

Jonathan Brearley
Executive Director, Systems and Networks
Ofgem
10 South Colonnade
Canary Wharf
London
E14 4PU

Chris Bennett
Director, UK Regulation
chris.bennett@nationalgrid.com
Tel: +44 (0)1926 650000

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www.nationalgrid.com

Dear Jonathan

RIO-2 Framework Consultation Response

This response is from National Grid Gas (NGG) and National Grid Electricity Transmission (NET) Transmission Owner. Due to the future legal separation of the Electricity System Operator (ESO) from NET, the ESO will be responding separately to this consultation. The response summarises our views on the RIO Framework issues that Ofgem indicates it will make decisions on in summer 2018, and in the appendices we set out our more detailed views on the full set of questions posed in the consultation.

The RIO-2 period will be an important and exciting period of transformation of the energy sector. Networks will play an important role in facilitating government policy objectives on industrial strategy and clean air through, for example, decarbonisation of UK transport. The scale of change, innovation and investment required to provide safe, resilient, reliable, affordable and sustainable energy delivery to enable a low carbon future requires well designed, stable regulation that balances a range of priorities for the long term.

We are supportive of many of the proposals in the consultation document. We are keen to ensure the regulatory framework continues to develop to balance the competing stakeholder priorities of the energy trilemma and delivery of government's related policy priorities. Within that context we are concerned that the consultation puts greater emphasis on addressing the perceived problems of RIO-1, and ways to limit and lower network returns in the short term, rather than enabling and incentivising the investment and innovation required to facilitate the continued transformation of the energy sector in RIO-2 and beyond. The three most important issues in this consultation which need addressing in this regard are:

- The cost of equity range of 3 to 5% is too low for the risk of a Transmission company and will not offer adequate return for investors in this period. The parameters driving the proposed cost of equity range, in the current consultation document, do not take into account the full range of evidence for Total Market Return (TMR) or beta. Ofgem should take account of the full range of evidence available, which would increase the range currently contained in the framework document. We would then support narrowing the range, on a sector specific basis, closer to the start of the RIO-2 period.
- Some of the fair returns mechanism options are not workable for Transmission due to the small number of companies involved of different scale with very different network issues. These options should be closed off in this phase to reduce investor uncertainty. The variable sharing factor options should be taken forward to the sector specific review. It is important that a fair returns mechanism does not fundamentally undermine the incentives on companies to innovate and drive efficiencies, or increase uncertainty for investors by

breaking the link between company performance and its returns as this would not be in the longer term interests of consumers.

- The consumer and investor proposition is unclear in the consultation. Positive, strong incentives drive innovation, efficiency and performance improvement which benefit consumers through cost reductions and service improvements and provide opportunities for investors to earn above base returns. We would like to see a clearer description of the range of incentive opportunities and risk implications for both investors and consumers in the framework decision document.

The remainder of this response is sequenced in line with the consultation chapters.

Giving Consumers a Stronger Voice

We fully support the Constructive Engagement Model proposed for Transmission to enhance the approach to stakeholder engagement for RIIO-T2. This will deliver better outcomes for our customers and stakeholders to ensure their future needs and preferences are accommodated in our business plans and related price control arrangements (for example outputs, costs, management of uncertainty and incentives) and also serve to increase the transparency and legitimacy of the price control. We welcome the revised timetable for business plan submission to accommodate this new approach and the guidance that has been subsequently published by Ofgem. We have commenced the process of establishing our 'User Group' including the recruitment of an independent chair.

Most of our stakeholders tell us that they are supportive of this new approach, but are somewhat concerned about the level of time commitment required to make it work. This makes it all the more important to ensure that the efforts put in by the industry through this process are fully considered by Ofgem, both through its stated commitment to place its focus on areas of disagreement, and also in its ultimate determination of the price control outcomes. We look forward to hearing more from Ofgem on this point in its next consultation.

Responding to How Networks are Used

We acknowledge Ofgem's desire to set a default price control duration of five years and we welcome the recognition that a multi-duration approach for setting allowances for different parts of a business plan may be beneficial for consumers. As such, the option for longer or shorter effective durations for different categories of costs should therefore be judged on merit, result from a company's stakeholder engagement process on its business plan and form part of its price control submission in Q4 2019.

There may be benefits for setting allowances for e.g. asset health works for longer periods, as these are more certain in nature, have more optionality for optimising timing of delivery and are generally repeatable activities so innovations to reduce costs give rise to significant future period benefits. Developing uncertainty mechanisms to effectively revisit allowances for some customer driven works on a more frequent basis may be an appropriate way to protect consumers from the higher level of uncertainty that exists in this area. These are issues that are better considered in the subsequent phases of the price control review process and therefore should not be foreclosed in July.

The RIIO-T1 price controls have benefitted from a range of re-opener uncertainty mechanisms for certain categories of uncertain costs. We see these as appropriate ways of dealing with uncertainty in RIIO-2 irrespective of the length of control as opposed to 'deep' mid period reviews which are likely to increase uncertainty for investors and have the potential to undermine incentives on companies to innovate – neither of which would be in the long-term interests of consumers.

We agree with Ofgem's assessment that it is not in consumers' interests to amend the price control timetable to align the start of the RII0-T2 and RII0-ED2 price controls, and we are supportive of looking at other ways to ensure whole system outcomes are incentivised in the interests of consumers.

With formal legal separation of the ESO occurring in 2019, it is necessary to establish a separate price control for ESO as a separate licensee for the T2 period. We support the exploration of different funding models for the ESO licensee through the sector specific phase of its price control development. We are supportive that the ESO should also run its own constructive engagement process, including its own independently chaired panel, as per the model for the Transmission sector.

We do not believe it is necessary to fundamentally change the Gas SO remuneration model. It is part of a single Gas Transmission licensee and already has a broad incentivisation framework in place which drives outcomes that are aligned with reducing Transmission and wholesale gas market costs.

Driving Efficiency and Innovation

We agree that dedicated innovation funding is critical in supporting the energy transition. Innovation funding should be focussed on delivering products and services which our customers and consumers want. Using the enhanced engagement approach proposed as part of RII0-2 will allow innovation to be targeted in the right areas. We welcome increased third party involvement and believe this is best channelled through network companies. Transitioning innovation into business as usual is beneficial for both network companies and consumers however there needs to be a continued incentive for network companies to innovate in more risky areas.

On enhancing competition for investment projects, the best way to achieve the policy objective is through development and establishment of a fully formed competitive regime. In Electricity Transmission the CATO regime is the most appropriate model. We support application of the current criteria for competition (new, separable and high value) and these should be used to identify potential projects in the RII0-2 business plans to enable a cost-benefit analysis.

Simplifying the Price Controls

The proposed approach to setting price control outputs and cost allowances appears to be broadly in line with RII0-T1 and on that basis we are supportive. The key principles that are important features of the framework that drive consumer value are:

- A totex regime which strongly incentivises companies to reduce total expenditure and which equalises incentives between capex and opex to optimise trade-offs;
- Defining high level outcomes and output goals that all stakeholders are ultimately interested in for as much of the cost-base as possible (as opposed to defining work delivery 'inputs') to stimulate technical and commercial innovation, risk management and efficiency in delivery;
- Holding companies to account for delivering the outcomes they have committed to, with clear arrangements / consequences of not delivering;
- Setting of allowances, targets, incentives and output goals on an ex-ante basis to best simulate the pressures of real competition; and
- Mechanisms which flex to encourage responsive delivery of changing customer requirements and minimise potential for windfall gains or losses (such as indexation of RPEs)

We are supportive of removing fast tracking for Transmission, in favour of the Constructive Engagement approach as fast tracking has limited value in revealing an efficiency frontier in the Transmission sector, as compared with Distribution.

Given the constructive engagement approach, we support the removal of an IQI mechanism for Transmission in favour of a fixed efficiency incentive (totex sharing factor). However Ofgem should be cautious in seeing the totex sharing factor purely as a form of reward for business plan efficiency. The totex sharing factor determines the strength of the incentive placed on the company to seek to innovate and drive efficiencies and hence it is in consumers interests for allowances to be set at the new efficient level through the price control process and then for high powered incentives to drive behaviours to find ways of delivering outputs at lower costs. One of the key features of RIIO is that consumers derive benefit from strong incentivisation immediately as a significant proportion of successful efficiency gains are shared within period, as well as in perpetuity from the next review period when the new baseline efficiency frontier has been revealed. This principle should continue but a balance needs to be struck with minimising any resulting variability of earnings.

Fair returns and Financeability

The RIIO-2 framework needs to ensure an efficient company is financeable and offers an investable proposition to shareholders. This means that the financial elements of the framework must be assessed as a package to ensure that:

- returns are commensurate with the risk borne by the networks
- long term and short term requirements of consumers are balanced
- notional company and network financeability assumptions are consistent

Cost of equity plays a central role in financeability as well as being key in balancing consumer cost and investor confidence across the energy sector. The cost of equity range and individual components need to be assessed against the risk of each network company, its notional gearing and the prevailing regulatory framework and political environment they are operating within. The regulatory principles of consistency and predictability applied across successive price controls are also important if investors, rating agencies and lenders are to maintain their confidence in the energy sector and its regulatory framework.

On this basis, Ofgem's proposed cost of equity range of 3 to 5% is too low for the risk and required return of a Transmission company. We agree that a range should not be finalised until closer to the start of the RIIO-2 period. However, it is important to clearly define and apply an economically robust methodology even when stating an indicative range to avoid misleading or unfounded expectations. The parameters driving the cost of equity range, in the current consultation document, do not take into account the full range of evidence for Total Market Return (TMR) or beta and are based on economically questionable risk free rate assumptions so should be updated appropriately.

Separate to cost of equity, we agree with Ofgem that the indexation of cost of debt introduced in RIIO-1 has worked well in incentivising networks to raise lowest cost financing whilst being an objective and transparent method for assessing efficient cost to consumers. It also appropriately reflects that the cost of financing is best managed by networks with the risk of performance being borne by investors. Whilst we therefore support continuation of the existing indexation methodology, we propose harmonisation of the tracker length to 20 years as it is more reflective of the age of network debt, its likely refinancing profile and the long-term nature of network assets. Adoption of a single mechanism across all energy networks recognises that there are no fundamental differences that would generally be expected to lead to significant differences in cost of debt between electricity and gas, transmission and distribution networks.

From a financeability perspective, a fully informed assessment can only be undertaken once business plan submissions are made. It is important that any changes to the framework should not be designed to address financeability problems that are the result of other decisions such as setting an unrealistically low cost of equity. At this stage of the process, we support maintaining a

number of options including nominal returns and changes to asset lives, depreciation profiles and capitalisation rates to potentially address any financeability concerns.

We support the proposal to move from RPI to a consumer price based index providing any such change is NPV neutral from an investor's perspective over the long-term. The impact of the transition in the short term should balance moving to a more appropriate inflation measure and ensuring consumers' bills are not too adversely impacted. On balance we would support moving to a CPI-based index from the start of the RIIO-2 period but would want to determine the precise transition profile once the base plan and specific stakeholder views are understood.

In relation to corporation tax, the approach adopted during RIIO-1 was effective in ensuring adequate funding for tax liabilities and appropriate consumer sharing of material tax variances outside of the licensee's control. RIIO-2 corporation tax arrangements should seek to retain these principles through retention of notional allowances and consumer protection arrangements. Whilst a method based on actual payments may also be worthy of investigation, this must be balanced against the additional practical and administrative burdens that would be involved.

We understand the need to improve legitimacy of network companies returns in RIIO-2. The constructive engagement approach, improvements in management of uncertainty and improving on-going reporting will serve to provide the legitimacy consumers require.

On fair returns mechanisms, we are pragmatic in acknowledging the benefit this type of 'safety net' provides in relation to enhancing the legitimacy of price control. For the Transmission sector the two options that involve varying totex sharing factors (the constraining totex and outputs incentives option and RORE sharing factors option) are the only options that should be taken forward to the sector specific phase.

We do not support the introduction of hard caps and floors and we do not support anchoring or any mechanism that works on a 'relative' basis in Transmission as these are unworkable due to the small number of companies involved of different scale with very different network issues and therefore not in consumers interests. These options should be closed off in this phase to reduce the scope of investor uncertainty going forward. Mechanisms that break the link between company performance and company returns undermine the incentives on companies to innovate and drive efficiencies, can create perverse incentives between companies at a time when collaboration is needed and act to increase uncertainty for investors about future returns which increases cost of equity. Relative mechanisms would also require price controls to be well calibrated between companies (the difficulty of which is a large part in Ofgem's justification for needing a fair returns mechanism in the first place).

If you have any queries about this response please contact Mark Brackley or myself.

Kind regards

Chris Bennett

[by email]

Director, UK Regulation

Appendix 1 – Detailed Consultation Question Responses

Q1. How can we enhance these models and strengthen the role of stakeholders in providing input and challenge to company plans? What are your views on the proposal to have Open Hearings on areas of contention that have been identified by the groups?

We strongly support the proposed enhanced approach to stakeholder engagement for RIIO-2, which will deliver both better outcomes for stakeholders and increased legitimacy of the price control. We are in the process of setting up our independently chaired 'User Group' so they will be able to challenge and review our direct stakeholder engagement activities and outcomes over the course of 2018, before entering a phase of detailed scrutiny of our entire business plans from early 2019.

Our stakeholders tell us that they are also supportive of this approach, but that they are somewhat concerned about the level of time commitment required to make it work. This makes it all the more important to ensure that the efforts put in by the industry through this process have a material impact on the outcome of the price control. In order to ensure this happens it is important that each part of the process builds on the others and allows companies to iterate their plans to align with what stakeholders want and need. Ensuring sufficient interaction between the RIIO-2 Challenge Group and company User Groups will help with this.

Open Hearings on areas of contention identified by the groups could provide a good incentive for additional alignment between stakeholder views and company plans, thus maximising the impact of the process overall, provided that their remit is limited to areas of contention and not all aspects that have previously been agreed.

Q2. Do you agree with our preferred position to set the price control for a five-year period, but with the flexibility to set some allowances over a longer period, if companies can present a compelling justification, such as on innovation or efficiency grounds?

- **What type of cost categories should be set over a longer period?**
- **How could we mitigate the potential disruption this might cause to the rest of the framework?**
- **What additional measures might be required to support longer-term thinking among network companies?**
- **Do you instead support the option of retaining eight-year price controls with a more extensive Mid-Period Review (MPR)?**
- **What impact might the alternative option of an eight-year price control with a more extensive MPR have on how network companies plan and operate their businesses?**

Ofgem have recognised the benefits to consumers of a longer price control, and the CEPA work has confirmed these benefits. A longer price control exposes the risk of greater uncertainty, and therefore improved risk and uncertainty management is key to ensuring maximum consumer benefit from RIIO-2.

Clarity on which areas are suitable for a longer duration should be explored further in the sector specific consultation, and confirmed through the constructive engagement process where potential benefits for consumers can be demonstrated more specifically.

There are some areas which naturally lend themselves to greater consumer benefit over a longer duration:

- Network risk targets for Asset Health.

- Compressor emissions reduction programme.
- Innovation funding driving longer term benefits.

A longer period which is a multiple of the shorter period will minimise resetting of targets (e.g. network risk) mid-way through a price control period (e.g. network risk could be a 10 year target for a 5 year RII0-2 and RII0-3).

Improved clarity on what constitutes an 'outcome' in future price control periods is essential for longer duration elements. A clear focus on delivering outputs with greater efficiency and productivity is a key principle of RII0, therefore what constitutes an outcome needs to be clearly understood at the start of the price control period.

We do not support an extensive MPR and an eight year price control period. This would closely resemble two four year price control periods providing uncertainty for investors and reducing innovation and minimising performance savings which benefit consumers.

Q3. In what ways can the price control framework be an effective enabler or barrier to the delivery of whole system outcomes? If there are barriers, how do you think these can be removed? What elements of the price control should we prioritise to enable whole system outcomes?

We fully support the focus that is being given to whole system outcomes in RII0-2. The smart, flexible energy system of the future and the decarbonisation of heat and transport will see greater interaction between the gas and electricity networks, and between the transmission and distribution networks. It is essential that companies are enabled and encouraged to make decisions that are best for the energy system as a whole through features within and outside of the price control framework.

A key consideration across all three areas of whole system is how the price control framework incentivises the most efficient investment across all of the different networks. There is a need to clarify funding routes between different parties.

We believe that incentives, outputs and innovation are areas that should focus on whole system outcomes. This should be explored with Ofgem and stakeholders over the next few months.

Specific whole system incentives could be created to encourage knowledge sharing and optimal decision making for the benefit of consumers across sectors and networks.

Q4. Do you agree with our minded-to position to retain the current start dates for the electricity transmission and electricity distribution price controls, and not align them?

Yes, we agree with retaining the current start dates for ET and ED and not aligning them.

Q5. In defining the term 'whole system', what should we focus on for the RII0-2 period, and what other areas should we consider in the longer-term? Are there any implementation limits to this definition?

There are many ways to define 'whole system', therefore it is not always clear which sections of the energy system are being referred to, and whether this extends beyond energy networks into areas such as heat and transport. We propose the following definitions are used in T2 in relation to networks:

- Whole Electricity System – electricity transmission (ET) and distribution (ED)
- Whole Gas System – gas transmission and distribution
- Whole Energy System – gas and electricity, transmission and distribution

We think an approach which targets the 'Whole Electricity System' will provide the greatest initial benefit. In ET and ED there is significant work already being carried out by the ENA (Open Networks) which should be realised to maximise the benefit of regulatory changes in RIIO-2.

The transition from DNO to DSO will play an important part in removing barriers to whole electricity system solutions, in addition the legally separate ESO will play a significant part in delivering whole electricity system outcomes. With its new perspective it is ideally placed to identify and reduce barriers to whole electricity system thinking.

Whole gas system and whole energy system will soon become key areas to consider in RIIO-2, therefore the framework will need to consider all definitions, and the differing priorities of each.

Q6. Do you agree with our view that National Grid's electricity SO price control should be separated from its TO price control?

Yes we agree the ESO price control should be separated out from the ETO price control.

Q7. Do you agree that we should be considering alternative remuneration models for the electricity SO? If so, do you have any proposals for the types of models we should be considering?

Yes, alternative remuneration models should be considered as the ESO has very different characteristics to a largely RAV based network licensee. The ESO is best placed to propose potential models for further consideration by stakeholders.

Q8. Should we consider alternative remuneration models for the gas SO? If so, why and what models?

The Gas Transmission business is in the unique situation of being both the system operator and sole transmission owner under a single licence. This results in the gas SO managing a different set of risks than the electricity SO and enables the single licence to deliver benefits for customers, consumers and stakeholders. This can be managed within the current regulatory so we therefore do not think that an alternative model is required for the gas SO.

The gas SO has a broad incentive framework in place which drives outcomes that are aligned with reducing Transmission and wholesale gas market costs. To ensure benefits are maximised and best value for customers and consumers is achieved from the gas SO we should always seek to ensure that risks are managed by those best placed to do so. The developments in remuneration models undertaken by the electricity system operator create the opportunity to learn and understand more about how this balance can be achieved.

Under any remuneration model it is important that the gas system operator is exposed to the right incentives that drive behaviours aligned with the needs of customers and stakeholders whilst ensuring the continued efficient and effective real-time operation and balancing of the gas transmission system.

Q9. What options, within the price control, should be considered further to help protect consumers against having to pay for costly assets that may not be needed in the future due to changing demand or technology, while ensuring companies meet the reasonable demands for network capacity in a changing energy system?

There are a range of future energy scenarios and in particular some large unknowns such as government policy on heat, rate of take up of electric vehicles, role of carbon capture, future role for hydrogen and future consumer behaviour. In developing our business plans for RIIO 2, we are considering the impacts of the various Future Energy Scenarios and more stretching

sensitivities to test the demand levels for different energy forms, including gas and electricity, and how the interactions between these systems may evolve in the low carbon transition.

With the level of uncertainty around the energy future and what requirements this could place on all networks, we believe more focus should be placed on understanding the value in keeping sensible economic options open until the energy future is clearer (e.g. decarbonisation of gas, move to hydrogen, roll-out of carbon capture use and storage).

During RIIO-2 we will need to maintain our networks to deliver for today's customers and to keep options open for tomorrow's consumers to avoid high regret costs or precluding the development of a particular energy future. We recognise that keeping options open creates a risk of asset stranding in the longer term and as part of our stakeholder engagement we will explore the value stakeholders place on keeping options open.

There are a number of price control framework options that would reduce the risks for consumers including:

- Development of effective uncertainty mechanisms that adjust revenues/allowances during the price control as the energy future becomes clearer and the needs of customers evolves
- Adjusting the RIIO 2 financing arrangements, such as changing the regulatory depreciation profile or shortening regulatory asset lives that could minimise risk to future consumers.

We will engage on whether any of these approaches are needed in RIIO-2 during our constructive engagement but at this stage the only one we consider that may be required is aligning the depreciation profile of Gas Transmission to that of Gas Distribution where a sum of digits approach is used rather than straight line. This would potentially better reflect the changing customer usage of our network over the next 45 years.

Q10. In light of future challenges such as the decarbonisation of heat, what should be the role of network companies, including SOs, in encouraging a reduction in energy use by consumers in order to reduce future investment in energy networks? What could the potential scale of this impact be?

Transmission networks do not have the same direct interaction with domestic and smaller consumers that distribution networks do, therefore the role that they play in this challenge will be different. The ESO will have a significant role to play in improving efficiency of the electricity industry, ensuring the right solution for constraints on the electricity network is chosen which may include DNO led energy reduction options.

The role of all network companies will be to collaborate closely with the SO, and others to ensure consumers interests are taken into account when making key investment decisions. An improved 'whole system' definition and incentivisation to remove whole system barriers will improve decision making in this area.

Q11. Do you agree with our proposal to retain dedicated innovation funding, limited to innovation projects which might not otherwise be delivered under the core RIIO-2 framework?

Yes, we think dedicated innovation funding is critical in supporting energy transition issues. Separate funding incentivises investment in areas where greater risk may be needed in order to deliver the future transition.

Q12. Do you agree with our three broad areas of reform: i) increased alignment of funds to support critical issues associated with the energy transition challenges ii) greater

coordination with wider public sector innovation funding and support and iii) increased third party engagement (including potentially exploring direct access to RIIO innovation funding)?

We agree with the broad areas of innovation reform, and welcome further clarification of the framework in this area during the next phase of consultation.

We agree that there needs to be greater alignment of innovation funding to support critical energy issues, particularly around the delivery of the industrial strategy and decarbonisation of heat and transport. The enhanced stakeholder engagement process provides an ideal opportunity to liaise with our stakeholders getting their input into where innovation funding should be focussed during the price control period.

We support greater coordination with wider public sector innovation funding and welcome the opportunity to explore this further during the sector specific consultation phase.

We welcome increased third party involvement and believe that this is best channelled through network companies.

Q13. What are the key issues we will need to consider in exploring these options for reform at the sector-specific methodology stage, including:

- **What the critical issues may be in each sector and how we can mitigate the bias towards certain types of innovation through focusing on these issues?**
- **How we can better coordinate any dedicated RIIO innovation funding with wider public sector funding and support (including Ofgem initiatives such as the Innovation Link and the Regulatory Sandbox)?**
- **How we can enable increased third-party engagement and what could be the potential additional benefits and challenges of providing direct access to third parties in light of the future sources of transformative and disruptive innovation?**

Increased third party engagement and wider public sector innovation funding will be beneficial but it is best coordinated with network companies as the delivery of the innovation will normally be through the network companies. In the interest of ensuring the greatest value to customers, we welcome transparency about any problems, methods or solutions that Ofgem considers would be appropriate for 3rd parties to apply for innovation funding.

Q14, Q15

What form could the innovation funding take. What would be the advantages and disadvantages of various approaches?

How can we further encourage the transition of innovation to BAU in the RIIO-2 period? How can we develop our approach to the monitoring and reporting of benefits arising from innovation?

Driving innovation through strong totex incentives and the potential for setting certain categories of allowances for longer than 5 years are key levers in transitioning innovation to BAU.

We support the proposal to retain some form of innovation stimulus as part of the RIIO framework to stimulate more speculative and long term transitional network innovation where the risks are different, the benefits probably accrue in the long term or are accrued by third parties.

Ofgem could consider requiring companies to publish the progress and benefits of innovation projects associated with any stimulus.

Q16, Q17

Do you agree with our proposal to extend the role of competition across the sectors (electricity and gas, transmission and distribution)? What are the trade-offs that will need to be considered in designing the most efficient competitions?

Do you consider there are any reasons why our new, separable and high value criteria might not be applicable across all four sectors? If so, what alternative criteria might be suitable?

The best way to extend the role of competition for network investments is through the development and establishment of a fully formed competitive regime - where it can be demonstrated that it is in consumer's interests to do so. In Electricity Transmission the CATO regime is the appropriate model, and as a direction of travel we support the further development of an 'early' model which potentially provides more scope for innovation and also ensures the party gaining consent for a project follows through with delivery given they are intrinsically linked.

We support application of the current criteria for competition (new, separable and high value) in all sectors to identify potential projects – and companies should signal these in their RIIO-2 business plans. Ofgem should then use this to conduct an assessment of the costs and benefits of further developing the CATO regime in electricity Transmission, and developing and establishing a similar licence based regime in other sectors, to determine where extending competition is demonstrably in consumer's interests.

There are a number of trade-offs to be considered when seeking to apply the early or late CATO models to individual projects, principally driven by the level of certainty over the project (or project timescales) and the impact this has on a party's willingness to bid, and also the impact of uncertainty on costs. Therefore a cost benefit analysis needs to be conducted on each individual candidate project to take account of its characteristics and establish whether to run a competition and whether an early or late model is more beneficial.

Q18. What could the potential models be for early stage competitions (for design or technical solutions)? What are the key challenges in the implementation of such models, and how might we overcome them?

The development of the early CATO model is the most appropriate model for electricity transmission: it offers clearly defined roles and responsibilities and the benefits of a licencing structure allowing for the party responsible for the new assets to be directly regulated by Ofgem. The CATO model has undergone several years of development and consultation, and it should be possible to build on this in order to implement a workable regime within RIIO-T2 when the necessary primary legislation is available.

In 2016 we chaired an industry group to develop a workable early model resulting in a comprehensive report which Ofgem has published. Specifically, the group addressed the questions of when in the process to run a tender, the roles of different parties, how to pre-qualify and assess CATOs, and how to handle uncertainty in need, scope and cost.

Q19. What views do you have on our proposed approach to specifying outputs and setting incentives? When might relative or absolute targets for output delivery incentives be appropriate? What impact would automatically resetting targets for output delivery incentives during a price control have? Which outputs might best suit this approach?

The RIIO regime has driven significant benefits for consumers by focusing companies on delivering outputs and strongly incentivising companies to deliver efficiencies and service level improvements in areas that customers value. The approach to setting price control outputs is not entirely clear but appears to be broadly in line with RIIO-T1 and on that basis we are supportive.

We support an approach for RIIO-2 which enhances clarity of the application of the following principles:

- A totex regime which strongly incentivises companies to reduce total expenditure and which equalises incentives between capex and opex to optimise trade-offs;
- Defining high level outcomes and output goals that all stakeholders are ultimately interested in for as much of the cost-base as possible (as opposed to defining work delivery ‘inputs’) to stimulate technical and commercial innovation, risk management and efficiency in delivery;
- Holding companies to account for delivering the outcomes they have committed to, with clear arrangements / consequences of not delivering;
- Setting of allowances, targets, incentives and output goals on an absolute and ex-ante basis to best simulate the pressures of real competition; and
- Mechanisms which flex to encourage responsive delivery of changing customer requirements and minimise potential for windfall gains or losses (such as indexation of RPEs)

Setting targets relative to the performance of other companies would not be workable for Transmission networks, as the population is too small. Further, the businesses in the Transmission sector are very different in scale with different issues leading to difficulties in comparability, calibration and potential for unintended consequences.

The current approach to designing incentives in Transmission has worked well in improving quality of services and encouraging output delivery and improvements which benefit consumers. In the context of a potentially shortened 5 year price control duration, resetting targets within the period based on outturn performance within the price control is not in consumers interests because it does not simulate the operation of a competitive market. In a fully competitive environment, companies make investments or innovate to improve services beyond their competitors with an expectation of being able to gain market share for a period to generate an enhanced return on before others do similar and ‘catch up’. For regulated networks, the periodic review is the way the ‘catch up’ is established. If there is not confidence that benefits will be generated either because there is an insufficient period to generate potential benefits against the investment made, or that targets move, then the incentive will fail to stimulate the desired behaviours. This cannot be in consumers’ interests. We are also concerned that

- The risk of decoupling cost efficiency and output delivery incentives, both areas should be consistent to ensure cost efficiency does not conflict with improving quality.
- There may be a transfer of risk to the consumer. Based on fixed targets companies are exposed to revenue risk based on their performance and the range is dependent on the attributes of each incentive. However, assuming resetting targets will be applied symmetrically there is the potential for risk to be transferred to the consumer further weakening the incentive for companies to improve quality.

We will develop proposals for incentives, which align with what our customers and stakeholders want, through the constructive engagement process.

Q20. What views do you have on our general approach to setting cost allowances?

Allowances should be set on an ex-ante basis along with strong incentives to drive efficiencies in the interests of consumers. We support that the RIIO-2 framework should maintain flexibility to handle the cost profile of work that spans multiple price control periods. This should include the possibility of setting allowances for some activities over a longer period than others.

Where significant uncertainty exists, we support the continued use of volume and revenue drivers. In RIIO-T1 there was (and still remains) significant uncertainty around customer driven investments and, in the round, the uncertainty mechanisms have dealt well with automatically adjusting allowances as the need for investment projects and timescales change. They are efficient to administer and have minimal delay in truing up the adjustments for companies and

consumers. There is opportunity to refine these uncertainty mechanisms in light of experience from RIIO-T1 which should be considered in the sector specific phase.

Determining the right uncertainty mechanisms should be done to ensure the risk sits with the party best able to manage it and the allocation of risks should be explicit and clear when setting the overall price control package up front.

Q21. What views do you have on our intention to index RPEs?

We support developing a form of indexation of RPEs. Network companies have limited or no ability to influence RPEs despite the significant impact on their cost base, particularly in times of political and economic uncertainty. We look forward to working with Ofgem to develop options which minimise the potential for material movements from forecast as a result of RPEs.

However, we note the importance of differentiating between two areas which are often treated as one:

- Volatile prices – typically commodities such as copper, oil, aluminium steel. These products track inflation over the long term but are subject to considerable volatility which means they are loosely correlated or uncorrelated to inflation over the short to medium term
- Real Price Inflation – typically input prices such as labour costs. These inputs have more stable prices with a strong correlation to inflation and have a long history of tracking above the relevant indices

Any proposed approach to deal with RPEs must reflect this difference ensuring it is only the components which networks genuinely have limited control over or difficulty in forecasting accurately which are incorporated.

It is important to consider the interaction of any proposed solution with other areas of the framework. As well as indexation of RPEs Ofgem are proposing a number of mechanisms which are designed to avoid forecasting error and it important to consider the balance between introducing several complex mechanisms with the need to simplify the price control and minimise charging volatility which is a clear message emerging from interactions with our stakeholders.

Q22. What impact would resetting cost allowances based on actual cost performance (eg benchmarked to the average, upper quartile or best performer) during a price control have? Which cost categories might best suit this approach?

We do not support relative adjustment of cost allowances based on actual cost performance within the price control, and do not think this is workable for Transmission due to the small number of companies and for other reasons outline in our answer to Q19. Totex incentives have worked well in RIIO-1 in ensuring networks are incentivised to reduce costs through driving efficiency improvements and innovation. This has been enabled through mechanisms which are clear, credible and predictable, attributes which will be lost if allowances are re-set within the price control. The possible impacts include:

- Lack of predictability of future cost allowances which creates uncertainty and disincentivises longer term decision making. The ability to retain benefits relating to innovation and efficiency throughout the price control encourages companies to implement ideas with a greater payback period and be more radical in their thinking. This has driven a significant step change in RIIO-1 benefitting both consumers and networks. Re-setting cost allowances within the period would undermine this benefit going into RIIO-2.

- Lack of comparable networks for transmission makes benchmarking within the price control difficult as it assumes each network is equally calibrated and all activities will impact performance equally.
- Higher portion of risk being passed to consumers as the incentive for companies to innovate and deliver more efficiently is significantly weakened.
- Additional complexity of the resetting mechanism and annual reporting requirements increasing regulatory burden and introducing further mechanisms which move Ofgem away from their key outcome of simplifying the price control.

Q23, Q24, Q25

Do you agree with our assessment of IQI?

Do you agree with our assessment of fast-tracking?

What are your views on the options we have described? How might these apply in the different sectors? Should we retain the IQI, amend it or replace it entirely?

IQI acts to provide the right incentives on companies to submit efficient business plans. Given the concerns over complexity associated with existing IQI, and the adoption of the constructive engagement approach in Transmission, we support removal of IQI for Transmission. We are supportive of removing fast tracking for Transmission, in favour of the Constructive Engagement approach as fast tracking has limited value in revealing an efficiency frontier in the Transmission sector due to the small number of companies of different scales as compared with distribution.

Q26. What factors should we take into account when assessing plans for example, under fast-tracking (option 2) or a single business plan incentive (option 3)?

These options are not applicable for Transmission so no comment provided.

Q27. Do you have any views on the factors we should take into account when deciding how to differentiate efficiency incentives for companies if we do not use the IQI?

The enhanced engagement model being proposed for Transmission will ensure detailed scrutiny of our plans by informed stakeholders which will result in plans that are high quality and thoroughly challenged on their efficiency. The independent reports resulting from this process will allow Ofgem to make an even more informed conclusion about the efficiency level within plans. For Transmission we do not see the need for differentiating efficiency incentives – a simple fixed sharing factor should be determined which strongly incentivises innovation and efficiency in the T2 period.

Q28, Q29, Q30

Is an explicit upfront financial reward required to incentivise companies to submit high quality business plans, in addition to differential incentive rates or sharing factors?

Do you have any views on our proposal to remove fast-tracking for transmission?

Do you have any views on how we propose to incentivise better business plans from transmission companies, including removing the prospect of an upfront financial or procedural reward and placing greater reliance on user and consumer engagement and scrutiny?

We are supportive of removing fast tracking for Transmission, in favour of the Constructive Engagement approach as fast tracking has limited value in revealing an efficiency frontier in the Transmission sector due to the small number of companies of different scales and with different networks as compared with distribution.

Q31. How can we best improve the suite of annual reporting requirements to be as efficient and useful as possible?

We see our reporting activities as a key tool to engage with our consumers and maintain their confidence in the performance of their network providers. In order to do this, the scope and format of our reports should be simple and focussed on the outputs that matter most to consumers. The information included should enable us to show how we have spent against allowances in delivering those outputs, and how the risks we bear in delivering those outputs have impacted our expenditure, so that we can clearly explain what decisions and actions our performance has resulted from and how these are legitimate drivers of performance.

In our view the current reporting requirements should be completely re-shaped in supporting these goals of simplicity and transparency. The current requirements for data and information provided to Ofgem have grown over the RIIO-1 period and with it the length and burden of the RIGs, DAG and RRP process. It has also introduced areas of duplication and redundancy of information. We are not convinced that continuing increased data provisions and reporting has succeeded in providing the regulator with the right narrative to give consumers confidence in network performance.

We are supportive of exploring data provision channels, such as a data services reporting process, to provide the detailed, day to day operational information that Ofgem requires to monitor companies. Getting agreement on the format and content of these different reporting channels at the start of RIIO-2, and keeping these stable and consistent through the RIIO-2 period, will help us optimise our reporting processes for efficiency, reducing the cost and effort of reporting.

Q32. How can we make the annual reports easier for stakeholders to understand and more meaningful to use?

Through the enhanced stakeholder engagement process we will be working closely with a diverse range of our stakeholders, sharing information about our current performance and future business plans. The insight into how best to articulate performance that we and other networks will gain from this should be used to inform reporting for RIIO-2. We will work with Ofgem and other network providers to determine a process by which we can use these learnings to develop the content and format of reporting for RIIO-2.

Q33. What are your views on the policy objectives that we have defined with respect to the cost of debt?

We are supportive of the policy objectives as set out at Paragraph 7.11 of the consultation, namely that:

- Consumers should pay no more than an efficient cost of debt
- The cost of debt allowance should be a fair and reasonable estimate of the actual cost of debt likely to be incurred by a notionally geared, efficient company
- Companies should be incentivised to obtain lowest cost financing without incurring undue risk
- The calculation of the allowance should be simple and transparent while providing adequate protection for consumers.

In particular, we note that the principle of incentivising companies to obtain the lowest cost financing without incurring undue risk effectively balances the need for efficiency with that of prudence. The networks should not be dis-incentivised from making appropriate decisions to finance long life assets with long term debt. This approach reduces consumer exposure to fluctuations in the financial markets compared to an approach where the networks have to rely on

financing with short-term debt. Allowances should therefore reflect efficient financing programmes with long term debt, but should networks choose an alternative financing programme, such risk should be borne by shareholders rather than consumers.

In addition to the policy objectives proposed, we believe that consistency of financing costs to consumers for use of network assets should be a principle of regulation in relation to cost of debt. For illustration, any major change to the approach after just one RIIO price control could increase uncertainty and perceived regulatory risk which would not be in consumers' interests.

We therefore agree with the suggestion at Paragraph 7.12 that because the existing indexation approach has worked well in RIIO-1, a high bar of evidence would need to be met before deciding to alter the general approach, although as explained further below the details of the approach could be refined.

Q34. Which option might help to ensure that the approach to updating the cost of debt methodology delivers best value to consumers and why?

We support the continuation of the current indexation policy but with extension of the trailing average period to 20 years.

An index based approach provides an objective and transparent way to achieve the policy objectives; to measure efficient financing whilst protecting consumers and network companies from inaccurate forecasts, inefficient financing decisions and subjective judgements. The iBoxx indices contain a large range of non-financial companies so cannot be manipulated by any network company and an index based approach appropriately constructed should lead to consumers paying no more than an efficient cost of debt.

Option A: Re-calibrate the RIIO-1 indexation policy

Option A is the method that networks and investors are familiar with and for reasons of consistency and predictability we support retention of this approach, albeit with some further refinement. The existing mechanism has benefitted consumers as interest rates have fallen over the RIIO-1 period. However, we consider there are improvements which can be made, so we welcome Ofgem's invitation to look for ways to improve the methodology.

Cost of debt allowances should be reflective of financing the networks for the long term efficiently rather than incentivising network companies to take undue risks with their financing decisions. An index based on a 10 year trailing average would not reflect the cost of efficiently incurred debt that is older than 10 years. Ofgem have recognised that use of a 10 year trailing average in RIIO-ED1 would have led to a situation where the costs of efficiently incurred debt would not have been recovered nor met across a range of forecast interest rate scenarios. In its determination of the BGT Appeal of RIIO-ED1, the CMA then accepted the modified approach (which involves moving to a 20-year trailing average) and the reasoning behind it.¹

We support a move to 20 year trailing average tracker for embedded and new debt as this is more reflective of the age of network debt, the likely refinancing of the debt portfolio and the long term nature of network assets which have regulatory lives of up to 45 years. A 20 year trailing average would allow the cost of appropriately rated 20 year debt, if raised in equal amounts each year, to be recovered. Whilst this debt raising profile will not be strictly accurate for any individual network, it forms a plausible and defensible basis for funding efficiently incurred debt costs across the energy network sector without removing the incentives on individual companies to raise debt efficiently and prudently. In addition, use of an indexation tracker with a 20 year trailing average period is in the consumer interest as it reduces the likely future volatility of the cost of debt allowance.

¹ "British Gas Trading Limited v The Gas and Electricity Markets Authority, Final determination", 29 September 2015, Section 8

Other modifications, as set out in Paragraph 7.18 of the framework consultation, would generally detract from the transparency and simplicity of the methodology, such as adjustment for the “halo effect”. To the extent that it existed (CEPA in their Feb 2018 report believe that the effect has diminished and NERA^{2,3} have shown that effect was in the low single digits after adjusting for ratings, duration, and low cost RPI linked debt), recent experience of network company bond issues has shown that the effect is around zero to mid-single digits. This is before fees and costs are taken into account, which we note Ofwat have granted an allowance for.

The rating of the benchmark index needs to be linked to the desired rating in the financeability assessment. A move to basing the cost of debt index on only A rated bonds would only be appropriate if the notional company was firmly in the A range rating. Likewise if the notional company was in the BBB range, the benchmark index should just be the BBB index.

Option B: A fixed allowance for existing debt plus indexation for new debt only

As noted in the consultation, this option is comparable to that proposed by the CAA and Ofwat as they look to move away from setting fixed rate allowances for the cost of debt. This mechanism does not fulfil the principle of consumers paying no more than an efficient cost of debt as it compensates networks for embedded debt cost irrespective of whether this was efficiently incurred or not. However, we recognise that it does ensure consumers pay no more than the networks cost of debt for embedded debt, although it compensates networks as a whole, rather than individually, for the full embedded debt cost.

Under this option, new debt issuance is measured against an index, but embedded debt costs are effectively measured against the industry average. Companies are therefore incentivised to outperform the index during the current price control without necessarily being incentivised to consider longer term financing implications. This could drive sub-optimal decisions from a long-term perspective. For example, companies could issue short term debt at the start of a price control period but then refinance to either match or outperform the industry average towards the end of the price control. Potentially driving refinancing towards the end of the price control period could drive the cost of new debt higher due to increased demand for new debt from the networks or a concentration of a network’s financing costs being the result of financial market conditions during a narrow time period.

In summary, this option does not fulfil all the policy objectives primarily as companies are incentivised to take undue risk with consumers bearing the cost.

Option C: Pass-through allowance for debt

A pass-through mechanism does not meet Ofgem’s proposed principles, as pass-through does not encourage companies to behave efficiently, nor does it incentivise them to obtain the lowest cost of financing. Instead this approach allocates the associated risks and costs to the network’s customers and consumers. As CEPA state in their report, “*The use of a pass-through would imply that there are no net benefits from incentivising the cost of debt. We consider that use of actual debt costs would lead to instances of moral hazard, and that the optimal approach is to use a well-calibrated mechanism based on notional costs*”.⁴ This mechanism could also potentially lead to consumers in different regions incurring different amounts for financing, or there would have to be some kind of redistribution mechanism so each network receives only its actual cost of debt.

In addition, a move to a pass through mechanism would represent an unanticipated change from the current incentive based regulation which incentivises efficiency and drives lower costs.

In summary, we support Option A which is the retention of the indexation approach adopted for RIIO-1 but with harmonisation of the trailing average to 20 years. There are no fundamental

² “A Response to Ofgem’s Proposals on the Cost of Equity and Debt for RIIO ED1, Prepared for ENA”, NERA Economic Consulting, 26 September 2014, Section 3.3

³ “Ofgem’s estimate of the ‘Halo Effect’”, NERA Economic Consulting, 20 January 2011

⁴ “Review of cost of capital ranges for Ofgem’s RIIO-2 for onshore networks”, Cambridge Economic Policy Associates, February 2018, Page 27

differences that would generally be expected to lead to significant differences in the cost of debt mechanism between ET, GT, ED and GD. Moving to a 20 year trailing average should therefore be adopted across all the network sectors in the next round of RIIO price controls, including in RIIO-T2.⁵

Finally, it should be noted that the assumptions and approach taken in remunerating the cost of the notional networks' efficiently-incurred debt costs need to be consistent with the assumptions used in the financeability assessment that is carried out as part of the price control revenue-setting process; this requirement will need to be addressed in due course throughout the development of the framework and in networks business plan submissions.

Q35. Do you agree with our proposed methodology to estimate the cost of equity?

The allowed cost of equity is an important element of the regulatory framework and care needs to be taken in determining the rate for any price control period. The methodology needs to balance current and future investor and consumer requirements. Setting the rate too high would risk consumers being charged too much, setting the rate too low would risk investment in critical infrastructure.

Given the importance of the cost of equity methodology we have included several appendices in relation to our response to this question. Our key points are summarised below with additional detail for each cost of equity parameter following in Appendix 2. We have then included three reports from NERA on observed beta values, beta estimation methodology and the inflation index applied in deriving real total market return in Appendices 3 to 5.

The cost of equity range needs to be assessed against the risk of each network company and the regulatory framework and political environment in which they operate. On this basis, Ofgem's proposed 3 to 5% range is too low for the risk and required return of a Transmission company.

The top end of the range is depressed by total market return (TMR) and beta parameters not reflecting the full range of evidence.

- We support use of long term approach to setting TMR but capping the range at 6.5% does not properly reflect the long-run average realised TMR or the Bank of England and Bloomberg Dividend Growth Models (DGM) which show TMR in excess of 7%.
- Asset beta assumptions do not reflect the higher risk of Transmission versus other regulated sectors or the observable impact of growing political risk across the utilities sector.

The low end of the range is artificially reduced by use of incorrect TMR views and economically unsecure risk-free rate (RFR) assumptions.

- The TMR range is not consistent with CEPA's own evidence on weighting of arithmetic versus geometric averages according to price control or investment time horizons.
- The RFR is assumed to remain significantly below zero across the RIIO-2 period. This implies that investors are willing to take a real reduction in cash invested in a risk free investment, which is a questionable economic assumption and should therefore not be used in setting even an indicative range.

It is appropriate that the cost of equity and underlying component values are not set until much closer to the start of the price control, and the resulting uncertainty needs to be reflected in the ranges of any indicative values that are presented in the interim.

⁵ Exceptions could though still be made by agreement between an individual network and Ofgem without undermining the underlying rationale if the implicit assumption that the network could have been financed by raising a broadly constant level of debt each year breaks down – e.g. for a network with a relatively small RAV which is undergoing a period of very large investment and associated RAV growth, such as for SHETL in RIIO-T1, where a bespoke index/methodology was agreed.

The overall cost of equity range should be assessed at the sector specific stage in conjunction with each network company's notional gearing.

Q36. Do you agree it would be desirable to index the cost of equity? Do you have views on our proposal for indexation?

We appreciate that cost of equity indexation may help ensure consumer and customer legitimacy around cost of equity which is important to us. In principle, we support use of a cost of equity tracker providing it is transparent, easily replicated, and capable of forming part of the annual iteration process.

In practice, estimating each of the parameters that feeds into the formulaic expressions for calculating cost of equity requires application of judgment to bring together the available evidence, and the way in which different weightings or adjustments are applied to the data sources would need to be clearly defined in order that the indexation methodology is replicable.

None of the three options shortlisted by CEPA involve indexation of beta values, and we agree with not tracking and adjusting beta during a price control due to the complexity involved and number of potential judgements involved in estimating its value.

We can see merit in indexing RFR from a legitimacy perspective and are of the opinion that a simple and mechanistic approach could be developed using readily available data such as indexed-linked or nominal gilts. There are however a number of practical issues which would need to be considered in advance such as how to identify and deal with periods of unusual monetary policy which could have an unforeseen impact on benchmark data.

Based on the premise that estimation of the TMR range is weighted towards historical evidence, there is limited potential for change in the TMR range across the price control period. Therefore, indexation of TMR based on a historical dataset is unlikely to have a significant impact on the cost of equity. On a practical basis, whilst still mechanistically possible indexation of TMR would also present more of a challenge due to the variety of data and methodologies which could be referenced in deriving an index. For example, weightings for CAPM and DGM data would require consideration as well as data sources and interpretation of data such as arithmetic versus geometric averaging.

The key requirement is that the basis of any update must be consistent with the approach taken in setting the opening allowed return for RIIO-2. The indexation methodology should not drive the framework used to set the opening cost of equity for the price control but should instead apply an agreed, logically consistent and formulaic way of updating the relevant parameters. Therefore, a specific indexation approach can only be given due consideration once the framework for estimating cost of equity has been determined.

Q37. Do you consider there is merit in removing the indexation of the RAV and adopting a nominal return model in RIIO-2? What would be the benefits and drawbacks?

The RIIO framework needs to ensure that the efficient notional company is financeable however this can only be fully assessed at a later stage of the RIIO-2 process once company business plans have been developed. At this stage it would seem sensible to keep a range of options open to networks and Ofgem to address any financeability problems that become apparent. We support keeping a move to nominal returns open but only as part of a broader suite of options including changes to asset lives, varying depreciation methods and optimising capitalisation (fast / slow) rates based on the underlying plan. These other options may offer networks and Ofgem a better balance between mitigating financeability concerns and impacts on consumer bills. For illustration, the fixed capitalisation rate for NGET during RIIO-T1 has reduced cash return compared to the natural opex/ capex ratio in the period. Continuing this mis-match into RIIO-T2 would impact on future financeability and solving this would likely have less unintended consequences than moving to nominal returns.

At a more general level, we note that decisions on financeability should be taken on a network specific basis, rather than with the intent of addressing problems that are the result of other decisions such as setting an unrealistically low cost of equity. Bringing forward revenue from future price controls, such as through a move to nominal returns, might be an appropriate way of addressing short term financeability concerns but will not solve fundamental financeability issues.

Cost of equity plays an important role in financeability as well as being key in balancing consumer cost and investor confidence across the energy sector.⁶ This cannot be ignored in the financeability assessment. Ofgem note that reducing the return is causing financeability issues which means the first question needs to be whether the cost of equity level is adequate rather than what levers are required to offset this shortfall. Cost of equity is meant to fund networks for the risks they bear – including cashflow risks – and heightened financeability concerns give further evidence for why the return levels set out by Ofgem are inadequate when compared to the risks borne by energy companies.

Returning to the question of nominal returns, as the framework consultation notes, a shift to nominal returns would be a significant change to the regulatory framework and so could have wide-ranging impacts including on investor and rating agency views of the sector and of the stability and predictability of the regulatory framework. An unanticipated change of this kind could have impacts on the financing strategies and positions of network companies that today are the result of multiple decisions taken over many years in expectation that inflation indexation of the RAV will continue as in the past.

Whilst examples such as those in the US show that a nominal regulatory framework can work for consumers and investors the question here should more be about understanding any impacts of transition. Moving from a real return framework to one based on nominal would create a short term intergenerational impact for consumers. This would need to be considered in the context of the underlying plans of the networks to ensure it is justifiable and appropriately balanced with future utilisation of network assets.

Q38. Should the onus for ensuring financeability lie with the network operating companies in whole, or in part?

The onus for ensuring financeability of the actual companies lies with the networks.

However, as the consultation recognises, Ofgem have a duty to have regard to network companies' ability to finance their activities, and in the context of setting a price control this requires Ofgem to make sure that the resulting allowed revenues are sufficient for the notional company to be financeable.

This assessment should consider the financeability of the notional company over the longer term, and not just for the next price control, to ensure that concerns over financeability do not elevate long term financing costs to the detriment of consumers. It is important to assess the quantitative metrics even if qualitative metrics are assumed to be strong to understand the potential financial impact of the proposed framework under a range of scenarios.

In addition, since network companies are obliged under their licences to take steps to maintain an investment grade credit rating, it is necessary that as part of this assessment, Ofgem consider the financeability of the notional company by following the rating methodologies published by rating agencies such as Moody's and Fitch, as applied to a notionally geared, efficient network company.

⁶ "Bristol Water plc, A reference under section 12(3)(a) of the Water Industry Act 1991", Competition Commission, Presented to Ofwat 4 August 2010, Paragraph 10.8

National Grid Electricity Transmission plc
Registered Office: 1-3 Strand, London WC2N 5EH
Registered in England and Wales, No 2366977

National Grid Gas plc
Registered Office: 1-3 Strand, London WC2N 5EH
Registered in England and Wales, No 2006000

Q39. Do you consider the introduction of a revenue floor, to protect the ability of companies to service debt, to have merit?

We do not support the introduction of a revenue floor.

It is not immediately clear how a revenue floor would be implemented from a principles or practical perspective. The introduction of a revenue floor would move the regulatory regime away from an incentive-based approach towards a pass-through fixed return approach, at least in part. The track record of UK regulation suggests this would not be in consumers' interests. Moody's have also commented that whilst such a mechanism could support operating companies' credit quality this could be credit negative for holding companies due to potential reductions in distributions. As rating agencies often link the credit ratings of operating and holding companies this could mean that the intended outcome of increasing the financeability of operating companies is not achieved.

From a practical standpoint, it is not entirely clear what problems such a floor is intended to address or over what timescales the issues could arise. For the option to be practical there needs to be enough time to identify the issue and then enact any floor through the price control financial model and setting of revenue tariffs for the year impacted. It is likely that any financeability concerns of a company would not be identified until all financial parameters for a particular year are known. Tariffs for the same period are set in advance and can only be revised according to CUSC and UNC frameworks which do not provide for charging updates based on financeability assessments. Therefore the revenue floor will not be able to be implemented in the period of concern.

Even if changes were made to the licence to enable such financeability changes to be made, a revenue floor approach would impact on the predictability of charges for our customers. This begins to counter the reason why tariffs are set in advance rather than within the year in question.

Q40. Do you agree that Ofgem should review the causes of any variances between tax allowances and taxes actually paid to HMRC (including the treatment of group tax relief)? Which of the options described in this consultation may be worth investigating further to address any material variances?

We agree that it is important to understand the causes of material variances between tax allowances and tax actually paid to HMRC (including the treatment of group relief).

However, we also consider that the regulatory approach to funding corporation tax adopted during RIIO-1 was effective and the policy objectives fair.

In particular, the RIIO-1 arrangements:

- Retained an incentive for companies to manage their tax costs effectively;
- Ensured that companies were adequately funded at the point that tax liabilities were due and not at some later filing event;
- Ensured that the risks or benefits of material tax variances outside of the control of the licensee were appropriately shared by licensees and consumers; and
- Avoided placing an undue administrative burden on the licensee or Ofgem which was disproportionate to the values at stake

In our view, any revised RIIO-2 corporation tax arrangements should seek to retain these principles.

Regarding Ofgem's proposed options:

Option A- Notional allowance with added protections

Option A involves a review of the current RIIO-1 mechanism whilst considering what further mechanisms could be added to protect consumers from over-compensating for tax.

We agree that Option A is worth investigating further although we recommend that Ofgem consider whether their concerns could be tackled through enhanced disclosures and policy statements rather than through additional mechanisms. For example:

- Agreeing the form of a disclosure to be included in the RIIO Regulatory Accounts to explain variances between the tax charged to the performance statement and the tax allowance
- Monitoring this disclosure as part of the annual iteration process
- Providing a clear policy on paying for group relief; and
- Requiring licensees to include their Tax Strategy (or a UK specific extract therefrom) as part of the RIIO accounts.

The enhanced transparency would enable Ofgem to better identify and potentially challenge the causes of material variances whilst retaining the effective elements of RIIO-1.

Option B- Actual Payments to HMRC

Option B raises a more fundamental question as to how tax liabilities should be funded and specifically whether moving away from an ex-ante basis would adversely impact on the allocation of risk between companies and consumers or weaken the stability and predictability of the regime as it relates to tax.

Whilst an actual tax basis (whether ex-post or as part of a hybrid approach) would appear simple in concept and would remove any risk that consumers might over-compensate companies, there are some practical issues concerning the timing of tax payments, the subsequent preparation and agreement of regulatory accounts and CT600 returns and the unbundling of group relief claims.

We agree that Option B is worth investigating further though we would recommend that Ofgem considers how a pass-through basis would:

- Retain an incentive for companies to manage their tax affairs effectively and avoid putting consumers at risk for a licensee's failure to do so
- Ensure that companies continue to be adequately funded at the point that tax liabilities are due; and
- Avoid unduly increasing the regulatory burden through multiple true-up events or to address mismatches between the form and content of price controls and the equivalent statutory accounts

We also note that Ofgem previously consulted on but did not adopt an ex-post pass-through basis prior to DPCR4 (a decision mirrored in the following transmission and gas distribution price controls). We would suggest that the output from this review is revisited.

Option C –The 'double-lock': the lower of notional and actual

The tax trigger included in RIIO-1 was designed to ensure that the risks or benefits of material tax variances outside of the control of the licensee were shared fairly between consumers and licensees. Consumers would derive a benefit if tax costs fell and the licensee would be appropriately reimbursed if tax costs increased.

A double-lock would undermine this principle. Instead of allocating tax risk fairly between consumers and licensees, a double-lock would create an asymmetric risk allocating all of the risk to licensees. In our view, this is not a legitimate position and it could have an important bearing on financeability during RIIO-2.

As such, we do not believe that Option C is worth investigating further.

We look forward to working with Ofgem to further review whichever one or more of the above options it is decided should be taken forward.

Q41. Do you agree that we should move away from RPI for RIIO-2 (including for the indexation of the RAV if retained as a feature)?

- **If yes, which of the two potential indices – CPI or CPIH – might be most suitable?**
- **Is a phased transition between RPI and the chosen successor index necessary or desirable?**

We support the proposal to move from RPI to a consumer price based index (either CPI or CPIH) understanding that RPI has been subject to recent criticism and that this places pressure to seek an alternative index from a legitimacy point of view. As CEPA note, any change in inflation measure should be NPV neutral from an investor's perspective when seen over the long-term.

An important factor to consider here is which index is favoured by financiers and the government as this will impact on both the understanding and acceptance of the index. Currently the more favoured index is CPI but with the ONS adopting CPIH this may change over the coming months. The specific index should also be assessed closer to finalisation of the price control based on the availability of the financial instruments at the time.

The impact of the transition in the short term should balance moving to a more appropriate inflation measure and ensuring consumers' bills are not too adversely impacted. We are minded to support full transition to CPI from the start of the RIIO-2 period as suggested by Ofgem but would want to determine the precise transition profile within our business plan submission. This would allow informed views on this issue to be gathered through the stakeholder and consumer engagement process. For example, a transition across the five years of the RIIO-2 period starting at 50% of the historic RAV moving up by 10% each year may offer a smoother glide-path for consumers.

Q42. In the light of our proposal not to amend, at a price control framework level, our policies for depreciation and asset lives set in RIIO-1 do you have any views or suggestions that you wish to put forward?

Ofgem reference the potential use of regulatory depreciation as a lever to address financeability issues⁷ and we support this option being kept open and being considered at the sector specific consultation and business plan submission stages. Maintaining the option to further consider asset lives would also provide an opportunity to review the alignment of Gas Transmission regulatory depreciation profiles with the sum of digits approach applied within the Gas Distribution frameworks.

Q43. We propose to review the fast/slow money split at the business plan submission stage, do you have views that you wish to put forward at this stage?

We agree that this is an appropriate stage at which to consider capitalisation rate.

The RIIO-T1 framework introduced a number of elements which increased the volatility of earnings, for example the lack of a split capitalisation rate for uncertain capex in Electricity Transmission. As a result we have therefore placed less external emphasis on earnings and instead focussed on economic performance through the ROE performance metric as a more meaningful measure to investors.

A review of the capitalisation rate, both the value and mechanism, provides an opportunity to more closely align earnings and performance providing additional clarity for investors. Adoption of a suitable capitalisation rate mechanism would also contribute to addressing any financeability concerns arising due to uncertainty of investment programmes.

⁷ Paragraph 7.81

Q44. Do you think existing mechanisms for providing allowed revenue to compensate for the raising of notional equity are appropriate in principle and in practice?

We consider that the current mechanism which provides for 5% of the notional equity issuance required to adjust gearing to notional levels is appropriate.

Q45. What are your views on each of the options to ensure fair returns we have described in this consultation?

The RIIO2 framework is introducing additional measures which will reduce the impact of uncertainty and facilitate the efficiency of business plans submitted. It is vital that there is transparency and clarity up front when setting price controls on outputs, assumptions, expectations and allocation of risks and uncertainties to avoid legitimacy questions later in the control period. We are in a period of uncertainty and energy transition, where it is increasingly challenging to predict what might happen in the future, which brings with it increasing uncertainty. The proposals within the RIIO2 framework consultation look to introduce additional measures and mechanisms to minimise the impact of uncertainty.

However, we acknowledge the challenge regarding the perception of fair returns and that these measures alone may not provide comfort that the risk of “over-performance” is sufficiently mitigated.

We support the concept of a symmetrical backstop mechanism which acts to automatically adjust risk/reward sharing factor for a network company when the level of returns is outside a given range.

An approach that adjusts the absolute returns of companies, through sculpting of sharing factors relative to a pre-determined range of “fair returns” will deliver the best outcome overall. It retains the incentive for companies to create efficiencies whilst ensuring company behaviour influences company performance and maintaining certainty of outcome for investors.

We do not support any mechanism for Transmission that links one company’s returns based on another company’s performance, particularly as it will be very difficult to calibrate intended outcomes across the different approaches. Practically it is also not possible to apply relative mechanisms to Transmission where there are insufficient comparators and disproportionate impacts of size/activity are complex to remove.

Moreover, approaches to address the legitimacy challenge based on relative performance (e.g. anchoring) will not deliver the best outcome for consumers because:

- The challenge of accurately calibrating an ex-ante price control is at the heart of the legitimacy challenge – yet the ability to calibrate effectively is a pre-requisite for all relative approaches
- Investments made by companies subject to price controls have limited upside and for a limited period – an uncertain pay-off for investments will reduce innovation and efficiency to the long term detriment of consumers
- At this inflection point in the industry, increased collaboration across network companies is necessary to bring about the energy transition, which will massively benefit consumers in the long term.

We propose two models should be taken forward for further consideration at the sector specific stage: Constraining totex and output incentives; and RORE sharing factors.

Q46. Is RoRE a suitable metric to base return adjustments on? Are there other metrics that we should consider, and if so why?

Before considering whether RoRE is a suitable metric to base return adjustments on, it is first important to return to the principles of what it is that we need a performance metric to achieve. Setting out in this way will enable us to objectively consider the appropriateness and effectiveness of RoRE

We believe the key attributes of a performance metric should be to:-

- Provide transparency of information that helps all company stakeholders to understand how networks are making their money under the RIIO framework
- Reflect underlying performance in the current price control where the impacts of timing and other factors are minimised
- Achieve consistency in how financial performance is presented enabling comparison against final determination and across sector

Using these criteria we agree that RoRE has been useful in providing an assessment of how companies are performing under the price control compared to both allowed returns and to the return achieved by other licensees on an equivalent basis. It has also made the sources of outperformance more transparent enabling stakeholders to better hold companies to account.

However, we do not believe the measure fully reflects the financial performance of the company. RoRE focuses on a view for the total price control period rather than within year so we have chosen to voluntarily disclose additional information on our regulatory performance allowing stakeholders to better understand our underlying position on an in-year basis. That said, we agree that a suitable performance metric should reflect the building blocks framework of RIIO, which with an alternative presentation could be based on RoRE and/or the returns we expect to be reported through RIIO accounts.

Incorporating adjustments to ensure a more appropriate reflection of underlying performance aligns the returns metric to the key attributes we believe a performance metric should include. With this as an assumed starting point we can then address the question as to whether it is a suitable tool on which to base return adjustments to achieve fair returns.

As explained in more detail in our response to the options proposed to ensure fair returns, we support the use of an approach that adjusts the absolute returns of companies through sculpting of sharing factors. We believe this maintains the incentive for networks to create efficiencies as companies continue to share in the benefits alongside consumers.

To apply this option in the form of a sharing factor on returns means any proposed metric within this calculation must focus on how the business is performing operationally. It must therefore be calculated using the assumption that businesses are financed in line with Ofgem's view of an efficient capital structure. This ensures only components where risk is shared and provides a direct benefit or loss to the consumer during the price control period are included. For example, it would not be practical to apply a sharing factor to a metric which shows the total return to the company because including financing and tax performance would transfer risks which are not in the best interests of consumers to bear.

Q47, Q48, Q49, Q50

Do you have any views on the interlinkages and interactions outlined in this consultation and those that we will need to consider as we develop our sector-specific proposals?

Do you have any views on the issues highlighted that we will consider as we develop our sector-specific proposals?

Are there any sector-specific issues or policy areas that we should ensure we review and consider as we develop our sector-specific proposals?

Do you have any views on our high-level proposals for timing of RIIO-2 implementation, and on our proposals for engagement going forward.

The ESO will play a crucial part in removing barriers for whole system coordination, hence the interaction between the form of control for the ESO, whole system, and how incentives will drive behaviours in these areas are linked.

It is impossible to arrive at a final decision on a form of backstop control without taking into account a full assessment of the options alongside the financeability of the overall price control. It is important that these areas are considered together.

Whilst the consultation sets out the broad framework for the energy sector as a whole there is more work to do in the sector specific framework on how the overall RIIO framework interacts to ensure an adequate balance of risk and reward. The consumer and investor proposition is unclear in the current consultation. Positive, strong incentives drive innovation, efficiency and performance improvement which benefit consumers through cost reductions and service improvements and provide opportunities for investors to earn above base returns. We would like to see a clearer description of range of incentive opportunities and risk implications for both investors and consumers in the sector specific consultation.

An understanding of business risk and how this is rewarded or mitigated through the framework is critical to ensuring the framework is consistent and maintaining legitimacy through the control period when risks crystallise or fall away. This concept is not tackled in the current consultation but needs to be when sector specific controls are calibrated and defined. We would encourage focus on this over the coming months with the formulation of and engagement around sector specific risk registers which transparently determine the size and nature of risks held by both networks and consumers.

We welcome the proposal to allow time for constructive engagement process ahead of business plan submission. The timeline will still be challenging however, and therefore we highlight the need for Ofgem to make timely decisions on panel chairs to allow the process to work effectively.

Appendix 2 – Detailed Response to Q35. Do you agree with our proposed methodology to estimate the cost of equity?

As outlined in our response to Q35 in Appendix 1, we include additional detail in support of the 3% to 5% cost of equity range being too low for the risk and required return of a Transmission company.

Beta

It is important to clearly define and apply an economically robust methodology which is reflective of the risks of a Transmission network. Whilst beta estimation is an area requiring judgement, there is a history of precedent showing how sectoral regulators and the CMA have approached this in the past.

The current emphasis should be on estimating an asset beta range (rather than equity beta). As noted by Ofgem the gearing of the specific networks and therefore the equity beta can then be considered at the sector specific stage of the RIIO-2 process. The equity beta is extremely sensitive to changes in gearing and consequently should not be viewed in isolation.

There is no evidence to justify a move away from use of observed market data methodologies as used in previous price controls. The introduction of more complex methods such as the GARCH techniques set out in the UKRN report reduce transparency and run a higher risk of being perceived as arbitrary by investors potentially leading to increased regulatory risk faced by the networks.

Based on the observed data, presented in further detail below, the weight of evidence shows the asset beta to be at least the same as RIIO-T1 levels with a range from 0.38 to 0.45 for National Grid's UK Transmission networks. On this basis, the range and, in particular the upper boundary proposed by CEPA, is too low and does not reflect the market view of Transmission network risk.

Empirical evidence

Importantly, the beta value in the CAPM model reflects the market's view of network risk exposure and therefore requires consideration of the market evidence for beta. We focus on the asset beta range to understand the underlying network risk and agree with Ofgem that the gearing and equity beta can be assessed at the sector specific stage.

CEPA's indicative asset beta range is from 0.25 to 0.4 based on empirical data from National Grid and the three listed water companies. Both Oxera and NERA have published reports which estimate an asset beta range for the regulated energy networks using the same UK comparator sample as well as extending this to a comparison of EU network data.

Oxera's report for the ENA shows a range for the two-year asset beta estimates of 0.30 to 0.39 based on the UK comparator sample.⁸ The Oxera report also notes that these ranges may underestimate the beta for energy networks and observes that the asset beta for National Grid is higher than that of the two pure-play water comparators (United Utilities and Severn Trent).

Asset betas for a sample of four European energy networks are also assessed. The report concludes that, on balance, evidence from the UK and European samples and the five- and two-year averages suggests an attenuated asset beta range of 0.38 to 0.42, but then comments that *"Consideration of the risks facing energy networks and the empirical shortcomings of the CAPM suggests selecting a beta point estimate in the top half of the attenuated range based on listed comparator companies."* The report concludes that *"With a gearing assumption of 60% and a debt beta assumption of 0.05, an equity beta range of 0.93–0.98 is recommended for RIIO-2."*

⁸ "The cost of equity for RIIO-2; A review of the evidence, Prepared for Energy Networks Association", Oxera, 28 February 2018, Page 42

In the UKRN report, Tables F.6, F.7 and F.8 give asset beta values for a range of comparator companies, UK and EU, for a number of different averaging periods and sampling frequencies. These different approaches generally give average asset betas from 0.36 to 0.39 based on zero debt beta and the report's approach to adjusting for leverage which broadly support Oxera's estimations.

NERA have also carried out a more recent assessment of beta taking account of the most up-to-date market information.⁹ This again focuses on empirical evidence, as empirical betas represent the "*market view of equity risk*". The analysis of the UK comparator sample produces asset beta estimates consistent with Oxera's observations. The majority of asset beta estimates lie in the range of 0.3 to 0.4,¹⁰ with values for National Grid plc towards the top-end of this range.

Additionally, the report recognises that NG plc's group-level beta understates the risk associated with National Grid's UK network assets, given that it represents the composite risk for its UK networks and the lower risk US networks. Using a sample of US-only comparators as a proxy for the systematic riskiness of NG plc's US operations, it is possible to solve for the beta associated with NG plc's UK businesses and as explained in the report this results in an implied beta for National Grid's UK networks of 0.43 to 0.47 depending on the US comparators used.

Furthermore, the report considers asset betas for listed European networks operating in Italy and Spain and, in line with the Oxera results, shows that empirical evidence supports an asset beta of around 0.4 over the most recent 2 year period. Given that a comparative risk assessment of the Italian and Spanish regimes suggests that investors face broadly similar risks as NG plc investors, this 0.4 asset beta also provides a relevant benchmark for NG plc.

Finally, for the indicative values in the December 2017 PR19 Methodology document, Ofwat's advisors, Europe Economics, calculated unlevered asset beta of 0.32 based on two years of daily data for Severn Trent and United Utilities,¹¹ but as explained in the Oxera and NERA reports above, companies in the water sector are exposed to less risk and so these estimates are likely to underestimate the asset beta for notional energy networks.

Taken together, therefore, the evidence in the Oxera and NERA reports point to an asset beta for National Grid's UK networks in the range from 0.38 to 0.45 (for zero debt beta). An asset beta greater than 0.35 is applicable based on the observed data set for current capex to RAV ratios and not just for investment at the levels observed for the Scottish TOs for RIIO-T1 business plans, as suggested by CEPA.

Notional company gearing

The more important focus at this stage in the RIIO-2 process is the asset beta range rather than equity beta. The notional company gearing is due to be considered during the sector specific consultation and, given the reliance of equity beta and financial risk faced by equity investors on the gearing level, it is appropriate that the equity beta is evaluated at the same time.

The top end of CEPA's range of equity beta is based on a 50% geared notional company. Based on 60% gearing which is more reflective of the notionally geared NG networks in RIIO-T1, we note that the top end of the equity beta range based on CEPA's asset beta is 1.0 which would increase the cost of equity range above 5%.

The Framework Consultation seeks to substantiate that equity beta should be significantly less than 1 through qualitative discussion of reasons why networks are 'low risk'.¹² However, this assessment does not take into account the higher notional gearing compared to the gearing of the stock market as a whole which would increase the equity beta. In addition, beta values

⁹ Report included at Appendix 3 of this response: "RIIO-T2 Beta and Risk Assessment", NERA Economic Consulting, 30 April 2018

¹⁰ These values assume a zero debt beta.

¹¹ "Delivering Water 2020: Our final methodology for the 2019 price review", Ofwat, December 2017, Table 10.3

¹² "RIIO-2 Framework Consultation", Ofgem, March 2018, Paragraph 7.49

National Grid Electricity Transmission plc
Registered Office: 1-3 Strand, London WC2N 5EH
Registered in England and Wales, No 2366977

National Grid Gas plc
Registered Office: 1-3 Strand, London WC2N 5EH
Registered in England and Wales, No 2006000

should be based on empirical estimates which reflect the market's view of network risk rather than application of theoretical thresholds.

The UKRN have put forward the principle that “*Regulators should exercise care in allowing for the impact of leverage in deriving asset beta and in ‘re-gearing’ equity betas*” and Ofgem have proposed further work in this area. We agree that the principles of levering and de-levering beta should be carefully assessed to ensure that the equity beta range correctly takes into account the relationship between observed data and a notionally geared company.

Beta estimation methodology

During the development of the RIIO framework in 2010, Ofgem stressed the importance of ‘regulatory commitment’, particularly in relation to financial issues and financeability. The central role of the allowed equity return to financeability has also been emphasised,¹³ and whilst minor changes to allowed return between successive price controls to reflect major developments over time might be expected, material changes would not. The regulatory principles of consistency and predictability are also important if investors, rating agencies and lenders are to maintain their confidence in the energy network sector and its regulatory framework. Great care therefore needs to be exercised when considering making any changes to the approach adopted in the previous round of price controls to estimate the allowed cost of equity. The alternative techniques explored in the UKRN report do not maintain these principles and we do not consider that there is evidence to move away from regulatory precedent.

The Framework Consultation makes reference to a number of wide-ranging methodological questions relating to beta estimation which are raised in the UKRN report.¹⁴ If adopted, these could lead to a fundamental change in the way that beta is estimated in future price controls compared to past precedent across the range of regulated industries in the UK. The key areas considered are as follows, though it should be noted that even the authors of the UKRN report could not reach a consensus view on whether changes in these respects should be made:

- Whether beta estimates should be based on longer time series (from 2000 to the present)
- Whether beta estimates should focus more on lower frequency sampling (monthly or quarterly, rather than daily or weekly)
- Whether an alternative estimation technique – referred to as GARCH – should be examined as an alternative to OLS.

These methodological issues, which are in many respects interlinked, have been reviewed by NERA with support from Professor Ania Zalewska of the University of Bath and their report is attached in Appendix 4 to this response.¹⁵ This report shows that there are strong grounds, both theoretical and practical, for not making changes in each of these respects, and so a move away the established methods generally used in previous price controls would not be justified.

In addition, it should be noted that:

- GARCH models have not previously been widely used for beta estimation in the regulatory setting for a variety of reasons, such as the additional complexity involved in assessing the variant of model which should be adopted;
- GARCH models are most commonly used in other applications where they are applied to high frequency data, at odds with the approach proposed in the UKRN report;

¹³ “Bristol Water plc, A reference under section 12(3)(a) of the Water Industry Act 1991”, Competition Commission, Presented to Ofwat 4 August 2010, Paragraph 10.8

¹⁴ “RIIO-2 Framework Consultation”, Ofgem, March 2018, Paragraphs 7.46, 7.47

¹⁵ Report included at Appendix 4 of this response: “Review of UKRN report recommendations on beta estimation”, NERA Economic Consulting, 1 May 2018

- If beta estimates were derived from GARCH models, these estimates would be much less transparent and reproducible, reducing their legitimacy.

Reasons not to use longer time series

Section 3 of the NERA report explains that there are a number of problems with relying on long-horizon data for estimating betas at future price controls. In summary, the use of long-horizon data fails to take into account changes in the comparator companies' risk over time, because of factors such as:

- The mix of business activities of the comparator companies used to estimate beta for the notional networks is likely to have changed substantially over such a long period.
- UK regulation has changed substantially over that period, for example, with the introduction of RII, as has the market's perception of the regulatory frameworks and regulatory risk.
- In addition to changes in companies' business models, the composition of the market itself has changed substantially over time since 2000, which also affects the beta estimate.
- The use of very long time frames increases the risk of including structural breaks that the econometric model is not designed to incorporate. NERA's report provides evidence that this is indeed the case for the period suggested by Mason, Pickford and Wright (MPW) in the UKRN report which includes the global financial and European debt crises.

For these reasons, older data is of limited relevance to the beta values for the companies in their current form, and estimates of beta using such a long horizon of data from 2000 onwards do not reflect the current or future risk of the businesses.

The report concludes that a more recent timeframe should be considered when estimating betas for the purpose of regulatory determinations, to ensure the beta estimates reflect the risks companies face going forward. This approach is consistent with established UK regulatory precedent.

Reasons not to consider lower frequencies

Section 4 of the NERA report explains that there are a number of problems with relying on low frequency data, such as quarterly returns, as proposed by MPW.

- When using lower frequencies – especially quarterly returns but also monthly returns – the use of a longer time series becomes necessary to achieve a sufficient sample size. This immediately leads to all the problems outlined in the section above.
- Even when using data across the full timeframe available, from 2000 to 2017, the number of observations under quarterly returns is considerably smaller than when using daily frequency even across a much shorter timeframe.¹⁶ This leads to less precise beta estimates including large standard errors around estimates and thereby ultimately increases regulatory risk for the regulated companies.
- When aggregating from daily to lower frequency returns there is a certain “flexibility” on the way to aggregate returns (e.g. for weekly sampling, whether to use Monday to Monday, or Tuesday to Tuesday, etc.). The report illustrates that that changing the starting point for aggregating returns at lower frequencies may have dramatic effects on the estimated beta when using quarterly returns, whether using on OLS or a GARCH model. The data presented by NERA at Section 4.2 of their report clearly demonstrates

¹⁶ Even 18 years of quarterly data gives only 72 data points, compared to c.250 data points per year using daily data.

National Grid Electricity Transmission plc	National Grid Gas plc
Registered Office: 1-3 Strand, London WC2N 5EH	Registered Office: 1-3 Strand, London WC2N 5EH
Registered in England and Wales, No 2366977	Registered in England and Wales, No 2006000

the sensitivity of Severn Trent, United Utilities and National Grid plc's asset beta based on the aggregation used to derive quarterly data. This calls into question whether weight can be placed on beta estimates calculated using lower frequency data. As there is no accepted consensus on the appropriate aggregation mechanism, and no single 'correct' day to choose for the start of the sampling, the use of lower frequencies introduces arbitrariness into the method and thereby increases regulatory risk.

- The report also highlights that the use of low frequency data together with GARCH models appears inconsistent as GARCH models were developed to reflect certain statistical properties in financial data that are largely removed when returns are aggregated, suggesting that GARCH models should be applied to high frequency data, if at all.¹⁷

Reasons not to use GARCH models

Section 5 of the report discusses the use of time-series models to estimate CAPM beta and raises a number of issues with the use of GARCH models, including:

- The potential practical difficulties with use of GARCH models, which are computationally demanding and complex, to estimate betas;
- As GARCH models allow for time-varying distributions, there are then different ways of aggregating the instantaneous betas into one single figure on which the cost of equity may be set;
- If beta estimates were derived from GARCH models rather than the standard OLS approach, they would be much less transparent, accessible and reproducible by different stakeholders, which would increase the risk that they are seen as arbitrary and reduce their legitimacy.¹⁸

Section 5.1 compares the standard OLS results for equity and asset beta with estimates from alternative approaches, and shows that once consistent time periods and data frequencies are used, the results from standard OLS estimation and the MGARCH model set out by MPW become very similar. The lower beta estimates MPW present appear to be primarily driven by their choice of time frame and the aggregation of returns, not by the introduction of a new MGARCH model, though as explained above neither we nor NERA consider their recommendations in relation to time period and data frequency to be justified.

Estimating betas using daily data, an approach consistent with existing regulatory practice, and a five year estimation window, NERA find no convincing evidence of lower betas for UK regulated firms than allowed at recent reviews.

Given that GARCH-type models are complex and difficult to implement and reproduce and that once consistent time frames and data frequencies are used the results from the MGARCH model are similar to those from standard OLS, there seems little justification for adopting the less transparent GARCH approach to estimate comparator company betas.

¹⁷ A second, more technical argument against the use of GARCH-type models in conjunction with aggregate returns as MPW propose is also explained. This concerns the use by MPW of the same (M)GARCH model to daily, weekly, monthly, and quarterly returns. However, it is not immediately apparent that a GARCH-type model that is a suitable representation of returns at a given frequency is still a suitable representation when the returns are aggregated to a lower frequency. This issue has received continued attention in the academic literature.

¹⁸ As Burns points out in Appendix F of the UKRN report, in their 2003 report Wright, Mason, and Miles argued that there are many different ways to model time variation and that it would be a problem of getting a beta estimated with a time-varying technique to be widely accepted as a standard estimate.

NERA also conclude that use of high frequency data (e.g. daily) and recent time periods (e.g. two to five years) should be used in estimating an asset beta range.¹⁹

TMR

Ofgem propose to estimate the expected market return by considering the historical long-run average of market returns, as well as the findings of the Competition Commission in Northern Ireland Electricity (2014) and estimates from forward-looking approaches such as those considered recently by regulators such as Ofwat and CAA.²⁰

We support the weight of evidence remaining with use of a long term historical approach for TMR. However, the TMR range of 5% to 6.5% range proposed by Ofgem is too low as it does not take into account the full range of information, for example, from Bank of England and Bloomberg DGMs which show TMR in excess of 7%.

We also do not agree with the UKRN assertion that the TMR range is depressed based on setting returns for a “*relatively long (e.g. 10 year) time horizon*” as compared with the length of the period for which returns data is available.

In addition, we include a report by NERA which investigates the inflation adjustment applied in deriving real TMR estimates and suggest that alternative methods should be used to estimate this adjustment.²¹

This evidence leads us to conclude that the TMR has not significantly declined since RIIO-T1/GD1, a view which is supported in both the Oxera report for the ENA²² and NERA in their paper reviewing the evidence for TMR for RIIO-2.²³

TMR range of evidence

We support the weight of evidence remaining with use of a long term historical approach for TMR. The main evidence from the Oxera and NERA reports which reinforces using a long-term approach for TMR is:

- The expected TMR exhibits a stable mean over time, and thus historical returns provide an unbiased measure of the expected future return.
- Use of historic data is less dependent on the subjectivity or multiple potential sources of input assumptions.

We support the use of the CAPM approach as the primary methodology for estimating a cost of equity range but recognise that no single approach provides a definitive point estimate of the TMR. We therefore also reference alternative approaches as crosschecks so that the final estimated TMR range and the point value that is chosen within this range are reasonable and defensible.

One such crosscheck is to reputable, independent and published estimates of TMR derived using the DGM. As with CAPM, DGM relies on input assumptions which are not directly observable.

¹⁹ Report included at Appendix 4 of this response: “Review of UKRN report recommendations on beta estimation”, NERA Economic Consulting, 1 May 2018, Page 17

²⁰ “RIIO-2 Framework Consultation”, Ofgem, March 2018, Paragraph 7.33.4

²¹ Report included at Appendix 5 of this response: “Review of UKRN recommendations on the appropriate inflation index for estimating historical TMR”, NERA Economic Consulting, 1 May 2018

²² “The cost of equity for RIIO-2, A review of the evidence, Prepared for Energy Networks Association”, Oxera, 28 February 2018, Page 2

²³ “Total Market Return for Determining the Cost of Equity at RIIO-2”, NERA Economic Consulting, 3 November 2017, Page 10

Hence, different practitioners derive different values. CEPA,²⁴ PwC²⁵ and EE for Ofgem and Ofwat have derived values of 4.4% to 5.8% which are essentially based on the same assumptions for short term and long term dividend growth. Both CEPA and PwC assumptions are based on FTSE dividends growing in line with short term and long term nominal growth in UK GDP. As noted by NERA *“There are a number of reasons why this is likely to be a flawed assumption, not least because FTSE companies derive over 70 per cent of their earnings from outside of the UK, where forecast GDP growth is higher than the UK”* and *“UK GDP forecast growth rates in the short term are somewhat depressed (due to factors like Brexit) and are substantially lower than independent analyst forecasts of dividend growth rates for FTSE stocks”*.²⁶

Given the need to estimate the values of input parameters to the DGM, it may be preferable for the regulator to source DGM estimates of TMR from reputable and independent organisations who regularly publish DGM results for wider usage, rather than a bespoke modelling result used to inform a price control. Bloomberg have published an estimate of TMR for many years. The Bank of England has a DGM model which gives estimates of ERP and whilst the corresponding RFR estimate has not been published, plausible values²⁷ can be combined with the ERP during 2017 to give a view of TMR. Both Oxera for the ENA²⁸ and NERA²⁹ use Bloomberg and Bank of England data to conclude that the TMR range derived using the DGM approach is in the range of 7% to 8%.

Finally, we note that the CMA’s TMR range in the 2014 NIE Appeal Determination was from 5% to 6.5%, although the CMA commented that the lower end of the range wasn’t as well supported as values higher in the range. The CMA referenced DMS data and DGM estimates from the Bank of England in its response. The latest information for the Bank of England data shows higher TMR estimates than those at the time of the appeal outcome mainly due to improved modelling. This again suggests that the 6.5% TMR forecast determined by the CMA at that point should be increased.

Historical averaging of returns

Returns are typically expressed in terms of the arithmetic average or the geometric (compound) average. Both the UKRN and CEPA reports note the dependency of the TMR estimation on *“the choice between geometric and arithmetic returns”* and the relationship of this choice to the time horizon over which the cost of capital is to be set. The UKRN report is based on a time horizon of 10 years.

The relationship between the weighting of the arithmetic and geometric means and the full time period of historic data is set out in Blume formula, as quoted in the UKRN report.³⁰ We note that a time horizon of 10 years results in a value substantially closer to the arithmetic mean than implied in the UKRN report and observe that the negative adjustment of 0.5% proposed in the UKRN report is more indicative of a 40 year investment horizon. For a 10 year horizon the fact

²⁴ “Review of cost of capital ranges for Ofgem’s RIIO-2 for onshore networks”, Cambridge Economic Policy Associates, February 2018, Annexes E and F

²⁵ “Refining the balance of incentives for PR19”, PwC, June 2017, Page 81

²⁶ “Total Market Return for Determining the Cost of Equity at RIIO-2”, NERA Economic Consulting, 3 November 2017, Pages 8 and 9

²⁷ Based on long-run spot index-linked gilts during 2017.

²⁸ “The cost of equity for RIIO-2, A review of the evidence, Prepared for Energy Networks Association”, Oxera, 28 February 2018, Page 27

²⁹ “Total Market Return for Determining the Cost of Equity at RIIO-2”, NERA Economic Consulting, 3 November 2017, Page 9

³⁰ Blume (1974) and Cooper (1996), as referenced in footnote 111 of *“Estimating the cost of capital for implementation of price controls by UK regulators”*, Wright, Burns, Mason and Pickford, March 2018, Page A-93

that the return is significantly weighted to the arithmetic return is further borne out by academic and DMS literature as referenced in Oxera's report (Box 2.1).³¹

We therefore conclude that the TMR range should be more aligned with the arithmetic average returns.

Inflation adjustment

The appropriateness of the UKRN's approach for estimating the real CPI-deflated TMR based on historical CPI inflation since 1900 and the associated RPI-CPI wedge since 1900 depends on the reliability of the historical CPI inflation data. The data used by the UKRN in deriving the historic CPI index has been investigated by NERA as detailed in their report at Appendix 5.³²

The report raises serious concerns with the robustness of the historical CPI inflation data used to estimate the RPI-CPI historical wedge:

- For the period 1950-1988, RPI existed as an official national statistic while CPI did not. For this period, the Bank of England data relies on a paper by ONS which back-estimates historical CPI to 1950 based on official RPI data. However, the ONS paper itself raises serious concerns with the reliability of such back-estimated CPI series noting that "*The method provides only approximate results and there is no way to determine how accurate our method is as sufficient data to calculate the CPI do not exist prior to 1987*".
- For the period 1915 to 1949, the data used for both CPI and RPI are based on an identical source and data and hence cannot possibly be relied on as a basis of estimating two different inflation indices CPI and RPI and the associated RPI-CPI wedge.
- For the period 1900-1914, the Bank of England data relies on two different papers by Feinstein. Given the ONS quote above that there is no reliable data to calculate CPI prior to 1987, it appears that this concern is likely to only magnify when going back to the period prior to 1914 when neither RPI nor CPI indices are available as official statistics. In addition, the results show a negative RPI-CPI wedge over this period which casts further doubt on the validity of the data as measures of RPI and CPI inflation respectively.

We therefore conclude that the only period over which CPI and hence the RPI-CPI wedge can be reliably calculated is since 1989 when CPI became an official statistic. In particular, we find that the estimates of the RPI-CPI wedge based on Bank of England data prior to 1950 are particularly unreliable, given that for most of this period the RPI and CPI series are based on the same data, hence producing a zero RPI-CPI wedge by construction.

If real returns are to be set in reference to the CPI index, historical real returns should be based on the historical RPI index and an estimate of the RPI-CPI wedge based on reliable data since 1989.³³

The combination of these effects and the incorporation of the additional evidence from the Bank of England and Bloomberg leads us to consider that the TMR range proposed by Ofgem does not correctly reflect all available information and that TMR has not significantly declined since RIIO-T1/GD1.

³¹ "The cost of equity for RIIO-2; A review of the evidence, Prepared for Energy Networks Association", Oxera, 28 February 2018, Page 19

³² Report included at Appendix 5 of this response: "Review of UKRN recommendations on the appropriate inflation index for estimating historical TMR", NERA Economic Consulting, 1 May 2018

³³ For the period prior to 1950, neither RPI nor CPI exist as official statistics, which requires an estimate of historical inflation. To date, regulators have relied on DMS data, which use an "index of retail prices" and which has been interpreted as an RPI-like measure of inflation. An alternative would be to rely on Bank of England data based on the Feinstein papers as it appears this more closely resembles an RPI-like measure of inflation than CPI.

Risk free rate

The framework consultation proposes to estimate the RFR using the current yields on long-dated index-linked government debt. It may be reasonable to look at yields on long-dated index-linked gilts as part of the suite of evidence to inform the RFR, but it should not be assumed that this information alone will always give a reliable measure of RFR.

The approach to estimating the RFR should involve bringing together a wider range of available information on the yields on both index-linked and nominal gilts, considering both past and current values and the future rates implied in recent forward curves. This information should then be considered holistically, in the context of the relevant market context, to give a plausible forward-looking estimate of RFR for the time period covered by the relevant RIIO-2 price control. This approach is consistent with the regulatory best practice that has been applied in the past across different sectors.

Whether weight is attached to spot rates or trailing averages (or more appropriately estimates of future spot rates or trailing averages), values based on single-day spot rates or single day forward curves should not be used and as a minimum rates should be averaged using data from at least several weeks or months, as this will avoid unwanted effects from very short-term fluctuations which could undermine the legitimacy of the approach.

Indexation of RFR during the years of the price control could still be introduced, but this should be implemented in a way that is consistent with this past practice rather than arbitrarily attaching undue weight to a single measure and piece of information.³⁴ The introduction of indexation should not be used as a justification for ignoring some sources of relevant information in the estimation of RFR. Clearly, if the RFR is being set for the full duration of a price control in advance, rather than being indexed each year, it would be more appropriate to consider future rates or future trailing averages from forward curves rather than the current spot rates or current values of trailing averages.

In addition, as Oxera noted in their report for the ENA, the observation of negative real yields raises the question of whether it is appropriate to translate current market evidence directly into the RFR assumed when calculating cost of equity in a regulatory context: *“A negative real interest rate implies that investors will receive less money in real terms in the future than they invest today. This is not consistent with economic theory, which predicts that negative real interest rates will not persist in equilibrium because consumers have incentives to bring forward their consumption. UK economic regulators have been cautious in placing significant weight on current gilt yields in reducing the allowed RFR to zero or below”*.³⁵

Oxera's report also notes that while interest rates are low, they exhibit marked volatility, such that setting the allowed RFR for RIIO-2 exactly equal to the level of forward rates may not be appropriate, particularly in the context of current unusual monetary policy and uncertainty in relation to the pace and timing of future changes in the quantitative easing programme and interest rates. The volatility of gilt yields suggests that the current market evidence may not remain representative of capital market conditions in the RIIO-2 period, especially as several years are yet to elapse before the start of the RIIO-2 price controls.

CEPA's range for RFR as reproduced in the framework consultation therefore looks too low, albeit we recognise that the estimate for this parameter will be updated nearer to the start of the price control.

³⁴ For example, an initial best estimate for year 1 of a price control might involve applying an agreed set of weightings to several different estimates based on yields for different tenors of gilts and both index-linked and nominal gilts, with an uplift to account for known distortions. This calculation could then be repeated each year to give an updated value of risk free rate to be applied to the following price control year.

³⁵ “The cost of equity for RIIO-2, A review of the evidence, Prepared for Energy Networks Association”, Oxera, 28 February 2018, Page 12

Cost of equity range

Recognising the level of subjectivity involved in estimating the input parameters of the CAPM model and as previously accepted by Ofgem, there is value in sense-checking the results against those from alternative methodologies. Ofgem proposes crosschecks of the estimated cost of equity to market-to-asset ratios (MARs) and OFTOs but OFTOs have very different risk profiles and MARs are difficult to interpret (as concluded in the UKRN report and by NERA) due to sizeable and uncertain distortions.³⁶ A more direct crosscheck are the estimates of cost of equity based on the independent and published DGM for listed utilities.³⁷

The CMA, the appeal body for energy licence modification appeals, has set out in previous determinations how it has estimated the allowed cost of equity, and in a similar way this generally involves bringing together available information from different approaches and carrying out a number of sense-checks or cross-checks to ensure that the final point estimate that is used for a price control is well-justified.

³⁶ Implications of Observed Market-to-Asset Ratios for Cost of Equity at RIIO-T2, NERA Economic Consulting, 1 Dec 2017, Page 10

³⁷ “The cost of equity for RIIO-2, A review of the evidence, Prepared for Energy Networks Association”, Oxera, 28 February 2018, Section 5.2

Appendix 3 – RIIO-T2 Beta and Risk Assessment, NERA Economic Consulting, 30 April 2018

Report included as a separate attachment

Appendix 4 – Review of UKRN report recommendations on beta estimation, NERA Economic Consulting, 1 May 2018

Report included as a separate attachment

Appendix 5 – Review of UKRN recommendations on the appropriate inflation index for estimating historical TMR, NERA Economic Consulting, 1 May 2018

Report included as a separate attachment