Appendix A Format for submissions

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Question		Comment
Q1.	What is your view of the potential competition, reliability and efficiency benefits of more participation?	Moving from a monopoly business to a more competitive landscape should provide great benefits for the consumers in terms of electricity costs, additional services and more customer care in addition to reliability of service. It is important to ensure all market players have equal access to market and to market data.
Q2.	What is your view of the opportunities to promote competition and more participation in the electricity industry?	With the actual changes in the energy sector and the move towards decentralization and digitalization, it is a good opportunity to redesign the market structure and allow more participation in the electricity industry. Interfaces for necessary data should be standardised and unrestricted to all market participants. Such an interface could be either a physical interface in e.g. Smart meters, or on cloud, where market participants could access the relevant consumer data to provide new services for consumers. An example of such interface is Datahub being built in Finland, where “data sent between electricity consumers, sellers and distribution companies will be stored in a datahub, where it will be equally available for all market operators.” More information available here: http://www.fingrid.fi/en/customers/datahub/Pages/default.aspx
Q3.	What other issues might inhibit efficient mass participation? Please provide your reasons.	As we see it in other parts of the world, an effective and fair market model for all participants is the key enabler for mass participation. If Smart meter data is not freely available to all market participants, it might lead to new market entrants to have to either buy the data from respective companies or install their own meters to customer premises in addition to the existing meters. This could be seen as an inefficiency or a hindrance to introduce new services

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		to the market. It is also worth considering who actually owns the data and who should determine who has access to it?
Q4.	What is your view of the opportunities for network businesses to obtain external help to provide aspects of the network service using competition or market mechanisms?	Network operators need to embrace the model (and mindset?) that services can be provided to them by other participants. We have many examples of well-functioning markets for T level and large suppliers (US, DE, UK, etc). However, now it is also aggregators, mid-size storage and DR which actively contribute. In the future we will also see a commercialization of D level services. With the right design of the market model and with the help of the new technologies, the myriad of grid-connected devices can become reliable service providers for network operations. In a recent white paper by European Energy Regulators, the key role of the Distribution System Operators (DSOs) is seen as neutral market facilitators. Regulators state that proper incentives should be guaranteed for the DSOs to efficiently integrate emerging new 3rd party services to their network operation. This paper is available here: https://ec.europa.eu/energy/sites/ener/files/documents/wp_acer_02_17.pdf
Q5.	What do you think are the main challenges to be dealt with to increase the use of competition in supplying network services? What are your reasons?	Transparency of the business might be a challenge. It might be difficult or not worthy for third party players to enter the competitions if some of the traditional players (grid or generation operators) will still have advantages in the new setup. It is crucial that the electricity market is flexible in welcoming innovative assets (even when small in size). These assets such as aggregated EV batteries can be introduced as part of the system but it requires innovation also from electricity distribution perspective. In the Attachment 1 (see below) we have raised a few thoughts from literature with the aim to understand what regulatory obstacles and opportunities should be considered when accelerating innovation while maintaining efficiency among distribution companies.

Question		Comment
		From what we understand, benchmarking analyses and dedicated innovation incentives have achieved good results in Europe.
Q6.	What is your view on whether open access is required and what would be the elements for an effective open access framework?	Open/non-discriminatory access is important to incentivise the new (especially small) players to participate in the business setup. Clear and fair grid connection rules as well as transparent and fair market environment should be provided to all players.
Q7.	How effective are the existing arrangements for open access? What are the problems?	If it is more general we can say that these rules in DK, DE, UK and some US ISOs are already quite well fine-tuned and optimized. There is also a significant effort taken now in US and EU to let (via aggregators) small DER participate in the market. Problems could be upfront cost to install ICT interface for market participation.
Q8.	What type of distributor behaviours and outcomes should the Authority focus on to understand whether changes are required to support open access?	Distribution utility/grid operator? Maybe the focus needs to be having affordable connection fees, especially for prosumers. For example, in some states of the US they charge 40USD/month for solar PV owners to compensate for reduced energy sales.
Q9.	What changes to existing arrangements might be required to enable peer-to-peer electricity exchange?	From a technical perspective, we need sources and demand being able to autonomously trade energy (AI). Another administrative aspect to exempt form T level fees in case peer-to-peer transaction does not go via T level. Actually it can be a multi-level system: within one radial LV feeder, between two LV feeders on the same s/s, between LV s/s on one MV feeder, etc. Also, there is the need to have someone running the peer-to-peer market platform. A new player or the distributor itself could take this responsibility. If the distributor is still in charge of the distribution system stability, then it should validate the output of peer-to-peer markets from a technical feasibility prospective, before the transaction is approved. The costs would be associated with setting up a system

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Q10.	What are the costs and the benefits of enabling peer-to-peer electricity exchange?	and entity to run the peer-to-peer markets. Technologically, there might be a solution to have everything integrated in the processors of devices, however this is far from current state of the art. The main benefits of a peer-to-peer market could be that most of the distribution grid issues can be solved with a (local) market mechanism, hence ensuring the lower cost of solving problems. Additionally, for small prosumers it is an opportunity to sell above FiT/PPA and for consumers to buy below utility prices. The business case will be motivated with a large difference El.price-FiT. For example, in Germany today it is up to 29-12=17 cents while in Switzerland it is 15-18=-3 cents.
Q11.	What is your view of the possibility for, and impact of, any current or future blurring of participant type? What are your reasons?	If roles and responsibilities of participants' type are not clear to all players, some (particularly non-regulated players) may take advantage of the flows in the setup. On the other hand, the regulated players may be hindered to find the best solutions for their business.
Q12.	What types of participation are or might be prevented because the party is not recognised as a participant? What are the potential impacts?	The main potential impact of not having all participant types represented will be the lack of services. For example, if solar roof top systems are not recognized as a participant type, then distributors may lack localized services which such systems could provide, i.e. reactive power control. On the other side excluding V-RES from active power related services may reduce the risk of getting to unstable situation. But when they will dominate their P contribution will be the must.
Q13.	What challenges might new forms of generation, such as virtual power plants, or small and dispersed generators, face in entering the market?	The new form of generation faces that challenge that is not (yet) threated as a recognized participant to the business. However, we are seeing a quick move towards recognizing them. Also, the minimum market entry levels are going down from 1 MW to 100 kW and most probably will further fall further. Although demonstration projects, technologies and existing running business show their respective benefits, the (majority of) market models do not recognize them as a participant. As a consequence,

Question		Comment
		their business case (and bottom line) is affected, while on the other hand the other participants in the energy market may lack beneficial services. Another challenge of the new forms of generation is their competitiveness with the old forms of generation and among themselves. Today we see they can only compete at retail price level being frequently 5-10 times that of the wholesale market. As the market starts to get crowded, the non-competitive players are destined to vanish.
Q14.	What changes might be required to the rule book to facilitate the emergence of virtual power plants or demand response?	Treat them fairly on the market model, in the same way as that of any other player. They will then need to invent themselves to create a profitable and sustainable business.
Q15.	Would the functioning of the market for hedges and PPAs and the availability of finance be improved if there were greater transparency of long-term prices and greater standardisation of terms and conditions for long-term contracts?	Certainly.

Attachment 1

Short literature review for promoting innovation and security of supply

As electricity distribution companies are natural monopolies, their economic incentive to include new technology or to include new services to benefit their system security is heavily dependent on the regulatory framework that they are subject to. Rapidly evolving energy market in itself therefore does not give full incentive to react to the transformation, without changes in the respective regulatory framework.

The previously mentioned need for change has been noted in multiple academic sources elsewhere in the World, when the change in energy sector has been seen inevitable. What follows is quotes from relevant sources.

"--we need a substantial re-examination of the model of electricity regulation that has been so successful in the UK from 1991 to 2007. Climate change concern and its associated policy implications are so major that it would be irresponsible not to ask whether our current regulatory model is fit for policy. This is because the current model existed in a world where the focus was on exploiting the efficiency gains that could be had from introducing competition--"
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I suggested that economic regulation needed to focus on processes rather than outcomes. -- A key way to do this is shift responsibility for deciding on network investment requirements on to the buyers and sellers of network services. -- The regulator would move from being the key decision maker to being the auditor of decisions agreed between the buyers and sellers.
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New entrants into low carbon production and energy management need to be encouraged and concerns about the inaction of incumbents in providing network access or import/export services addressed. We need to recognize the possibility that existing incumbents may not be best placed to deliver the de-carbonisation of the electricity sector. -- more locally based companies may be more effective an engaging the public in demand reduction or the uptake of micro-generation; new business models may be more appropriate, such as those focused on energy service management, rather than ownership of hard assets.
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Private energy services companies based around smart control of heating and lighting and joint provision of security or IT services might also have a role to play in the future. Independent regulators, such as Ofgem, should have a key role in facilitating the entry of new players into the market, especially where these have strong political backing.
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The Future of Electricity (and Gas) Regulation, Michael G. Pollitt, University of Cambridge, 2008.
http://www.econ.cam.ac.uk/dae/repec/cam/pdf/cwpe0819%26EPRG0811.pdf

"Fixed-price contracts (or price caps) are good at providing incentives for managerial efficiency and cost minimization but bad at extracting the benefits of the lower costs for consumers. Cost of service contracts are good at aligning prices and costs but the costs will be excessive due to suboptimal managerial effort. Perhaps not surprisingly, the optimal regulatory mechanism in the presence of imperfect and asymmetric information will lie somewhere between these two extremes.
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In addition, price caps are often only one component of a larger portfolio of incentive mechanisms that include quality of service incentives
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Distribution service quality in the UK, at least as measured by supply interruptions per 100 customers and average minutes of service lost per customer, has improved as well in the UK since the restructuring and privatization initiative in 1990.This suggests that incentive regulation has not led, as some had feared, to deterioration in these dimensions of service quality."

Incentive Regulation for Electricity Networks, Paul L. Joskow, Massachusetts Institute of Technology, Article in CESifo DICE Report · October 2005
https://www.researchgate.net/publication/227357288_Incentive_Regulation_for_Electricity_Networks

"In many European countries, service quality is treated separately under quality incentive schemes and involves a rewards and penalty scheme (RPS) (CEER, 2012; Fumagalli, 2012). For example, in 2000, Italy introduced RPS followed by Norway and Great Britain in 2001 and 2002 respectively while France only introduced RPS in 2009.
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The review of different approaches to benchmarking networks suggest that undertaking robust benchmarking of network security can pose challenges to energy regulators.-- Nonetheless, network security output indicators can be defined and designed considering the existing data limitations and incorporate these in an incentive regulation framework. -- the allowed revenue or price path (Pt) of the regulated network company can be directly linked to the network security indicator in an incentive regulation framework."

Incentive Regulation and Utility Benchmarking for Electricity Network Security
Tooraj Jamasb, Durham University Business School, Durham, UK
Rabindra Nepal, School of Economics, University of Queensland, Australia
http://www.uq.edu.au/economics/abstract/522.pdf

According to EURELECTRIC, the European electricity industry associations Innovation incentives for DSOs - a must in the new energy market development, published in 2016, the regulatory framework of Great Britain is among the most innovation friendly in Europe.

"The energy mix is changing and the way the electricity networks operate needs to change as well. The RIIO framework allows companies to develop innovative projects which can make the grid smarter, allow faster integration of low carbon energy generation and help reduce consumer bills. GB network companies are satisfied with the framework, and have and will continue to develop innovative projects to deliver outputs for their customers." The paper is available here:
EURELECTRIC, 2016
http://www.eurelectric.org/media/285583/innovation_paper-2016-030-0379-01-e.pdf

For better comparison with the networks of New Zealand, the regulatory framework in Finland is developed to serve the more than 80 distribution companies in the country with population of 5,4 million and population density of 18,1 people per square kilometre compared to 17,2 in New Zealand. In EURELECTRIC's paper Finnish regulatory framework was ranked as neutral in giving incentive to invest in Smart Grids, whereas many countries including Germany was evaluated as "rather hampers". In Finland the reasonable rate of return for distribution system operators includes separate investment, quality, efficiency, innovation and security of supply incentives. The framework is available here:
Energy Authority, Finland, 2015
https://www.energiavirasto.fi/web/energy-authority/regulation-methods-2016-2023

ABB suggests, that based on the arguments made by academic sources as well as based on development of regulatory frameworks in Europe and elsewhere in the world, incentive based regulatory framework could accelerate innovation and efficient investment to new technology also in New Zealand.

Benchmarking analyses that evaluate companies' performance in comparison to similar companies seem to work well in introducing competition to natural monopolies. Together the dedicated incentives for innovation and e.g. security of supply and benchmarking to stimulate competition can result in efficient and innovative outcomes for the benefit of the consumer.