98 Aketon Road
Castleford
WF10 5DS
jim.cardwell@northernpowergrid.com

Neil Copeland
Ofgem
107 West Regent Street
3rd Floor
Cornerstone
Glasgow
G2 2BA

5 February 2016

Innovation stimulus funding

Dear Neil

Please see attached the response from Northern Powergrid to your consultation on 'Reviewing the benefits of the Low Carbon Networks Fund and the governance of the Network Innovation Competition and the Network Innovation Allowance'.

I would be pleased to meet with you to discuss further if that would be useful.

Yours sincerely

Jim Cardwell
Head of Trading and Innovation

Innovation Stimulus Funding

Northern Powergrid's response to Reviewing the benefits of the Low Carbon Networks Fund and the governance of the Network Innovation Competition and the Network Innovation Allowance

KEY POINTS

- Innovation in networks has been a **major success story** since Ofgem introduced funding arrangements for innovation:
  - It has delivered **significant cost reductions and service improvement** levels for today's customers and **managed uncertainty and risk** for those of tomorrow.
  - In particular, over the past decade, the **innovation stimulus** package has led to a focus on much longer-term goals.
- The market and regulatory circumstances that gave rise to **the need for this innovation stimulus** have not changed:
  - We have started to develop the understanding necessary to manage the **changing use of the gas and electricity networks** and to mitigate the significant **cost risk for customers…**
  - … but plenty of **uncertainty remains** over how best to meet this challenge.
- The innovation stimulus package is the **optimum regulatory framework to promote innovation in the absence of normal market mechanisms**:
  - There is a **'timing inconsistency' problem** for funding innovation where the benefits are longer term…
  - … since the price control system is geared to handing long-term cost savings back to customers.
  - By ring fencing specific funding for innovation we **avoid the difficulty of assessing its efficiency in the general cost benchmarking**.
- Although material, the sums involved in the funding mechanisms are relatively modest compared to **R&D intensity benchmarks** and the success of the Low Carbon Networks (LCN) fund suggests that customers are receiving a good return on their investment:
  - As such, we **propose that the funding levels remain as is**.
- Lastly, we propose some changes to the focus and operation of the Network Innovation Competition (NIC):
  - The NIC scope should be extended to enable more trials on **novel energy systems approaches** and focus less on network technology.
  - Projects that feature **collaboration partners that are new or take a lead role** should be particularly encouraged through changes to the award criteria.
  - We consider Ofgem may be setting the bar too high for **companies recovering their** costs having delivered successful projects.
  - The stages of project **qualification and scrutiny could be remodelled** to improve efficiency of allocating funds based on international examples of best practice.

1. Summary

1. Innovation stimulus funding has changed the innovation landscape for energy networks in general and for electricity networks in particular over the last decade. Networks businesses have moved from being relatively inward-looking engineering-led operations towards a more customer-focussed perspective, using innovation to drive service improvement and reduce costs. Furthermore, there is now evidence of much more long-term thinking and direction. The innovation funding mechanisms have played a large part in this change.
2. The original Innovation Funding Incentive (IFI), the LCN fund and the more recent Network Innovation Allowance (NIA) and Network Innovation Competition (NIC) have been largely successful in fulfilling their purpose. This is the time to reflect on and refine the scope and operation of the schemes; but they should continue with funding levels broadly equivalent to today's values.

2. Responses to Ofgem's consultation questions

Question 1: Should we change the NIC and NIA criteria? If so how and why?

3. The criteria are generally satisfactory and cover all of those factors which should be addressed in assessing innovative projects. However, there are some minor amendments that should be made to the qualification criteria for projects that may deliver more costly solutions but overall are an improvement on the status quo. There is a broader issue on scope that we answer in response to question 3 below.
4. Selection of, and then effective collaboration with, partners is essential to deliver successful innovation projects. The criteria for the NIC already recognise this dimension[1] and we recognise the importance placed on the role of project partners by both Ofgem and its expert panel. This focus could be strengthened by further changes to the NIC criteria to place more value on the following project attributes:
    - New parties being introduced who are new to the sector or innovation activity in order to bring in fresh thinking or new insight; and

[1] Reference criterion (e) Involvement of other Project Partners and External Funding

- Third parties (other than DNOs) leading on a project or having rights to influence project direction; helping to build capacity for innovation activity within the sector as well as different perspectives and potentially richer project outcomes.

5. The project eligibility criteria used to demonstrate the value to the customer can be restrictive. There is a particular difficulty where the rationale for a project is not reduced cost. For example the need to find an environmentally acceptable replacement for creosote preserved overhead line (OHL) poles is clearly an area in which the distribution network operators (DNOs) should be undertaking innovative work. The project eligibility assessment (PEA) assumes that any proposed innovative solution can be shown to be more cost effective than the approach it seeks to replace. In this case the solution may actually add cost relative to the present (unsustainable) practice, but the need and justification for the innovation is clearly there.

Question 2: Should we give more of an indication of where we consider innovation is required or is that inappropriate?

6. Ofgem's view (and indeed that of the Department of Energy and Climate Change (DECC)) of the innovation landscape is important and should be expressed and heard by network operators and the other stakeholders engaged in providing solutions. This is especially the case for the large NIC projects, where emerging areas of joined-up thinking that are required may be better identified. There have been good examples of the LCN fund projects feeding learning into Ofgem forums with observations and trials data to inform policy making in addition to informing the specific actions of companies.

7. The industry as a whole engages with Ofgem on innovative topic areas of particular importance. Recent work by the Energy Networks Association (ENA) Energy Networks Futures Group (ENFG) and the DECC/Ofgem Smart Grids Forum (SGF) are good examples of this. Most recently the SGF Workstream 6 has produced a significant body of work to set out the regulatory and commercial issues that need tackling. In Workstreams 7 and 9, useful outcomes are being delivered on studies for the operation and technology development for future distribution systems. Also, the subject of flexibility that is of current high interest to both Ofgem and DECC is the sort of fertile ground where companies may deliver some of the required thinking using innovation funding.

8. While some innovation activity is being driven through this industry dialogue there are many smaller NIA projects that are developed through local engagement and consideration of

individual network needs. Project selection is based on a complex mix of technical, social, corporate, risk and economic considerations as opposed to a top-down view from the outside.

9. In summary, a perspective from Ofgem on where innovation priorities would be useful (perhaps to support its policy making) should be viewed as helpful and advisory but it should be carefully framed to avoid prescribing boundaries for future innovation. Also, it would be inappropriate to adjust the criteria in the innovation competitions that Ofgem judges to add weighting explicitly to projects that address areas signalled by Ofgem. Rather, the value of having some guidance would be to encourage more learning and evidence to inform policy making.

Question 3: Should the focus of the NIC and NIA be broader and cover the broader energy system?

10. It is likely that any substantial step-change in benefits to customers will come from holistic, interactive innovations which will require the optimisation of the energy system as a whole. The governance currently restricts projects to deliver benefits to networks customers only and changes should be made to open up the focus of innovation to allow benefits to flow to customers of energy suppliers as well as encouraging more crossover work between electricity and gas sectors.

11. The disaggregated nature of the GB electricity system means that distributors, suppliers and other customers need to work collaboratively to deliver learning outcomes that will benefit customers. Some projects have qualified for funding and explored joined-up solutions but these remain in the minority and Ofgem should consider what could be changed in the governance to encourage more energy system approaches to be trialled. We propose that the scope of the separate gas and electricity schemes and the focus on network benefits as opposed to whole energy system benefits should be reconsidered. We need more clarity on the barriers to bringing forward whole energy system projects and the potential solutions.

12. Further, the current system has the potential to deliver optimised electricity *or* gas networks while sub-optimising the broader system. This is also difficult to justify to customers who want the best value-for-money from energy and are, in general, customers of both the gas and electricity systems.

13. The current innovation stimulus system does not make addressing these cross-cutting issues especially easy. As an example, cross-sector projects which use heat as a mediating storage technology, where the stored energy can be either converted back to electricity or used to

defray gas usage as required, are not being bought forward. Changes that allow such projects would be welcomed and would help licensees to provide better optimised solutions for society and the customer base as a whole.

Question 5: Can we improve the process for deciding on which projects to approve and if so how?

14. The current process for bids to the NIC is bureaucratic and expensive. A large amount of licensees' and partners' time and customers' money is spent developing overly-detailed project plans for projects which are not ultimately funded. The Initial Screening Process adds little value.

15. A better model could be to adopt a similar approach to the EU R&D funds (Framework programmes and, more recently, Horizon 2020). Here there is a reasonably detailed, but essentially outline, initial bidding process. Success at this stage leads to an agreement to fund in principle subject to certain conditions. This can then be followed by a more detailed project planning phase and final agreement to fund. This would reduce the wasted bidder costs, reduce the burden on Ofgem and better utilise the expert advisory panel.

16. There is a further process improvement that we would like to see regarding the recovery of project costs. This is pertinent to the close-out stages of Tier 2 LCN fund projects as well as the Network Innovation Competition. We consider Ofgem may be setting the bar too high for companies recovering their costs having delivered successful projects.

17. A feature of both competitions is that those projects that deliver successfully will be provided with the final 10% of project costs to add to the original 90% of costs that were recovered from customers upfront. Ofgem judges whether or not the companies should be awarded these costs through an assessment of whether or not the company has met the Successful Delivery Reward Criteria (SDRC) that were set out and agreed at the time of the original project award. To date, there has been limited experience of this judgement having been applied since few projects have reached this point in their lifecycle to date. In July 2015 Ofgem issued its first judgements in respect of some of the earliest projects that took place in the LCN fund. Decisions were provided on four projects including one delivered by Northern Powergrid – the Customer-Led Network Revolution project.

18. Of the four projects assessed to date only one (delivered by UK Power Networks) has been awarded its full costs. The other three, for different reasons set out by Ofgem in its

determination, were judged not to have met all the criteria and therefore were undeserving of the full cost recovery (in each case 8.75% of the 10% sought was awarded).

19. It is right that Ofgem should scrutinise that value for money is being obtained for customers. However, we consider that Ofgem is demonstrating insufficient understanding and tolerance for the issues and challenges that are commonplace in innovation projects and is basing its judgements more on an ex post evaluation of inputs and project governance processes as opposed to focusing more on outcomes for customers.

20. The risk from a policy perspective is that if the bar is set too high for companies and if the full project cost recovery is seen as unachievable then companies' appetite for taking on ambitious projects with more valuable outcomes for customers will be diminished. Instead, Ofgem could see lower risk, less ambitious projects dominating the funding competition and customers receiving sub-optimal solutions delivered to meet the future energy challenges. Indeed, a rational licensee might judge that such projects were unlikely to recover their full costs and the wisest thing to do would be to avoid that risk by confining itself to implementing the learning from other companies' projects that might or might not have recovered their full costs.

Question 6: To what extent do you consider that the LCN Fund has succeeded?

21. The change in the technology environment bought about by the LCN fund activities is clear. There are a large number of new technology options and approaches available and a considerable increase in the capacity and knowledge in this area.

22. The closedown reports from LCN fund projects suggest that the customers' money has been well spent and that the new smart grid options have generated value. Forecast benefits identified at completion of the projects greatly outweigh the costs of delivery.

23. This new knowledge now requires implementation to deliver its value. Despite LCN fund projects largely being demonstration activities, there is still a considerable lead time to bring these into full use. The nature of the extant systems and technologies and the capital expenditure cycle means that benefits may not be quickly realised.

24. This presents a challenge when tracking benefits since some of the solutions are seeking to deliver learning that will be valuable when we have a much greater concentration of low carbon technologies on the network. Therefore, costs saved or outputs delivered in the five years immediately following project closedown should not be the only measure of success considered. Much of the LCN fund is about establishing solutions to tomorrow's issues as demonstrated by

the benefits cases presented by DNOs in the ED1 business plans and the future gas scenarios work undertaken by the gas distribution network (GDN) companies.

25. The new ED1 regulatory reporting requirements have elements that are seeking to address the issue of benefits delivered by tracking costs and volumes of innovative solutions. However these tables and tracking processes need further development to ensure that the benefits are documented effectively and as consistently as possible across companies. In some cases this is quite challenging. For example, new approaches to decision support do not produce new network assets that can be valued and counted but may provide extremely large benefits in efficiency and avoided cost.

Question 7: To what extent do we need to continue incentivising innovation by DNOs?

26. It is appropriate that Ofgem continues to incentivise innovation to drive longer-term customer benefits through the provision of funding that is made available on both a 'use it or lose it' and competition basis. That said, this should be viewed as part of a wider set of measures in the regulatory framework to incentivise innovation that also includes output incentives that drive innovation funded from business revenues with the price control period.

27. The circumstances that originally supported introduction of the various innovation funding mechanisms have not changed appreciably:

    a. The decarbonisation of electricity generation, heating and transport continues to provide significant challenges to the security of supply and affordability. Significant uncertainty remains and the best method to manage the uncertainty is to continue to learn more about the options available in terms of networks solutions.

    b. Cost benchmarking used to set revenues at price control reviews continues to prioritise costs and outputs within the price control period, with cost savings incentivised in the near term and then benchmarked into lower cost allowances at future price control reviews.

    c. Meanwhile, deploying innovative solutions involves incurring costs now in order to realise long-term cost savings, potentially over several decades.

    d. This creates a time inconsistency problem – innovation costs incurred now could not be justified on a commercial basis, since the longer-term benefits from successful projects with widespread adoption would flow wholly to customers.

e. Ring fencing small amounts for longer-term objectives and assessing these separately is the optimal regulatory solution to this problem.

28. In addition, the current obligation to share all of the outputs generated through innovation funding across the industry would be removed if the current innovation stimulus arrangements were discontinued. This requirement is a positive feature of network regulation that should be maintained as it maximises the value from the innovation for all GB customers.

29. At the inception of the IFI, the LCN fund's and NIA's predecessor, the need for funding for specifically development and deployment activities was highlighted by Ofgem[2] to fill the key gap between research and adoption. The conditions that bought this need about have not changed. Removal of this type of allowance therefore risks returning the industry to the lower levels of innovation expenditure seen in the period prior to 2005.

30. When assessing network companies for the appropriate level of innovation funding, Ofgem should continue to look favourably on those that access alternative external sources of funding and leverage contributions from others to reduce the cost burden on customers. These alternative sources may include research funds (typically accessed by academic partners) or other funds such as Innovate UK (supporting the SME sector), the Energy Technologies Institute or DECC.

31. However, some of these alternative sources of innovation funding mandate that the intellectual property generated by their activities is retained by the project participants for their own benefit. The open innovation approach that the industry currently takes to innovation is difficult to replicate under these funding regimes. Therefore, as such, it is unrealistic to expect that alternative funding sources could completely replace the innovation funding mechanisms and deliver the same outcomes.

32. Further, alternative funding is often unavailable for large scale deployment trials and is usually focussed on research and technology development rather than product development and large scale deployment. The last of these is particularly important when applying new technologies to extant energy systems.

[2] Innovation and Registered Power Zones, Discussion Paper, Ofgem, July 2003

33. A recent EU report[3] identifies electricity as a low to medium R&D intensity industrial sector, characterised by spending as a proportion of turnover in the range 1-2%. This should be viewed as a guide or comparator as opposed to a target since it appears to include the whole value chain and not simply focus on regulated networks.

34. The current levels of NIA expenditure, as expressed in the ED1 determination, are in the range 0.5 to 0.7% of regulated turnover with the median value at 0.5%. This would appear to be lower than the EU-wide electricity sector as a whole and suggests that it is not too much and if anything is a conservative value. We suggest that innovation stimulus funding should be continued at this level to maintain the advantageous position that has developed since the inception of the LCN fund at the beginning of DPCR5.

35. Finally, there is a risk that if the NIA type funding were to be removed now, the pace of innovation and the appetite of the industry would decline markedly. To avoid that negative outcome it would be necessary to ensure that those investing their own money in innovation could achieve more of a premium return for that investment. This is achieved in normal, non-regulated marketplaces through the normal interaction between market offering, price charged and the innovation costs across all activities, both successful and not. Another feature of these alternative approaches to innovation is that the intellectual property is protected by the company making the investment. As such, this alternative model would therefore not provide the GB-wide benefits delivered by the innovation stimulus funding in network regulation.

[3] The 2014 EU Industrial R&D Scoreboard, Hernandez et al.