

By e-mail to: FutureNetworkRegulation@ofgem.gov.uk

Open Letter: Future Systems and Network Regulation
Ofgem
10 South Colonnade
Canary Wharf
London
E14

31st October 2022

Dear Ofgem

Ofgem Open Letter: Future Systems and Network Regulation – Capgemini Invent response

Capgemini Invent welcomes the opportunity to share our views on Ofgem's Open Letter regarding the future systems and networks regulation from 2026.

Capgemini Invent is the consulting, innovation, and digital business of Capgemini. We are Europe's largest supplier of systems and technology services to the Energy and Utilities Sector. HFS Research have placed us second globally in their list of business and technology service providers to utilities. Every year we publish the World Energy Markets Observatory (WEMO)¹, the 24th Edition of this was published in October 2022. The report consists of 600 pages of detailed analysis and insights on the world energy trends.

Our response to the open letter draws heavily on our insights and energy market expertise gained in our work across UK market functions in both gas and electricity. Our experience covers a wide range of services relevant to the open letter, including support to numerous energy network clients in business and technology transformations, leading regulatory submissions across both gas and electricity, and contributing to price controls regulatory reform. We also provide wider services that cover net zero consumer strategy, development of new market services, smart metering implementation, consolidation, harmonisation and digitalisation of retail market codes and wholesale markets.

Furthermore, in 2022 we established the Energy Markets 2030+ working group, which involved collaborating with senior cross-industry representatives over a 10-month period to define the future energy system. This has produced a compelling vision for the future that is based on a broad consensus of how the energy system should work.

In responding to the four questions outlined in the open letter, we have provided key observations and recommendations:

- Capgemini Invent agree that the current network price control arrangements will not be appropriate for the future energy system and are in full support of Ofgem raising its review of the network regulatory framework. The energy transition will fundamentally change how consumers engage with the energy system. The network regulation should be adapted to enable the transition and support future operations.
- Regardless of whether you believe the network needs to be two, three or four times larger than it is now, and whether it needs to accommodate for new fuels such as hydrogen, we need to get on with building it now. Ofgem should consider introducing a mechanism that focuses on the delivery of network upgrades on a proactive basis. This needs to be driven by an 'ask for forgiveness, not permission' mindset at all levels of the network. Contrary to the 'no regrets' mindset, which minimises risk of investment redundancy, we need a mindset based on the understanding that electrification is key in the UK's net zero carbon targets and that proactive grid upgrades have a significant upside. This also has customer experience benefits as it will mitigate the risk of disappointing customers through having inadequate networks.
- We support Ofgem in reviewing more agile options. These options could include more frequent review cycles, standardised submissions that enable consolidation and benchmarking, and the addition of qualitative metrics that promote businesses to develop new solutions. In our experience of supporting regulatory submissions and delivering on agreed plans, the current approach embeds rigidity.

¹ [Capgemini \(2022\), World Energy Markets Observatory Report 2022](#)

- It is essential that the review considers the whole energy system and is not assessed in isolation to other critical energy system reviews undertaken by Ofgem and BEIS. The energy system is fundamentally linked, as such the full flow of energy, money, data, and agreements must be taken into consideration to all reviews. This will help to ensure that the review outputs meet the intended purpose and do not incur transitional 'debt' and result in future reworking.
- As the core facilitator of the future energy network, the framework must shift from an engineering-focused to an end-consumer focused energy system. The future network regulatory framework will need to drive behavioural and operational changes at all levels within the network, to ensure the networks remain stable during the energy transition. The complexity of the task at hand cannot be understated. It is critical that the human impact of network operations and planning is understood and reflected in the future regulatory framework. Design decisions must be sensitive to the human impact of decision-making and resource allocation, requiring a deep end-consumer, customer, and community focus.
- The definition of the future network regulatory framework will not only be a critical aspect of the UK energy transition and net zero targets, but it will play an important role in progressing a green industrial revolution – enabling the development of emergent sectors like Energy Tech and the hydrogen economy that can support UK PLC's drive to international competitiveness and economic sustainability.
- The future energy scenario will be fundamentally different to today's model, as such the future framework must be designed for the energy market of the future and we must resist the temptation to appease vested interests in the current model. It is essential that the review is undertaken with no pre-conceptions on the answer, but in full recognition of the challenges the framework must address for both the transition and future operations.

Capgemini Invent welcome the strategic direction in the RIIO-2 Price control, however we think a wider consideration of the priorities is needed. We also believe that the pace of change needs to increase. We have outlined these considerations in more detail in Appendix 1.

I hope you find these insights and suggestions helpful and if you would like to discuss any areas of our response, please do not hesitate to contact Katka Nguyenova², Michael Taylor³ and/or Tom Rudgard⁴.

Yours sincerely,

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List of enclosures:

Appendix 1 – Executive Summary

Appendix 2 – Response to Open Letter: Future Systems and Network Regulation

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Appendix 1 – Executive Summary

Capgemini Invent agree that the current network price control arrangements will not be appropriate for the future energy system scenario and are in full support of Ofgem raising its review of the network regulatory framework. The energy transition will fundamentally change how consumers engage with the energy system, as such it follows that network regulation should be adapted to enable the transition and support future operations.

In addition to responding to the four questions outlined in the open letter, we have provided key observations and recommendations within this executive summary. The executive summary is broken into the following key considerations:

- Whole system thinking and plan transparency
- Consumer focus
- Plan duration and agile governance
- Regional network control
- Investing in a bigger electricity network
- Digitalisation and data
- Implementation of the network companies of the future

Whole system thinking and plan transparency

We understand the current regulatory regime was designed in 2010, and as such we believe it is not fit for the energy system of 2030+, which requires increased whole system coordination, rapid expansion and reinforcement of the network and innovative solutions to engineering and consumer challenges.

It is essential that the review considers the whole energy system and is not assessed in isolation to other critical energy system reviews undertaken by Ofgem and BEIS. The energy system is fundamentally linked, as such the full flow of energy, money, data, and agreements must be taken into consideration to all reviews, to ensure the review outputs meet the intended purpose and do not incur transitional 'debt' and result in future reworking.

Furthermore, market participants need transparency on Ofgem's perspective on fundamental questions such as the preferred direction of the DSO transition (where there are currently four options), the central scenario for 2050 and how whole system trade-offs and synergies will be managed and measured.

Consumer focus

The end-consumer must be at the heart of the future network regulatory framework. As such, it will require a fundamental shift in how we view network challenges and measure success factors. Furthermore, the future network regulatory framework will need to drive behavioural and operational changes at all levels within the network, to ensure consumer positive outcomes are delivered, whilst maintaining networks stability during the energy transition.

Plan duration and agile governance

The current regulatory regime with its long regulatory period, five-yearly review cycle and requirement for high granularity of reports and forecasts is driving over-reliance on existing technologies, ways of working and market arrangements at time of writing, which then translate into delivery based in past decisions, rather than adapting to market challenges and developments.

Considering the current challenges, we are in support of Ofgem reviewing more agile options, with potentially more frequent review cycles, standardised submissions that enable consolidation and benchmarking and addition of qualitative metrics that promote businesses to develop new solutions. Performance metrics/KPIs of network build should be regularly reviewed against forecasts and clearly reported regionally and nationally.

The future network regulatory framework needs to recognise that implementation targets may need to be iterative and agile to respond rapidly to evolving external factors. There needs to be a delineation between plan design and plan implementation, with recognised reassessment check points built into the plan, to ensure outputs remain strong.

Regional network control

The future energy system will contain high numbers of distributed electricity generation assets, resulting in additional system balancing considerations at both a national and regional levels. To ensure overall system robustness, network operators will need to take greater control of network planning, including working with generators and battery operators to ensure placement suitability, and local organisations to ensure local area energy plans are advantageous for consumers. This should be driven from a regional level, to reduce the volume of residual balancing interventions at a national level and decrease the risk of major stress events but will require significant whole system planning across the UK to ensure this does not cause issues at or across network boundaries. As such, the future network regulatory framework needs to reflect the need for greater localised investment and control.

Enhanced regional network control will require significant whole system planning to ensure national interoperability and reduce the likelihood of issues at, or across network boundaries. As such, there needs to be centrally driven decisions on network planning, possibly by the Future System Operator (FSO), or equivalent body.

Investing in a bigger electricity network

It is well recognised that electrification will be a key component of the energy transition, resulting in the need to significantly upgrade the electricity network. Unfortunately, there has been a frustrating lack of investment in the physical infrastructure at all levels in the electricity system, and a lack of clarity on the future of gas. There is a need for a clear roadmap for both domestic and industrial heating, the role of alternative fuels such as hydrogen, a plan for heat pump roll-out and other decisions required for gas infrastructure planning.

Ofgem should consider introducing a mechanism that focuses on the delivery of network upgrades on a proactive basis. This needs to be driven by a bold mindset at all levels of the electricity network, based on the understanding that electrification is key in the UK's net zero carbon targets and that proactive grid upgrades, given coordinated whole system planning such as that initiated by National Grid ESO in collaboration with BEIS, result in low risk of asset redundancy.

The upgrading of the electricity network is an investment that needs to be addressed in both the immediate and long-term regulatory arrangements. We cannot rely on a model that results in distribution companies reactively responding to customer requests, when long lead times result in slow roll out of physical network upgrades that add significant risk to transition failure. This also has customer experience benefits as it will mitigate the need for customers to request upgrades.

We would also consider assessing 'build' and 'operating' costs through separate principles, as the former should incentivise speed (in combination with safety and resilience) and the latter efficiency and intelligence particularly through automation.

Digitalisation and open data

The future system will have millions of potentially automated actors interacting and balancing the system in real time. This will require a wholly digitised system capable of moving vast amounts of data in near real time. It is essential for the regulatory framework to be designed with upgrades, both physical and digital at its heart.

A resilient, flexible energy system must be supported by a free flow of standardised open data to enable automation and coordination of interoperable assets. Future data will need to be supported by a sophisticated network of sensing and control infrastructure and all levels across the electricity system. Therefore, the regulatory framework must encourage the roll out of data capture assets and the adoption of a consistent, open approach to data sharing.

As the volume of smart digital assets are connected to the energy network, the importance of data quality will take on a greater emphasis. Unfortunately, today's energy system is plagued with data quality issues, resulting in complications in operational processes and dilution of decision effectiveness from policy makers and the regulator. Implementation of a smart digital grid is a pre-requisite for the future energy system and should be progressed urgently. The regulatory framework needs to reflect this urgency.

In many cases, system architecture needs to be modernised with modularity and integration capabilities at its core without compromising on safety. We encourage a stronger focus in the digitalisation strategies and action plans on whole-scale systems reviews, proactive digital portfolio management and clear strategies for how the digital talent gap will be closed.

Implementation of the network companies of the future

There is a risk the current operating model of network operators may not be optimally designed to deliver the energy transition and may be too slow to adapt without appropriate incentivisation. The framework should consider what the future system and market requires from these organisations, and promote capability build focus across people skills, information availability and process optimisation. Separating regulatory reporting into structures such as asset build, asset management, operations, customer satisfaction and others promotes transparency and enables market forces to identify areas in need of new solutions and investment. There is also a need for a fundamental shift in organisational cultures and employee value propositions, as the need for new talent increasingly outgrows the industry's ability to attract it.

It is critical that the human impact of network operations and planning is understood and reflected in the future regulatory framework. Design decisions must be sensitive to the human impact of decision-making and resource allocation, requiring a deep end-consumer, customer, and community focus. As the core facilitator of

the future energy network, the framework must facilitate the shift from an engineering-focused to an end-consumer focused energy system, becoming the leading light and supporter for others in the ecosystem.

Summary

The definition of the future network regulatory framework will not only be a critical aspect of the UK energy transition and net zero, but it will play an important role in progressing a green industrial revolution – enabling the development of emergent sectors like Energy Tech and the hydrogen economy that can support UK PLC's drive to international competitiveness and economic sustainability.

It is essential that the review is undertaken in full recognition of the challenges the framework must address for both the transition and future operations. The future energy scenario will be fundamentally different to today's model, as such the future framework must be bespoke to the energy market of the future and not attempt to appease vested interests in the current model and compensate on its regulatory effectiveness.

Appendix 2: Response to Open Letter: Future Systems and Network Regulation

Question 1: Do you have any views on the strategic issues we will face in the development of the next price control review process?

We are in broad agreement with the strategic issues identified within the open letter. However, in addition to the challenges and considerations covered in the executive summary (see Appendix 1), we believe there are a few additional issues which should be recognised in the development of the next price control review process.

Importance of demand-side behaviour

Electrification of domestic heat and personal transportation with the roll out of smart assets capable of load shifting will play a key role in future electricity network behaviour. Whilst we believe suppliers should be the primary interface with consumers when driving the implementation of demand side flexibility assets, close collaboration with network companies and system operators will be essential to ensure stability at all levels within the electricity network. As such, the future network regulatory framework should reflect the demand-side dependencies and promote operational behaviours which allow for new technologies to be implemented in a way that does not compromise system robustness.

Energy transition dependencies

The development of energy networks, notably the electricity networks, represent a significant dependency to the successful implementation of energy transition targets, such as distributed generation, domestic heat, and personal transportation. The future regulatory framework should recognise the wider transitional plan to ensure traceability of success criteria.

Workforce resilience

The energy sector and its supply chain have a well-documented crisis looming related to their workforce. Workforces are aging, recruitment of energy leaders of the future is sluggish and demand for skilled resources has never been higher due to the ramp up of infrastructure schemes in GB and abroad.

The energy sector is also going through rapid digitalisation and modernisation, with new tools, behaviours and roles being deployed in organisations across the sector to keep up with the pace of change needed to decarbonise.

The availability of a skilled workforce that can deliver the regulated targets represents a significant delivery risk. RIIO-2 recognised this risk but more needs to be done in future network regulatory frameworks to incentivise network participants to mitigate and conquer this challenge.

It is essential that network participants are driven to incorporating an education strategy in their plans. The framework should also consider how participants are incentivised and funded to invest in upskilling their workforce. It is very challenging to quantify how this investment will manifest in consumer value down the line, but it is critical that the investment happens. With a drive to a whole energy sector mindset, network participants will rely on their workforce being increasingly skilled in multiple energy vectors (electricity / gas / storage etc.) and multiple segments of the energy sector system (transmission / distribution / generation / retail etc.).

We believe the regulator will need to push network companies to implement appropriate education strategies through the future framework, as the evidence to date suggests that unless incentivised it will not be actioned. The future framework will also need to incentivise participants to collaborate with other actors to give their workforce exposure to the breadth of the sector, to be able to use that knowledge to deliver on their organisation's needs.

Question 2: Do you have any views on the case for change we have outlined?

Overall, we are in agreement with the case for change that Ofgem has identified within its open letter. However, we would like to draw attention to some additional points, which we believe should be included for further consideration.

Least cost should not be an objective

We are concerned that the guiding RIIO framework outcomes of lowest cost is taken forward into the future regulatory arrangements. We do not believe that lowest cost should be a guiding principle for any aspect of the energy transition, as it can undermine system robustness and consumer protection. Least cost was one of

the guiding principles that allowed the retail market to become saturated with low maturity and unhedged energy suppliers; a factor which was attributed to be a leading contributor to the 2021 retail collapse.

Our view is that network companies should receive a fair market rate for the work provided and profits should reflect the risk taken in delivering the stated objectives. Higher risk operations should lead to higher profits, and importantly, safe operations should receive lower profits. The current model bakes in certainty, which lowers risk, but network companies have seen very good rewards regardless. A future model should reward those that take calculated risks.

Flexibility in forecasting

There are inherent challenges associated with forecasting far ahead into the future when strategic choices, market conditions and technologies choices will invariably change given evolving market pressures. The future arrangements should aim to provide greater flexibility, potentially through iterative approach, to allow for adjustments to forecasts as more information becomes available over time. Commitments to often outdated forecasted fixed costs do not allow for much flexibility when it comes to project delivery.

Summary

Ultimately, we agree that there is a strong case for changing the regulatory framework and are in full support of Ofgem progressing the review. We welcome the recognition of the downstream consumer impact that the regulatory model has and agree with Ofgem that consumer centricity will be key in defining the future arrangements.

Question 3: Do you have views on whether the changes to the electricity or gas sectors mean we should consider alternatives to the approach taken in the RIIO-2 price control?

We support Ofgem reviewing more agile options built on whole system insights that account for inter-dependencies and trade-offs, regardless of developments in the industry.

In our experience of supporting regulatory submissions and delivering on agreed plans, the current regime embeds rigidity for two reasons:

- (1) **The duration of the regulatory period is too long.** We recognise the trade off, as long cycles provide certainty. However, they limit flexibility, encourage over-reliance on established technologies, processes and planning based on immediate priorities.
- (2) **The required granularity of business plans is too high.** We recognise the regulator's challenge of information asymmetry, however forecasting so far into the future can result in values built on assumptions and historic data that do not reliably predict the future, making plans unfeasible by the time a new regulatory period starts.

We would consider the following changes in the review of the price control mechanism:

Ongoing review of costs

We favour a rolling and agile approach for cost reviews, potentially with a different model for 'build' vs 'operation', with consideration to opening 'build' to further competition. Models such as the two-yearly review of the Digitalisation plans and six-monthly updates to the Action plans are steps in the right direction.

Adopting an approach which also allows for greater flexibility to the changing business environments will allow for faster delivery. Developing an agile framework that increases the speed of electricity network upgrades needs to be the priority, given the volume of energy transition dependencies.

Closer early collaboration between the regulator and regulated entities

The future regulatory framework should allow for greater collaboration with both national and local system operator(s), when setting targets. The scale and complexity of investments required will likely result in a high degree of cost granularity requested by the regulator ahead of plan approval. This process can greatly reduce the agility of plan design and implementation.

The level of regulatory control should be proportionate to the risk and alignment to the overall network strategy. For example, building a new interconnector will require a significant amount of scrutiny, whilst upgrading and digitising a transformer should be actioned quickly.

Furthermore, the regulator should look to involve system operators as early as possible, to ensure forecasts and cost change complexities are well understood. This could help reduce the effort required in cost justification, as the regulator played an active role in the development of the benefits case.

Appropriately assessing speed of delivery in cost benefit analysis

The pace of change delivery has historically been slow in both the gas and electricity sectors. This can result in situations where major change programmes have lengthy build phases, such that they are delivered into a market environment that have fundamentally changed and the change benefit case is no longer relevant. For example, the benefit case for network reinforcements on the north-to-south transmission network would have potentially been higher if it had included the connection of new offshore wind generation capacity, which frequently gets curtailed due to congestion. Stronger early engagement and alignment between relevant parties, such as the Crown Estate and the Electricity System Operator (ESO) would have mitigated this issue. Our view is that there is a clear need for a central planning body and would support the Future System Operator taking on this role.

Simplified innovation scaling funding mechanisms

Scaling innovation is challenging in any industry, more so in an industry where return on investment is dependent on multiple market players, including regulated monopolies. There needs to be a fundamental shift away from the innovate and trial mindset, towards a large scale 'rollout' mindset if aggressive net zero carbon targets are to be met. Unfortunately, many innovation projects have costed consumers significant sums without resulting in real progress. Large scale rollout must be investment based and have an adaptive approach to digital technology. Much of the investment in trials, pilots and Proof of Concepts (PoC)s is not cognisant of the other changes in the industry, and thus does not progress further. There needs to be a central innovation strategy with clear priorities, an operating model that promotes insight sharing across industry and a simple funding route for scaling successful trials. More should be done to stitch innovations together into initiatives that will resolve the IA/SIF Model we see today.

Central coordination of gas and electricity planning

We agree that the gas and electricity industries face different challenges. There is greater clarity on the direction for electricity, whereas there has been a notable lack of an explicit long-term plan for gas. However, we believe full separation of the regulations would legislate against an integrated energy system. We support a separate set of regulatory principles and network plan for gas and electricity; however a central planning entity needs to take into account the inter-dependencies and provide clear objectives for each industry.

Question 4: Are there any broad frameworks or options that you think we should consider, including variants and alternatives to those we set out?

Our position is that the future framework should promote local system planning and control, under the oversight of a central authority, such as the FSO, to ensure interoperability at a national level. Ofgem should also consider introducing a mechanism that focuses on the delivery of network upgrades on a proactive basis. As centrally developed plans are translated into regional plans owned by DNOs, it is critical that these are tracked, and delivery performance reflected in rewards and penalties. We would also welcome considerations for opening up network build at both transmission and distribution level to competition.