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Dear Anna,

EA Technology Ltd Response to the LCNF Consultation Process

Many thanks for allowing me the opportunity to submit our thoughts on the LCNF to you as part of your Consultation process. The attached document provides the detail behind our thinking and submissions but I would like to take this opportunity to highlight our key points for your consideration.

We believe that the introduction of the LCNF presents the DNOs with a unique opportunity to define, test and recommend a wide range of potential solutions, ahead of the need to deploy these as part of a large-scale implementation programme in the latter part of the decade. Our comments, in summary, are as follows:

Screening of Projects
We believe that there should be a clear framework for screening projects, Tier 1 and Tier 2, so that decisions made are informed, consistent and transparent, in order to ensure stakeholder confidence in the process.

Evaluation Criteria
We firmly believe that the sustainability, ease of replication and opportunities for market development should be the most important criteria in defining the quality of a LCNF project.

Intellectual Property Rights
We do not believe that substantial patentable IPR will be generated from the deployment of technologies in LCNF projects. Moreover, we believe that onerous IPR restrictions around LCNF projects will deter and constrain innovation.

Allocation of the Discretionary Reward
We are concerned that the current framework does not strike the right balance between collaboration and competition and between risk and reward, particularly for Tier 1 projects.

Kind Regards

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EA Technology response to the Low Carbon Network Fund

We welcome Ofgem's timely introduction of the Low Carbon Network Fund (LCNF) in DPCR5, and for the opportunity to respond to the model. It is clear that the industry is set for a period of unprecedented change over the course of the next decade. Whilst we would acknowledge that the DNOs are not in a position to decarbonise energy alone, their role in acting as a facilitator to allow changes to occur both up and downstream of their operation will be essential in delivering an economic and efficient system for UK plc.

With this in mind, we believe that the introduction of the LCNF presents the DNOs with a unique opportunity to define, test and recommend a wide range of potential solutions, ahead of the need to deploy these as part of **a** large-scale implementation programme in the latter part of the decade. To enable the required learning and assessment to take place, we believe the LCNF framework needs to be sufficiently open to allow innovation to take place, without getting too hung up on short term targets or measures, which could detract from the overall national objective.

It is apparent that the networks are going to face change, in a very short timescale and at a point where there is a significant shortage of engineering skills and expertise in the UK. To make the most of the skills and capability we do have, we believe that collaboration should be promoted and encouraged. The successful introduction of the Innovation Funding Incentive (IFI) in DPCR4 clearly demonstrated how Regulatory mechanisms can stimulate open collaborative behaviour between the Distribution Network Operators (DNOs), if structured in the right way.

The majority of our comments below are focused on arrangements for the Tier 1 funding, although may have application to the Tier 2 element as well.

Screening of Projects

All activity carried out under the LCNF will be screened, either by the DNOs in the case of Tier 1 or by Ofgem in the case of Tier 2. Further, Ofgem has retained the right to disallow funding under Tier 1 if it is inappropriately deployed.

We therefore believe that it is essential that all parties adopt a clear framework for screening projects. This will enable DNOs to confidently develop Tier 1 projects, and build confidence that the appropriate mechanisms are in place to enable Ofgem to screen potentially complex and subtly different Tier 2 projects.

We are not advocating that Ofgem and DNOs need to adopt the same process for the two tiers, although they may wish to to ease administration of projects. However, we believe that the development of a framework by Ofgem for Tier 2 activities; will serve to both facilitate the screening process and the communication of decisions for Tier 2 activities, as well as supporting the development of Tier 1 projects and ensuring that a diverse range of appropriate projects are put forward over the Price Review period. We believe that it is essential that decisions made by Ofgem using this screening process are informed, consistent and transparent, in order to ensure stakeholder confidence in the process.

The smartgrids area is vast and, whilst Ofgem have stated a desire to avoid unnecessary duplication, there are projects which may appear to be remarkably similar on the face of it but have significant learning points that need to be explored. One technology, for example may be appropriate to multiple, different applications and there are likely to be multiple technologies that can meet some applications. Similarly, the appropriate solutions for urban networks will differ from those for suburban and again from rural networks. DNOs, and the broader energy

community, need the opportunity to trial different solutions to identify the most technically suitable and cost effective solutions are identified that can be easily replicated beyond DPCR5.

Whilst we recognise that this is unlikely to be developed for the first year of the Tier 2 competition, we do believe it would be of value for this to be available for applications made in 2011. In developing our own thinking, we have produced an outline framework, which we believe could be adopted and developed to a higher degree of granularity with industry stakeholders over the next 6 months. Some examples of how this can be used, based on two live projects we are developing with DNOs as Tier 1 projects are also offered, in Appendix 1.

We have developed this approach to help us identify projects that are of interest to us, our customers and the UK at large. There are a number of questions that we are asking ourselves in developing proposals:

1. Does this increase knowledge and understanding? We want to avoid duplication.
2. Does this meet customer and consumer needs? We want to meet the needs of our customers, their customers and energy consumers.
3. Does this promote and encourage innovation?

Assuming we can answer yes to all of these, it's probably a good project. As time goes by, we will be increasingly looking for the gaps that we believe haven't been targeted and trying to develop solutions to meet these.

Evaluation Criteria

We firmly believe that the sustainability, ease of replication and opportunities for market development should be the most important criteria in defining the quality of a LCNF project. We believe that LCNF projects need to also develop 'mass market' solutions, in order for the innovative solutions being developed to achieve economies of scale in their production and distribution.

Whilst we are excited by the development of 'Smart Cities' and other iconic projects, we believe it needs to be as attractive to develop smaller projects that will be replicable and lead to transformation across the UK.

We believe that smaller-scale smart village or smart borough communities hold a key to highly replicable models, but the initial cost to develop and deploy are likely to be higher (on a £ / trial-customer basis). In order to avoid a skew to only city projects we would recommend that in addition to the direct financial NPV for a project, an assessment is made on the potential £ / customer at large scale implementation. Therefore any project appraisal should explicitly require an assessment of the number of similar communities / network topologies where the solution could be rolled out across the UK distribution networks.

Intellectual Property Rights

We do not believe that substantial patentable IPR will be generated from the deployment of technologies in LCNF projects. Moreover, we believe that onerous IPR restrictions around LCNF projects will deter and constrain innovation.

LCNF by its nature is positioned to look at higher Technology Readiness Level (TRL) activity, with the formal IP residing with individual inventors. Though the Innovation Funding Incentive, companies have learnt to negotiate benefits through discounts on products developed. This model leaves IPR with the inventor, but ensures that customers ultimately receive benefit, albeit indirect. In contrast, technology application tends to realise informal IP (know-how, etc), which is more difficult to protect or value, and certainly less likely to yield direct benefits which could be shared with the consumer.

This informal IP is of crucial importance if the outputs of the LCNF projects are to be transformed into wide-scale deployment, since it is the people who have the experience that will make this happen, whilst transferring their knowledge to others that work with them on the roll-out activities. Placing too strong a constraint on the flow of this informal IP will produce an unhelpful barrier to wide-scale deployment of the outputs of the LCNF projects and therefore might confound the aims of the LCNF.

The purpose of the LCNF is to help distribution networks facilitate the transition to a low carbon economy. The implicit assumption in the DPCR5 final proposals, is that without LCNF, this transision will not happen in a timely or efficient manner. Whilst a great source of pump-priming, the LCNF is a tiny proportion of the £150bn-£250bn cited in numerous industry publications (Ofgem included) that is needed to achieve this in a UK context over the next 15 years. The success of LCNF should therefore be judged by the successful transition to an efficient low carbon energy economy, rather than by a financial return to customers, resulting from the investment in networks via the LCNF. If the LCNF achieves its purpose, then customers will receive returns from a better, sustainable, low-carbon lifestyle together with lower individual tax bills resulting from a strongly growing low-carbon economy

We therefore suggest that Ofgem should not look to mandate rules or treatment of IPR within LCNF projects.

Criteria for the Allocation of the Discretionary Reward

Having reviewed Ofgem's LCN Fund Governance Document v.1 (24/02/10) on Tier 1 projects, and from our observations of DNO behaviour since its publication, we are seeing indications of closed, competitive mindsets creeping in around the development of LCNF projects. It would appear to us to be a result of:

1. The competitive nature of the funding, particularly for Tier 2 projects
2. The model of risk / reward

We are concerned that the adoption of mindsets that are too competitive may discourage collaboration across all innovation mechanisms, affect shared learning of project outputs in the longer term and ultimately reduce the benefit to the consumer if learning has to be repeated by different DNOs. Whilst we recognize the benefits of competition, we are concerned that too stringent focus on Tier 1 activities will result in consequences that contradict our understanding of Ofgem’s intentions.

Given the size and nature of Tier 2 projects, we understand Ofgem’s desire to ensure an emphasis on competition in these larger, iconic projects to ensure that potential inefficiencies are driven out from the start and the benefits to the wider customer base maximised.

Competition Vs Collaboration

In order that the innovation delivery mechanisms work effectively, LCN Tier 1 needs to act as the bridge between the open, collaborative model of IFI and the closed, competitive model of LCN Tier 2. We are already seeing evidence that DNOs are uncomfortable collaborating in Tier 1 projects, for fear that they give an unfair advantage to one of the collaborating DNOs if a Tier 1 project 'grows' into a larger Tier 2 project in the territory of that DNO. Ultimately, this behaviour could have a significant and detrimental impact on all innovation activities, including IFI.

We also believe that collaboration, in terms of Tier 1 projects, needs to be considered in its widest form to include multiple DNOs, Energy Suppliers, Equipment Manufacturers and other relevant partners as identified in our approach shown in Appendix 1. The opportunities and benefits arising from broader approaches will be in terms of shared learning, increased understanding, and more effective knowledge transfer. All of these will in turn create value for the UK plc by increasing the knowledge economy within the UK for developing low carbon network solutions.

The rules, as drafted, appear to fit with the needs of larger Tier 2 but do not seem to be the most appropriate for Tier 1. Whilst we accept that commonality between the mechanisms should be strived for wherever possible, Tier 1 projects, are quite different in character and scale than Tier 2. We believe there should be clearer differentiation between the reward mechanism for Tier 1 and Tier 2, plus a solid link to IFI, to avoid any unintended consequences on the delivery of innovation by network operators.

Risk / Rewards

We believe that Ofgem have introduced the LCNF to support and encourage DNOs to take risks in demonstrating more innovative solutions that will have longer term benefits for the UK in achieving its low carbon objectives. We are concerned that the risk:reward balance for Tier 1 projects as currently outlined is not quite appropriate to optimize the potential of the LCNF.

We see a fundamental issue with the removal of benefits attributed to savings a DNO may receive (allowed within the DPCR5 settlement), from LCN projects. The LCN mechanism needs to be structured to encourage companies to be rewarded for any risk taken by its shareholders. Taking this stance will limit the reward on offer to the 'discretionary reward', which makes the business case for the shareholders more difficult. The consequences of this are

- The LCN funding may not be spent, or
- Companies will suppress the benefits realised, or
- Projects will be focused on parts of the network where Solutions are not yet needed.

In our consideration of the LCN Fund Governance Document v.1, we are concerned that paragraph 4.20 may inadvertently disincentivise DNOs from adopting the behaviour that the LCNF was designed to encourage. The paragraph states:

> "*If revenue allowed for within the DPCR5 settlement has been saved through the undertaking the First Tier LCN Project, this must be used to cover the expenditure incurred on the First Tier LCN Project and so must be deducted from the Eligible First Tier DNO Expenditure*."

We understand that the purpose of this statement is to prevent a DNO from simply transferring an expenditure which is planned in their DPCR5 business plan into a First Tier LCN Project and then claiming a proportion of that saving in planned expenditure through the IQI mechanism. (In other words, avoiding "double accounting").

This is clearly appropriate, however the wording of the statement can be interpreted in a much wider context. For example, a DNO may be able to avoid a planned replacement of a Load Index 5 asset, by better management of the asset, including entering into innovative commercial contracts to manage the load on the asset and by establishing a dynamic rating for the asset. By doing so the asset would be no longer classified as Load Index 5 and therefore would not need to be replaced.

If the DNO establishes a First Tier LCN project to explore the feasibility of this approach, and it is successful, then the DNO should be allowed to claim the expenditure saving from not replacing the transformer through the IQI mechanism.

If this claim is not allowed, then there is little incentive for the DNO to take on the increased risk from the new operational regime. As there would be limited financial reward, but significantly increased risk, then it is likely that the DNO would not pursue the project but would instead follow the planned replacement program.

A subtle variation of this scenario would be the replacement of an asset which is planned for replacement with another asset which has a greater functionality and facilitates a low carbon alternative to like-for-like replacement. In this case the difference between the expenditure on the more highly functional asset and the expenditure which would have been incurred for like-for-like replacement should be an eligible LCN Project cost.

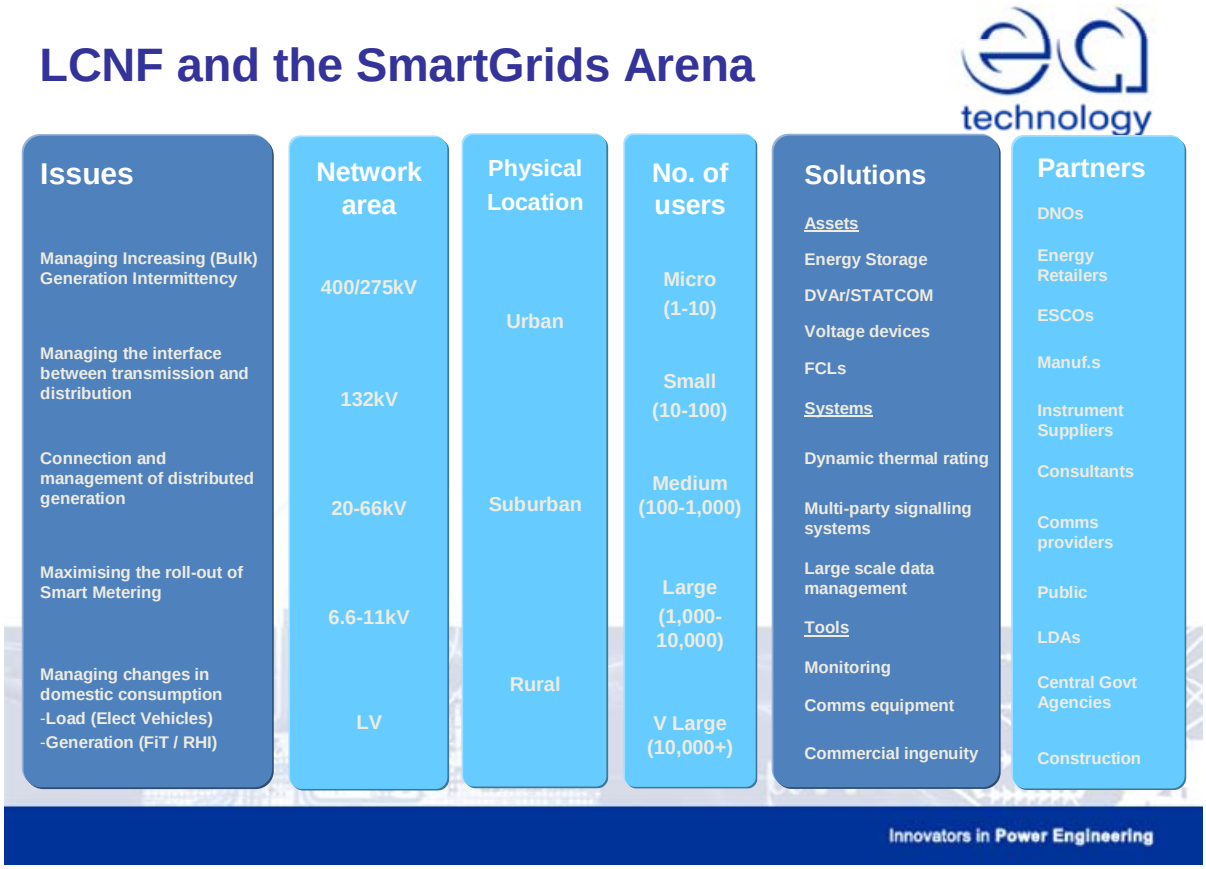
If DNOs are not able to produce financial benefits from Tier 1 LCN Projects which improve the functionality of the network (for example a project which demonstrates a change in managing assets which are close to overload), then they will be less motivated to pursue these types of projects and instead be more interested in projects which result in greater publicity but may not result in longer-term benefit.

For both Tier 1 and Tier 2, we believe that some (if not all) of the benefits should be allowable, as this will encourage DNOs to consider alternatives to conventional reinforcement - which is ultimately the behavioural aim of both the LCNF and DPCR5 in general.

Ofgem has for many years followed a strategy of stimulating DNOs to undertake commercial innovation to yield efficiencies, by allowing the DNOs to retain the benefits of that efficiency in the price control period in which the efficiency is achieved, then resetting at the next price review. This strategy has demonstrably been very successful in achieving the long-term aims of the Authority. It seems to us that an approach which is proven to change the behaivours of DNOs to the long-term benefit of customers, should not be replaced by an unproven shorter-term reward mechanism. We strongly recommend that this approach is applied to technical innovation, in the same way as it has been applied to commercial innovation over the last 20 years.

Should you wish to discuss any of these points in more detail, we would be happy to be contacted, or meet with you to explain our thinking further.

Appendix 1 – EA Technology's Smart Grid Framework



Why we have developed this

We recognise that the SmartGrids arena is extremely broad. At the highest level, the smartgrid is how the network changes to cope with the decarbonisation of energy – led by activity which is both up and downstream of the DNO's operation.

The high level issues that will demand smartgrid functionality, as a result of changes within the electricity value chain are broadly:

- Managing Increasing (Bulk) Generation Intermittency
- Managing the interface between transmission and distribution
- Connection and management of distributed generation
- Maximising the roll-out of Smart Metering
- Managing changes in domestic consumption: whether that be from changes in Load from electric vehicles, to changes in Generation as spurred on from the Feed in Tariff

Whilst the smartgrid is relevant to both transmission and distribution networks, solutions will be different depending on:

- Network voltage – cost, scale and risk will mean that a solution at 400kV will be very different to one at 400V

- Network topology – the fundamental difference in technical issues and therefore solutions between city centres, suburbs and rural communities.
- The number of users – a solution to link with one single ESCO or landlord will be very different to one linking to hundreds or thousands of households
- The types of solutions employed. The solutions can generally fall into several different categories, broadly we see:
    - **Technical - asset solutions**: installation of a single asset (e.g. an energy storage device or a fault current limiter) to solve a given problem. These would be considered in Ofgem's IFI terminology as primary assets, and
    - **Technical - system solutions**: the gelling together of several assets or secondary systems (monitoring, control, etc) to form an integrated solution
    - **Tools** – the use of commercial solutions or supporting IT infrastructure
- The partners – a DNO will be involved in every LCNF project, but there are a host of other partners from across both the supply chain and electricity value chain to involve in projects.

Why we feel it is useful

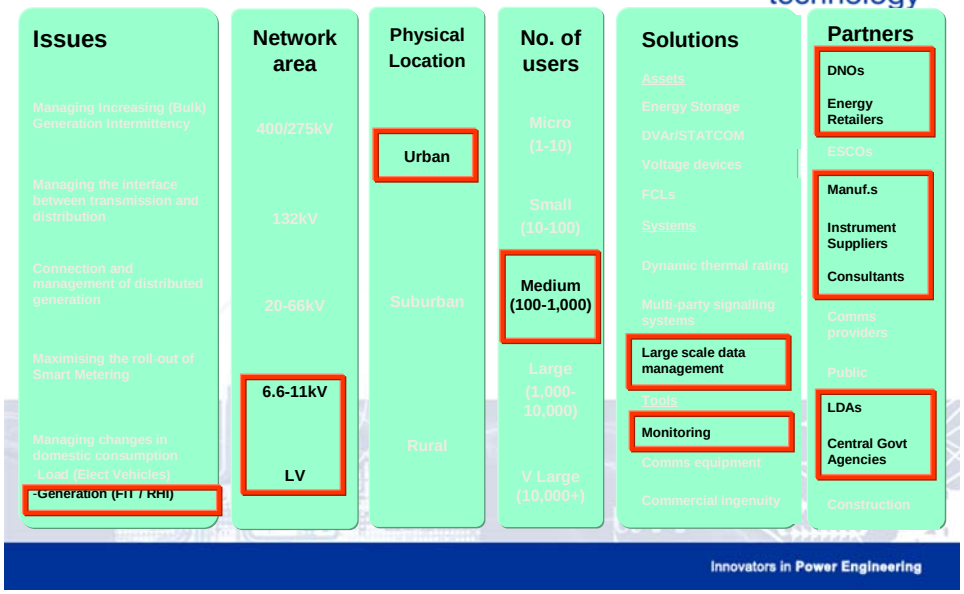
We developed our framework initially as a communications tool to use with DNO colleagues, and in mapping our capabilities where we believe we can add value.

As we begin to develop more LCNF project we believe that it can be used to keep track of our planned LCNF activity with DNOs. With every project expected to address a different combination across the framework (see over).

Looking longer term we expect that this model could be used with our partners to explore synergies from similar projects. We would expect learning to be drawn from two different projects that are using the same technology (such as energy storage) but are tackling different network issues.

We believe that this could be developed to a greater level of detail to give a transparent framework for UK smartgrid projects. One of the significant benefits could be to ensure that the range of issues are addressed over the course of the Price Review, so that as a nation we don't end up with gaps in our learning when we are looking to roll out solutions in 2015.

LCNF Activity – Project #1 (Smart Borough)



LCNF Activity – Project #2 (Smart Village)