

Dear Rachel Fletcher,

I write in response to the consultation:

"Consultation on the potential requirement for new balancing services by National Grid Electricity Transmission plc (NGET) to support an uncertain mid-decade electricity security of supply outlook"

<http://www.ofgem.gov.uk/Markets/WhlMkts/effsystemops/Documents1/Consultation%20on%20the%20potential%20requirement%20for%20new%20balancing%20services%20to%20support%20an%20uncertain%20mid.pdf>

I hope you are still able to take my views into account.

1. Do you agree with our assessment regarding the risk to mid-decade electricity security of supply?

Yes, subject to the following comments:

a) It is not realistic to assume that 17% of wind capacity is firm / always available.

Therefore the risk could be higher than the assessment indicates. Increased renewable energy storage (eg pumped hydro) would guard against this risk.

b) The projection of reduction in peak demand seems optimistic and there could be risk that this reduction is not achieved. Increased renewable energy storage (eg pumped hydro) would mitigate this risk.

c) The Capacity Assessment states (section 1.52) that the required data does not exist by which to establish any seasonality of wind power availability. However this is not correct as most wind farm owners would certainly record this data. Wind farm owners or trade bodies could be contacted for historic data in order to establish this.

d) Trend lines with little or no statistical significance (such as that of Figures 18 and 64 in the Capacity Assessment Report 2013) could be misleading.

e) Increased Demand Side Response capacity may be less than expected in which case there would be increased risk to security of supply. Increased renewable energy storage (eg pumped hydro) would mitigate this risk.

f) Is it correct to reduce the reserve requirement because a large Total Infeed Loss is considered unlikely? Surely the reserve requirement is protection against unlikely events. Increased pumped hydro power reserve (renewable energy storage) could mitigate this risk.

g) Figure 45 of the Capacity Assessment Report 2013 seems to indicate an unrealistic level of certainty in wind power output which is not borne out by historic experience. Uncertainty could be higher than indicated. Increased renewable energy storage (eg pumped hydro) would mitigate this risk."

2. If so, do you agree with our view that it is prudent to consider the development by NGET of additional balancing services, which NGET would procure and use if there is a need for them?

Yes.

3. Do you agree with our assessment of the key factors we should have regard to when considering whether to approve any changes to NGET's Balancing Services Procurement Guidelines and associated documents?

I would say that greater emphasis should be put on the provision of these services by 100% renewable energy methods which are sustainable, non-polluting and independent of imported fossil fuels. Pumped hydro energy storage electrically co-located with wind farms can be deployed at 50 MW scale as well as GigaWatt scale. This would tackle the problem of variable unpredictable wind energy directly at source, enabling the delivery

of reliable pure renewable energy exactly when required. Stored wind energy and balancing services offered this way provide energy security with homegrown renewable energy. Therefore I would say that key factors which could be emphasised further are:

a) how to incentivise the provision of grid balancing services by pure renewable energy methods

b) how to tackle the problem of variable wind energy at source by using electrically co-located pumped hydro

c) how to simultaneously avoid the dumping of wind energy through wasteful curtailment of wind farms

Having analysed curtailment of wind farms and witnessed huge amounts of energy being dumped due to this wasteful problem I believe an important thing to do would be to specifically incentivise co-located energy storage at wind farms in order to capture this energy which is otherwise dumped. Pumped hydro is tried and tested large scale energy storage which can also be deployed on a medium scale around 50 MW as well as hundreds of MW or GW scale. This reliable clean technology should be encouraged.

Planning process should encourage sensitive deployment of more pumped hydro electrically co-located with wind farms. Especially in case of man made reservoirs connected top and bottom by pipe on hillside with 150m or more head height separation this design would have practically no interference with local watercourses. The method of artificial upper and lower reservoirs enables the deployment of pumped hydro energy storage in numerous new geographic locations which can be of benefit to the grid. This method of energy storage electrically co-located with wind farms and its provision of balancing services is 100% renewable energy in accordance with UK and EU government objectives and sustainability. New pumped hydro should not be held back by overly onerous planning restrictions although clearly developments must be within reason.

As well as capturing curtailment energy this technology should be encouraged to provide balancing services to the grid. Ideally this would be through market price signals where the price reflects demand but in order to protect the grid in the short term some capacity payment or alternative mechanism could be helpful in order to encourage fast deployment.

Please do not hesitate to get in touch if you would like to discuss further any of the above.
Yours Sincerely, Dr Theodore Holtom (Director, Wind Farm Analytics Ltd)

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