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Dear Richard,

Network Options Assessment methodology review and related direction

Thank you for submitting the second Network Options Assessment (NOA) methodology in late July as required under standard licence condition C27 of National Grid Electricity Transmission's (NGET) licence. We've reviewed the methodology against the requirements contained in the licence condition. This letter explains that the outcome of our review is to direct the System Operator (SO) to do further work on its methodology.

Based on our review, we think the SO has made good progress on introducing several new developments we requested in this year's NOA methodology. These include assessing reinforcement options against the competitive tendering criteria[1], reviewing the cost estimates of options, and identifying potential economic opportunities for interconnection.

We also note that in this year's methodology the SO has also resolved an issue we highlighted in our December 2015 letter[2] on the first NOA methodology. This related to the technical analysis of boundary transfer capability; specifically, our concern was that there might be accuracy issues due to the analysis being carried out using only the Gone Green (GG) scenario from Future Energy Scenarios (FES) and for winter peak demand. NGET scaled the GG results (ie approximated) for the other scenarios and seasons. This year NGET carried out a validation exercise that showed the loss of accuracy is not significant in most cases. We welcome the changes NGET has made to its methodology to address the circumstances when the loss of accuracy could be more significant.

However, we consider that this year's NOA methodology has not gone far enough to address the other issue that we highlighted last year in relation to the use of the GG scenario in the economic analysis of single-year Least Worst Regrets (LWR). For the reasons set out in the following paragraphs, we believe that the way in which the GG scenario is used in the economic analysis of single-year LWR (in particular its treatment as a scenario the occurrence of which is equally probable to the occurrence of the other FES)

[1] The criteria for competitive tendering are explained in our May 2016 consultation document on extending competition in electricity transmission: https://www.ofgem.gov.uk/publications-and-updates/extending-competition-electricity-transmission-criteria-pre-tender-and-conflict-mitigation-arrangements
[2] A copy can be found here: https://www.ofgem.gov.uk/sites/default/files/docs/2015_12_08_final_letter_to_ng_on_noa.pdf

may give rise to false-positive results. Moreover, because single-year LWR is a significant factor in deciding the grid investment recommendations that are put forward in the NOA report, we think that this approach could lead to inefficient investment planning for the national electricity transmission system.

The SO considers that the FES capture an 'envelope of credible outcomes'. We believe, however, that the scenarios at the upper boundaries of this envelope have a lower likelihood, as they are based on a number of assumptions involving significant developments in energy policy, the economy, environmental legislation and technology compared to the status quo. Therefore, we aren't convinced that it is prudent, from an efficient network planning and investment perspective, for the methodology to effectively give equal weight to all the scenarios. We note that for other activities the SO has responsibility for, such as setting its strategy on future system operability issues, it may be appropriate to consider all the FES equally to identify the possible implications.

In relation to the NOA, we think the GG scenario, which envisages a significant increase in large-scale low carbon generation by the early 2020s, increases the risk of a false-positive signal to proceed with a transmission reinforcement option in the coming year. The analysis is more prone to this risk on parts of the network where the GG scenario has a more ambitious generation profile relative to the other scenarios. This is because the single-year least worst regret analysis first evaluates the cost to consumers of proceeding with an option in the coming year when it is sub-optimal for a given scenario. It then identifies the option that minimises the potential cost across all scenarios. In the NOA methodology, the decision to proceed with an option is reviewed each year. Therefore, the cost to consumers (or single-year regret) comprises the coming year's development costs for proceeding with an option as well as the future costs of constraints that might otherwise arise if the optimal option for the scenario is delayed by a year. In instances where there is a significant difference in the generation profile between the GG scenario and the other scenarios, it will increase the potential single-year regret of reinforcement options that have insufficient capacity to relieve the higher volume of generation constraints in the GG scenario.

We note the SO has proposed some mitigations in the NOA methodology in the event a single scenario gives an investment signal for a particular reinforcement option:

1. The SO will undertake further analysis to verify the drivers and volume of the constraints which we interpret this to mean the SO will review the generation scenario and check if there have been any significant developments in the contracted position or government policy that would likely lead to a change in scenario generation background in the coming year. If there are, NG would apply an adjustment to review the sensitivity of the recommendation to such changes. The SO has indicated that this verification exercise will also involve a more probabilistic modelling of the constraints in future years (but this won't be in place for the next NOA report).

2. In addition, the SO will engage with the respective TO responsible for the reinforcement to determine the minimum spend needed in the year ahead to keep the option open.

Although the above mitigations do provide some safeguards we're not convinced these go far enough. The first mitigation may help to reduce the risk of a false-positive recommendation but only in limited circumstances ie in the event a large generator has modified or terminated its connection agreement. However, it's not clear how the SO would

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translate changes in government policy into the generation scenarios at this stage and we think it is undesirable that there is a lack of transparency about these changes.

The second mitigation would help to reduce the potential impact but not the occurrence of a false-positive recommendation, ie reduce the amount of money that is at risk of stranding. But nonetheless including the GG scenario on the same basis as the other scenarios could result in less efficient investment planning. As there isn't an objective measure of the likelihood of the GG scenario (nor for any of the FES scenarios) it is difficult to estimate the potential impact. At best the inefficiency could be made up of timing effects. However, cumulatively this could amount to a significant unnecessary cost to consumers, if there are several timing effects across the different parts of the network. In other instances this may result in sunk costs if a project is further developed but warranted only under the GG scenario.

Because of our ongoing concern about the potential inefficiency of using GG in the single-year LWR analysis, we are directing the SO to review its approach to applying the FES in the NOA and refine it so that there is more assurance that its approach is in the best interests of existing and future consumers. We would like the SO to consider overall what best meets the objectives of the NOA. For other purposes it may be appropriate to treat the scenarios in the same way but for NOA, which is seeking to identify efficient network development and build, we think more consideration is necessary both in terms of the scenarios that are used but also how they used in the NOA – these issues need to be addressed together rather than separately. We would like this issue resolved in advance of the submission of next year's methodology. Therefore, we direct that the SO to submit a report to us by 31 March 2017 on its analysis and views on the best way forward.

In addition to the direction above, we think the SO should proceed with publishing the second NOA report by end of January 2017 on the basis of the NOA methodology submitted to us. We believe this will be useful for wider stakeholders that have a large interest in new areas of analysis to be included in the 2016 NOA report.

We note it is National Grid's view that its NOA methodology has superseded its 2013 Network Development Policy and is now the basis on which it makes decisions for the coming year's investment programme for incremental wider works in England and Wales. We ask that National Grid formalises this arrangement with us as required under Special Condition 6J as soon as possible.

If you have any questions in response to this letter please contact Anna Kulhavy (anna.kulhavy@ofgem.gov.uk).

Yours sincerely,

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