workforce is not creating barriers to the reinforcement work necessary to deliver Net Zero and Clean Power by 2030.

Q12. Do you agree that the risk and downside for consumers of underinvestment in network reinforcement would be greater than the downside of over-investment?

Yes. The risk of under-investment is greater, and the costs of this under-investment are not currently incorporated into regulatory decision-making. Under-investment in network capacity has significant cost implications to consumers including those associated with

- delayed connection of clean electricity and flexibility sources (including the associated carbon and wider system-costs),
- delayed connection of clean heat and transport options, and associated air quality, carbon and other benefits,

- delayed connection of new housing, industrial and commercial demand and
- loss in economic growth associated with delays and congestion and costs to the wider economy.

Additionally, underinvestment in resilience and reliability of networks will have greater costs in a world with higher levels of electrification because customers will be more dependent on our electricity networks.

Q13. What are the benefits and risks to deliverability if network reinforcement is deferred to future periods?

The risks of deferring reinforcement into future periods are that

- Lead-times on projects will need to be extended, and programmes of reinforcement and projects will be delivered late and with added cost, because a steep increase in demand for equipment and workforce to install exceeds the capacity of the supply chain.
- The cost of delivery rises because demand for equipment and workforce increases.
- Manufacturers and their investors lose the confidence in the UK market as a focal point because they have been expecting an upturn in demand based on DNO spending plans, investing to serve it, and then having repeated experiences of lower-than-expected demand for their products and services. There is a risk of a ‘crying-wolf’ situation that damages confidence in a lasting way: where the supply chain is asked to ramp up in response to planned reinforcements which are then delayed or don’t materialise at all. If the pattern doesn’t change, the supply chain will struggle to justify investing in the capacity required for the UK market – especially also given that GB has specific technical requirements.

Overall, it is worth noting that pressure on the supply chain is not only being driven by distribution network operators, but that DNOs are competing with other sectors for capacity in the supply chain. The same equipment and skills are required in other sectors as the economy is electrifying and power sector is being decarbonised because the suppliers producing components and providing installation services for DNOs are supplying also independent connection providers and iDNOs, EV charging and renewable energy developers, data centres and other industrial-commercial users.

Q18. Can anticipatory network reinforcement be used to smooth the long-term build profile to avoid creating pinch points for the supply chain and workforce? What are the risks and trade-offs?

Yes, it is key that anticipatory investment is used to smooth the long-term build profile.

The aim should be that reinforcement work is undertaken early, ahead of need following a steady build trajectory on the basis of planning out to 2050, rather than in response to short-term

demand increases on the network. It is important that networks are reinforced ahead of need, so they are ready to connect the electric heat, electric transport, electrified industrial uses, renewable generators, and storage systems required to decarbonise the economy by 2050 (2045 in Scotland). In all net zero compliant pathways, annual electricity demand is projected to increase from around 285 TWh in 2023 to 667 – 700 TWh in 2050, while peak demand is projected to double by 2050 (from 58 GW in 2023 to 104 – 119 GW)¹. This increase in demand will require significant investment in electricity networks, and if this build is deferred continually, the increase in demand for products and workforce will be so steep that lead-times will have to be extended.

The cost of potentially over-building the network in isolated instances or reinforcing earlier than required is lower than the costs to energy consumers and the economy as a whole of delivering networks late. This has been demonstrated by experiences in the transmission sector, but also by the experiences of customers seeking network connections.

It is essential that the price control design changes so that DNOs move from a stop-start approach to procurement to one that is steady and ongoing – rather than starting procurement and planning afresh at the start of every price control, leading to the year 1 hiatus in spend we have seen time and time again. This means that funding mechanisms should span price controls. There are potentially lessons that could be learned from the transmission network sector in this regard.

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?

Yes, all investments should be future-proofed by sizing them to long-term need, in line with the ‘touch-the-network-once’ approach. It seems that the current approach does not adequately incentivise this behaviour. Minimising network losses should be considered in the decision-making framework.

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?

The price control should be directive to the extent that it drives DNOs to deliver strategically important reinforcement against a planned trajectory required to enable Clean Power by 2030 and Net Zero targets. This may imply penalising DNOs for under-delivering on the reinforcement rate they need to do to avoid a steep ramp-up later on (and if necessary for achieving an appropriate balance, rewarding DNOs for delivery in line with the work programmes in question). Given the cost associated with delay in network build in terms of delaying (firm, unconstrained) connection of low-carbon generation, and connecting low-carbon demand on time, putting more

¹ NESO 2024: [FES: NESO Pathways to Net Zero 2024](#)

emphasis on the spend trajectory is not just proportionate, but also important to drive the required investment.

DNOs may need delivery incentives/ penalties to adjust their incentive structure. Some might argue that DNOs do not require delivery incentives/ penalties at all. It may be argued that Ofgem simply replacing the previous *reactive regulatory direction* (invest only when demand, LCT numbers and connection requests are rising) with the *anticipatory investment model* it has signalled in this framework consultation, aligned with a strategic plan, would result in DNOs redesigning their internal processes and procedures. Especially given that DNOs in theory have an incentive to grow the Regulated Asset Value (RAV), one might assume that this change in direction from Ofgem would suffice to drive DNOs to move from investing too little too late to reinforcing networks earlier and faster. However, assuming that no tools are needed to incentivise or penalise DNOs keeping to a certain reinforcement trajectory is risky. Certainly, if the Totex Incentive Mechanism (TIM) was applied to investment programmes, there would still be incentive to underspend and underdeliver. Moreover, DNOs will not only need to procure earlier and more, they will also have to resource themselves differently, and develop new, different models of engagement with their supply chain. These are very big changes to make that require high-level, strategic focus, so incentives/ penalties to ensure delivery is on time against the strategic plan may be beneficial.

To keep the costs for consumers manageable, the incentives for being on time should not reward DNOs over and above the cost of delivery – the incentives would ideally be priced into business plan submissions from the start, and competitive cost benchmarking would hopefully ensure that the risk DNOs face from penalties is priced in at a manageable level. We are not suggesting that designing such incentives/ penalties would be simple, and we recognise that there are risks and potential unintended consequences. However, Ofgem should certainly explore the options for how to ensure that DNOs do not fall behind on investment levels required.

Q23. Should the price control provide more guidance or guardrails around the use of particular network solutions to achieve the ‘networks for net zero’ consumer outcome?

Yes, the price control should explicitly promote network reinforcement on the basis of ‘touch-the-network-once’ with interventions sized to meet future projected demand. The price control should no longer take a ‘flexibility first’ approach, so that investment in network infrastructure is not deferred. The ‘touch the network once’ approach should potentially include also a digital dimension, to ensure that DNOs adopt innovation that supports increased digitalisation of network infrastructure as a default where it is available and proven.

Q24. Should we consider how we might bring all network capex investment together within the framework, irrespective of driver (eg load, asset health, resilience), to ensure a common approach to future proofing and delivery?

It seems sensible to extend the approach to take a proactive, future-proofing approach from the load-related programme to investment programmes with primarily other drivers.

It's important that Ofgem considers the need for more proactive asset replacement and refurbishment investment where this can support a range of drivers of the life of the investments such as reducing asset risk, improving availability of capacity for new distributed generation or demand connections, reducing distribution losses, improving climate resilience and providing wider whole system benefits. In this respect, it is critical that DNOs' optioneering exercises for investment consider the full range of relevant drivers and associated investment benefits over the whole life of the assets. We consider that Ofgem should review and enhance the current Engineering Justification Paper and CBA guidance and associated templates to ensure that these broader benefits of investment are properly reflected.

3. Responsible business

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

In the consultation Ofgem makes the following statement *“It is crucial that both domestic and industrial consumers receive an uninterrupted supply of electricity from DNOs, especially as reliance on electricity grows in order to meet net zero and for certain growth industries, such as data centres.”* BEAMA agrees entirely with this position. The changing energy landscape including rapidly growing volumes of distributed generation being connected to the distribution networks, emerging electrification of transport, and future electrification of heat means that the reliability of distribution networks is growing in importance. Increasingly we all rely on an uninterrupted supply of electricity as critical to all aspects of our economic and social wellbeing.

In this context, we consider that retaining and updating strong incentives for reliability under the IIS will be critical to ensuring the effective regulation of reliability to meet the challenges for customers during RIIO-ED3. This comprises including opportunities for rewards for outperformance relative to the interruption targets, which have had a hugely positive impact on the experience of British electricity customers. There should also be further consideration of financial incentives for short interruptions.

There may also be merit in a further review to the planning standard P2/8 to reflect increasing customer requirements for reliability and the need for greater climate resilience.

Retaining the IIS

Since its introduction, the IIS has unquestionably had a positive impact on the experience of British energy customers. Significant improvements have been achieved. Since 2001-02 there has been a 54% improvement in average British System Average Interruption Frequency Index (SAIFI) and a 68% improvement in average British System Average Interruption Duration Index (SAIDI). This has resulted in a level of service that is world leading and led many other regulatory jurisdictions including those in Australia, New Zealand and Italy to replicate and adopt aspects of the IIS framework.

Ofgem makes the point that the pace of improvement has slowed in recent years. This is true but should not be interpreted as a sign that the mechanism has served its purpose and is therefore no longer required. The incentive rates in RIIO-ED2 were significantly reduced, for CI and CML, due to the way in which the incentive rates are calculated.

Despite what has already been achieved, there is still scope for further improvement, and this requires the regulatory framework to send the right signals. Innovation means that new technologies to improve reliability and resilience on different parts of the electricity distribution networks are continually being developed and the increasing role of electricity in the broader economy means that the Value of Lost Load (VoLL) is increasing, which mean that reliability improvements deliver additional benefits.

Reiterating the point that reliability will be increasingly important to customers, then regulation must recognise this in the way incentives are employed. This means retaining the IIS and updating the value of incentives. In this context, BEAMA welcomes Ofgem's statement of plans to review the VoLL. It will be important that the review considers current and future developments in terms of electrification. Ofgem should also review the methodology for how the VoLL is translated into incentive rates. Ultimately, incentives should be driven by the value provided to customers and VoLL provides a means to determine that value.

Climate resilience and the treatment of severe weather exceptional events

Overall, Ofgem should review performance of DNOs during recent severe weather events including Storms Darragh and Bert, and whether learnings and planning for future severe events are being sufficiently reflected in improved performance.

Besides investment in dedicated equipment and projects, driving network resilience will also going forward require DNOs to maintain a greater minimum stock of critical equipment.

There is a potential perverse incentive in the current severe weather exceptional events mechanism, which is now becoming more significant given the increased importance of climate resilience. If a DNOs improves its resilience, and therefore has less CI and CMLs during major events, this will tighten the severe weather threshold which in turn means it will potentially be exposed to more risk under the CI and CML incentives.

4. Smarter Networks

Q49. What should the role of the DSOs be in identifying and delivering whole system benefits?

We agree with Ofgem's proposed use of flexibility to address wider system needs, and the risks Ofgem has set out in terms of underinvestment leading to constrained networks, meaning that local flexibility will not be adequately accessible to the wider system.

It is right therefore that Ofgem changes course from the 'flexibility first' principle for distribution network planning and management towards an approach that encourages anticipatory network reinforcement investment to ensure networks are connection- and net zero-ready. This shift is important because continuing to defer investment is not the right approach in the face of the unprecedented need to expand and reinforce distribution networks to accommodate electrified heat, transport and industry. Reinforcing networks ahead of need is also important, in the context of globally increasing pressure on supply chains.

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?

Focusing on how to use digitalisation to support achieving strategic priorities may be useful, but Ofgem and DNOs should not lose sight of the wider benefits of digitalisation across all DNOs' activities, outputs and business areas. It may be that a 'mainstreaming' of digital approaches and investments, through minimum standards, the benchmarking process, and other interventions is required, alongside or instead of the current approach of setting specific targeted incentives and funding packages that result in 'bolted-on' projects and innovation programmes. DNOs need to embed digitalisation into all of their activities.

Overall, it is important that Ofgem and DNOs conceptualise the value of enhanced digitalisation more broadly than thus far, and that there is a funding model for investing in more digitalised networks as the default. This implies embedding digitalisation and visibility as core principles to the large-scale reinforcement programmes DNOs are running, rather than treating digitalisation as separate projects. It may be that the key to digitalising networks and changing the mindset within network companies to embrace the state-of-the-art technology is to set minimum standards. Given the large-scale investment DNOs will be making over the coming years, it is key that in line with a 'touch-the-network-once' approach, digitalised networks become the norm, and are not held back by a lack of innovative mindset and funding. Moreover, adequate funding is needed, and comparative performance benchmarking as part of the price control setting process may be the key to driving improvements.

This response is informed by reports from suppliers of network equipment – companies who supply traditional versions of key components, digital solutions to integrate hardware and software, as well as entirely digital solutions and platforms. The experience of these suppliers shows that several DNOs are not willing to adopt the latest state-of-the-art technology they are being offered but prefer to buy the traditional rather than the digitally enabled version. BEAMA members who provide LV equipment, cable accessories and connectors, substation equipment, control and protection devices and other network components report that there are only one or two DNOs who are open to considering purchasing the state of the art of what is available, including in-built sensors, increased visibility and control, and internet-of-things-enabled solutions that integrate hardware and software to the latest specifications.

There seems to be a lack of incentive and funding model that consistently drives DNOs to purchase digital solutions embedded in network equipment. It is true that a dedicated funding programme to roll out LV monitoring equipment has driven adoption of dedicated products, but this has not translated into digitally enabled innovative versions of traditional products being adopted beyond this programme. The lack of interest is probably based on cultural mindsets as well as funding constraints imposed internally within the business. There may be a lack of incentive to digitalise given the benefits of investing in digitalised options across the board in many cases are not realised within the five-year price control period. If the benefits are only realisable over the longer-term, the TIM and other outputs alone will not drive all DNOs to purchase digitally enabled versions of the equipment they are rolling out as part of load-related and asset-health driven reinforcement. It is crucial that the laggard DNOs are driven to catch up with the leaders in terms of adopting state-of-the-art digitalised equipment as the norm.

Overall, there may be a problem with realising the opportunities of more digitalised networks in that the benefits are likely to in many cases accrue at a system-level, i.e. once the data and connectivity across the network can be analysed and utilised, but that at the individual asset or project level, the intervention would be hard to justify. This may mean that cost-benefit-analysis tools and regulatory mechanisms that are focused on individual asset replacement or reinforcement programmes, individual asset classes and spend categories can't reflect the benefits, until the analysis of the cost-benefit ratio is undertaken at the system, network-wide level.

Comprehensive digitalisation strategies are also important and Ofgem and DNOs should adjust their approach in this regard. So far, regulation, such as Ofgem's Digitalisation Strategy and Action Plan (DSAP) Guidance document and the DNOs' DSAPs published in response seem to have focused primarily on how to improve services and products for DNO customers and stakeholders (such as local authorities, parties looking to connect to the network, flexibility providers etc). However, how DNOs can improve their own data access from their assets, use the data to drive improvements, for instance around sustainability by adopting digital technology, improving asset health, reliability and resilience and realising efficiencies has not apparently been the focus of the

DSAPs at all². The focus on products and services to DNO stakeholders is too narrow and needs to be broadened. DNOs must be driven to realise the full plethora of benefits of investing in increased visibility, control, a coordinated and interoperable approach to data and digitalisation. The Digitalisation Action Plans and Strategies must incorporate this focus on how digitalisation can benefit DNOs' own business operations, assets and all outputs, and hence ultimately bill payers and all network users. Any digitalisation strategy should feed into DNO asset purchasing decisions, thus ensuring that individual measures contribute to an overall system outcome.

In line with the 'touch the network once' principle, Ofgem and networks might want to consider if this principle should include a digital dimension. It is worth considering whether there should be a minimum digital specification for networks to adhere to, to avoid revisits, how this could be set, and what this could include.

Q51. How can we enable greater development of internal digital expertise in licensees?

We agree that DNOs need to build capacity and expertise to promote digitalisation of their networks. Currently, DNOs have a lack of skills and expertise in this area. We do not have specific proposals on how Ofgem can address this gap, but it is important to invest in this area.

² For instance, SSEN's DSAP update states: *"Our Digital Strategy is refreshed every 2 years and describes the digital products and services we will provide to the people we deliver services to and the people we work with, and how these benefit each individual. It also describes how we want to work with you to make them as valuable as possible"*. SSEN [Digital Action Plan June 2024](#)

5. Resilient and sustainable networks

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

BEAMA considers that the NARM mechanism has made a very positive contribution to the network companies' evidence-based approach to assessing the need for non-load related investment and the focus on resilience.

In terms of evolution, we recognise that Ofgem has increasingly favoured ensuring a consistent approach is adopted across all networks. While we recognise that consistency is important, we also note that network sectors are not all the same. Both now and going forward, network companies will face different risks and should be able to adapt to respond to those risks. Therefore, we would suggest that an approach is adopted that does not drive consistency for consistency's sake but only where it provides benefits to customers.

Evolution of NARM could focus on the following:

- A core aspect of evolving NARM must be a focus on increasing the coverage of asset categories. This will enable a broad and targeted assessment of risk which is likely to lead to be a better understanding of the challenges faced, and better outcomes for all customers.
- Development of NARM could furthermore include linking it to data captured under DSO functions.
- NARM could possibly be extended to other areas such as vegetation management using a risk-based approach.
- NARM does not adequately address more extreme high-impact events and the benefits of greater climate resilience. If these are not captured elsewhere, more needs to be done on high-impact events, such as storms Bert and Darragh.

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?

We agree that the clear interaction between asset health and load investment should be recognised by the regulatory framework. The challenges facing the energy networks are real. Climate threats have risen materially in recent years and resulted in significant costs to networks companies to both prepare for and manage those threats. At the same time, the risks posed by cyber and physical security threats continue to evolve and become more sophisticated.

This means that such challenges have to be addressed in a progressive way. Network companies need to invest to get ahead of those challenges and in doing so optimise across all the drivers of risk and capacity requirements. Failure to do so will mean higher costs in the long-term.

The benefits of a more joined up approach are clear: networks that are more resilient to the threats faced can ensure customers retain the uninterrupted supplies that they increasingly rely on. Such improvements will also enable networks that support Britain's critical infrastructure as well as its economic growth and Net Zero ambitions.

The risk lies in the development of "stranded assets" that are ultimately not required or over-engineered in relation to the threat faced. However, these are the same challenges associated with any anticipatory investment and, as Ofgem has demonstrated elsewhere, regulatory mechanisms can be employed to minimise these risk – volume drivers, uncertainty mechanisms etc. Further, we reiterate Ofgem's own message which is well articulated in the consultation document i.e. *"that the risk and downside for consumers of network underinvestment in network reinforcement would be greater than the downside of overinvestment."*

Q58. How should we monitor progress on the delivery of climate change resilience? Do you have any specific learnings which can help shape this?

We consider that there should be a number of elements to this including monitoring of network companies' delivery of work and outputs identified in their RIIO-ED3 climate resilience strategies and the development of more outcome-based metrics for resilience, discussed further below.

Overall, Ofgem should review performance of DNOs during recent severe weather events including Storms Darragh and Bert, and whether learnings and planning for future severe events are being sufficiently reflected in improved performance.

Some of Ofgem's plans to monitor DNO progress may also drive reporting and data requests from DNOs to their supply chain. In this respect, the key learning from a supply chain perspective that Ofgem and DNOs need to take into account is that:

- Initiatives and data requests directed at the supply chain need to be proportionate in terms of the volume, frequency, and detail of information requested to keep the administrative burden on the supply chain manageable. Especially small and medium enterprises (SMEs) struggle to keep pace with increasing requests for data.
- Initiatives need to be led as joint programmes, rather than as isolated DNO activities, so that they are well coordinated. Data requests developed by network companies in isolation have led to DNOs using differing formats to request information from the supply chain, and this misalignment results in unnecessary added overheads, complexity and cost for the supply chain that are ultimately borne by the consumers.

Any information requested from the supply chain needs to create limited administrative efforts for suppliers.

Q59. Do you have any comments on the suitability of current incentives to ensure that consumers continue to receive a reliable service in the face of climate hazards?

As highlighted in response to Q38, we consider that the IIS incentives form a strong basis to support the provision of a reliable service but that these should be supplemented with additional attention on reliability performance including exceptional events and a separate focus on short interruptions in recognition of the increased importance of an uninterrupted supply. As noted in our response to Q38, the exceptional event mechanism within the IIS can potentially cause perverse incentives on resilience. If a DNOs improves its resilience, and therefore has less CI and CMLs during major events, this will tighten its severe weather threshold which in turn means it will potentially be exposed to more risk under the CI and CML incentives.

However, recognising the increasing challenges posed by climate threats, we note that Ofgem has previously indicated the intention to consider a specific “resilience incentive.” We consider there is merit in developing such a mechanism but also recognise that doing so presents challenges, in particular ensuring that incentives are only set with respect to outcomes that network companies can influence through their actions.

Various regulatory regimes have identified a desire to deliver a form of incentive on resilience. For example, in Australia in a 2022 Position Paper the Australian Energy Regulator (AER) highlighted that existing reliability incentives did not cover the impact of major events and that there may be merit in introducing an incentive for such events. This may be one option that Ofgem could consider e.g. with respect to the treatment of exceptional events.

6. Environment

Q60. Do stakeholders agree with retaining and strengthening the main components of the environmental framework from RIIO-ED2?

Power Losses

We agree with strengthening the framework in respect of power losses. Reducing power losses is an important step to improve the environmental footprint of the networks, especially as networks are being reinforced and expanding.

Interruption and Insulating Gases

Ofgem should now, during ED2, encourage and fund DNOs to purchase SF6-free, where DNOs are procuring new switchgear and alternatives are available.

We disagree with Ofgem's proposals for the DNOs' SF6-free strategies going forward. Ofgem is proposing to take a passive stance, waiting for DEFRA to decide on whether to ban SF6 in switchgear. In the meantime, Ofgem encourages DNOs to, besides improving leakage management, work *"with other industry parties to jointly collaborate with the supply chain on expanding the availability of SF6 free and environmentally sustainable alternatives³."*

However, in our view, energy consumers would benefit from Ofgem taking a more active position in endorsing and funding the adoption of SF6-free equipment. Ofgem should now during ED2 actively encourage and fund DNOs to purchase SF6-free alternatives where available, when they procure new switchgear. At least one DNO has already adopted such a procurement policy – this should become a mandated norm across all DNOs within ED2. There are several reasons for which it is imperative to make this change:

- DNOs embracing SF6-free across the board will encourage further market development of alternatives – otherwise, manufacturers will not necessarily have reasons to continue developing all their product range suitable for the GB market (which has specific requirements and standards), leaving the UK behind the rest of Europe. Purchasing alternatives now will drive further market development of products, so that these will be available by ED3. Collaboration will not on its own lead to wider availability of alternatives, as Ofgem suggests. At this stage, where alternatives are being developed and have been launched in some cases, the supply chain needs clearer signals to invest in producing GB-compliant versions of their equipment, and to invest in further innovation. Given the direction from Government is currently unclear and Ofgem has not endorsed the DNOs purchasing SF6-free, the industry is facing uncertainty, and this is holding back investment. Signalling that where there are alternatives DNOs will procure SF6-free will

³ Ofgem 2024 [RIIOED3 Framework Consultation](#), 9.51, p. 102

send the signal to the supply chain and actively support the increased availability of SF6-free switchgear, to lay the groundwork for ED3.

- Even if DEFRA and devolved administrations decide to phase out SF6 (which the industry is supportive of), the implementation of the policy would still take a while, and in the interim SF6-containing switchgear continues to be sold – delivering a network with higher environmental impact than necessary.
- The network of the future should be green to align with the wider decarbonisation efforts. The scale of network investment in the next years is large, to meet Clean Power and Net Zero targets, and to ensure that this reinforcement is lowest impact, it should not include this incredibly potent GHG in new assets.
- The lack of clear regulatory direction is creating added costs. Running two different versions of the same product adds cost for the manufacturer which gets passed through to DNOs, and hence ultimately increases energy bills. The costs arise from e.g. maintenance of two designs and updating type testing where required, maintaining a greater list of components and suppliers, sales and technical support for two ranges.
- For resilience reasons, DNOs should not purchase new equipment containing SF6, also to avoid assets with such very long lifetimes becoming a burden to manage in the future. There may be obsolescence issues in the future because the EU as a major market is phasing out SF6 from networks, so maintenance of SF6-containing assets will become more difficult.
- Certainty on the phase-out is required to give the supply chain confidence to invest in scaling up its operations more widely (to ensure there is sufficient capacity in the supply chain to meet the required demand to accommodate Net Zero). Already, manufacturers and their investors have limited confidence in the UK as a market to invest in, given how DNO reinforcement trajectories and consequently procurement volumes have fallen behind expectations that were set up for ED2. Given global competition for supply chain capacity, the uncertainty over whether the UK will go SF6-free is hampering investment further, and jeopardising investment, because companies do not know which products will be bought at scale.

Ofgem note uncertainty over whether the availability of SF6-free equipment is sufficient: *“A more pressing issue is whether the availability of SF6-free and environmentally sustainable alternatives is at scale sufficient to meet significant network growth needed to facilitate net zero”* (9.50, p. 102). On this point we can confirm that the supply chain is in a position to have commercially launched SF6 free switchgear at key voltage levels and that more products are being launched every year, on an ongoing basis. The fact that the EU has banned the gas means that manufacturers are moving to replace SF6 over time – and the UK holding back simply introduces uncertainty and added cost.

Given the market is moving quickly and Ofgem may be unsure how to cost-benchmark SF6-free switchgear, there may be merit in using an uncertainty mechanism to manage the uncertainty about which assets are available, and will be launched over the course of the next years. Some

DNOs are not willing to move to SF6-free without a mandate or steer from Ofgem, it seems that cost-saving incentives may be holding them back, meaning that they purchase SF6-containing new switchgear on an ongoing basis. To allow DNOs to recover the additional cost of SF6-free alternatives, a volume driver may be useful – this could adjust allowances down in instances where SF6-free alternatives were not available when DNOs made the purchasing decision.

Environmental reporting framework

We agree that DNOs should continue reporting on their environmental impact. However, the framework must be strengthened with additional guidance and standardisation to reduce the burden on the supply chain. Currently, significant challenges exist in measuring and requesting embodied carbon data (see Section B below), including inconsistent methodologies and data sources used between suppliers, as well as variations in how DNOs request data from suppliers.

Inconsistent methodologies and data sources used across suppliers result in embodied carbon data being incomparable. This means that DNOs are not receiving comparable data from their suppliers, and they are comparing ‘apples with oranges’. The entire manufacturing industry is currently on a journey of alignment through standardisation of data sources and measurement methodologies.

Several initiatives led by manufacturers, including BEAMA and standardisation bodies, aim to harmonise methodologies and data sources and introduce best practice across the industry. However, achieving full standardisation will likely take several years.

Because the data provided by suppliers is currently incomparable, it can therefore also not be used to weight carbon as a criterion in tenders with accurate outcomes. Doing so before the necessary standardisation has been achieved would distort competition to the detriment of consumers.

To prevent unfair competition, OFGEM must support the position that embodied carbon data should not be part of scored procurement exercises or influence decision-making until the required standardisation in data sources, measurement methodologies and reporting, which manufacturers are working on, has been achieved.

Furthermore, networks and suppliers are using different definitions of embodied carbon. [BEAMA have developed a definition](#) that is accepted by our members and others within the supply chain, and if this was adopted by Ofgem and the ENA, this would support an important step towards alignment.

We propose the following steps to lay the groundwork for meaningful improvements by the start of ED3:

- 1. Strengthened Regulation and Guidance:**

Ofgem should in ED2 issue enhanced guidance to promote more efficient market development. BEAMA and its member companies, in collaboration with other market stakeholders, can contribute contents to be referenced or issued by Ofgem, ensuring

DNOs and TOs consider the position of the supply chain when requesting and handling data (see Section A below on what this needs to cover).

2. Tool Alignment:

DNOs and TOs should standardise the tools used to request embodied carbon data. Currently, at least three different tools (likely based on separate innovation projects) are used by DNOs, while TOs rely on a fourth spreadsheet. This fragmentation increases supply chain costs and exacerbates misalignment. Additionally, many tools fail to accommodate supply chain needs, often requesting commercially sensitive information, or information on impacts outside of suppliers' control. We recommend forming a joint working group between network companies and suppliers, facilitated by ENA and BEAMA, to achieve tool alignment. Alignment could happen either through a mutually agreeable ENA standard created together with the supply chain, or by aligning on a single tool. In both cases, the needs and expertise of the suppliers using the tools need to be taken into account in the design and development.

3. Support for Standardisation:

Ofgem should actively encourage DNOs and TOs to collaborate with their supply chains and broader industry to support standardising embodied carbon measurement, ensuring comparable data through common methodologies and data sources. This should extend beyond embodied carbon to other sustainability metrics. The embodied carbon and other sustainability challenges we as manufacturers of electrotechnical network infrastructure face are not unique to our sector. They exist also in the built environment sector, and this provides opportunities for cross-sector collaboration which BEAMA are already facilitating.

A. Principles for network companies and Ofgem on how embodied carbon data should be requested and reported

The following principles should be followed by Ofgem and network companies and could form part of enhanced Ofgem guidance:

1. Focus regulations on reporting according to Life Cycle Assessment (LCA) boundaries or stages.
2. Avoid mandating specific data formats, such as Environmental Product Declarations (EPDs).
3. Protect sensitive manufacturer data and intellectual property. This implies that data should be aggregated and most likely held and managed by a third independent party. Manufacturers cannot share with network companies the details of for instance quantities of materials, such as copper and steel contained in their products.
4. Until standardised scenarios for asset use are developed, manufacturers should be asked only to provide A1-A3 life cycle stage data (otherwise known as upfront carbon) where product information can be uniformly supplied. Life cycle stages B-D vary by project and asset use and can hence only be completed accurately by project owners with support

and information from the manufacturer. (Once standardised scenarios for project design and asset use are agreed, manufacturers will be able to provide information on full life cycle assessment, however liability for the outcomes will remain with the project owners who control the asset use.)

Until standardisation has led to more alignment, DNOs should support comparability of data by:

- As part of any data requests, asking suppliers for the details about data collection – which methodology, which databases and which carbon figures (associated with the relevant database) did the suppliers use.
- Cooperating with their supply chain to support the alignment through creating a collective understanding of product embodied carbon initiatives, so that data process can be more accurate, up to date, reliable and comparable.

B. Current Context: Market Challenges in Reporting Embodied Carbon Data

This section provides more detail and background on the challenges in the market and outlines the problems which Ofgem enhanced guidance and a joint networks-supply chain task force could help address.

1. Data Inconsistency and incomparability:

Past Ofgem decisions required reporting embodied carbon using EPDs and compliance with PAS 2080 where possible. However, many manufacturers had already invested in private companies assessing their products, not always using the formats Ofgem indicated. This means that the result of Ofgem’s decisions is now a fragmented market and varying data incompatible for comparison. It is important that going forward, no specific data formats are promoted – instead standardisation through product category rules (PCRs), according to life cycle assessment (LCA) stages needs to be encouraged.

PAS 2080 requirements also extend far beyond embodied carbon and will take time for all actors within the supply chain to prepare for to be able to follow and report on the full scope of requirements. By suggesting compliance with PAS 2080 where possible, Ofgem is putting pressure on the market which is not prepared to report under the full requirements.

2. Guidance and Guardianship to avoid Higher Costs and Fragmentation

Greater guidance and oversight from public bodies and the Government are essential to drive effective standardisation. Without this, private profit-seeking entities will likely dominate the process, creating templates and methodologies for compliance that force manufacturers—and ultimately energy consumers—into ongoing costs.

For instance, some Environmental Product Declaration (EPD) providers are actively working with network companies to establish proprietary frameworks for compliance with Ofgem regulations. These frameworks often require manufacturers to subscribe to

costly annual services, increasing financial burdens without fostering consistency across the wider industry.

An alternative approach is for the industry to collaboratively standardise methodologies, ensuring alignment is accessible to all stakeholders, supported by further guidance from Ofgem setting out the principles. The Government more widely, and in this case Ofgem in regulating networks, must act as a guardian against the exploitation of businesses as they pursue environmental responsibility. Standardising practices before widespread commercialisation is essential to uphold the integrity of the shift towards decarbonisation—an effort that only the Government can effectively oversee and regulate in a rapidly evolving and loosely regulated market.

Without public sector guidance, private companies risk monopolising standardisation efforts, imposing ongoing costs on manufacturers and consumers. A market-driven approach risks creating closed systems, whereas standardised industry approaches supported by Ofgem would be open and widely accessible.

3. **Varying Tools used by Network Companies**

DNOs have, on the basis of separate innovation projects, developed three different carbon calculation tools. TOs are using a fourth format – a joint spreadsheet. This misalignment between network companies is causing suppliers considerable additional overhead costs, and does not support comparability either. A joint working group should be facilitated by BEAMA and the ENA.

4. **Inappropriate Data Requests**

Network companies are requesting data from suppliers that is not in suppliers' gift to provide. In several cases, network companies are requesting manufacturers to provide project embodied carbon data for a full LCA (LCA stages B-D that are in the network companies' control rather than the manufacturers' control). For instance, power losses for a transformer depend on how heavily the asset is loaded. One key task for the joint ENA-BEAMA working group would be to support LCA A4 data by network companies with input from the supply chain defining average standard use cases against which PCRs can then determine the performance of products. This type of standardisation work could likely take up to 2 years, so should start immediately, to be ready in time for ED3.

5. **Limited Understanding of Data Formats**

Network companies also lack understanding of the different formats available to provide embodied carbon data (and how to compare them). Manufacturers have invested in different private providers' services to certify their products' carbon data, but network companies lack the knowledge and expertise to interpret the data. BEAMA and its members are ready to help educate customers on how to use manufacturer's different data formats as part of a joint working group developing a standard for how networks will request and use the data.

Industry-Wide Challenges – beyond the electricity networks product supply chain

There are additionally industry-wide challenges which mean data on embodied carbon of products reported is incomplete, unreliable and incomparable. These challenges are being tackled across various sustainability initiatives, including led by BEAMA, and at European and international levels. DNOs and TOs should cooperate with the supply chain and across industry more widely to support progress in these areas.

Broader challenges affecting embodied carbon reporting include:

- **Complex Global Supply Chains:** Reporting is costly and complex due to numerous sub-components.
- **Data Incomparability:** Methodologies and data sources remain misaligned. Developing a formal standard could take 3-4 years, with a 'best practice standard' achievable within 2 years.
- **Data Availability:** Data on raw materials and sub-components is often incomplete or unavailable. For widely used materials, origins and components, there is good reason for Government, or international Government organisations, to provide embodied carbon data from a central database that everyone could use, or endorsing a global database. For more niche materials and sources, the industry will have to align via standardisation.

7. Cyber resilience

Q61. Do stakeholders agree with building on the approach taken to cyber resilience in RIIO-3 for ED3?

We have no specific comments on the funding and regulatory approach for cyber resilience in ED3, but we would like to note that some DNOs seem to be inhibited from embracing state-of-the-art technologies and solutions that are available in the market and offer multiple benefits, based on the fear of being less resilient to cyber-attacks.

There are multiple reports from the supply chain about their customers, DNOs, making suboptimal purchase decisions for fear of cyber vulnerabilities, but these are not based on good understanding of the risks. For instance, several DNOs have requested that suppliers of digital solutions build bespoke software solutions just for them, rather than aligning with a wider ecosystem of software-as-a-service solutions for some applications. This seems to be based on a misunderstanding of how to be most resilient: being part of a wider ecosystem means that software stays up to date and can move along with the state-of-the-art protection measures which is more difficult for bespoke solutions. Another example is the virtualisation of control and protection in substations – here suppliers have long since developed solutions for use in other sectors, but DNOs are reluctant to adopt these digital innovations. This approach also makes poor use of scarce supply chain cyber security resource. Workforce resilience is also a concern, if DNOs don't align with a wider ecosystem and update their purchasing practices to embrace digitalisation because it is likely that over time, skilled personnel will be trained in and familiar with industry best-practice. Therefore, it is key, that DNOs embrace digital innovation.

It is also important to note that digital equipment and service vendors are key players in maintaining the cyber resilience of the networks and should be included and consulted in any discussions that are relevant to the supply chain. Whilst the network operators own the cyber risk and have responsibility for ensuring resilience, it is helpful to have forums where network companies and vendors can collaborate to better understand their positions and agree common approaches to best practice. The joint DESNZ / BEAMA Code and Partnership and Practice (CoPP) is an example of such a forum. It might be noted that the European Cyber Security Network Code identifies the trade associate T&D Europe (representing vendor companies, equivalent to BEAMA) within the legal text as a stakeholder that has to be included in relevant aspects when implementing the network code. A similar recognition of the role of the supply chain in the UK would be beneficial for all parties and assist the maintenance of network resilience.

Finally, it is important that data requested from the supply chain is requested in the same format and using the same assumptions. More coordination between DNOs and cooperation with the supply chain is necessary to enable this alignment and reduce the burden and costs on the supply chain that arise from differing formats and approaches.

8. Supply Chain and workforce resilience

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

Key problems that pose a risk for the deliverability of future DNO investment programmes are:

- the lack of visibility of a pipeline of future orders,
- the lack of commitment from DNOs to volumes of equipment and work they procure in framework contracts,
- the stop-start nature of procurement whereby orders ramp up and down, rather than procurement following a steadily planned trajectory according to long-term planning, where the supply chain can ramp up production in a managed way to meet steady demand.

Firstly, the lack of clear visibility of the size of the future market makes it difficult to justify investing in growing capacity. The RESP issued by the NESO may have an important role to play going forward, because it can reflect needs beyond DNOs as well, but in the short and medium-term, DNOs will need to develop a process to provide more visibility and confidence to the market. Ofgem could also issue projected equipment volumes that underlie its funding decisions to help provide visibility to the supply chain, but unless there are clear incentives or penalties to ensure delivery, simply awarding funding at this stage may not suffice to drive the supply chain to invest in increasing capacity. Better visibility of the future workload pipeline is required across load-driven, asset-health-driven and resilience-driven procurement (including DNOs needing to hold more stock of critical equipment for resilience reasons in future).

Related to the lack of sufficient *visibility* of the projected procurement pipeline is that the supply chain suffers from a lack of steady, plannable demand from DNOs for volumes of work with associated *commitment*. In order to justify growing capacity to reduce constraints and avoid future constraints, the DNOs need to commit to volumes of work they will procure, which involves a degree of risk-sharing. At the moment, the supply chain carries all the risk which, should there be a steeper ramp-up of demand, as is indicated by the current DNO LRE spending plans⁴, following year 1 of ED2 under-delivering on load-related investment spend by more than half. This is especially true, as the supply chain have repeatedly seen a row-back of purchasing from DNOs, whereby they promise an upturn in demand, ask the supply chain to prepare for it, but then don't purchase the volumes associated with the greater workload anticipated. Without a longer-term, strategic procurement model, the supply chain will likely have to extend lead-times for items, should there be a steeper increase in demand for equipment. It is important to emphasise that it is not just DNOs who are buying for instance transformers and switchgear, but that these items are also being purchased by fast growing sectors such as data centres, EV charging, renewable

⁴ Ofgem ED3 Framework consultation, p. 38.

power generation and battery storage developers that are similarly projected to see significant growth in the next few years.

In terms of regulatory measures to avoid the stop-start nature of procurement and continuous under-delivery, Ofgem should consider delivery incentives, meaning policies that incentivise delivery, whether they are upside-and-downside, or down-side/ penalty-based only), rather than under-delivery that is currently incentivised by the TIM. Delivery incentives will be more complex to design than in the transmission sector, where reinforcement work is more project-based, and the delivery of upgrades can be clearly defined against a target date. This is less true for distribution network reinforcement at lower voltages where reinforcement is characterised by higher volumes of work. Nevertheless, with careful design, it should be possible to find a way to drive DNOs to adhere to planned programmes of work. Moreover, funding mechanisms will likely have to span price controls.

Another issue for the supply chain looking to develop local operations, in line with the UK Government's ambition to develop the clean energy manufacturing sector as a key-growth driving sector⁵, is that there are no incentives to 'buy local' and 'invest local'. While other jurisdictions are driving investment in manufacturing facilities with localisation requirements or incentives, no such incentives exist at the moment in GB.

DNOs could consider weighting local value created within products, and thereby drive more local elements within their supply chains. This would also have resilience benefits because as the UK is looking to significantly ramp up network investment, relying less on imports would add resilience, and having operations locally would ensure that the capacity is available for the UK market. In some cases, it would also have carbon saving benefits. Implemented with sufficient advance notice and signalling, such localisation measures could support both Ofgem's growth duty and interest in resilience by enabling investment in growing local and more diverse tier-2 and tier-3 supply chains.

Q64. Given our comments in Chapter 6 around taking a more proactive approach, are there any specific features of a more anticipatory or strategic investment approach that might create risks or opportunities for supply chain and workforce constraints?

If the proactive anticipatory approach to reinforcement is implemented with long-term procurement visibility, commitment and risk-sharing, as described above, the more gradual ramp-up offers cost-saving, resilience and efficiency opportunities.

⁵ His Majesty's Government [Invest 2035](#)