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

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

David Oram
Network Innovation Manager Electricity Transmission
National Grid House C3
Warwick Technology Park
Warwick
CV34 6DA
david.oram@nationalgrid.com

Direct tel +44 (0)7884 475 641
www.nationalgrid.com

Date 17th July 2015

Dear Neil,

Consultation on SP Transmission's (SPT's) Innovation Rollout Mechanism (IRM) Submission

National Grid Electricity Transmission (NGET) owns the high voltage Transmission network in England and Wales and is the System Operator for all of Great Britain. We welcome Ofgem's consultation on SPT's application for IRM funding for the use of ACCR conductor on two of its circuits.

Investing in increased capacity on these circuits may offer a valuable opportunity to alleviate restrictions on the Moyle interconnector which were, and may again become, a matter of interest for the EU with respect to DECC's obligations in terms of restrictions on cross border flow (reference Article 16.3 of the Regulation (EC) 714/2009).

National Grid has been at the forefront of trials of new conductor systems and following a series of IFI and NIA funded trials, the ACCR conductor proposed in SPT's IRM application is one of the High Temperature Low Sag (HTLS) conductors that is now fully type registered and considered by National Grid to be suitable for use on the GB network. On a simple per metre comparison the 3M ACCR conductor is more expensive than conventional conductors and some of the other HTLS conductors currently available on the market; however, in some circumstances this is more than off-set by the overall savings from avoided tower reinforcement costs.

The roll out of an innovative solution on SPT's network that was originally trialled by National Grid is a demonstrable testament to the value to consumers of investing in network innovation funding mechanisms, and the successful collaboration and dissemination of information amongst the electricity network companies.

Question 1: Do you consider that the proposed rollout will facilitate the Government's Carbon Plan, or deliver wider environmental benefits?

The proposal relates to increasing the capacity of two existing circuits using a novel technology that has been proven to be suitable for the GB network.

National Grid is aware of a number of wind farms connected to or intending to connect to these two circuits and increased capacity may also enable the Moyle interconnector to increase the import of low carbon generation from Ireland.

Question 2: Do you consider that the proposed rollout will deliver long term value for money to customers?

We have separated out response to this question into two parts:

- does the proposed use of ACCR to increase the capacity of the existing circuits deliver long term value, and
- does the proposal to increase the capacity of the two circuits to the degree proposed deliver long term value to customers.

Depending on the details of the circumstances, the ACCR conductor can offer long term value for money to customers compared to other options for increasing capacity. HTLS conductors provide increased transmission capacity by virtue of being able to operate safely at higher operating temperatures compared to conventional conductors.

Some HTLS conductors achieve improved capacity by increasing either or both the size of the conductor or the density of the conductor. Both of these can lead to the need to reinforce the structural capability of the towers along the circuit. The ACCR conductor has a lower density and as a result, in some circumstances it can be installed on existing towers and the cost saving can from this more than offsets the additional cost of the conductor.

The IRM application doesn't provide sufficient information to fully address the second point: a number of factors can affect the long term value proposition; perhaps most notably the amount of time for which the extra capacity proposed is sufficient.

The proposed increase in capacity on the single circuit YY section is in line with the capacity of the currently connected wind farms and those forecast to start operations in 2016 and some of the potential capacity of the Moyle interconnector. In the event that more wind farms connect in the future, or the interconnector increases its operating capacity, the useful life time of the higher capacity could be significantly reduced which may impact on the NPV calculations.

Question 3: Do you consider that the rollout will allow the licensee (SPT) to receive commercial benefits from the rollout within the price control period, ie will the rollout lead to cost savings, greater than the cost of the rollout within the price control period?

National Grid is unable to comment on this based on the information published.

Question 4: Do you consider the technology that SPT wishes to rollout falls within the definitions of either a Proven Innovation or an Ordinary Business Arrangement as defined in the IRM licence condition?

National Grid has completed trials of the ACCR conductor to prove that it is suitable for use on the GB transmission network. The ACCR conductor proposed for roll out on the two SPT circuits is type registered and regarded by National Grid as being proven and suitable for use.

The National Grid trials were completed in the financial year 2013/14. National Grid is in agreement with SPT that until that point ACCR was not in use or capable of being used without need for modification and is therefore not an Ordinary Business Arrangement as defined in the IRM licence condition.

Question 5: Do you consider that there is a need for the extra network capacity claimed by SPT?

The extra network capacity proposed is in line with the current needs and forecasts for additional wind farm connections that National Grid is aware of up to 2023. If the Moyle interconnector was to increase its import capacity or any further wind farms wish to connect in the future, additional capacity may be required.

Question 6: To what extent will the proposed rollout facilitate the Carbon Plan?

- **Please explain what aspects of the Carbon Plan you consider the proposed rollout will facilitate.**

All of the connections proposed along these two circuits are wind farms with effectively zero scope 1 greenhouse gas emissions. Increasing the capacity of these two circuits may also enable greater import of low carbon generation from Ireland via the interconnector.

- **What is your view of the claims made by SPT regarding the contribution the proposed rollout will make to these aspects of the Carbon Plan?**

National Grid considers the approach adopted in the application for estimating the contribution to carbon emission reductions in the application is logical and appears to be appropriate.

- **Will the proposed rollout deliver benefits more quickly than the business as usual methods used across Great Britain (GB)?**

Based on the information provided in the IRM application the proposed increased capacity is likely to be more quickly delivered, and with less disruption to local communities, than the alternative options.

Question 7: To what extent will the proposed rollout deliver wider environmental benefits?

- **Please explain what, if any, environmental benefits you consider the proposed rollout will deliver.**

- **What is your view of the claims made by SPT regarding the environmental benefits the project will deliver?**

- **Will the proposed rollout deliver benefits more quickly than the business as usual methods used across GB?**

SPT's application refers to a number of other environmental benefits that National Grid agrees are relevant and noteworthy. These include:

- reconductoring with an HTLS solution can avoid the need for additional overhead lines: this in turn avoids a potentially adverse impact on the visual amenity of the area, as well as noise and traffic impact from construction activity and the consumption of raw materials.

- reconductoring with ACCR in particular can avoid the need for tower reinforcement: this reduces the impacts of significant construction activity, such as noise and traffic, and also reduces the consumption of raw materials.

- National Grid's trails of the ACCR have found that it is less prone to give rise to noise under certain weather conditions than one of the alternative HTLS options, the GAP conductor.

Question 8: To what extent will the proposed rollout deliver value for money to consumers?

- **Please explain whether you consider the cost and scale of the project is justified in relation to the benefits you consider it will deliver.**

- **What proportion of the potential benefits from the project do you consider will accrue to the network compared to other elements in the energy supply chain?**

Using the ACCR conductor can, in some circumstances, offer better overall value for money as a means of increasing circuit capacity than other options. Increasing the capacity of these two circuits will, in the long term, provide benefits to existing and new wind farm operators in the areas, and potentially the Moyle interconnector.

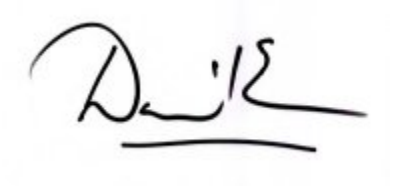
SPT's IRM application to make use of a novel technology, trialed originally with IFI and subsequently NIA funding by National Grid, is a positive example of the value that can achieved for consumers through the innovation funding mechanism under RIIO, and through the collaboration and effective dissemination of innovation project outcomes between network

licensees. We look forward to continuing to work with our stakeholders and customers to deliver further significant innovation benefits.

We recommend that all the Transmission System Operators potentially affected by the proposal, SONI, Eiregrid and National Grid are consulted on the details of the proposal in order that wider system impacts, and in particular short term effect of outages during the work on interconnector operations and wind farms, can be assessed and efficiently planned and coordinated.

We hope that the information provided is useful for you. Please do not hesitate to contact me or Paul Auckland on 07824 476359, to discuss any elements of this response.

Yours sincerely



David Oram
Network Innovation Manager: Electricity Transmission