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15 January 2025

Ofgem
By email to RIIO3@ofgem.gov.uk

ED3 Framework Consultation

Dear Sirs

Thank you for the opportunity to comment on the ED3 Framework consultation. The comments are made as an independent consultant who was involved in the development of incentive driven distribution price controls through DPCR4, 5 and RIIO-ED1, and has recently been involved in wider net-zero innovation and policy development.

Key Points:

- **Investment delivery needs a new balance of incentives** to deliver the right investments, find ways to make this easier and more affordable and potentially improve service whilst reducing operation cost associated with maintenance and fault response. Totex incentives and robust allowance have promoted cost and volume efficiency in capital expenditure. As service incentives tighten so it will become imperative to ensure the allowances and incentives drive investment by shareholders. Outputs arose out of a need to incentivise better delivery. Plan and Deliver needs more than just volumes to drive efficient and valuable customer outcomes. More thinking is required on how the overall incentive and financing package interact with delivery.
- **The ED3 framework needs to introduce the agility to support long term programmes of work** through the 2030's to set up successful delivery of the 2050 net-zero targets. Periodic 'plan and deliver' controls run the risk of being insufficiently agile to allow network companies to respond.
- **Outputs remain important**. Well-designed output measures help customers understand how investments are targeting what is important, the extend of the challenge, help DNOs manage high volume programmes of work and enable Ofgem to oversee extensive programmes. 'Volume and cost driven' programmes often drive the easiest least cost work rather than a balance of the harder more expensive and easier to deliver programmes.
- **There should be an ambition to deliver smart systems for the future** that reduce the costs to operate and maintain and allow much more targeted future investment. This requires ambition. Ofgem's incentives and approach can drive conservative behaviours or ambitious change.

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The principles of RIIO emerged from a predominantly efficiency / cost process (RPI-X) needing to deal with service standards (IIS) and increased need to manage investment avoidance (NARMS) given the strength of efficiency incentives to keep overall costs as low as possible. These requirements do not change, but the emphasis must become more forward looking and more focused on efficient delivery and synergies.

There should be an ambition to deliver smart systems for the future that reduce the costs to operate and maintain and allow much more targeted future investment. This requires ambition. Ofgem's incentives and approach can drive conservative behaviours or ambitious change.
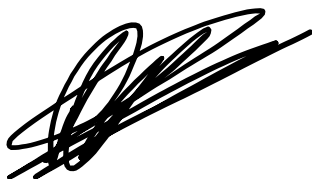
The current levels of network CI and CML performance emerged from the adoption of remote control and automated restoration technologies in the early 2000's that were part of a London smart grid strategy developed in the early 1990 (that has still not been fully realised). Even with a technical vision, without Ofgem's willingness to drive reliable CI and CML metrics and trial outputs and incentives in DPCR3/4, the enormous improvements in service would not have been achieved. RPI-X and volume driven allowances would not have created the service performance we have today.

Plan and Deliver is likely too simplistic an approach of Ofgem to take. An agile and intelligent regulatory regime is needed to serve the development of net zero networks through the 2030s. This must build on a solid understanding how incentives drive behaviours and a set of output measures that ensure transparency that investment is meeting all customers' needs. Investments in smart grids and data should drive better network insights, decision making and greater transparency.

I would be pleased to expand on any of the points made and how potential output measures might be developed.

The responses to selected questions are included in the following pages.

Yours Faithfully

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Responses to selected Questions from the consultation

Where the response is provided below two questions, the points made are considered to be pertinent to both.

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

The existing framework for larger investments, particularly for load related investment in higher voltage infrastructure, is already very input driven at the time of a price control, with Ofgem receiving much more detailed investment evidence than is visible to the public.

Plan and Deliver may be appropriate for higher voltage networks that supply the 11kV/6.6kV distribution systems. However, given the uncertainties and that the nature of each scheme being largely bespoke, unless all heavily loaded substations where reinforcement may be needed are assessed and allowances for each project agreed a significant amount of change management would likely emerge as load growth accelerates.

A long-term plan for net-zero, well beyond the normal control periods, would allow Ofgem to maintain visibility and allow DNOs more flexibility, potentially with allowances linked to inputs.

Unit cost driven plan and deliver 'contracts' for volume activities, such as MV and LV reinforcement can be at high risk of the programmes delivering the least cost work at the expense of more important but more difficult to deliver work. On long term programmes this can result in the most expensive elements being deferred with customers then expected to pick up higher unit costs in future controls.

An output framework for the need for reinforcement should therefore be developed. This would help both DNOs manage delivery, Ofgem oversight and should allow customers to understand what is being delivered and where.

Any mechanism needs to be forward looking and could be at a distribution substation level. This should characterise the likelihood of LCT adoption and the available capacity and the difficulty/cost of delivery. An initial approach will be far from perfect. The mechanism should be allowed to develop in dynamic as a way (instead of being frozen for the price control) of demonstrating and refining the efficiency of investment spend.

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Q4. Do you agree that we should consider introducing additional controls around network investments and what features should these controls contain?
Q5. Do you agree that the incentives on DNOs will need to adapt from RIIO-ED2 and if so, how?

It will be important to consider how the overall incentives act on the investment programme both in the short and long term. The current TIM totex efficiency incentive is a very strong driver on investment given the controllability of investment expenditure. Ofgem will need to be very mindful of the correct balance between allowance levels and incentives to ensure that investment is delivered where it is needed and not just where it delivers the most value to companies. Outputs are important in measuring the value being delivered (eg that the investment is targeting the most needed areas and is delivering the right levels of new capacity).

The principles of TOTEX are that the drivers should be the same for investment and operational expenditure, such that there is no bias towards more expensive investment solutions over more effective operational maintenance, repair and response.

The correct drivers would ensure that investments in smart network technology, drive the investment that delivers the needed capacity, improves service and resilience, and thereby reduces long term operating costs (including network losses that are external to DNO costs).

Output measure should be developed to support volume drivers, however imperfect the outputs would be to start with. Output measures of some form are needed to help targeting and tracking of programmes, as well as transparency to customers and other stakeholders.

It is also worth Ofgem reflecting that it is not well placed or resourced to directly manage DNO investment making. Ofgem's role should remain that of the customers' representative, ensuring sufficient financial resources exist and that there is sufficient transparency over their use and the condition and performance of the networks that serve the customers.

Q6. Do you agree that there is still a role for re-openers in ED3, particularly given the timing of the future full RESP output and how should these be triggered?

In shorter controls such as the five year period used today a single mid-term reopener should suffice if Ofgem sets the right macro framework and right outputs.

A more agile process than the current re-opener process is needed for frequent changes to planned programmes, or re-prioritising of investment programmes such as brining forward schemes and deferring schemes given that there are likely to be high volumes

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of change. Ofgem should strive not to allow it to become an annual or bi-annual allowance setting process.

Q7. Using RIIO-ED2 as the counterfactual, what alternative regulatory models or characteristics are needed in ED3 to ensure the DNOs deliver the above consumer outcomes? What are the trade-offs we should consider?

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?

The principles of RIIO emerged from a predominantly efficiency / cost process (RPI-X) needing to deal with service standards (IIS) and increased need to manage investment avoidance (NARMS) given the strength of efficiency incentives to keep overall costs as low as possible. These requirements do not change, but the emphasis must become more forward looking and more focused on efficient delivery and synergies.

RIIO-ED3 needs an agile framework that will work throughout the 2030's to allow DNOs to react to changes in local circumstances whilst promoting efficient behaviour. Plan and Deliver may not produce agile decision making or will create a significant need for change management with Ofgem.

Totex efficiency incentives need to be further developed. Drivers to innovate to reduce costs of network upgrades are important, as will be finding synergies with other drivers such as condition replacement / repair and fault costs. It is difficult to see how this can be efficiently regulated in a balanced way at the scheme level. The current 50% sharing factors may need to change and how it applies to delivered and avoided expenditure considered.

As noted in Q3, Plan and Deliver is appropriate for some large schemes (and this might be appropriate to extend in ED3) but Ofgem should be mindful of allowing enough flexibility to deal with uncertainty, rather than bake in a 'we delivered what we said we would' mindset that plan and deliver could promote. A key issue is that scheme level plan and deliver frameworks can encourage overpricing in budgets where risk gets baked in (an issue in all fixed price contracts), where a more risk sharing framework is needed (and is at the core of incentive regulation).

Q9. Do you think that there is a greater role for elements of ex post regulation or of cost pass through in ED3, either specifically in assessing cost changes resulting from changes to investment requirements during the period, or more broadly to reflect the changing context?

There are already elements of ex-post in the assessment of investment outputs that could be built on. Ex-post delivery incentive mechanisms could be enhanced around efficient

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delivery, level of information supporting data and improved insights and forecasting, rewarding innovation adoption and continuous improvement directly.

The need for ex-post adjustments would be minimised if a long-term view of expenditure is developed, and such a view could be used to adjust efficient costs at control points. There are only 4 controls (assuming 5 year periods) between today and 2050 where meaningful interventions are possible. Mechanisms are needed where efficiency incentives are applied to work done rather than work avoided. These could be a combination of ex-ante and ex-post. But ex-post should be at the margins of the controls.

Ex-post regulation in European counties such as the Netherlands has resulted in challenging investment conditions for network renewal and Ofgem must be ensure that the balance of risk is right to encourage low investment costs.

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

Overinvestment in long term assets that will most likely be in service well beyond 2050 and largely paid for over a 45 year period is almost certainly lower impact on consumers than the consequences of a lack of investment limiting the ability to decarbonise / adopt low carbon transport or heating.

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

Whilst there are financial cost reductions today, there would most likely be higher future in year costs and the risk that customer expectations are not met, yet at the same time bill increases would be steeper than if expenditure is grown more slowly over a longer period. Ofgem should be mindful of the programmes in other sectors such as water, where lower costs were put ahead of investment and now investment needs are higher, the 'social contract' to raise the money has become more difficult.

A longer-term programme, with an evolving 'output' framework that anticipates needs should enable the development of suitable work force planning and delivery.

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Q10. What is the potential availability of network flex across GB for DNOs in the short term and on the journey to net zero during ED3?
Q14. What do you see as the role of distributed flexibility, both in the short and longer term, to manage distribution network constraints?

It is important to remember that flexibility first needs to serve the customer's needs. The value from distribution flexibility is clearly minor, or supplemental to the value that can be found from system services, balancing and supplier actions. This should not be surprising as most of the distribution value is in securing networks in the unlikely event of demand exceeding firm capacity (eg under maintenance outages).

Unless DSOs manage flexibility for system services (delivering outputs at the transmission system interface based on the impacts of distribution network characteristics) this would seem likely to remain much smaller in value than other services.

It will be important for DNOs to understand how flexibility is affecting observed demand on networks and what is driving that, even if it is not DNO sourced flexibility. Efficient network development must understand different potential use patterns and diversity. Today's networks assume high diversity between peak demands of for individuals and the overall system, with diversity factors of 10 (2kW planning loads (excl EV or ASHP) v 20kW capacity per house based on fuse sizes). Flexibility (especially EV charging) may be important in instances where that diversity is compromised, eg post outages. The needs will be different depending on the mix of loads but planning guidance may need to be developed to enhance service standards (or even set them).

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?

Efficient network investment should consider whole life costs including the long run costs of meeting thermal/technical losses. Given the costs of installation frequently being much higher than the costs of the electrical components it is important to understand the right design options. However, physical installation factors (eg the ability to bend cables around corners) must also be considered.

It is not just components that must be considered on an individual basis, but the overall design of the networks; extent of meshing, impact of imbalance at LV (where losses are largest), amount of resilience capacity will also be important.

The meshed low voltage networks developed in London, Merseyside and Scotland and in the 1950's/60's were done in response to a need to meet high load densities and provide high service standards. Ofgem should be encouraging more innovative

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approaches in areas that have become very much simplified but will absorb considerable investment. Without some 'standard' design targets/assumptions it is hard to see how Ofgem will understand efficient investment.

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?

Ofgem should see the controls as a series of opportunities between 2028 and 2050 (there are only four opportunities, with 5 year controls, each with increasingly less opportunity to address any issues).

ED3 should consider the investment needs over the following 25 years and set pathways and identify critical sensitivities and intervention triggers. Agility is required beyond set piece controls or annual 'reopeners' that are time consuming and resource intensive.

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?

If a long term programme is developed and commitments made, the strategic investment should be a long term contract to deliver a network suitable for net zero.

Smarter Networks

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

DSOs should be charged with understanding the local context of heat, electric power and other vectors in the path to decarbonisation, underpinning the knowledge of the RESPs and NESO. Understanding how flexibility, even that used for wider services, impacts on local networks and demand patterns under abnormal conditions and how this might interact with wider planning assumptions will be important, as will be understanding how constraints are impacting network users and the system. DSOs should be replicating NESOs role as a planning body at the local level with a strong working relationship developed.

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?

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As a contributor to the original Energy Data Task Force which published its report in 2019, whilst progress has been good, six years later we are still in a position where it remains difficult for third parties to access a common view or develop meaningful innovation proposals without significant DNO input. Digital twins are being developed slowly through innovation funding. Much more urgency is required given the relatively short timescales (and number of controls to 2050) rather than less. The value of opening data remains largely unexplored.

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

Ofgem should be clear on what is required and allow DNOs to develop their digital expertise, either through partnerships or through building their own resources. DNOs strategies should be assessed and robustly challenged and appropriate funding and deliverables put into controls.

Ofgem should encourage better digital, data analysis and investment planning skills within DNOs, or in a supporting network of providers, supported by open (shared) data.

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?

AI has much potential, especially to identify patterns of change and investment need, but needs data to drive it. Encouraging network visibility and the use of all tools to interrogate, analyse and identify efficient opportunities to invest and developing investment policies.

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

DNOs appear to be conservative in adopting innovation developed elsewhere. Some of this is a need to learn about the innovation and how to deploy it into their systems, some may be linked to the need to deliver what is in the current business plan and it being difficult to make significant changes to that plan in a period. This is a potential downside of ever more detailed business plans with ever more prescriptive deliverables as could emerge through more plan and deliver emphasis; if it isn't in the plan it is not 'funded' and not in our commitments, so innovation does not happen.

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

Ongoing use of asset risk metrics will be important to help DNOs illustrate how synergies in load related investment help improve the overall condition of the networks. The most

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significant challenge that Ofgem should drive is developing metrics for distribution cables.

Smart grid and smart metering data (eg voltage disturbance data) has the potential to enable an effort to develop measures to what is a complex issue (that might not fit exactly the same models as used in NARMS).

Load growth risk metrics should be developed as outputs to support the widescale investment needed at 11kV and below. Metrics need to be established and developed as more data and better insights into the uptake of LCTs develops.

The pattern recognition opportunities of AI is an area that could be further explored in developing synergies between outputs and input drivers. Ofgem should be driving the impetus for more and faster change.

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?

The benefits of encouraging a full system consideration will be a lower cost to operate, higher performance system that meets customers' expectations when more of their lives are dependent on electricity. There should be an ambition to deliver smart systems for the future that reduce the costs to operate and maintain and allow much more targeted future investment. This requires ambition. Ofgem's incentives and approach can drive conservative behaviours or ambitious change.

The current levels of network CI and CML performance emerged from the adoption of remote control and automated restoration technologies in the early 2000's that were part of a London smart grid strategy developed in the early 1990 (that has still not been fully realised).

Even with a technical vision, without Ofgem's willingness to drive reliable CI and CML metrics and trial outputs and incentives in DPCR3/4, the enormous improvements in service would not have been achieved. RPI-X and volume driven allowances would not have created the performance we have today.

The risks are largely around a paralysis in decision making, but if an approach of continuous improvement these synergies are possible. Plan and Deliver frameworks could make such synergies harder to realise.

Q57. In the context of making anticipatory investment decisions, what do network companies and other stakeholders need to enable the planning and delivery of cost-effective network resilience measures against our changing climate? What

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risks and opportunities do you see linked to an input-based approach to these investment plans?

Input based regimes can lead to rigidity in delivery and a lack of agility to learning and innovation. Ofgem needs to ensure that the decision-making frameworks and funding frameworks are agile enough to provide incentives to allow investment, at the same time promoting innovation in efficiency in what and how it is delivered.

More work on the incentives and decision making based around a scorecard of output measures would be more valuable than implementing simple input based regimes, however appealing, from holding companies to account. Ofgem should not be afraid of increasing oversight costs if that enables better customer outcomes.

A scorecard of output measures and ways of visualising what they mean for the communities served by the networks would allow better communication of the need for anticipatory investment, and evidence that it is being delivered. Measures such as which assets are at risk of flooding, storm risks, network reinforcement along with what work is being planned, where and that that has been delivered are all needed to ensure that communities are assured that increasing funding is being invested appropriately for resilience.

The DNOs have started the journey to providing more visual data tools as part of their digitalisation initiative and Ofgem should support more use of these tools to communicate the need for investment and what is being done to deliver it. Smarter networks should provide more insights and more ability to map network needs.