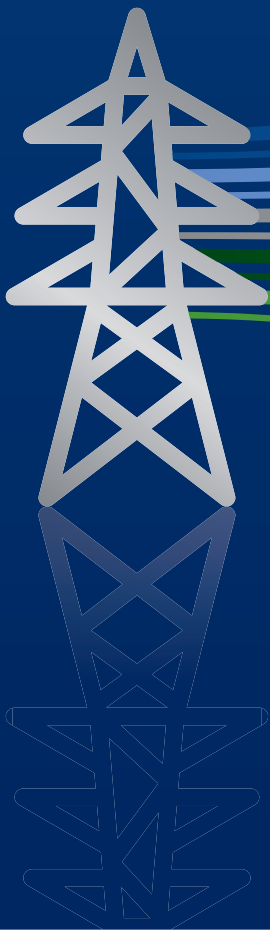




Scottish & Southern
Electricity Networks

North of Scotland Onshore Wind Repowering

November 2017



Introduction

Scottish and Southern Electricity Networks (SSEN) is currently in the early stages of preparing for the next transmission price control (RIIO-T2) which will cover the eight-year period between 2021 and 2029. As part of this work, we have been reviewing our assumptions concerning onshore wind farm repowering and those used within the Future Energy Scenarios developed by the GB System Operator. We are now looking for feedback to confirm our assumptions ahead of progressing to a final position.

In August 2017, we published our initial analysis on the potential onshore wind capacity that could be subject to repowering during the next transmission price control (RIIO-T2). Our analysis identified that by the end of the RIIO-T2 period (2021-2029) a total of around 700MW of existing capacity could be nearing the end of its life assuming a 20-year asset lifetime or 120MW if a 25-year asset life is used. In order to allow us to plan the future requirements of the network in the north of Scotland, gaining an understanding of the different options available to windfarms is an important step. Our initial analysis proposed 5 key questions. This has allowed us to better understand future trends in this area.

This paper provides a summary of how we engaged with affected and interested parties, the responses we received from our initial paper and how the responses have influenced and informed our work. We will also be posing questions to further inform our position.



About us

We are part of Scottish and Southern Electricity Networks, operating as Scottish Hydro Electric Transmission plc under licence and are responsible for maintaining and investing in the electricity transmission network in the north of Scotland.



Scottish
Hydro Electric
Transmission plc

Scottish Hydro
Electric Power
Distribution plc

Engagement process

We recognise that the input of affected and interested parties is vital if we are to develop the solutions needed to ensure the electricity network in the north of Scotland is fit for purpose now and in the future. We identified a number of key groups who we believe will play a fundamental role in setting and implementing onshore wind repowering policy and developing projects. As a first step in gaining a better understanding on this emerging topic, we chose to engage with the following parties:

Groups	Organisations
Governments and Local Authorities	UK Government Scottish Government Highland Council Aberdeenshire Council Perth & Kinross Council
Community Energy Groups	Local Energy Scotland
Developers	SSE Renewables Scottish Power Renewables RES Fred Olsen Renewables Scottish Renewables

Figure 1: Key groups identified

To ensure we gained rich and varied feedback from engaged parties, we implemented a two-stage approach to capturing feedback:

1. Targeted interviews to identify issues affecting those in Figure 1; and
2. This broader consultation.

Face-to-face roundtable meetings were carried out with a number of organisations across the identified groups from August 2017 to October 2017. The face-to-face meetings consisted of participants from a variety of roles within each organisation, ranging from Business Development, Planning and Economic Development to Climate Change Officers. This made each face-to-face meeting unique in the sense that we were able to gain different perspectives and responses on the questions we posed. Meeting notes were written after all of the face-to-face meetings which provided us with a record of the feedback gained.

We also received written responses from the different groups which supplemented the feedback gained from the face-to-face meetings.



We are keen to find out what other methods of communication and engagement should be considered as part of the engagement process.

Your feedback

We received positive responses from those we engaged through this process and are grateful that so many people took the time to respond to the questions that we posed. A summary of the feedback we received, grouped by themes, and highlights of how the feedback has helped influence our analysis is noted below.

Asset life

Our initial analysis in August 2017 identified that by the end of the the RIIO-T2 period (2021-2029) a total of around 700MW of capacity could be nearing the end of its life assuming a 20-year asset lifetime based on connection dates. However, this value drops to around 120MW if a 25-year asset life is used.

We asked if our view of a 20-25 year asset lifetime was valid and if we should broaden our range to take into account lifetime extension.

We received a broad and interesting range of comments from those who responded. The feedback advised that a 20-25 year asset lifetime is valid, in that it lines up with the period in which a windfarm will be receiving ROCs (Renewables Obligation Certificates) and how long windfarms will have been granted planning consent for. However, a few parties said that we should look to broaden our range to 27 years or even 30 years to reflect technological advancements in lifecycle optimisation and lifecycle extension opportunities.

We recognise that there may be instances where windfarms may look to extend their life beyond our 20-25 year assumption. This would be subject to the condition of assets and any subsequent asset management regimes put in place. We believe our 20-25 year asset lifetime assumption is valid but we have noted that extending our assumptions out to 30 years is something we may consider in the future.

As part of our further consideration, we are seeking additional views on our assessment of asset life.

Transmission Entry Capacity (TEC)

Whilst we developed our initial analysis on onshore wind repowering, the question of what windfarms would do with regards to their TEC was raised a number of times.

We asked if onshore wind repowering was being considered, what would be the implications for the required levels of TEC.

The feedback we received highlighted that developers would look to increase TEC where economically viable and where sufficient grid capacity is available. Both of those factors were identified as being important components of the decision making process. The feedback identified that the economic viability of a windfarm could be affected by a number of factors such as load factor.

We asked if the increase in TEC would come about as a result of using larger and/or more efficient turbines.

The feedback detailed that this could potentially occur but it is dependent upon a number of factors. The first key factor identified was in relation to planning; would planning authorities provide consent for taller turbines as part of a windfarm's repowering activities? The Scottish Government set out its clear support for the principle of repowering in its Onshore Wind Policy Statement which was published earlier in 2017. However, it is still unclear on how individual local authorities will approach the topic of onshore wind repowering. The second factor that was identified was grid constraints. Feedback suggested that the deployment of larger and more efficient turbines may occur in areas with low levels of grid constraints.

Additionally, we asked developers if they would adopt an approach of repowering to increase energy yields within the constraints of existing TEC levels.

This particular question raised the interesting point about overpowering, where windfarms would install higher yield turbines but keep their existing TEC. The thought around this is it would allow windfarms to make better use of their existing TEC and in instances where it looked like they would exceed their TEC, windfarms would self-constrain their generation. Further feedback on this question said that if there is limited grid availability in an area, this may hamper the development of particular sites.

The feedback we received identified a number of potential credible options available to windfarms: increase scale where economically viable and where sufficient grid capacity is available, extend the life of windfarms beyond their initial lifetime and overpower sites to better make use of existing contracted TEC. We have used this to shape the range of options that could take place when windfarms look to repower or not.

We believe this is a crucial factor and are keen to receive views on our assessment of TEC implications.

Energy Storage

Energy storage is a technology that has emerged in recent years as means to better manage intermittent generation. The recent successes of battery energy storage in the Enhanced Frequency Response (EFR) tender and Capacity Market has helped increase interest in the technology.

We asked if the development of energy storage was being considered as part of repowering strategies or as standalone projects.

The feedback we received suggested that the application of energy storage has not yet reached technical and/or commercial maturity. Respondees advised that further clarification is required on which ancillary services energy storage assets can access which could improve the business case of co-locating energy storage with wind assets. Further to this, the feedback highlighted that interested parties are looking to utilise energy storage in conjunction with other technologies such as solar PV.

We are currently carrying out an analysis into how solar PV could develop within the north of Scotland and we will look to understand more on the role energy storage could play in the future deployment of solar PV. We will be publishing this analysis paper in late 2017.

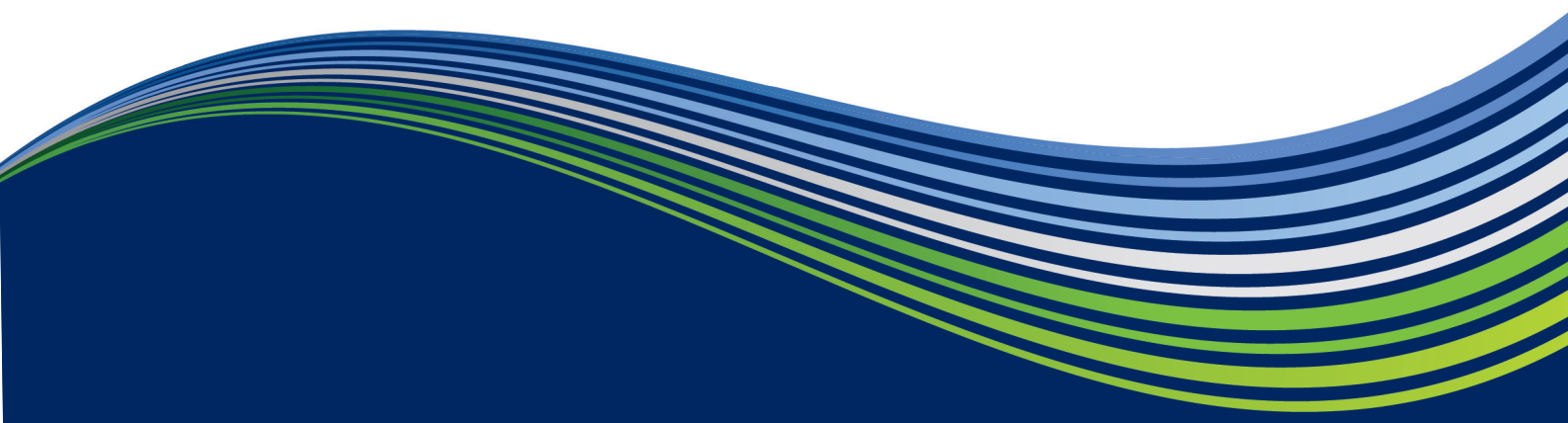
Planning

In addition to the questions we asked of affected and interested parties in our first paper, we wanted to understand how onshore wind repowering would be impacted by planning policy. We recognise that energy policy is a reserved matter for the UK Government however planning is devolved to the Scottish Government and has the ability to influence the direction of energy in Scotland.

We were advised that the current direction by Scottish Government in the Scottish Planning Policy (2014) is that areas identified for wind farms should be suitable for use in perpetuity, and that a sites existing use as a wind farm will be a material consideration in deciding an application for onshore wind repowering.

We recognise that the industry is in the early stages of deciding how the topic of onshore wind repowering will be dealt with from a planning policy perspective. We have noted that this will be an area we will need to keep a close eye upon as it has the potential to impact the likelihood of future onshore wind repowering projects taking place.

We would be grateful if you could provide details of any further planning considerations that we should be aware of.



Summary

From the feedback received, a number of issues were identified that have the potential to impact the development of onshore wind repowering in the north of Scotland. The feedback identified that there were a number of potential, and credible options available to windfarms: increase scale where economically viable and where sufficient grid capacity is available, extend the life of windfarms beyond their initial lifetime and overpower sites to better make use of existing contracted TEC. Planning and grid constraints were also identified as being issues which could impact the scale of onshore wind repowering developments in the north of Scotland.

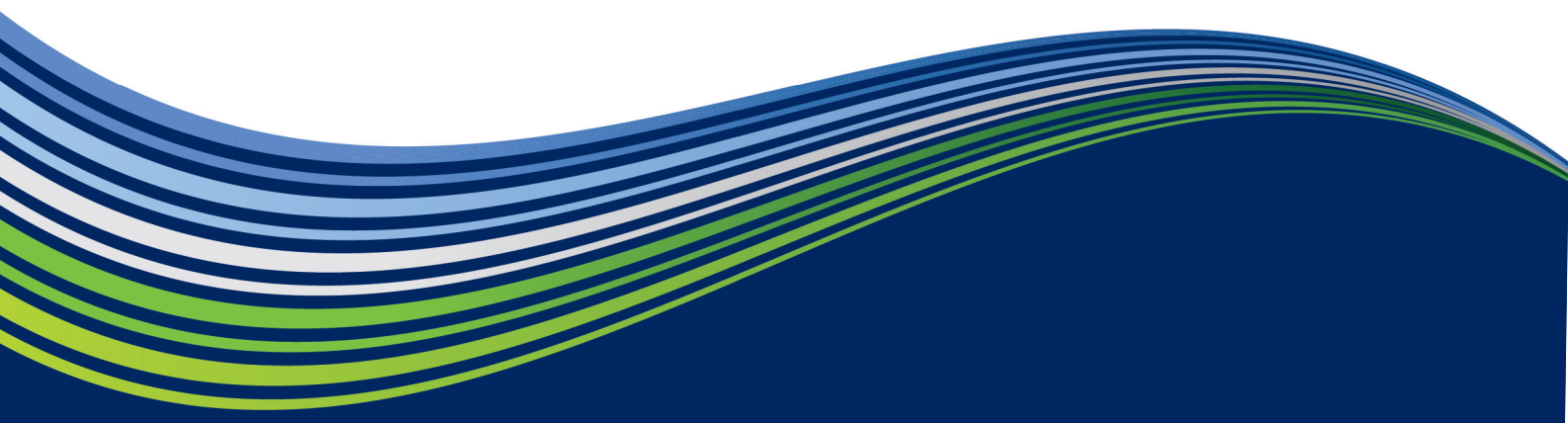
Energy storage was deemed to not have reached technical and/or commercial maturity in the marketplace with further clarification required on the ancillary services available. The feedback has given us a greater understanding of the potential options available to windfarms with regards to onshore wind repowering and highlighted a number of topics that we need to follow as we progress closer to the beginning of the next transmission price control (RIIO-T2).

We believe we have assessed the main considerations which would impact the development of onshore wind repowering in the north of Scotland. Are there further areas that we should consider?

What next?

In late 2017, we will be releasing further consultation documents on a number of topics which we believe are pertinent and will impact the development of energy in the north of Scotland: Electric Vehicles, Generation & Storage and Heat and Energy Efficiency.

This will be followed up by a paper in the new year, detailing all the work we have been doing in relation to Future Energy Scenarios for the north of Scotland.



Responding to this paper

To allow us to complete our assessment and confirm our assumptions, we would be grateful to receive your comments on the following areas:

Q1 What additional policy support do you think is required to support onshore wind repowering in Scotland?

Q2 What other methods of communication and engagement should we have considered as part of the engagement process?

Q3 What other aspects of asset life do you think we should consider?

Q4 What further comments do you have on our assessment of TEC implications?

Q5 What, if any, additional planning considerations should we be aware of?

Q6 Can you tell us if there are any other areas you believe would impact the development of onshore wind repowering in Scotland?

This paper and an online feedback form can be found on our website at the following address:

www.ssen-transmission.co.uk/information-centre/industry-and-regulation/future-energy-scenarios/

If you have any other queries on the content of this paper then please get in touch with Imran Mohammed on the details below:

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We are inviting responses to this paper by **Friday 8 December 2017**.

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