National Grid House
Warwick Technology Park
Gallows Hill, Warwick
CV34 6DA

Stathis Mokkas
Electricity System Framework
9, Millbank
London
SW1P 3GE

10th March 2016

Dear Stathis,

***Future arrangements for the electricity system operator: its role and structure* – response by National Grid**

National Grid welcomes and supports Ofgem's consultation on future arrangements for the electricity System Operator (SO). As set out in the joint statement of the Department for Business, Enterprise and Industrial Strategy (DBEIS), Ofgem and National Grid on 12 January 2017, the SO has an important role to play in this significant time of transition to a smarter energy future, and is well placed to take on a greater facilitating role, delivering value to consumers. National Grid plc supports the SO taking on this role, enabling our SO and Transmission Owner (TO) businesses to focus on their respective priorities, serving the UK economy and meeting the needs of their customers.

The proposed outcome of legal separation to deliver greater independence for the SO within the National Grid Group is the right solution at this time and strikes the right balance between costs and benefits for the end consumer.

The UK energy market is changing rapidly as a result of the rise of new technology, and changes to environmental legislation and government policy. A significant increase in the penetration of renewable generation, particularly connected to the distribution networks, has rendered the task of system balancing significantly more complex, requiring the SO to seek new innovative models to facilitate system balancing. The operational environment faced by the SO is now considerably different to that envisaged at the time of the RIIO-T1 settlement.

The SO has risen to the challenge. We are transforming our operations through investment in new products and infrastructure, leading the development of new technologies such as battery storage through the Enhanced Frequency Response tender, and taking on additional roles such as the Electricity Market Reform (EMR) delivery body. Our Power Responsive campaign has put a spotlight on Demand Side Response, providing a medium through which the energy industry can remove barriers to markets. These initiatives have already resulted in significant progress towards the transformation of the energy sector, continuing to address the challenge of the energy trilemma whilst meeting the needs of our customers and stakeholders.

Although the integrated TSO has made good progress on these challenges, there are further upcoming challenges which will be best addressed by a more independent SO which can take a more holistic view of the energy system. This includes considering a whole system approach, facilitating onshore network competition, and leading the evolution of markets delivering such outputs as stronger investment signals, more competition and better access to markets and networks for market participants.

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Greater independence will enable the SO to prioritise these new challenges, identifying robust and innovative solutions to continue to support the delivery of a secure, low-carbon future as economically and efficiently as possible. As the smarter system materialises it brings additional complexity; sufficient investment in system operation will be needed to fully realise the associated consumer benefits of the smart, flexible and whole system future[1].

We have listened to industry stakeholders and, building on the feedback received, we are committed to increasing confidence in how we discharge our role by embracing greater independence for the SO. We believe that a legally separate SO within the National Grid Group is the right outcome for the end consumer at this stage; allowing us to address any perceptions of conflicts and continue to provide value for consumers. The SO should also preserve whole energy system benefits (e.g. gas and electricity SO interactions), maximising existing and future interactions across energy vectors.

We believe we can demonstrate robust business separation, which will provide Ofgem and industry with the comfort that a National Grid SO can act independently of the TO business. We will appoint three Sufficiently Independent Directors to the NGSO Board, and implement specific compliance reporting and separation arrangements, to foster industry confidence in the SO's impartiality.

We welcome the publication in parallel of Ofgem's consultation on the 2018-2021 SO regulatory and incentive framework and the commitment in the 12 January statement of intent to fund efficiently-incurred costs that result from this policy decision. To accelerate the industry transition that Ofgem describes requires an investment in the SO and strong financial incentives that maximise the benefits to consumers of a legally separate SO within National Grid Group. We look forward to working with Ofgem to adequately finance and deliver this significant industry change. Separately, we have submitted two documents to support a deeper understanding of the costs associated with delivering our new roles and legal separation.

We look forward to working with industry and key stakeholders to design and establish the new transformative roles and responsibilities for a more independent SO. By working together, and investing in the SO at this critical time, we can unlock significant value for the UK consumer and put the UK energy system on a path to a secure, sustainable whole-system transformation.

Yours sincerely,

Chris Bennett

Director, UK Regulation, National Grid plc.

[1] Evidence of the benefit of additional flexibility to the system and taking on a whole system approach has been widely analysed and includes analysis carried out by Imperial College for the National Infrastructure Commission and for the Carbon Trust. The consumer benefit of additional flexibility on the system could be as significant as £3bn to £8bn per annum by 2030 depending on the scenario.

Response to consultation questions

Chapter Two

Question 1: What are your views on our proposed objectives for the SO (set out in paragraph 2.1)?

National Grid agrees with the proposed objectives listed in the consultation document and the aspiration to realise benefits for the end consumer through contributing to the delivery of a smarter energy system.

The objectives are a step change from the current licence objectives of the SO. They are necessary to enable a corresponding transformation in the way that the system is operated to unlock the value of flexibility, deliver a shift to whole system thinking and realise associated benefits for consumers in delivering the new and smarter energy system.

The objectives will be delivered through an evolution of the existing SO role in four main areas as described in the consultation document. Our Future Role of the System Operator (FRSO) programme (described in greater detail in the response to question 2) supports the delivery of the transformative changes needed to deliver the objectives.

The FRSO programme is, however, not standalone. It builds on the investments already made by the SO (e.g. Electricity Balancing Services infrastructure, Power Responsive Campaign) as part of our day-to-day work in maintaining an economic and efficient system. Through these initiatives, we are already responding to the challenges of the changing system with progressive and forward-thinking initiatives.

The outputs of the FRSO programme represent an accelerated transformation of the electricity industry to realise additional benefits for consumers from embracing the value of flexibility and whole system thinking. This puts the FRSO programme outside the mandate agreed in RIIO T1 and implies that both the SO's transformation and the SO/TO separation require funding.

A new regulatory and incentive framework is also needed to reflect the SO's role in delivering value for consumers in this new environment. We welcome Ofgem's separate proposal to review the SO incentives framework and provide our views on this in our response to the consultation on *Future arrangements for the electricity SO: the regulatory and incentive framework*[2].

Question 2: What are your views on our expectations for how the SO should seek to achieve these objectives?

We broadly agree with the expectations on how the enhanced SO can achieve the objectives referred to in the consultation. We see the creation of a legally-separate SO within the National Grid Group as an enabling factor allowing the SO to take on a holistic perspective that will deliver value for the end consumer and for industry. We also agree with the delineation of the four roles as well as the case for change in each of the roles.

[2] https://www.ofgem.gov.uk/publications-and-updates/future-arrangements-electricity-system-operator-regulatory-and-incentives-framework

In response to the four roles where transformative changes are needed and new areas of responsibilities are described, we have created the FRSO programme. The programme is ambitious, innovative and will deliver a set of outputs which are the first steps towards a smarter and more flexible energy system and the realisation of the changes called for in the consultation.

- The Flexibility workstream creates efficient and functioning markets to unlock the value of flexibility, accessible for all technologies and business models.
- The Network Competition workstream facilitates onshore competition, identifies options for the efficient development of the transmission systemand provides clear and timely investment signals for market participants.
- Our Whole System workstream will facilitate delivery of economic and efficient solutions across the transmission-distribution boundary.
- Our Level Playing Field workstream supports the creation of commercial frameworks to facilitate the delivery of these initiatives in flexible, whole system operation, focusing on efficient network charging and access.

The benefits of the whole programme are significant. Evidence of the benefit of additional flexibility to the system and taking on a whole system approach has been widely analysed. A study carried out by Imperial College for the National Infrastructure Commission and for the Carbon Trust shows that the consumer benefit of additional flexibility on the system could be as significant as £3bn to £8bn per annum by 2030 depending on the scenario. This whole system benefit includes:

- A reduction in high carbon generation capacity onto the system displaced by other capacity or demand;
- A reduction in curtailment of renewable resources;
- Optimising the use of network assets and therefore reducing the capital costs; and
- Reducing wholesale peak prices.

The sum total of the benefits of the FRSO programme to the end consumer is greater than the sum of its parts as there are many interdependencies between the programme. For example, the delivery of the flexibility workstream's outputs on optimising the use of distributed energy resources (DER) and the whole system workstream's outputs on releasing additional capacity onto the system effectively start to build the commercial principles through which the future role of DERs can be understood.

We set out below our views for each of the four SO roles described in the consultation.

Role 1: Acting as a residual balancer

Outcome to be achieved: *We will promote the market reforms required to allow participants to more effectively self-balance. Thereby reducing our role as residual balancer and increasing the efficient allocation of resources through effective, market based platforms.*

Prior to 2016, the SO balanced energy supply and demand close to real time accounting for 2-3% of the market activities. The operability requirements (e.g. inertia and voltage support) were inherently provided by large scale plants.

Today, the operability situation is different, and the SO's role as residual balancer has started to become more significant. There are an increasing number of one-off incidents when the SO is managing a greater proportion of market actions. For example, on the 7th August 2016 at 05.00, a period of low demand led to SO actions accounting for nearly 50-60% of activities. The balancing actions taken by the SO at those times include energy balancing as well as ensuring sufficient voltage support is available.

Although the incidents themselves are one-off and relatively infrequent, they are increasing and symptomatic of a substantial change to the SO's operations and fundamental changes to market characteristics in recent years.
We want to address this change, and work to minimise our role again. Self-balancing is already facilitated and enabled by the implementation of the recommendations from Ofgem's cash out reform. We agree that encouraging market participants to further self-balance would increase efficiency and reduce overall costs to consumers. We also agree that improving the information provided to market participants encourages the market to self-balance.

The SO contributes to parties self-balancing by releasing information to the market, much of it developed with the industry through a stakeholder engagement process. Information with a longer-term focus includes our annual Future Energy Scenarios (FES) and the System Operability Framework (SOF); the latter providing a view of our future system needs. In the shorter-term, our Outlook Reports provide within-year forecasts to the industry of anticipated gas and electricity supply and demand.

To facilitate system balancing in the very near-term we have a range of tools including products and services which have created consumer value. Examples include:

- Successfully tendering for 201MW of Enhanced Frequency Response (EFR) to provide frequency response in sub-1 second which is delivering approximately £200m of consumer value;
- Reduced the MW threshold for Firm Frequency Response (FFR) to encourage more competition in provision of services.

Building on the above, we are proposing as part of the FRSO programme to further encourage self-balancing, taking into account the changes in market fundamentals.

Our proposed work on structural market changes (delivery of a structural market change paper), alongside a review of BSUoS charges, will deliver new market frameworks that will incentivise new operational, and self-balancing behaviours. This could include better reflection of regional scarcity or a less socialised imbalance regime[3].

[3] Review of residual cashflow reallocation cashflow

The SO will facilitate the delivery of these structural changes, recognising the different relationships which need to exist between ancillary services, the Balancing Mechanism, the wholesale and capacity markets. There are some aspects of this broader review which the SO is proposing to lead such as trialling auctions as well as more real time procurement and alternative market structures (e.g. regional market trial). We will also be recommending additional market design considerations such as how new technologies and business models could be commercialised, options for new business models to access the Balancing Mechanism and the way distributed resources are integrated in market arrangements.

Through the above, the SO is taking on a greater role in the evolution of markets, particularly as balancing markets and ancillary services revenues have a more significant impact on the business case of market participants (e.g. new business models such as storage developers).

Our greater role also includes providing early insights and recommendations to the market and industry on how efficiencies can be gained in the wholesale and other related markets. We are therefore aiming to transform the information and the way we provide information to market participants (more details available in the next section, balancing services).

We also agree with the fact that Distribution Networks will need to be more actively managed to facilitate this future energy vision. We outline our thoughts on this below under 'facilitating whole-system outcomes'.

Role 2: Facilitating competitive markets

Balancing Services

Outcome to be achieved: *The SO will deliver access to markets for all business models, significantly increase the number of providers offering services to the SO and to other market participants; thereby increasing competition. We will also make the information we provide more transparent and user friendly for participants, further reducing barriers to entry.*

Ofgem sets out that the SO should focus on ensuring its suite of balancing services are transparent, accessible and work to maximise competition. The emergence of new technologies and business models, particularly those relying on multiple contracting strategies, drive different interactions between supply, demand and networks. This requires more complex system operation with the SO's actions having a substantial impact on other markets.

Through extensive engagement with our stakeholders and customers, we recognise the need to improve the simplicity of our services and improve the information we provide to market participants. Our flexibility work under the FRSO programme has been designed to deliver simplicity and transparency. Improved information and simplification of our products accompanied by commercial and regulatory change provide the basis of our transformational programme of work.

Our System Needs and Product Strategy is a new framework through which the SO will contribute to the provision of strong commercial signals to market participants. The framework recognises the rapidly changing landscape we are experiencing, providing a view of the SO's requirements in the 1-5 year timeframe. While the first insights will come out in March/April 2017, subsequent updates will be carried out as and when required, recognising that changes, both in terms of system needs and in terms of changing landscapes need to be communicated quickly and efficiently.

The simplification of our products and services will unpick a complex set of established assumptions. These have worked well to date, in a system which consists of predominantly large scale

transmission connected plants – and now need reforming to be fit for purpose in the decarbonised and decentralised future. This is a significant business change activity both for the SO and for industry which has substantial commercial, regulatory and process impacts. The simplification of products will include standardising existing products, the potential creation of a more optimal set of markets as well as reviewing contracts, testing and compliance amongst other activities. We also propose to trial new procurement approaches such as the use of auctions and more real time procurement; the learnings then helping to refine our product strategy. The trialling of auctions and more real time markets is aligned with the draft European Electricity Balancing Guidelines.

We recognise the importance of engagement as part of this process and our Power Responsive Campaign is now extending its remit to cover storage. In addition, our newly formed Business Development team within Commercial Operations is actively working with new market entrants to support their specific needs. We recognise that there are new business models and new technologies that need something different from the SO. Our new team is helping these new market entrants to understand how to bring them to market; we have interacted with nearly 200 parties in the last 8 months since the team was created.

An improved website and changes to how historical information and data is provided to market participants completes the new way of working for the SO in relation to its providers.

We understand the benefits to providers of offering services to multiple market participants (e.g. SO and DNO or SO and Suppliers). This will require new interactions with those market participants which is elaborated on in the *Facilitating whole systems outcomes* section below. We are working with all partner DNOs using a design by doing approach to understand how providers are able to offer multiple services to different market participants.

Industry Codes

Outcome to be achieved: *The SO will support Ofgem through providing a framework that allows industry to work through code changes in a more strategic, expedient and agile way.*

As both Ofgem and the Competition and Markets Authority (CMA) have identified, the current suite of industry codes can form a barrier to competition as they are difficult to understand and navigate particularly for new entrants. Reform would benefit consumers through reducing barriers to entry into markets and delivering more competition. We think that the SO is ideally placed to support this change and recognise a number of ways our existing approach can be enhanced.

The consultation document discusses how the SO could take on a more active role in the code landscape and we agree that this could be a direction of travel for the SO.

Setting the foundations for this role, the Level Playing Field workstream (part of the FRSO programme), addresses transmission network charging arrangements and includes broader thinking on network charging as well as access rights to support Ofgem in the creation of appropriate commercial frameworks that support a whole system approach.

The Level Playing field workstream is designed to meet the objectives outlined in the consultation, focusing on more sophisticated stakeholder engagement and robust analysis to deliver more agile thinking and expediency on code changes.

We are developing a new stakeholder engagement approach including establishing a stakeholder forum and steering group where both small and more established entities can participate on an equal footing. We recognise the challenges and constraints associated with the existing code modification processes; the stakeholder forum could provide a medium through which key issues can be worked through in a more agile, expedient and cost effective way. We will be learning lessons from our successful Power Responsive programme that has used similar tools to engage and enable the demand side community and storage.

We will also be developing our analytical support capabilities to better support code changes. We will provide more robust narratives and analysis of the impacts of code changes to all stakeholders, including identifying the benefits or costs to the end consumer, thereby helping market participants and customers to navigate the change process.

To demonstrate our new approaches, we will be working in partnership with Ofgem to address the immediate concerns identified as part of Ofgem's targeted review of transmission network charges. The targeted review provides an opportunity for the SO to showcase how it can support the industry code evolution in an agile way.

This new role also creates more opportunities for the SO to work with other regulated entities such as DNOs, particularly where there may be complex interactions and interdependencies. This is the case for network charges but also in areas such as flexibility, transmission/distribution interfaces and whole system challenges.

EMR

Outcome to be achieved: *Continue to execute our role as the EMR delivery agent, and play our part in ensuring that the capacity mechanism delivers an efficient outcome for UK consumers.*

We note Ofgem's view that there is no need for major changes to the way the EMR delivery body delivers its functions going forward.

There will be a continuing need to ensure that participant data acquired by the SO in performing its role as EMR Delivery Body remains confidential to the Delivery Body. We will explore how greater separation of the SO from the rest of the National Grid Group would present opportunities for a more holistic engagement with policy-makers and industry on questions relating to development of all markets, aligned with our new SO enhanced role on leading the evolution of markets.

Through its whole system workstream, the FRSO programme aims to activate distributed energy resources and support market access for all market participants, wherever they are connected in the network. With this, we anticipate that more, and different, types of capacity will be able to compete in the capacity mechanism auctions, contributing to secure supplies and delivering further value to the end consumer through greater competition.

Our whole system workstream will also contribute to refining our demand forecasts. Demand forecasting is increasingly challenging as accurate distribution data is needed in a timely manner to allow the SO to take account of the increasing levels of weather dependent generators connected to the system. The SO produces accurate demand forecasts as part of its duties. The forecasts allow the SO to minimise the costs of system balancing and help market participants to self-balance. We are continually working to improve our demand forecasting capabilities; our whole system workstream will facilitate the partnership with DNOs to deliver improved demand forecasting capabilities.

We understand Ofgem's desire for the SO to increase its focus on producing accurate Capacity Market (CM) auction target recommendations and de-rating factors. We already have a transparent process for developing CM recommendations and de-rating factors that is scrutinised by Ofgem, BEIS and BEIS' Panel of Technical Experts (PTE). Our recommendations are published in the detailed Electricity Capacity Report[4]. The PTE holds us to account and supports continual improvements through oversight as well as external challenge and review.

Supporting this independent scrutiny and challenge, National Grid is very active within European circles through both ENTSOE and ENTSOG. This network enables TSOs to discuss energy market design issues and align on best harmonised methodologies on various topics across Europe including capacity adequacy modelling, derating anddemand forecasting.

We have been developing our interconnector modelling capabilities for both the CM as well as for the NOA and FES processes over the past few years. We continue to engage with our European partners to understand the likely contribution of interconnectors during scarcity situations. In all our FES scenarios, current peak interconnector flow is around 2500 MW/year[5] and we see this remaining at least constant over the coming years under all scenarios. In future we propose to increase our participation in working groups which contribute to ENTSO-E's Mid Term Adequacy Forecasts and take a more leading role in this area. This will lead to more accurate analysis and a consistent approach of interconnector's contributions to security of supply at system peak, which could lower consumer bills.

Role 3: Facilitating efficient whole system outcomes

Outcome to be achieved: *We want to achieve greater clarity in the roles and responsibilities of the SO and DNOs as well as the delivery of a set of agreed planning and operational processes which facilitate whole system decisions, thereby reducing costs for the end consumer.*

Whole system challenges are already here. The transmission and distribution systems act as an integrated entity with large and small parties and consumer behaviour all playing important roles in their overall management. In our 2016 System Operability Framework we highlighted many system challenges, including more variable transmission demand, an emergence of regional issues and a need for greater flexibility to deliver both active and reactive power requirements. These will increasingly require the SO to take a whole system approach to planning and operating an economic and efficient system for consumers, and for distribution networks to be more actively managed; the whole system workstream within the FRSO programme aims to test those aspirations.

We agree that there is a need for greater co-ordination across transmission and distribution networks to ensure that outcomes are efficient from a whole system perspective. This includes:

- When managing infrastructure needs, investigating how to accommodate distribution solutions to issues identified via the network options assessment (NOA) process.
- When managing operability needs, expanding on how to accommodate distribution solutions to issues identified via the system operability framework (SOF) process.

[4] https://www.emrdeliverybody.com/Lists/Latest%20News/Attachments/47/Electricity%20Capacity%20Report%202016_Final_080716.pdf

[5] Future Energy Scenarios 2016, Figure 4.2.3t

As a general principle, we believe we should look for efficient distribution system solutions to transmission system problems; and vice-versa, which requires an improvement in our mutual understanding of the impact of transmission on distribution; and vice-versa. For example:

- Ensuring sufficient data and information is exchanged between transmission and distribution to identify the consequences of operational decisions on both types of network.
- Enhancing the visibility and controllability of distributed generation resources, such that they can help resolve operational challenges.
- Clarifying the roles and responsibilities of parties across the transmission/distribution boundary.

In the whole system workstream, we are seeking to achieve these objectives through bilateral engagement with DNOs as part of Regional Development Programmes, which focus on:

- Enhancing our transmission and distribution modelling approach to better understand the capabilities of the networks, with the aim of maximising their efficient use.
- Developing technological solutions to the issue of visibility and controllability of distributed energy resources.
- Pursuing commercial treatment of curtailment options where appropriate, to drive operational decisions that are in the best interests of consumers.

In addition, we, along with our partners UKPN, were pleased to be awarded network innovation competition funding for the Transmission and Distribution Interface 2.0 project (Power Potential), which will investigate the extent to which reactive power services, traditionally offered by transmission-connected generation to the SO for management of transmission system voltage, can be provided by distribution-connected energy resources.

Our approach is to design by doing, where we will seek quick wins and plan longer-term actions to deliver sustainable change. We are seeking to engage the wider community on a proactive basis via established routes; for example, the Energy Networks Association and their re-focused project structure for delivering improvements across the Transmission and Distribution Interface. We will also be engaging with key stakeholders through such channels as the Power Responsive Campaign alongside the flexibility workstream.

Finally, our whole system workstream represents the first few steps towards a GB whole energy system (gas, electricity, heat and transport). We believe that the potential synergies across whole energy systems as well as potential unintended consequences need to be understood as we move to a smarter energy system.

We note Ofgem's reference to potential new licence conditions or supporting guidance to reflect any changes to the SO's role in helping to facilitate and coordinate with other parties across the Transmission and Distribution interface. We agree that this may have a beneficial effect in clarifying roles, responsibilities and expectations. In addition, we note that, whilst existing regulatory frameworks allow for whole system solutions to be progressed where they can be demonstrated to be economic and efficient, it may be beneficial to review arrangements as part of RIIO-T2/ED2 process to ensure they are best able to support a whole system approach.

Role 4: Supporting competition in networks

Outcome to be achieved: *Through our Network Options Assessment tool, we aim to deliver a robust and transparent process to facilitate onshore network competition and continue to provide*

recommendations on investments to secure the economic and efficient evolution of the transmission system.

We support competition in the delivery of transmission network infrastructure where it is shown to add value and is in the interests of consumers.

Through the Network Options Assessment (NOA) process, we seek to facilitate the co-ordinated, economic and efficient planning and development of the electricity system (onshore, offshore and cross-border transmission networks). We welcome Ofgem's proposal to also use the NOA process to identify projects that are likely to meet the criteria for onshore network competition, and we have taken the first steps in this area with NOA 2. This role of information provider to the market, and facilitator of competition, matches the SO's strengths, skills and direction of travel.

The proposals set out in the consultation form part of the NOA development programme. Some of the specific roles and requirements of the SO will not become clear until further detail and clarification of the tender model is available. These roles will be further developed with industry and Ofgem in a way which delivers value to the end consumer and aligns with the SO skill set.

We propose to extend our existing NOA capability to include a methodology and set of principles to embrace and facilitate the projects that are provided to the SO as options into the NOA process and assess those that should be subject to a competitive process (including development of procedures, software and changes to codes, as appropriate). This would assess the following competitive network development options:

- submitted by incumbent TOs and, potentially, CATOs (or prospective CATOs).
- SO-driven solutions such as no build or market-based solutions; technical, cross TO boundary solutions; and, potentially through collaboration with market participants to develop 'hybrid' alternatives.
- submissions from DNOs or other market participants.

We also plan to extend the existing NOA modelling suite to consider 24 hour, 365 day requirements and will assess tools that will provide us with both that capability and potentially allow the SO to target those points of system need (be they time of day, year or by location).

We are refining our decision-making processes to add additional layers of robustness to our recommendations, both through additional analysis and the introduction of a decision making committee to examine those recommendations where the analysis results provide a less definitive answer and where additional SO expertise should be applied.

Significant stakeholder engagement will be needed to determine how the above proposals are implemented as part of NOA 3 and beyond.

Many stakeholders have positive views towards increased network competition. The SO is uniquely placed to bring together the market and market-based tools to meet the technical requirement and capabilities of the system. By working with all stakeholders, we can provide context, clarifications and develop the appropriate processes, code and licence changes to provide an efficient way forward.

Conclusions

The FRSO programme is ambitious, innovative and represents an accelerated transformation of the energy industry, and therefore outside the mandate agreed in RIIO T1. Realising this transformation should be financially recognised both through funding the transformative FRSO programme as well as funding the enabling legal separation programme.

Question 3: Do you agree with our proposals for what licence changes are needed to support these objectives?

The consultation recognises that the SO role needs to evolve in four key areas. New or enhanced outputs will be delivered by the SO. In either case, delivery of the objectives will either require supporting licence modifications or, clarification as to which other existing licence condition will support the delivery of the objectives.

Many of the proposed outputs under the FRSO programme represent new tasks for the SO which impact on people, systems and processes. These are:

- leading the broader evolution of markets which will have significant implications on established processes as well as the skills and resources needed;
- the delivery of a simplified suite of products and services and a change to the framework through which we deliver transparency to market participants effectively unpicks decades of assumptions and requires substantial process, skills, resources, cultural and organisational change in the way the SO operates;
- facilitating a more agile process to deliver holistic changes to industry codes, in line with the strategic direction set by Ofgem, would require more resource than our current role;
- taking a whole system perspective, managing the flow of information and investment across the Transmission and Distribution boundary which will require changes to licences, standards, processes and operating procedures; and
- facilitating network competition which requires a step change in skills, people, processes and potentially systems.

Taking the four SO roles in turn:

- **Residual balancer:** The consultation document states no licence change is required in order to deliver this expanded obligation and that the relevant behaviours should be delivered under existing licence obligations. In the absence of a specific obligation in relation to the expanded role of residual balancer, we would welcome clarification as to which existing licence obligation(s) will support the delivery of this output. On 1 March 2017 Ofgem published a statutory consultation on proposed licence changes to support and implement SO incentives for 2017/18. These licence changes include changes to Condition C16 (Procurement and Use of Balancing Services) of the NGET transmission licence. If we use the new C16 conditions to support the delivery of the expanded residual balancer role, this should not preclude appropriate funding and incentives being made available for this role.

- **Facilitating competitive markets**: The document states that no licence change is being considered at this stage. In the absence of new obligations in relation to this expanded role we would welcome clarification as to which existing licence obligation(s) will support the delivery of this output. We would also reiterate the point made above with regard to the reliance on existing licence conditions to support the delivery of the objective. Reliance on pre-existing licence conditions (Condition C16 or otherwise) should not preclude appropriate incremental funding for the delivery of the expanded SO role.

- **Facilitating whole system view**: The document states that a change to the licence or additional guidance will be required to support the delivery of objective. We agree with this conclusion.

- **Facilitating competition in networks:** The document recognises the need to change the NOA methodology to capture the SO obligation to identify projects that meet competitive criteria and SO led options. This is therefore a new objective which is being taken forward as part of extending competition in transmission work.

Question 4: What are your views on the extent to which we should set specific or general obligations for the SO?

General obligations (such as that in Condition C16(1) at present) naturally provide less regulatory certainty and more scope for interpretation. Nevertheless, Condition C16 has worked well to date as the SO has constantly innovated and provided value for the end consumer, while delivering a secure and efficient system.

In terms of setting requirements for the SO, we believe that an appropriate balance between principles-based requirements (delivered through financial incentives) and obligations (delivered through KPIs) is the best approach to maximise the value delivery to consumers.

With this balanced approach, financial incentives give freedom to act and drive longer term value for consumers by leveraging the structure of the for-profit SO, aligning shareholder and consumer interests while encouraging innovation and leadership. Well-designed KPIs promote transparency in delivery and provide simple metrics of success that demonstrate consumer value.

The balance between incentives and obligations is also important to ensure that there is sufficient flexibility for the regulated party to choose different approaches and innovate in an uncertain world.

The proposed modification of Condition C16 as part of the SO incentives for 2017/18 shows an appetite for providing specification around what is currently a general obligation. The specifications are currently being implemented as part of the 2017/18 incentive arrangements and are accordingly associated with existing SO roles.

FRSO obligations may be delivered by new, licence obligations or we may have to rely on existing conditions to deliver. Any reliance on clarified C16 (or any other existing condition) should not imply that funding and incentives to deliver those roles already exist.

In developing more clarity on obligations, we look forward to moving to a more collaborative approach with Ofgem, in line with the SO's legally separate status and the important role we have to play in enabling the transition of the energy system. It is important that our expectations are aligned, now and as the landscape evolves.

It is our view that tools such as guidance documents and open letters should be considered to deliver these clarifications, as licence conditions are not necessarily sufficiently agile to incorporate changes in expectations of the SO.

Chapter Three

Q1. Do you agree that greater separation between NG's SO functions and the rest of the group is needed?

As set out in the BEIS, Ofgem and National Grid joint statement of 12 January 2017, the SO has an important role to play in this significant time of transition to a smarter energy future, and it is well placed to take on a greater facilitating role, delivering value to consumers. National Grid plc supports the SO taking on this role, enabling our SO and TO businesses to focus on their respective priorities, serving the UK economy and meeting the needs of their customers.

The proposed new roles for the SO will have a fundamental impact on the nature and scope of the SO. Separation will enable the SO to effectively deliver these roles. We are confident that we will implement, manage and comply with the agreed new arrangements resulting from legal separation, building on our existing experience in dealing with transformative change.

We recognise that adopting this legally separate model does not remove the possibility of moving to alternative structures in the future. However, we are confident that the proposal is the right solution at this time and strikes the right balance between costs and benefits for the end consumer.

Q2: What are your views on the additional separation measures we are considering?

We support these proposals. We believe they are proportionate, striking the right balance between cost, timeliness and transparency, resulting in an SO that is able to discharge its existing and future accountabilities. This new NGSO will be financially stable and appropriately independent, allowing it to deal with all industry participants, including NGET, on an equal footing. The proposal does not lose the synergies between the gas and electricity SO, nor the benefits that come from shared services providing lower cost services to the SO.

The licenced entity

We support the proposal to develop specific licence arrangements to govern the relationship between the new NGSO and the remainder of National Grid's businesses. Our view is that the existing EMR and ITPR ring fencing measures will continue to apply in relation to NGSO but that they should not be replicated in the TO licence of NGET which should in principle align with other existing TO licences.

Governance of the SO

As is set out in the tripartite statement, we agree that it is appropriate that the NGSO Board should have a different constitution to the NGET Board and also that no members of the NGSO Board should also sit on the National Grid plc board or the boards of other National Grid plc electricity subsidiary companies. We believe that these additional measures will further enhance the independence of the SO from the National Grid TO.

In order to strengthen the independent nature of the enhanced SO, we propose to appoint, at least three sufficiently independent directors to the NGSO Board (instead of two) in order to provide

additional assurance and oversight of the NGSO's business by directors that are sufficiently independent of National Grid Group[6].

To provide additional assurance that NGSO business separation obligations are in place and are being complied with, we recognise the need for the SO to establish a compliance sub-committee chaired by a sufficiently independent director. We believe that this obligation, when combined with other measures, will further enhance the independence of the SO from the National Grid TO and provide confidence to stakeholders. We are open to views from stakeholders as to the function and activities of the compliance sub-committee.

Financial separation and credit worthiness of the SO

As stated in the document, a separate NGSO entity will be required to produce statutory accounts and, as a transmission licensee, the NGSO entity will also be required to prepare and publish regulatory accounts and maintain associated accounting records.[7]

Licence requirements mean that consumers, TOs, OFTOs and other counterparties of NGSO will need to be protected from the consequences of the SO becoming financially distressed. Credit worthiness and financial ring fencing obligations will be required to ensure this. We note the current intent to require the SO to take all reasonable endeavours to maintain an investment grade rating and would expect the costs of obtaining and maintaining such a rating to be funded as incremental costs of separation.

Due to uncertainties in the size and nature of the charge base, we estimate that SO revenues could vary from the expected value by approximately £100m each year.[8] This uncertainty is projected to increase in the future due to potential changes in charging methodologies, giving a total cash flow volatility of approximately £500m.

Under an ISO design, a cash flow volatility risk of £500m per year would be extremely expensive to manage. A full redesign of the industry revenue charging approach would be required which would require the solvency of the ISO to be guaranteed by Government. Our solution for our legally separate SO within the National Grid Group is for a parent company guarantee which we believe is in the best interests of the end consumer.

We note Ofgem's position that the cost of providing financial resource to cover the cash flow issues a separate SO will face is currently embedded within NGET. We agree with this in principle, but this only applies so far as charging arrangements remain the same as they were when the RIIO-T1 price controls were set. Changes to the charging arrangements in the remainder of the RIIO-T1 period could impact on the level of cashflow risk the SO is exposed to and would require a review of the cost for the SO. Notwithstanding this, we would expect that the allowances are reviewed more specifically for future price control periods.

We believe it would be appropriate to provide a specific allowance to the SO for the costs of its financial facilities. These facilities would carry a cost and as the SO licence will prohibit the licensee

[6] There will be six NGSO Board members (three SIDs) plus the CEO, who will have the casting vote.
[7] Due to Condition B1 (Regulatory Accounts) of its licence
[8] This assumes that the SO remains the entity which collects all revenue on behalf of the TOs and retains the cashflow risk of variation between TO allowed revenue and revenue collected

from giving or receiving a cross-subsidy, a fair price would have to be paid for the provision of these facilities within the group. If NGTO transmission service revenues are to be reduced by a compensating amount, then we suggest a financing service from NGTO to the SO is explicitly consented as a permitted activity of NGTO. This would demonstrate NGTO is not providing a cross-subsidy.

Employee Separation

In general we agree with the principle that, in order to minimise any perceived conflicts of interest, SO employees should only work on SO matters and TO employees should only work on TO matters. The proposed approach to manage the transfer of employees between SO and TO is supported and builds upon our existing experience in managing this compliance requirement. We also recognise that for SO management, annual bonus arrangements should be based on specific SO metrics rather than wider group performance.

We agree that shared services should be provided to and from NGSO on the same basis that they are currently provided to other National Grid group entities. Existing shared services are provided from licensees to other licensees and other National Grid group companies today (with relevant Authority consents) and such arrangements extend to the provision of such services from NGET to relevant other competitive businesses. It is agreed that these existing arrangements should also be applied in relation to the provision of shared services to the NGSO entity. We recognise that for services of a more strategic nature, such as finance, legal and corporate affairs, an extension of the existing business partner model will be required, with the business partner providing a secure gateway to the NGSO for the wider support function. This will ensure strategic decisions taken within the NGSO are not shared within the wider group. Such arrangements will be subject to tight controls around system access, information use and disclosure.

We accept that our regulation function may be an exception to this conclusion on shared services, as one of the main goals of legal separation is for the NGSO to look and feel different to how it does today as part of NGET. A key part of meeting this goal will be how the NGSO shows up and facilitates ongoing industry and regulatory change. To this end we would accept the NGSO having its own regulatory function working on behalf of the SO. The existing regulation function would continue to be a shared service providing services to NGET and the Gas Transmission business and providing guidance to the plc Board on matters affecting NGSO which are shareholder reserved matters.

Alternative arrangements, such as setting up stand-alone support functions within NGSO, would create additional costs and destroy the synergies from the existing shared service model. Any perceived conflicts can be suitably managed through system, information access controls and existing professional obligations surrounding the avoidance of conflicts of interest.

Information ring-fencing

We agree with the principle that, in order to create a level playing field, the National Grid TO should only have access to information which is made available on an equivalent basis to other TOs through, for example, the NOA process.

We welcome Ofgem's view that the full separation of complex operational systems that are currently shared as between the NGET TO and SO functions is not viable. In the absence of such

separation, we recognise that controls will need to be implemented in respect of the information that the NGET TO function can access. This should be restricted to information relating to its own TO assets. NGET is already subject to a number of existing information ring fence provisions (for instance in relation to EMR information and Relevant System Planning Information) that rely on tight controls around system access. Accordingly, we are confident that such measures can and will be implemented successfully in order to provide the appropriate level of assurance in respect of access to existing shared information systems. Considering the requirement for eventual hard separation as part of future IS system replacement, we look forward to working with Ofgem and customers to determine the appropriate degree of separation as part of our T2 proposals.

Physical Separation

We recognise and accept that as a consequence of the separation of the SO function from NGET and the establishment of NGSO as a separate legal entity, NGET TO and NGSO will be operating independently and this should be reflected in their physical working environment. As is reflected in the tripartite Statement, National Grid will need to ensure that electricity SO employees are physically separate from National Grid TO employees.

Considering our main headquarters in Warwick, we believe that sufficient physical separation can be achieved through making modifications to our existing building. These modifications would include removal of any through-access to the residual building, a separate entrance and equivalent separate employee facilities including a canteen. Such an approach will be significantly more economic and efficient, avoiding both the additional cost of procuring additional office space, disruption and cost of moving employees and leaving elements of existing office space stranded. We agree that moving to a separate building is likely to take longer to implement and we would seek early confirmation of the eventual solution to allow delivery of the physical solution in line with the rest of the programme.

We have a proven track record with our EMR Delivery Body function that demonstrates that we can implement and maintain physical separation at the same geographic site that is sufficient to provide assurance to stakeholders and the regulator alike and we anticipate that such an approach can provide the same level of assurance in relation to the physical separation of the SO and TO entities.

Q3: What are your views on our proposed approach for implementing these changes?

We agree that separation of the existing NGET SO and TO functions can be achieved using existing legal provisions within the Electricity Act 1989 and the transmission licence.

Proposed process for separating the licence and transferring assets

We understand that section 7A (Transfer of licences) of the Electricity Act 1989 can be used to introduce modifications to the elements of the licence being transferred and also to the elements of the licence that are to be retained. This will facilitate the modification to the SO licence being transferred to the new entity from NGET and the TO licence that will be retained by NGET. As a

result it is our understanding that all modifications to both licences resulting from the partial transfer process will be brought forward under s7A rather than s11A of the 1989 Act.

We understand that NGET will be required to submit a s7A transfer request to the Authority in order to commence the licence transfer process. We look forward to working with Ofgem in order to agree the scope and content of this request. Paragraph 3.12 sets out Ofgem's current expectations as to what such a transfer request would contain. We would like to understand the level of detail that would be required in such a request. For instance, it may be that we simply refer to the conditions that need to be transferred, retained and / or modified or it may be that we need to scope out and provide drafting for the required modifications. It would be helpful to have a shared understanding of what is expected here at an early stage.

We agree with the general structure of the NGSO and NGET licences resulting from the partial transfer process as outlined in paragraph 3.81.

We recognise that, as part of the licence transfer process, the existing RIIO-T1 settlement for NGET will need to be split across the NGSO and NGTO companies and associated licences. We agree that this will entail an appropriate allocation of revenue, incentives and outputs across the two entities with consequential changes to the RIIO-T1 price control financial instruments but that this exercise will not extend to re-opening the overall NGET RIIO-T1 settlement. However, as acknowledged in paragraph 3.26, the Authority will consider further the funding of economic and efficient costs incurred by NGSO and NGTO as a consequence of the separation exercise.

Given the scope of issues under consideration and also the proposed implementation date of full licence separation of 1 April 2019 (referred to in paragraph 3.80), we believe that an informal consultation on proposed licence modifications ahead of the statutory consultation under s7A would be beneficial and aid transparency.

We recognise that NGET will need to give to the Authority not less than two months' notice of its intention to dispose of relevant assets to the NGSO entity under condition B3 (Disposal of relevant assets and restriction on charges over receivables) of the transmission licence. Such assets are defined as those forming part of the national electricity transmission system and any control centre for use in conjunction therewith. In this context, relevant assets for the purposes of condition B3 are likely to consist of the latter only.

The Authority's consent under Condition B3 may be subject to conditions. It would be helpful to understand any likely conditions that the Authority would consider imposing on such consent and, in particular, whether the matters discussed in paragraphs 3.16-3.25 of the consultation would be imposed as conditions precedent to such consent.

<u>Certification</u>

We recognise that the new NGSO entity will, as a transmission licensee, need to be certified as independent by the Authority under section 10D of the Electricity Act 1989. Accordingly we will need to submit an application for certification under section 10B of the Act in due course. We will work with Ofgem to discuss and agree the optimal time for the submission of such a request as part of the

separation programme. Our initial view is aligned with what is outlined in paragraph 3.19 in that we do not believe that the certification and designation of the NGSO entity as a TSO will impact on the existing certification and designation of NGET as a TSO. We will however keep this analysis under review.

Consequential changes resulting from separation

Industry codes will need to be modified in order to reflect consequential changes arising from separation of the SO from NGET. These modifications will be to the CUSC, STC, Grid Code and BSC in order to recognise the NGSO entity as the SO and the NGET TO as a new Transmission Owner. Our view is that the most substantive changes will have to be made to the STC (and the STC Procedures).

In the absence of primary legislation to implement the separation of the SO from NGET, we recognise that consequential changes to the industry codes will need to be taken forward under existing industry code modification arrangements. As such we recognise and agree that NGET will have responsibility for engaging with industry to support bringing forward a coordinated set of code modifications using existing code modification procedures.

Elexon is an uncontrolled subsidiary of NGET pursuant to the provisions of the BSC. As the role of Elexon is set out in the BSC and the obligation in licence condition C3 to have in force the BSC is a SO obligation, we agree with the view in paragraph 3.23 that it is appropriate that NGET's current ownership of Elexon should be transferred to the new NGSO entity. Such a transfer would require a direction from the Authority under Section C, paragraph 2.2.3 of the BSC.

We will work with Ofgem as required in order to ensure the appropriate allocation of roles and responsibilities under the European Network codes as a result of the consequential GB code changes.

Contract novation

Contracts that have been entered into by NGET which relate to its SO role and function will need to be transferred from NGET to the new NGSO legal entity. It is our current view that such contracts that have been entered into under or pursuant to the CUSC can be effectively transferred from NGET to NGSO by modifying the CUSC Framework Agreement in order to recognise the NGSO entity as "The Company" under the CUSC and bilateral agreements pursuant to it. These changes will be brought forward under the CUSC consequential changes referred to in paragraph 3.20.

SO related contracts that have not been entered into, pursuant to the CUSC, (such as commercial balancing services agreements and NGET non-regulated contracts with third parties) will also need to be novated from NGET to the new NGSO entity. This process will be taken forward through bilateral discussion with relevant contract counterparties.

Funding arrangements due to separation

We agree that separation does not require a reopening of the price control. We also agree that costs incurred as a result of separation (both one off and enduring) should be recoverable as they were not envisaged at the time the price control was set. We believe that both the act of separation and the transformative FRSO programme need to be adequately funded.

Chapter Four

Question 1: What are your thoughts on our proposed approach for implementing the proposed changes set out in this consultation?

We agree that many of the changes outlined in the consultation document can be introduced now.

Our responses to the questions above highlight the work that we are already doing and the other outputs that, with appropriate allowances, will start to facilitate the transformation of the energy market.

It is important that both the act of separation and the transformative FRSO programme are adequately funded. We have submitted further detail on our programme of work, its outputs and cost separately.

As this transformative programme delivers on its promises, the SO's regulatory framework needs to incentivise the new ways of working which are being created.

Our desire is to be genuinely innovative in designing the new regulatory framework for 2018-2021 which accompanies the FRSO programme. It is an unprecedented opportunity to put in place a new approach that helps to enable the transformation of the energy system and drives the SO to deliver benefits to consumers throughout the transition to a smarter energy system.

We welcome the publication in parallel of Ofgem's consultation on the 2018-2021 SO regulatory and incentive framework and the commitment in the 12 January statement of intent to fund efficiently-incurred costs that result from this policy decision. To accelerate the industry transition that Ofgem describes requires an investment in the SO and strong financial incentives that maximise the benefits to consumers of a legally separate SO within National Grid Group. We look forward to working with Ofgem to adequately finance and deliver this significant industry change. Separately, we have submitted two documents to support a deeper understanding of the costs associated with delivering our new roles and legal separation.

Question 2: What further evidence should we consider in finalising our impact assessment of these proposals on the SO's roles and level of independence?

We believe that a full impact assessment and cost-benefit analysis (CBA) of the legal separation and additional SO roles should be undertaken. This should focus on quantifying as much of the benefits as possible but recognise, as the consultation document does, that some of the benefits will be difficult to robustly quantify at this stage.

Such an assessment showcases the benefits of a legally separate SO within the National Grid Group compared to other alternatives such as the current status quo and an ISO model to the end consumer. This can also be used as a basis for appropriately valuing the future incentives portfolio.

We note that the current policy is due to be reviewed in September 2019. Legal separation only commences from April 2019. We would strongly suggest an interim review of FRSO outputs in September 2019 with a full review of the model at the end of the RIIO-T1 period in 2021. This interim step in September 2019 may necessarily be more focused on shorter term, qualitative

benefits than longer term financial benefits. It would however be a useful checkpoint in ensuring that work has progressed as expected to the benefit of the end consumer.

In the summary of 'Interventions and Options', it is stated that greater flexibility, new technology and level playing field can help low carbon business models. Our programme of work will help reduce the barriers to entry for all market participants. However, it is important to be mindful that the SO is obligated by licence conditions to be technology neutral and it is possible that due to regulatory or other policy changes, the aspiration to facilitate low carbon business models cannot be achieved. We believe that a clear understanding of the roles and responsibilities of Ofgem, BEIS and the enhanced SO will need to be agreed.

We also feel that the consultation document conflates the benefits of legal separation with the expected consumer outcomes which come from the FRSO programme and the SO's enhanced roles. As stated in the introduction to our answer of Question 2 in Chapter 2, we see the creation of a legally-separate SO within National Grid as an enabler to the SO taking on its enhanced role.

Risks and uncertainties in relation to the Impact Assessment

We feel that there are a number of risks and uncertainties that are not currently listed in the consultation document.

- Longer term trends in our sector are characterised by an increasing integration of energy vectors, for example, decarbonisation of heat and transport putting pressure on electricity infrastructure. Under our current model, the gas and electricity System Operators work together as one SO. There are synergies coming from "dual fuel" teams that support the operational gas and electricity teams in providing an overarching perspective on customer engagement, market insights, industry strategy and business change. Through legal separation of the electricity SO from the TO, there is a risk that the synergies from the gas and electricity SO working as one organisation may be lost, and this could compromise a longer term future of integrated energy thinking that is needed to continue to realise value for consumers in a fully integrated whole system approach.

- A suitable regulatory framework needs to be in place to allow the SO to carry out its enhanced role and recognise its new status. An alignment of consumer and shareholder benefits creates a powerful incentive for the SO to be agile, innovative and use its experience and expertise to drive through lasting transformational changes. This framework should appropriately balance the level of risk and reward placed on the SO.

- The funding that the SO receives for carrying out its enhanced roles must be timely, especially given that the new roles and responsibilities will be a step-change for the SO against a paradigm shift in the energy market. Failure to fund the SO in a timely manner may mean that the proposed programme of work cannot be carried out in full, resulting in reduced value creation for the end consumer.

- It is also important that there is a funding mechanism in place for contingencies for unforeseen events, for example if new infrastructure is needed as the various areas of the programme are being delivered. The FRSO programme is ambitious. There is no pre-prepared blueprint and there may well be unforeseen costs which have not been accounted for.

- Regulatory and policy risks need to be factored in. A change to government policy or a delay in regulatory change (e.g. enhanced RIIO framework taking account of whole system approaches) presents a risk to the SO in relation to its expected deliverables over the next two years. It is important that Ofgem and BEIS remain committed to the enhanced SO role and provide the support needed to deliver the agreed outcomes.

- The UK's withdrawal from the European Union and possible exit from the Internal Energy Market (IEM) represents a certain level of uncertainty for the GB energy system. There will inevitably be a period of uncertainly whilst details of the withdrawal are negotiated; the outcome can have a significant bearing on cost to end consumers over the next few years.