Onshore Wind Policy Statement Refresh 2021: Consultative Draft

October 2021

Scottish Government
Riaghaltas na h-Alba
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Ministerial Foreword

The Scottish Government has a strong history of support for renewable generation, with a huge amount of our current onshore wind capacity being built in response to Scotland's separate Renewables Obligation (RO). This, along with our ambitious targets, has helped send the clearest signal possible about our renewable aspirations.

While the RO has now been replaced by the UK Government's Contract for Difference scheme, the platform that it built in Scotland remains a powerful indicator of the extent of our renewable generating potential.

Onshore wind is a cheap and reliable source of electricity generation. Scotland's resource and commitment have seen us lead the way in onshore wind deployment and support across the UK; provisional figures from 2020 show that renewable technologies generated the equivalent of 95.9% of gross electricity consumption, with 58% of that being generated by onshore wind developments. This is a remarkable achievement.

Our net zero commitment presents the perfect opportunity to revisit and reassess our original Onshore Wind Policy Statement, published in 2017. That's why I am publishing this consultation – so that you can help us update our onshore wind policy for Scotland in this critical period up to 2030.

Onshore wind remains vital to Scotland's future energy mix, and we will need much more as we continue our progress to meet Scotland's legally binding net zero target. **This consultation, and your input and evidence, will help support work that we are doing to establish an ambition for the additional onshore wind capacity needed to help Scotland achieve net zero, as set out in the cooperation agreement between Scottish Government and the Scottish Green Party**.

In the delivery of this essential additional capacity, we will expect engagement from industry in our indigenous supply chain, ensuring that economic benefit from these developments is felt the length and breadth of the country. We continue to encourage communities to engage with the planning process and recognise the significance of the community benefit schemes resulting from these projects.

However, we are determined to ensure that any capacity is developed in a way which is fully aligned with, and continues to protect, our natural heritage and native flora and fauna.

By acting now, we can set Scotland on a pathway to meeting our ambitious climate change targets in a way that is aligned to our Economic Recovery Implementation Plan, supports a Just Transition and delivers opportunities for all.

I urge you to respond to this consultation, and to help us ensure that the final policy statement provides an ambitious, strong and stable framework for onshore wind development in Scotland.

Michael Matheson
Cabinet Secretary for Net Zero, Energy & Transport

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Chapter 1: Current Position

1.1. Net Zero: Legislative Requirement and Targets

1.1.1. The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 commits Scotland to achieving net zero greenhouse gas emissions by 2045 at the latest, and also sets two interim targets to reduce emissions by 75% by 2030 and by 90% by 2040. Meeting these commitments and targets will require decisive and meaningful action over the next 12 months, across all sectors.

1.1.2. The Climate Change Committee (CCC) released its Scotland 2020 Progress Report, which further emphasised that Scotland cannot deliver our net zero targets through devolved policy alone and will require clear and supportive policy from both UK and Scottish Governments.

1.1.3. Following the recommendations set out in the CCC's, 'Net Zero: The UK's Contribution to Stopping Global Warming', published in May 2019, the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 was passed by Scottish Parliament in September of the same year. This committed Scotland to achieving net zero greenhouse gas emissions by 2045 at the latest, and also sets two interim targets to reduce emissions by 75% by 2030 and by 90% by 2040.

1.2. Current Deployment

1.2.1. The Scottish Government has had a long-standing target to generate the equivalent of 100% of gross Scottish electricity consumption from renewable sources by 2020, with provisional figures showing that Scotland reached 95.9% in 2020. This target, together with our record of strong support for renewables using the powers of legislation available to us over the past two decades, exemplifies our support for onshore wind and belief in its effectiveness.

1.2.2. We must now go further and faster than before. We expect the next decade to see a substantial increase in demand for electricity to support net zero delivery across all sectors, including heat, transport and industrial processes. Some estimates from the CCC suggest that we could expect a doubling in electricity demand. This will undoubtedly require a substantial increase in installed capacity across all renewable technologies.

1.2.3. There is currently 8.4GW of installed onshore capacity in Scotland, providing 19.5GWh of our total electricity generation in 2020.

Scotland hosts the majority of operational onshore wind capacity in the UK, and our aim is to maintain the supportive policy and regulatory framework which will enable us to increase that deployment still further.

1.3. NPF4

1.3.1. Preparation of Scotland's fourth National Planning Framework (NPF4) is currently underway. NPF4 will incorporate Scottish Planning Policy (SPP) which contains detailed national policy on a number of planning topics, meaning that for the first time, spatial and thematic planning policies will be addressed in one place.

1.3.2. NPF4 will have the status of the development plan for planning purposes. This is a change to the current position, and will mean that its policies will have a stronger role in informing day to day decision making.

1.3.3. We will shortly lay a draft NPF4 in the Scottish Parliament, and will carry out extensive public consultation at the same time. Further information and updates on progress towards publication of a draft NPF4 can be found online via Transforming Planning webpage We anticipate producing a final version of NPF4 for approval and adoption around spring 2022.

1.4. Community Benefit and Shared Ownership

1.4.1. The Scottish Government puts communities front and centre when it comes to the development of renewable projects in Scotland – an approach which has led the way across the UK.

1.4.2. In collaboration with renewable energy developers and local communities, in 2014, the Scottish Government published Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments and Shared Ownership of Onshore Renewable Energy Developments. These principles, which were revised in May 2019, have been widely adopted across the renewables industry, providing a benchmark for the sector.

1.4.3. In our revised Good Practice guidance, we continue to promote the provision of community benefits at a national level equivalent to £5,000 per installed megawatt per annum, index linked for the operational lifetime of the project. We also continue to encourage the renewables industry to consider, explore and offer shared ownership opportunities as standard on all new renewable energy projects including repowering and extensions to existing projects.

1.4.4. Community benefits and the benefits flowing from shared ownership of a renewable energy development can help create a real and lasting legacy for Scotland's local communities. As at April 2021, the Community Benefits Register shows that over £22 million had been paid out in community benefits over the past year. Our ambition has been for half of all newly consented renewable energy projects to have an element of shared ownership by 2020.

1.4.5. A recent report from the Energy Saving Trust shows that, as at end December 2020, 115 projects were under discussion for shared ownership, representing 511MW of the 914MW of community and locally owned renewable energy capacity in different stages of development.

1.5. Deployment: Financial Mechanisms

1.5.1. For the past few years, Scotland's onshore wind industry has proved capable of delivering wind farms using alternative mechanisms, including the use of Power Purchase Agreements (PPAs), merchant projects and the use of private finance. However, the Scottish Government has long argued that the investment cost and risk facing many of the projects and capacity which we still need to come forward requires a revenue stabilisation mechanism.

1.5.2. The Scottish Government has welcomed the proposed reintroduction of established technologies including onshore wind to "Pot 1" of the Contracts for Difference (CfD) auction process, although the details underlying this process, and its ability to support the level of deployment necessary, are still to be confirmed. This is discussed in further detail at Chapter 3: Technical Barriers to Deployment and Reserved Matters.

1.5.3. We believe that access to a wide range of financial mechanisms will be necessary to support onshore wind in Scotland, with sufficient access to mechanisms which support a range of development sizes.

1.5.4. The emergence of PPAs has provided a viable alternative for many developers, in addition to giving organisations with a base in Scotland an avenue through which to fulfil their renewable electricity corporate and social responsibilities. This use of an innovative financial solution to achieve mutual benefits across sectors, to support the transition to a net zero economy, aligns well with Scottish Government ambitions.

Current Position - Consultation Questions:

1. Does this chapter provide a fair reflection of the current situation faced by Scotland's onshore wind industry?

2. How can the maximum number of developments be enabled to build-out without finance acting as a barrier?

3. Can more be done to support the use of PPAs/Private Sector Finance? Is there a need for more policy signals from SG, and/or UKG, to provide investment security/surety?

4. This section also underlines the Scottish Government's strong commitment to the role of community energy, and to community benefit and shared ownership. In what ways can we maximise the benefits of these policies as onshore wind development and repowering increases over the coming decade?

5. What more can be done to ensure that financial mechanisms are available to support development at differing scales?

Chapter 2: Future Position and Net Zero

2.1.1. The transition to net zero means that our demand for green electricity will increase substantially over the course of the next decade. This means that a consistently higher rate of onshore wind, and other renewables capacity, will be required year on year.

2.1.2. This will be enabled in part by a strong, supportive policy environment from the Scottish Government, particularly one which mitigates preventable barriers, issues which are discussed further at Chapter 3: Technical Barriers to Deployment and Reserved Matters.

2.1.3. The UK currently has 14.1GW of installed onshore wind, with 8.4GW of this in Scotland. Scotland additionally has around 9.7GW of onshore wind currently in the pipeline, spread over 202 different projects:

Status	GW
In Planning/Consenting Process	4.69
Awaiting Construction	4.64
Under Construction	0.43

2.1.4. Our Climate Change Plan Update noted the need to develop 11-16GW of renewable capacity through to 2032. This is consistent with Renewable UK's recently published 'Onshore Wind Industry Prospectus', which sets out the need for Scotland to develop an additional 12 GW of onshore wind, meaning a total of 20.4GW installed capacity, by 2030.

2.1.5. The Climate Change Committee (CCC) has additionally developed four exploratory scenarios for emissions to 2050. These estimate that, in every scenario, the UK will require a total of 25-30GW of installed onshore wind capacity by 2050 to meet governmental targets - which would mean doubling the current UK installed capacity.

2.1.6. **We are seeking views on an ambition for an additional 8-12GW of onshore wind be installed in Scotland by 2030 to help us meet our binding net zero commitment.** This follows initial discussions with stakeholders, and will be subject to further analysis as part of our wider work to refresh Scotland's Energy Strategy. As well as taking into account the representations we are seeking from stakeholders through this consultation.

2.1.7. The amount of capacity ultimately developed will continue to depend on a range of factors, which are covered in this document. These will also be considered alongside:

- the development of other generating technologies and innovations
- the decarbonisation pathways and demand growth across other sectors such as heat, transport and industrial demand.

2.1.8. However, we believe it vital to send a strong signal and set a clear expectation on what we believe onshore wind capacity can contribute.

2.2. Future Opportunities and Challenges: Repowering and Maximising Efficient Generation

2.2.1. The continued growth of onshore wind will be influenced to a considerable extent by the repowering of our existing fleet. Over the next decade, we expect up to 2.5GW of currently operational Scottish wind farm developments to reach the end of their consented life. The operators of these stations will need to decide between repowering, life extension or decommissioning. There are a number of factors which will influence this decision, including local and national planning and consenting considerations, land use, public perception, environmental impact, economic and financial issues and technical requirements.

2.2.2. The Scottish Government strongly supports repowering in principle, as it allows for the re-use of certain elements of the existing infrastructure, and means that existing sites and capacity can continue to make a vital contribution to our energy mix and net zero progress. It's also the case that not all developments will be considered appropriate for repowering, and the relevant consent and planning permission will still need to be in place.

2.2.3. Repowering offers an important opportunity to increase capacity at appropriate sites by installing more efficient and technologically advanced turbines. The Scottish Government acknowledges that tip-heights for onshore wind farms are increasing, and welcomes the resulting efficiencies in generation that this enables. At the same time, not all environments are able to accommodate such turbines – the tallest tip-heights may not be appropriate in every landscape or for every development.

2.2.4. Although we won't be able to rely on repowering alone to meet the volume of onshore wind capacity required to support the growing demands on our electricity system, the Scottish

Government believes that it will play an important part alongside significant volumes of new development.

Repowering, Life Extension and Planning

2.2.5. Repowering, and extending the operational life of wind farms, can take different forms, and the coming years are likely to bring advances in engineering, technology and environmental practices that will increase the opportunities to repower at particular sites.

2.2.6. Repowering to date has included new or upgraded components and technology being installed which can lengthen the operational life of a wind farm, while the layout and general scale of turbines remain unchanged. This is now known as life extension.

2.2.7. Other repowering options include dismantling existing turbines and installing new ones, potentially larger in scale, while re-using existing infrastructure (e.g. access roads, connection to a local electricity network). In these cases, the proposal is for a new wind farm, and can often extend the footprint of the existing wind farm into previously undeveloped areas.

2.2.8. As set out, there are significant potential advantages to repowering which include the environmental benefits of re-using existing infrastructure together with maximising the generation of established sites. Currently paragraph 174 of the Scottish Planning Policy sets out that the current use of a site as a wind farm will be a material consideration when assessing repowering applications.

Repowering and Community Engagement

2.2.9. Given the lifespan of renewable development, most wind farm sites, and their surrounding communities, may have changed markedly since the wind farm was originally considered through the planning and consenting system. End of life provides decision makers, developers, operators and local communities with an opportunity to reconsider the development's potential impact, including issues such as shadow flicker, landscape and visual impact, noise, community benefit and community empowerment and engagement, while recognising that the development has been in place for a significant period.

2.2.10. Most communities have thus far been either ambivalent towards, or supportive of, the repowering of wind farms in their locality. A recent study suggests that local communities are more likely to be supportive of an application to repower or extend the life of an existing local wind farm, rather than an application for new onshore

wind development in an entirely new location. This community acceptance, engagement and support can obviously play a part in the smooth transition of proposals through the planning and consenting system, but it should also give communities a new opportunity to engage with developers and maximise opportunities for community benefit, shared ownership or other options (see section 2.6).

2.2.11. As repowering gains momentum over the coming decade, we will continue to consider opportunities for community benefits within the host community.

2.2.12. It remains vital that developers act as 'good neighbours', working in tandem with local communities, communicating over the course of a wind farm's life and building good relationships. This should allow concerns to be addressed as they emerge, empower communities to engage positively with the development and secure community enhancements.

2.3. Future Opportunities and Challenges: Hydrogen

2.3.1. Our Hydrogen Policy Statement (published in December 2020), sets out Scotland's huge ambition to produce low-cost, clean hydrogen as a potential replacement for fossil fuel feedstock in industrial and chemical processes. It can be used in transport as an alternative to internal combustion engines, and has the potential to be used for heat and cooking in our homes. Hydrogen can also play an important role in managing network operation (see next section).

2.3.2. Scotland's renewable resource can support hydrogen deployment to not only meet our needs, but for the potential exportation of hydrogen to other partner nations. The ambition set out in the Hydrogen Policy Statement of generating 5GW of hydrogen by 2030 further demonstrates the requirement for continued, and heightened, deployment of onshore wind to support our future hydrogen infrastructure.

2.3.3. To support the steady growth of green hydrogen production from onshore renewables we need to understand more about the optimal production designs and the best value integration of these technologies.

2.4. Future Opportunities and Challenges: Local Energy, Shared Ownership & Community Benefits

2.4.1. We recognise that large scale renewables won't be the only route by which we reach our net zero targets. In January 2021, the Scottish Government published the Local Energy Policy Statement, setting out the ten principles that underpin our commitment to more localised energy solutions. We understand and champion local energy as a vital part of a vibrant national energy network and our future energy mix.

2.4.2. Our Local Energy Policy Statement Delivery Framework sets out a number of actions that will be taken forward to enhance Scottish Government support for community led activity. These include prioritising locally owned and shared ownership opportunities, and ensuring that the disengaged and vulnerable groups are identified and supported. Support for this is included in the new Community and Renewable Energy Scheme (CARES) contract which commenced on 1 April 2021. CARES will also continue to support communities with community benefit discussions and to work towards creating a lasting legacy from community benefits, with community action plans that reflect local needs and priorities.

2.4.3. Community benefit discussions should be held separately to those on the proposed development. In some cases, a pot of money provides the community with financial support for local projects, whereas other communities may prefer more flexible packages of community benefits, including for example local jobs and training, recreational areas incorporated into the wind farm development, and improved broadband connectivity etc).

Future Position and Net Zero - Consultation Questions:

6. What are your views on the installed onshore wind capacity that will be necessary over the coming decade, recognising the ambition Scottish Government have proposed for 8-12GW? Please share any evidence.

7. What more can be done to capture the potential and value of hydrogen production from onshore wind and how best can we support the optimal integration of these technologies?

8. In what way(s) can we maximise the benefits of repowering over the coming decade?

Chapter 3: Barriers to Deployment: Technical and Reserved Matters

3.1. Eskdalemuir

3.1.1. The issue of the Eskdalemuir Seismic Array, the impact of turbines on its operation and the effective moratorium on development that the exhaustion of the 'noise' budget has led to since 2018, is covered in more detail in Annex 1. We consulted upon these issues as part of the 2017 Onshore Wind Policy Statement and continue to consider these alongside the Eskdalemuir Working Group, which was reconvened in 2018.

3.1.2. The 50km consultation zone around the array covers an area of almost 8000 km^2, which is approximately 10% of Scotland's land mass. The Scottish Government recognises that this is a material barrier to the deployment of onshore wind in Scotland, and is consulting alongside this document on new policy related directly to the array and informed by seismological data and interpretation over the last 18 months. The consultation document is available at Annex 1, where further details and specific consultation questions can be found.

3.2. Aviation and Renewables

3.2.1. The impact of wind turbines on aviation operations at both civil and military aerodromes has been the subject of significant work and investment over many years. The development of sites for wind turbines has the potential to cause a variety of negative effects on aviation. These include (but are not limited to): physical obstructions; the generation of unwanted returns on Primary Surveillance Radar (PSR); adverse effects on the overall performance of CNS equipment; and turbulence.

3.2.2. Simply put, both onshore and offshore wind turbines have the potential to disrupt radar as they are very tall objects whose blades rotate at speed. This can cause distracting false returns for operators, or 'clutter' on the display, which can mask the true position of aircraft.

3.2.3. In the past, bespoke solutions to alleviate specific individual objections arising from impacts on aerodrome surveillance equipment have been very successful, with significant GW of development enabled following the implementation of mitigation solutions.

3.2.4. Although this model has proven that collaborative work between these two sectors can produce positive results, it has not been conducted under or as part of a coordinated strategy, meaning that opportunities to learn from good practice have not always been available. This has led to a sub-optimal, fragmented approach which risks us being unable to go far enough, or fast enough, to meet our collective, and legally binding, net zero obligations and ambitions while ensuring the safe and efficient operation of Scotland's airspace is not compromised.

3.2.5. The previously successful deployment of mitigation solutions has mainly been achieved through the renewables industry investing in surveillance technology, and/or coming to a contractual arrangement to pay the aerodrome stakeholder for work required to service any mitigation solution. This was based upon onshore wind developments having an impact upon aviation operations at a time when wind farms were a more novel landscape feature, and hence being considered liable for the cost of mitigation.

3.2.6. However, wind farms have been an established part of the landscape for well over a decade now, and will play an essential part in realising the Scottish and UK Government's net zero commitments. Given this, and the potential for future technological developments to reduce the need for bespoke mitigation solutions, such as the advancement of surveillance technologies, there is an expectation that responsibility for these issues will transition from the renewables sector to the aviation sector.

3.2.7. The installation of mitigation measures should be bound by fair and transparent processes that support a cost-neutral principle. This formed the basis of the **Aviation 2030 Vision Taskforce,** with the aim of bringing the civil aviation and renewables sector together to focus on a transition of responsibility by 2030.

3.2.8. The Covid-19 pandemic has had a significant impact on the aviation sector over the last 12-18 months. As countries reacted to the spread of the virus with travel and living restrictions as well as closed borders, aviation suffered a major loss of traffic with flights falling by in excess of 85% in comparison with 2019 traffic levels. This reduction resulted in a severe loss of revenues for ANSPs, airports and airlines alike. The ongoing uncertainty, about the speed at which the number of flights will recover, has resulted in a number of airports pausing their airspace modernisation programmes, and is also expected to affect their ability to make significant capital investments. Job losses at airports have also led to knowledge loss

within the industry and it will take time for this to be regained as the sector recovers.

3.2.9. Although COVID-19 issues affected the development of the Aviation 2030 Vision Taskforce over 2020, good progress has been made on developing positive relationships, encouraging collaboration, and considering the policy and regulatory framework these sectors operate in. **However, the demands of net zero require both aviation and renewables sectors to make still greater efforts to establish mutually beneficial collaboration, as well as to set and specify goals and to agree how these will be achieved.**

3.2.10. We believe that the contribution of wind energy towards meeting net zero can only be achieved if aviation and wind turbine co-existence forms part of a greater, overall strategy. The development and agreement of high-level guidance for these sectors could potentially secure important cross-industry and cross-policy benefits.

Aviation and Renewables Collaboration Board

3.2.11. The Scottish Government proposes to form a high-level group tasked with mapping the opportunities, risks and challenges associated with continued development and co-existence of these sectors. This group will not have a technical focus, but may direct sub-groups to assess and evaluate technical aspects where it deems it necessary or useful.

3.2.12. This group will ensure that good lines of communication remain with the Offshore Wind Industry Council (OWIC) Sector Deal Aviation Workstream, the Aviation Management Board, UK Government Ministerial Delivery Group, the SEAB: Task Force for Economic Recovery in the Energy Sector, CAA, AOA, CAST, ACOG Programme Board, ScTMA technical working group, the relevant Strategic Leadership Groups and any other relevant boards covering regulatory and policy change. This will prevent duplication of efforts and promote good practice around data sharing and collaborative working.

3.2.13. The group will consist of high-level members, with the ability to speak authoritatively for their organisations, to ensure speedy progress and acceptance of responsibility for this work at a corporate level. We propose that this group should meet quarterly initially, but will provide the necessary oversight, authority and

commitment to ensure that the work of the programme can be progressed by its sub-groups.

3.2.14. We would expect this group to consider the high-level issues and areas where increased collaboration can help these sectors on the pathway to their net zero obligations, and to direct the delivery of **specific and implementable guidance and solutions** on these issues. They may also consider the potential of producing a joint renewables and aviation roadmap, or a joint aviation and renewables target based on GW release and CO2 reduction. Progress reports will be expected quarterly, with significant progress having been demonstrated within the first 18-24 months of formation.

3.2.15. More information on this board, including draft objectives and terms of reference, can be found at Annex 2 of this document.

3.3. Aviation Lighting

3.3.1. Aviation lighting is becoming a more prominent issue, one which could have a significant effect on the development of onshore wind, and a wide variety of stakeholders hold different views on how to resolve it.

3.3.2. Work is underway on technical and airspace-related solutions to these issues, and we have no intention of duplicating this or placing any additional burden on those undertaking it. Where we see a gap is in the area of practical guidance on the assessment of the aviation lighting aspects of wind farm proposals, where advice from the various bodies can be unclear.

3.3.3. The Scottish Government has set up a short-term working group (anticipated lifespan of 18-24 months) to consider this issue and, ultimately, **to deliver practical and consistent guidance to aid both the renewables sector and decision makers in assessing these impacts.**

3.3.4. We expect that this working group will feed into the previously mentioned Aviation and Renewables Collaboration Board, sharing progress and outcomes, and ultimately taking direction where necessary.

3.4. Grid, Networks and Regulation

3.4.1. The required uplift in onshore wind capacity highlighted throughout this consultation will create demands for our energy infrastructure. New developments will need to be able to connect quickly and

affordably to Scotland's distribution and transmission networks, and these networks must be able to manage this output and ensure that it is able to reach or satisfy demand in the most useful and efficient manner.

3.4.2. The Climate Change Committee estimates that, by 2030, annual investment of £5 billion will be required in the UK's energy networks. It's already clear that we will need new and upgraded network infrastructure to connect and transfer the Scottish renewable generation that will support net zero here in Scotland, but also across GB more widely. What's less well defined at present is the pace at which this can be delivered, the costs for Scottish generators of connecting to and using this infrastructure, and the ways in which flexibility and storage can help manage and enhance the output from wind generation across our networks.

3.4.3. Delivering network infrastructure in a timely fashion will require agile regulation working in coordination with well evidenced policy drivers and efficient consenting and planning processes. Electricity policy and regulation are reserved issues, and the responsibility of the UK Government and the independent energy regulator, Ofgem – with whom the Scottish Government will continue to engage closely across a number of key areas.

Aligning Policy and Regulation

3.4.4. The Scottish Government welcomed the commitment in the UK Energy White Paper to consult this year on a draft Strategy and Policy Statement (SPS) for Ofgem, which will include a clear requirement for Ofgem to carry out its regulatory functions in a manner consistent with net zero, and the delivery of an energy system which can enable that outcome.

3.4.5. We continue to believe that this change is necessary and will provide helpful clarity. In the meantime, however, the regulator continues helpfully to make clear its determination to help achieve net zero while protecting customers. Ofgem is also a valuable and constructive participant in a number of important Scottish Government policy fora considering these issues.

3.4.6. For example, Ofgem is a member of the Scottish Government's Energy Networks Strategic Leadership Group. This Group agreed and published a set of principles during 2021 which recognise the importance of taking into account devolved policy and targets in regulatory decision making. These principles recognise the need for network companies and Ofgem to work within the existing GB regulatory system, while also responding to the democratic

mandate of the Scottish Government to deliver policy in areas of devolved responsibility.

Network Charging

3.4.7. We know that transmission charging remains a barrier, and a particular disadvantage, for projects located in Scotland or Scottish waters. A number of charging reviews currently underway risk increasing some of these costs further. The pressure to achieve reductions in these charges is more acute in Scotland due to the higher transmission charging costs (TnUOS) faced by generators here, as a result of their greater distance from GB's main centres of demand.

3.4.8. These charges and this system reflect an approach whose logic and design has been overtaken in large part by the fact of the global climate emergency, and the essential role of onshore wind and other forms of renewable electricity in decarbonising energy demand across our society and economy.

3.4.9. Ofgem has recently provided a welcome signal that it intends to review transmission charges. Pending this review, however, Ofgem's minded-to position following its recent review of access and forward looking charges has signalled that it still intends to apply TnUOS to small (less than 100MW) distribution-connected generation, which could be particularly detrimental to Scottish renewable developments and to investment in new onshore wind capacity. The Scottish Government understands the objectives of these reforms, but remains concerned that they are out of step with the need to achieve net zero.

Network Investment and Planning

3.4.10. The Scottish Government has been engaging closely with the process of developing the next set of regulatory price controls (RIIO2), focusing in particular on ensuring that Scottish energy policies, targets and priorities are taken into account as fully as possible. Decisions made under RIIO-2, and the energy infrastructure delivered as a result, will be critical to achieving our climate change and net zero commitments. This will need agile and responsive regulation, including the use of net zero reopeners, which Ofgem has made clear that it understands and aims to ensure. There is also a crucial role for anticipatory / strategic investment, as well as innovation.

3.4.11. The way in which network infrastructure is planned and delivered, and the efficiency and speed at which this can be achieved, is

another crucial area. We are working with the Scottish transmission owners, Ofgem and others on network planning issues, recognising and including the Scottish Government's role in considering and determining applications for consent to build overhead electricity lines within Scotland.

3.4.12. Our aim will be to manage these processes in as streamlined and co-ordinated a fashion as possible – for example, taking into account interdependencies and linkages with the development of offshore HVDC links and the need to connect our huge offshore wind potential – and to consider community awareness and engagement as well as issues such as supply chain and economic benefit.

Security of Supply / Storage Potential

3.4.13. We believe that onshore wind can play a greater part in helping to address the substantial challenges of maintaining security of supply and network resilience in a decarbonised electricity system. This will mean an increasing ability to provide some of the services and responses that are currently provided by thermal generation, and market / regulatory arrangements which can incentivise and support such outcomes.

3.4.14. The Scottish Government has helped enable a project which underlined some of the potential here. We provided £550,000 to support a demonstration project delivered by Scottish Power Renewables at its Dersalloch Wind Farm, looking at the potential for delivering black start from wind. The project delivered a global first during a test in October 2020 by delivering black start capability from wind power to re-start part of the electricity system.

3.4.15. More innovation of this kind can help onshore wind to play as full a part as possible within a net zero electricity network. However, there are other means by which onshore wind output can be managed and help assist the operation of the system.

3.4.16. These include the potential of co-location with forms of storage, such as hydrogen electrolysers. The green hydrogen produced from such processes can serve a number of highly valuable purposes; in addition to greatly reducing constraint payments and costs, the green hydrogen produced could help meet demand for zero carbon heat and transport energy as well as being used to generate electricity and provide vital flexibility at key strategic locations on the network.

3.4.17. We have already seen an increase of onshore wind developments co-located with battery storage facilities and, as we continue to progress towards the decarbonisation of our energy system, battery storage will be more and more prevalent. On-site battery storage not only removes pressures from the grid, but enables more locally focussed energy provision, and reduces costs to consumers.

3.4.18. The Scottish Government will continue to support the co-location of both battery storage and hydrogen production facilities with onshore wind developments to help balance electricity demand and supply, add resilience to the energy system and support the production of green hydrogen to meet our future demands.

Barriers to Deployment: Technical and Reserved Matters - Consultation Questions

Please note the Eskdalemuir Seismic Array policy issues are considered in a separate annex at Annex 1, this also includes specific consultation questions on that issue.

Additionally, details on the proposed Aviation and Renewables Collaboration Board are available at Annex 2, this also includes specific consultation questions on the formation of this board.

9. We would be grateful for comments on the issue of aviation lighting and suggestions for the focus and outputs of the Aviation Lighting Working Group – what are your views on the assessment of aviation lighting and how this should be undertaken?

10. We would also be grateful for your views on network charging and any of the other aspects set out under section 3.4.

Chapter 4: Barriers to Deployment: Environmental Factors

4.1. Noise

4.1.1. In 1999, the World Health Organisation (WHO) published Community Noise Guidelines (CNG), and in 2009, the Night Noise Guidelines (NNG) to determine and assess the impact of noise from various sources. However, there was increasing public concern despite a lack of empirical evidence linking any health impacts to noise generated by onshore wind turbines.

4.1.2. In 2010, WHO was requested to produce noise guidelines for a variety of issues, such as transportation, personal electronic devices and wind turbines, by the Member States in the European Region, which was published in 2018.

4.1.3. The WHO report concluded that there was not enough evidence at that time to make any specific recommendations for wind turbine noise, including amplitude modulation, and found no correlation between wind turbine noise and adverse health impacts. It did, however, suggest that policy makers should implement suitable measures to reduce noise exposure from wind turbines in the populations exposed to levels above the guidance (i.e. 45dB).

4.1.4. The WHO report also stated that the number of people exposed to wind energy development noise was significantly lower than that of other sources of noise (e.g. road traffic noise), and therefore estimated that the burden of on health at population level is low. However, it was clear that proper public involvement, communication and consultation, among affected citizens living in the vicinity of wind turbines whilst applications that are being considered, remained essential.

4.1.5. ClimateXChange also published a report on these issues in 2013, having been commissioned by the Scottish Government to review available academic literature on the health impacts of wind farms. ClimateXChange also worked in partnership with campaign group 'Scotland Against Spin' and independent acousticians to understand the extent to which the *anticipated* impacts of wind farm developments predicted by environmental assessment (including noise) compared to the *actual* impacts experienced once the wind farms were operational. Neither report showed correlation between the noise produced by wind farms and ill health.

4.1.6. 'Assessment and Rating of Noise from Wind Farms, 1996', known as "ETSU-R-97", is a comprehensive guidance currently used by

decision makers across the UK to assess wind turbine noise emissions. ETSU was originally designed for individual turbine sites (characteristic of 1996).

4.1.7. The Institute of Acoustics (IOA) 'Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' was published in May 2013. However, there have been significant advances since 1997 in both turbine technology and methods of measuring sound. Additionally, ETSU-R-97 does not currently take amplitude modulation into consideration, supporting the view that this guidance is no longer fit for purpose.

4.1.8. The Scottish Government is committed to ensuring that Scottish citizens are safe, and their health protected, from any potential impacts from wind turbines, or any other development.

4.1.9. We are aware that the UK Government has been considering the extent to which ESTU-R-97 may require updating to ensure it is aligned with the potential effects from more modern turbines. The Scottish Government support this move and anticipate the results of a short-term review project shortly.

4.2. Net Zero and Other Land Uses

Land Use

4.2.1. We are aware of the varying demands on land-use in Scotland and that a balance must be struck to best serve our net zero targets. Our Land Use Strategy, published in March 2021 stated:

"Our land contributes to climate change mitigation in many ways. Scotland has a long and positive history of harnessing renewable energy and our capacity to generate it will need to be increased to meet our net zero targets. Our energy will continue to be provided by a wide and diverse range of renewable technologies, including onshore wind. We will need to continue to develop wind farms, in the right places, and also look to the extension and replacement of existing sites. As set out in our Onshore Wind Policy Statement, in order to achieve this developers and communities will need to work together to ensure that projects strike the right balance between environmental impacts, local support, benefit, and – where possible – economic benefits for communities, for example through community ownership or other means...

As Scotland moves towards being a net zero economy there will need to be significant land use change from current uses to forestry and peatland restoration. This needs to happen alongside ensuring space for other

essential activities such as food production and onshore wind generation, and the protection and enhancement of habitats and biodiversity."

Peatlands and Carbon-Rich Soils

4.2.2. Scotland's natural capital is one of our greatest assets and is central to our future net zero economy, developing thriving rural economies that utilise both peatland restoration and sustainable energy.

4.2.3. Given the vital role that onshore wind and peatlands will each play in tackling Scotland's carbon emissions, it is imperative that we strike the right balance when it comes to their land use and, wherever possible, their interdependencies.

4.2.4. Scotland's peat soils cover more than 20% of the country and store around 1600 million tonnes of carbon. However, it is estimated that over 80% of our peatlands are degraded. When degraded, peatlands no longer provide these benefits and can often emit more carbon than they remove, resulting in the need for suitable management or restoration.

4.2.5. The Scottish Government has consistently made clear its view that the restoration and maintenance of peat and carbon-rich soils is crucial if we hope to achieve our carbon emissions reduction targets. As of March 2020, over 25,000 hectares of peatland have been put on the road to restoration, however we know that more needs to be done.

4.2.6. Our original target to restore 50,000 hectares of degraded peatland by 2020 was updated in the recently published Climate Change Plan Update, aiming for at least 20,000 hectares of restoration per year, with the challenge of restoring 250,000 hectares in total by 2032. Alongside these challenging targets, the Scottish Government has also committed to a £250 million ten-year funding package aimed at supporting protection of these significant carbon stores, and restoring wetland habitats.

4.2.7. To deliver on the 2032 emissions reduction envelope, annual peatland restoration needs to be far higher than the current 20,000 hectare annual target. However, great strides have been made in recent years and the energy sector contributes significantly to the peatland restoration work taking place across Scotland.

4.2.8. The onshore wind sector in Scotland has made remarkable advancements over the past decade in mitigation and restoration solutions for peatland, with environmental agencies and the

renewables sector working together to update the good practice guidance for the construction of wind farms in 2019.

4.2.9. Scotland's onshore wind sector can bring many and considerable benefits to rural areas, ranging from the delivery of jobs and investment, restoration and protection of our natural habitats. The Scottish Government is keen to see that the onshore wind sector continue to embrace the opportunities presented by peatland restoration and the challenge of biodiversity loss, showcasing considered schemes that will protect and enhance environmental conditions and peatland restoration.

4.2.10. We consider the identification of the condition of existing peatland to be a vital part of the wind farm design process, and are encouraged to see that this has become standard practice across the sector. We are also optimistic that many developers engage in an open dialogue with land management as early as possible, ensuring that appropriate, site-specific solutions can be deployed.

4.2.11. The variety of measures that can be included within wind farm design to improve degraded peatland have continuously developed as the industry has matured. Peat restoration and enhancement, being developed in tandem with improving habitats for important and protected species, allows projects to deliver multiple positive benefits to biodiversity and the natural environment.

4.2.12. As committed to in the Climate Change Plan, the Scottish Government will explore the development of a Peatland Restoration Standard to ensure best practice and continuous development in the success and effectiveness of peatland restoration. The onshore wind industry has long since committed to the improvement and restoration of peatland on their sites, and the Scottish Government anticipates that the aforementioned standard will be incorporated fully in these processes.

Forestry

4.2.13. In February 2019 the Scottish Government published Scotland's Forest Strategy, covering the decade from 2019 to 2029. This presented a long-term framework for the expansion and sustainable management of Scotland's forests and woodland. This document specifically noted the role of Scotland's forests in Climate Change mitigation and in achieving the ambitions set out in the Paris Agreement.

4.2.14. Creating new forests and woodlands is an important tool for reducing greenhouse gas emissions. For each hectare of forest and woodland created, it is estimated that, on average, seven tones of CO2 will be removed from the atmosphere each year. The Climate Change Plan includes a commitment to increase forest and woodland cover in Scotland from around 19% now, to 21% by 2032, and last year's Update to the Climate Change Plan set out ambitious targets to incrementally increase woodland creation from 12,000 hectares per year in 2020/21, up to 18,000 hectares per year by 2024/2025.

4.2.15. Where native woodland is planted, this can provide additional benefits for biodiversity by creating new habitat and connecting woodland remnants. While these woodland creation targets will help deliver additional carbon reductions, the existing resource must also be managed sustainably to preserve Scotland's carbon sink.

4.2.16. Scotland has a strong presumption in favour of protecting as well as expanding our forest and woodland and make sure that our forests are sustainably managed. Woodland removal should be kept to a minimum and where woodland is felled, it should be replanted. The Scottish Government only supports woodland removal where it would achieve significant and clearly defined public benefits. In some cases compensatory planting may form part of this balance. This position is detailed in the Scottish Government's Control of Woodland Removal Policy.

4.2.17. "Keyholing", where smaller areas of forestry are removed directly surrounding wind turbines, has been in use for many years and can prevent the need for clear-felling on wind farm sites. The trend towards increased turbine tip-heights for onshore wind turbines may offer further opportunities to exploit this option as clearance between forestry and turbine blades will likely be higher.

4.2.18. Delivering our net-zero ambitions will require the restoration of Scotland's peatland and reforestation in line with Scotland's Forest Strategy, as well as significant and increasing deployment of onshore wind – meaning that we must strike a balance between these areas in Scotland. We believe that co-existence is not only achievable and desirable, but will become increasingly essential over the next decade - with collaboration and innovative approaches on these issues likely to improve Scotland's overall net zero offering.

4.3. Biodiversity

4.3.1. Delivering both our emissions reduction targets as well as our wider national priorities for the environment and land use will require us to conserve and enhance biodiversity, protect conservation habitats and species while generating enough green electricity to support our economy and deliver our binding net zero target.

4.3.2. The Scottish Government published the '2020 Challenge for Scotland's Biodiversity' in 2013, setting out Scotland's ambitions for the conservation and enhancement of biodiversity in Scotland. The more recently published Climate Change Plan update, describes an ambition to develop thriving economies based around woodland creation, peatland restoration and biodiversity as well as sustainable tourism, food and drink and energy.

4.3.3. Securing positive effects for biodiversity is one of six statutory outcomes for the National Planning Framework. The Scottish Government commissioned research from NatureScot to inform the approach to NPF4. A working group was convened to further explore options and emerging themes with a final meeting held in July. This work helped inform the draft NPF4 which will shortly be laid in Parliament.

4.3.4. While onshore wind will remain an essential part of our energy and climate change effort, there may be some conflicts arising between its deployment and nature conservation at a local level. Nevertheless, as the rate of deployment increases in the coming years, we see a great opportunity for wind energy developments to further contribute significantly to our biodiversity ambition by safeguarding intact habitats, restoring degraded areas and improving connectivity between nature rich areas in order to meet our climate change targets.

4.3.5. We have already seen great progress in biodiversity protection and enhancement in operational wind energy sites, including the 2018 "Protect, Restore, Enhance" report from SSE which detailed key examples of improving biodiversity in sites across Scotland, such as enhancing golden eagle conservation in Inverness. Evidence shows significant positive effects on biodiversity from wind farm developments, and this should continue, aligned with future policy on securing positive effects for biodiversity through NPF4.

4.3.6. Wind Europe published 'The Role of Wind Energy in Wildlife Conservation' in 2017, and SEPA and NatureScot have also published detailed guidance on the design and management of wind energy sites. The aim of all of this is to enable the protection

and enhancement of local biodiversity, ensuring that wind energy can be deployed in harmony with, rather than at detriment to, the essential protection and regeneration of our natural environment.

4.4. Landscape and Visual

4.4.1. The landscape and visual impact of wind turbines, and how this can be understood both for an individual proposal and in concert with other existing and proposed developments, remains an evolving area.

4.4.2. Scotland's most cherished landscapes are a key part of our natural and cultural heritage and must be afforded the necessary protections. However, we also recognise that climate change, and our net zero ambitions, require decisive action, will change how Scotland looks and that we will need to deploy significant volumes of onshore wind generation over the next decade to help us meet our challenging legal obligations. This is likely to comprise modern, efficient turbines which will maximise the generation possible at each site and a mix of current technologies and taller turbines.

4.4.3. Developers are encouraged to discuss with planning authorities appropriate sites for wind turbines at an early stage with reference to the adopted local development plan. There is also detailed guidance available to assist developers; ensuring wind farms are represented fairly and accurately in applications.

4.4.4. The Scottish Government is committed to continuing to work with all parties involved to reduce any unnecessary barriers to deployment.

Barriers to Deployment: Environmental Factors - Consultation Questions:

11. What are your views on the integration of taller turbines in forested areas?

12. Can you provide best practice examples for effective peatland restoration (with carbon benefits) alongside the development of onshore wind?

13. What, if anything, is not currently reflected in the good practice guidance for constructing windfarms, in relation to building on peat and other carbon-rich soils?

14. From your own experience what can wind farm developments offer in terms of protecting and enhancing the natural environment, in particular through the planting of trees to compensate for those lost during windfarm development and through peatland restoration?

15. Can you provide best practice examples of encouraging biodiversity protection and enhancement, including connectivity between natural areas in wind farm sites?

16. What is your organisation doing to go above and beyond when it comes to biodiversity protection, conservation and enhancement in wind energy development sites?

17. How can habitat management plans better balance protection of the environment with connectivity and the operation requirements of a site?

Chapter 5: Economic Opportunities

5.1. Supply Chain

5.1.1. Scotland has a well-established energy supply chain, with thousands of skilled workers in manufacturing, operations and maintenance (O&M), environmental assessment and planning, and project management. Figures from 2019 show that onshore wind developments alone directly support over 1,900 FTE Scottish jobs (of an overall 4,600 renewables jobs). Additionally, according to the Office of National Statistics, each direct job created, supports 1.24 indirect jobs, increasing the overall impact substantially.

5.1.2. Research, including that conducted on behalf of Scottish Power Renewables for its "Power of Onshore Wind" report, has estimated the potential benefits in terms of construction jobs and long-term and skilled jobs from an increase in onshore wind deployment in the UK, as well as the opportunities this could present to local supply chains.

5.1.3. The recent Onshore Wind Prospectus goes on to suggest that approximately 17,000 jobs and the equivalent of £27.8bn in GVA could be achieved in Scotland if we are able to deploy an additional 12GW by 2030.

5.1.4. The Scottish Government is determined to see significant increases in local content attributable to Scottish energy developments, to steadily increase our skilled workforce, to see greater gender and BAME diversity and for our energy sector to continue to boost our local economies. To further inform our position on what is achievable and deliverable, we intend to undertake a data gathering exercise to enable a decision to be taken on local content levels and targets.

5.2. Consultation on Contracts for Difference (CfD) and Supply Chain Plans

5.2.1. The CfD mechanism has helped drive down the cost of renewable electricity support for consumers in recent years. However, the dramatic reductions in support achieved at recent CfD rounds have also increased the pressure to slash the capital costs of renewable electricity projects.

5.2.2. This pressure has caused a race to the bottom for the domestic supply chain, with suppliers greatly reducing margins or losing contracts altogether. The Scottish Government maintains that the supply chain pressure and squeeze resulting from the CfD scheme's effectiveness at reducing developer bids and technology costs has

been detrimental to the domestic supply chain and investor confidence.

5.2.3. The Supply Chain Plans element of the CfD mechanism provides an opportunity for applicants seeking to construct projects of 300 MW and over to provide key information around their project's scope and associated packages of work. We believe that this information should be shared with the domestic supply chain at the earliest opportunity so that companies can prepare their bids for upcoming contracts.

5.2.4. Moreover, it is absolutely crucial that developers make every reasonable effort to meet their supply chain plan commitments, which is why we support BEIS' proposal to introduce a termination right for the most egregious breaches in supply chain plan commitments.

5.2.5. The Scottish Government supports our agencies in identifying opportunities to work with supply chain companies to ensure suppliers are competitive. We expect developers to make every effort to support the domestic supply chain, and support the UK Government's decision to ask developers to provide UK content estimates for their projects as part of the Supply Chain Plan questionnaire.

5.3. Benefits to Scotland

5.3.1. Scotland has a wealth of expertise in large scale manufacturing for oil and gas projects. However, as the Just Transition Commission's A national mission for a fairer, greener Scotland sets out, "we need to be considering how to help and support people currently working in the sector to adapt to a new future and enable them to put the skills they have developed in oil and gas towards driving our net-zero transition."

5.3.2. The rapid expansion of Scotland's onshore wind capacity, and associated manufacturing opportunities, will play a key role in this new future. Scotland's Enterprise Agencies as well as Scottish Development International will continue to work with domestic suppliers in the Scottish oil and gas sector to better understand capability and capacity gaps. The Scottish Government is keen to ensure that companies are in a position to target key manufacturing contracts throughout this decade and beyond.

5.3.3. The Scottish Government expects onshore wind developers to engage with domestic manufacturers and ports to ensure that the Scottish supply chain has visibility of a pipeline of contracts. We want developers to seek out opportunities throughout the development of their project to build the competitiveness capability and capacity of the Scottish supply chain which in turn will keep costs down for consumers, as well as creating and growing competitive business, increasing local jobs, reduce emissions and boost our opportunities for exports. Developers should seek to engage Scottish companies early in procurement and open tendering processes and provide support to help them navigate forward.

5.3.4. We expect to see Scottish based suppliers being given a realistic opportunity to compete for manufacturing contracts. Developers, and those at the top of the supply chain, should work collaboratively to establish and develop manufacturing facilities and key infrastructure that can be utilised throughout the construction of multiple projects in Scotland. The Scottish Government and its Enterprise Agencies will continue to work closely with the sector to identify and progress opportunities for inward investment in the domestic supply chain.

5.3.5. While large scale manufacturing and component construction remain the priority, there is also substantial economic activity in other areas associated with onshore wind development. Scotland excels in areas such as pre-application planning and environmental consultancy, software development, onsite environmental monitoring, legal and financial services and onsite operations and maintenance. There is an opportunity to capitalise on this expertise and experience as onshore wind is deployed at greater volume over the coming decade. We expect that these opportunities, and the economic value attached, will exist predominantly within Scotland, but this expertise will extend across the UK.

5.4. Refurbishment and Recycling

5.4.1. The Scottish Government is committed to building a circular economy and recognise it is a vital part of our journey to net zero. Increasing use of renewable technologies is resulting in a greater demand on the associated manufacturing materials, however we are already taking action to maximise recovery of materials from decommissioned infrastructure.

5.4.2. Adopting a circular approach to sourcing materials for renewable energy developments both safeguards against potential future resource shortages, and reduces the greenhouse gas emissions involved in manufacturing and transportation.

5.4.3. At present, most component parts of onshore wind turbines are recyclable, except blades, which are made from composite resins and fibres that are difficult to recycle fully. The Scottish Government supports the use of recycled and refurbished turbines, recognising the enormous potential to strengthen the Scottish supply chain, reduce waste, utilise more of our local skills and capabilities and improve costs for the onshore wind sector.

5.4.4. Zero Waste Scotland (ZWS) is working to improve the circularity of the sector and SEPA has published guidance on extending life and decommissioning of onshore windfarms, encouraging the reuse and recycling of turbines. ZWS also provides support and advice to businesses looking to develop more circular business models, including the renewable industry.

5.4.5. Renewable Parts, based in Scotland, has become the first SME in the wind industry to received funding from the Circular Economy Investment Fund, focussing its efforts on reducing waste associated with wind turbines by creating a refurbishment programme that aims to decrease the carbon footprint of recycled parts by up to 80%. reducing waste associated with wind turbines by creating a refurbishment programme that aims to decrease the carbon footprint of recycled parts by up to 80%.

5.4.6. The Scottish Government encourages the onshore wind industry, among others, to consider the refurbishment and recycling of their wind farms, and have plans to introduce a Circular Economy Bill to advance Scotland's ambitions for the circular economy through measures which will encourage reuse of products and reduce waste.

5.4.7. We are aware that National Grid has adopted the principles of the circular economy, committing to sending zero waste to landfill, where possible, in their main offices. It is also looking to expand the scope of its landfill diversion targets in the UK, increase recycling targets and continue its year-on-year reduction in waste intensity from construction projects. We would be interested to hear the thoughts of renewables industry and others on how such targets could apply to the onshore wind sector.

5.5. Skills

5.5.1. The Climate Change Plan Update, published in December 2020, stated "The green recovery and transition to net zero present considerable economic opportunities for Scotland. By capitalising on Scotland's strengths in energy, natural capital, innovation and our skilled workforce and universities, we can set Scotland at the forefront of growing global markets."

5.5.2. We are committed to an economic recovery from Covid-19 that is both green and fair – where we capture the opportunities of our transition to net-zero including in green jobs, innovation and competitiveness. The need for a skilled workforce is more important than ever to enable us to meet these unprecedented challenges. Fair Work is vital to, and supports the delivery of, a just transition. We must make sure that new jobs are good jobs – underpinned by Fair Work principles, with high workplace standards and paying fair wages.

5.5.3. A history of oil and gas expertise in Scotland, and building on our existing supply chains, means that Scotland is comparatively very well placed to build on these existing skills, and provide skilled professionals to meet the increasing demands of the onshore wind sector as we transition to net zero. Opportunities for skilled jobs will be available throughout the lifecycle of developments, from planning through to development, through operations and maintenance (O&M) to decommissioning and recycling.

5.5.4. Our 2020 Programme for Government set out the key elements of a green recovery, and the next step in delivering Scotland's Green New Deal. This included commitments on the part of the Scottish Government to:

- work with employers and individuals to build the necessary skills and infrastructure to support the industries of the future.
- ensure every young person has access to a job, education, training or development programme, though our Youth Guarantee.
- deliver our new £25 million National Transition Training Programme, with a focus on the provision of green skills, to support workers at risk of redundancy move into sectors with the greatest potential for future growth and job opportunities.

5.5.5. Over the period 2017 to 2020 the Scottish Government provided grant funding of over £320,000 to the Energy Skills Partnership to support their Wind Turbine Technician training courses. Over 600 technicians and 100 apprentices have received this training since its inception, adding to our skilled and experienced workforce and building the workforce of the future.

5.5.6. We have also created a £62 million Energy Transition Fund targeted at projects, identified by the sector and regional partners, which will accelerate energy transition and respond to the dual challenges of commodity downturn and COVID. Taking a place-based approach, we are working to ensure this investment supports and creates local jobs and benefits wider supply chains across Scotland.

5.5.7. As such, grants within the Energy Transition fund will apply the Fair Work First criteria, which asks employers to commit to:

- appropriate channels for effective voice, such as trade union recognition
- action to tackle the gender pay gap and create more diverse and inclusive workplaces
- payment of the real Living Wage
- no in-appropriate use of zero hours contracts, and
- investment in workforce development.

5.6. Promoting a Diverse, Inclusive Industry: Equality and Onshore Wind

5.6.1. The Scottish Government believes that Scotland's onshore wind industry needs to do more to reflect the diverse nature of the UK's population. We believe a strong industry is a diverse and inclusive industry. This means maximising available skills of the workforce, ensuring the right people are in the right jobs; regardless of background.

5.6.2. The Scottish Government already promotes an increasingly diverse and inclusive workforce. Everyone should have equality of opportunity and work in an environment free from unfair discrimination and harassment, irrespective of irrelevant differences (some of which are protected by legislation). We strongly encourage members of industry to reflect this in their working practises.

5.6.3. As an example of the significant work still to be done, in 2015, Powerful Women presented a challenging target to the UK energy sector for "40% of middle management and 30% of executive

board positions to be held by women by 2030." However, their recent report highlighted that only 14% of executive director roles across the UK energy sector were held by women in 2021.

5.6.4. We are also aware that the UK Offshore Sector Deal challenges the offshore wind sector to achieve a workforce that is 33% female by 2030 (with a stretch target of 40%) and improves representation from minority ethnic groups to 9% (with a stretch target of 12%). The Scottish Government would like to see the onshore wind sector similarly challenge themselves to achieve greater diversity and inclusivity in the workforce.

5.7. Tourism and Cultural Economics

5.7.1. Tourism has a significant role in delivering Scotland's wider economic strategy, especially as we recover from COVID-19. Tourism has a key role to play in sustaining many of Scotland's local economies; creating jobs, adding vibrancy and enhancing our places, and helping to improve our health and wellbeing.

5.7.2. The Scotland Outlook 2030, published in March 2020, sets out a bold new approach that will see tourism act positively in the common interest of Scotland's communities, businesses and visitors. It recognises that the role of tourism has changed as a result of our climate crisis, advances in technology, EU exit and changes in consumer behaviour which is reflected in the demands of today's traveller.

5.7.3. The tourism sector represents a significant consumer of energy, and the Scotland Outlook 2030 recognises and acknowledges the part it has to play in reducing its environmental impact and contributing to net zero targets.

5.7.4. Public support for onshore wind has grown significantly across the UK, reaching a new record of 79% in 2019, with opposition decreasing from 12% in 2015, to 5% in 2020. However, we recognise that some of Scotland's citizens remain concerned about the impact of large scale onshore wind developments on local and national tourism.

5.7.5. The Scottish Government recognises the immediate and continuing support required by the sector to ensure its recovery beyond Covid-19 and developed a set of recommendations in 2020: Scotland's Tourism Recovery Recommendations - Covid19. A National Action Plan has also been created and priorities agreed by government,

agencies and industry to support the tourism sector's recovery in both the short and long term.

5.7.6. The Scottish Government is encouraged to see onshore wind developments, such as Whitelee Wind Farm on the outskirts of Glasgow, providing additional outdoor recreational activities alongside their windfarms. We consider the effect that onshore windfarms can have on local and national tourism as a significant opportunity to cultivate a 'people and place' mentality and would be encouraged to see more developments in Scotland with similar provisions.

Economic Opportunities - Consultation Questions:

18. What support do Scottish companies need from Scottish Government and agencies in order to successfully bid for and win contracts?

19. Should government consider options for introducing a sector deal similar to that of the Offshore Wind sector and if not, why is that your view?

20. How can individual organisations (including onshore wind developers, tier 1 suppliers, and the domestic supply chain) work collaboratively to ensure that key manufacturing projects for Scottish onshore wind stays in Scotland?

21. Circular economy and zero-waste are core principles that the Scottish Government are promoting. Where do you see the economic opportunities in relation to these policy issues lying with onshore wind? And are there any practical issues you think need to be addressed in order to maximise the benefits?

22. How can the Scottish Government best support skills for the future of the onshore wind sector? Specifically we would be interested in oil and gas transition, apprenticeships and entry-level positions for young people, as well as any other experiences you can share.

23. Do you have any views on the impact of wind farms on tourism?

24. What is your organisation doing specifically to promote diversity and inclusion in the onshore wind sector?

25. Given the significant contribution onshore wind is expected to make to our net-zero ambitions, and the structure of the ScotWind process for offshore development, should Supply Chain Development Plans be introduced for onshore wind developments in Scotland?

Annexes

Annex #	Content
1	Eskdalemuir Working Group and Policy Proposals
2	Aviation and Renewables Collaboration Board Proposal
3	Community Benefit Case Studies
4	Responding to this Consultation

Annex 1: Eskdalemuir working group and policy proposals

1. The Eskdalemuir Seismic Array (EKA) is a seismological monitoring station in the Scottish Borders which forms part of the UK's obligations under the Comprehensive Test Ban Treaty (CTBT). The array's operation can be compromised by excessive seismic noise in the vicinity, which is proven to be produced by wind turbines operating within a 50 km consultation zone around the array.

2. In response to wind turbine development on land near to the EKA, a study was conducted to examine the impacts of wind turbine vibration on the array. The study's findings showed that wind turbines could have an impact on the EKA and resulted in the introduction of a 10km radius 'exclusion zone' and a 50km radius statutory consultation zone for all onshore wind development. The 50km consultation zone covers an area of almost 8000 km^2, covering the South of Scotland and the North of England. This represents approximately 10% of Scotland's land mass and around 3% of the UK's total land area.

3. The 2005 Styles Report recommended a limit of 0.336 nm of seismic disturbance to prevent the array's operation being comprised, and this was adopted for any development within the consultation zone. This was followed by the 2014 work undertaken by Xi Engineering, on behalf of the Eskdalemuir Working Group (see para 9), which developed a spreadsheet tool enabling the MoD to monitor this budget.

4. Currently, the 0.336nm budget has been allocated between operational wind farms and developments still within the planning and consenting system. Based on current methodology, there can be no further budget allocated until this theoretical budget is returned, either through decommissioning or determination of sites. The MoD have a record of all onshore wind farms proposed or built in the 50km zone, which includes any applications that do have budget allocated.

5. The MoD is provided with details of specific turbines and their locations at development consent application stage. These details are entered into the budget tool spreadsheet, which then calculates the predicted 'noise' from that proposed development. If the proposal would not exceed the remaining available budget, the MoD offers no objection and the development is added to the budget tool.

6. At the moment, the noise budget for the zone has been breached, meaning the MoD will object to any and all developments within the consultation zone in order to protect the operations of the array.

7. Currently, there is in excess of 1.7GW of planned onshore wind developments that are being impacted on by the current policy

environment within the Eskdalemuir area. The Climate Change Committee (CCC) have estimated that the UK will need 22-29 GW on onshore wind by 2050 to meet our decarbonisation targets, and 1.7GW represents around one quarter of Scottish pipeline projects.

8. Unlocking potential capacity will require decisive and meaningful action from both Scottish Government, UK Government and MoD. To do so, we must recognise that:

    - Safeguarding of the array lies within the MoD policy remit.
    - Maximisation of renewable energy deployment lies within the Scottish Government policy remit.

9. The Eskdalemuir Working Group (EWG) was reformed in 2018 to find an enduring solution to unlock renewable potential in the area through collaboratively working with MoD, industry groups and developers. Since its reformation in 2018 the group has continued to grow in membership and Scottish Government consider that a restructure may be needed to retain its efficiency.

10. A "Policy Route" was explored by the group over the course of 2018-2019 but no full resolution could be found. As a result the Scottish Government opted to consider a technical approach to the issue over the course of 2020/21.

11. Scottish Government commissioned Xi Engineering to undertake a technical analysis of the budget calculation tool currently used by MoD. The purpose of this was to investigate potential headroom within the assumed seismic contribution of existing sites within the area. Three phases of work have been conducted by Xi Engineering which specifically look at the existing budget allocation algorithm used by MoD. The results of which have all been made publically available on the Scottish Renewables website. **These combined phases of work showed that there is a gross overestimation of the safety factor required when accounting for the seismic contributions of individual turbines.**

12. A final phase of work, comprising of a measurement campaign at an additional seven sites, has been funded by Scottish Government, BEIS, AIFCL and members of the renewables industry and its final report is due later this year.

13. The Scottish Government is committed to the most efficient use of our renewable generating potential and recognise that EKA is acting as a barrier to deployment at present. We are therefore seeking views on potential Energy Policy options. These will be informed by both the existing studies conducted by Xi Engineering and the upcoming results

of Phase 4. It is important to note that no policy decisions can be take ahead of further evidence.

14. As we see it, there are four potential policy options which could be adopted:

- **Option 1**: There shall be no onshore wind developments constructed within Scotland which lie within 15km of the Eskdalemuir Seismic Array. (Noting that without the final report from Phase 4 measurements, we cannot confirm that 15km is the most appropriate distance to set this at).
- **Option 2**: Any onshore wind development within Scotland which lies between 10km and 20km of the Eskdalemuir Seismic Array will be required to demonstrate, to the satisfaction of the Ministry of Defence, that they can sufficiently mitigate the impact their development would have of the array to an acceptable level.
- **Option 3**: Combination of the two options above. A hard, no build area and an additional buffer zone where mitigation is required.
- **Option 4**: Make no changes. The no build limit remains at 10km and no additional measures are put in place.

15. Any issues around budget allocation and the methodology for calculating impact upon the budget lie solely within the remit of the Ministry of Defence. The Scottish Government is keen to continue to work with the MoD, and support them as they develop a policy to govern these aspects.

Annex 1: Eskdalemuir working group and policy proposals – consultation questions

26. Does the above accurately reflect the current position in relation to the Eskdalemuir Seismic Array and the barrier it presents to deployment in Scotland?

27. Acknowledging that the Scottish Government require further evidence before taking a policy decision, at this point and reflecting the options outlined above do you/your organisation have any thoughts?

28. If Option 2 or Option 3 were to be selected, how could we best achieve or calculate an acceptable level of impact?
(One example being an agreement of a standard noise budget to MW generated proportional allocation I.e., for X MW generated = X amount of budget allocated*).*

29. Do you/your organisation have any thoughts on how the EWG might be restructured to ensure continued engagement for interested parties whilst maintaining the core purpose of the group?

Annex 2: Aviation and renewables collaboration board

1. The Scottish Government proposes the formation a high-level group tasked with mapping the opportunities, risks and challenges associated with continued development and co-existence of these sectors. This group will not have a technical focus, but may direct sub-groups to assess and evaluate technical aspects where it deems it necessary or useful.

2. We propose this board should consider, but not be limited to, the following issues:

Topic	*Issues*
Policy and Regulation to allow safe airport operation and windfarm development	Airspace Modernisation and the future Surveillance Environment, as it relates to the intersection between
	Developing radar Technologies
	Electronic Conspicuity
	Holistic approach to radar mitigation
	Integration of UAS and UTM from both airspace user perspective as well as support to the wind industry
	Transparent cost structures which are ultimately cost-neutral (i.e., costs associated are proportionate to services delivered)
	Aviation Lighting
	Planning and Consenting regime
Carbon Neutral Campuses	Electrification of campuses using both on-site renewable generation and PPA's.
	Considerations of net-neutrality of other operations.
Electric vehicle usage	Supporting the increased use of electric transport.
Contractual and Financial Issues	Financial arrangements between large electricity users and generators.
Networks and Grid	Considerations of increased grid requirements around aerodromes.

3. In order to properly serve these issues we propose that this group will include senior representation from:

Aviation regulator (the CAA)
Aviation policy
Renewables Policy
Defence Policy and Capability
Hydrogen Policy
Networks and Grid
Local Energy
Supply Chain
Planning
Infrastructure and Investment
Representatives of the Renewables Industry
Representatives of the Aviation Industry

4. Terms of Reference for this group will be determined by the group itself in due course.

Annex 2: Aviation and renewables collaboration board – consultation questions

30. We are clear on the value and importance of strategic and productive collaboration between the aviation and wind energy sectors.
    What are your thoughts on our proposed restructuring of the current effort and activity in this area, and the proposed Aviation and Renewables Collaboration Board?

31. The work of the Aviation and Renewables Collaboration Board may identify and agree the need technical or strategic investment to achieve specific goals or outcomes.
    What are your views on how work of this kind might be financed?

Annex 3: Community benefit case studies

Soirbheas

Soirbheas is a great example of a community that is benefitting from community benefits and shared ownership of nearby windfarms. Through their grant programmes they are enabling other local organisations to take forward low carbon projects, such as the Glenurqhuart Centre.

In addition to supporting community projects they help to fund apprenticeships and have also set up two new funds in response to Coronavirus (COVID-19): an employee training fund and a community support fund. Being in control of the funds available from community benefits and shared ownership has allowed them to act quickly and flexibly to support the needs of their community.

Soirbheas have reached a critical stage in which they have become a community company and have a team of employed staff, meaning that they are well resourced and have the available capacity that is required for developing and delivering projects and grant programmes.

Old Luce Community Fund

A significant achievement for the community has been the establishment of the Old Luce Development Trust, which was set up in 2016 to deliver on the Old Luce Community Plan priorities and respond to the emerging funding opportunities. The Trust has accessed the Fund for several significant projects, including taking ownership of and re-developing some areas in the community:

- Balkail Glen, an amenity wood well used by local residents and with potential for small-scale wood fuel. The Fund supported costs to transfer ownership of the wood and develop a management plan.
- A derelict site at 21 Main Street, Glenluce, a former shop which was demolished and seen as an eyesore by local residents. The Trust has used the Fund to purchase the site and re-develop it as a small public park with seating and a noticeboard.
- Brambles, a former café in Glenluce's main street, which closed some years ago leaving the community without anywhere to meet and socialise during the day. The Fund provided match funding for a successful bid to the Scottish Land Fund and is supporting the refurbishment of the property.

1. Annandale and Nithsdale Community Benefit Company Ltd (ANCBC)

During its first years of operation, the Board have funded an average of 28 projects a year directly through open grants and many more indirectly through local grants to Community Councils. Between April 2015 and March 2020, ANCBC supported 144 projects through open grant-making, distributing £1,300,927 to in total. The average award was £9,034.

The fund has supported a diverse range of projects including community transport provision, play parks, distribution of food parcels, local sports clubs, walking groups, music events, nature projects, support for disadvantaged community members, projects to help people with mental and physical disabilities, youth support, and local galas and shows. Applicants come in all shapes and sizes. Some groups are big and some are small, working in larger towns or smaller villages, so people from many different demographics are benefitting from the fund.

The largest grant, of £49,998, was awarded to Mossburn Community Farm in January 2016 over a three-year period, to provide equine therapies for people living with mental and physical disabilities. Since the Fund launched, ANCBC has supported 31 such community facilities across the area of benefit to the tune of just over £380,000, representing just under a third of the funds distributed through open grant-making over five years. These projects included new builds, maintenance, kitchen refurbishments, heating upgrades, accessibility improvements, extensions, flood prevention, replacement windows and doors, solar panels, pathways and parking facilities.

2. Gala Water History and Heritage Association

Since 2012, GWHHA has employed a parttime Community Archivist through grants from EDF's Longpark Community Fund. The Archivist supports others locally in their heritage related research and project work, organises exhibitions and does a variety of outreach and promotional work.

Some of the projects carried out by GWHHA, with the support of the Archivist, include:

- Poppy Project: A commemorative installation and record of the stories of local people commemorated on the war memorial.
- Borders Railway Booklet: A booklet of photos and local perspectives to commemorate the opening of the railway.
- Working with local schools: The Archivist runs regular sessions for pupils, both in school and on site.
- The Cafe Sessions: A popular monthly reminiscence group providing a rich source of stories and social connection.

- 19th century cuttings books: Publication of copies of three notable 19th century cuttings books.
- Exhibitions and displays: these are arranged at least twice a year.

3. Carsphairn Community Benefits

Lots of projects in the case study including:

- The village hall has been largely upgraded with funding going towards new floors and tiling; exterior and interior decoration and the installation of a new heating system and insulation to improve energy efficiency.
- The village hall is not the only place to have received funds for a facelift; Carsphairn Parish Church has welcomed repair and redecoration, mechanisation of the church bell as well as funding for social events.
- The community benefit received enabled the community to have the ability to own the shop.
- Local outdoor spaces have also been transformed thanks to such initiatives as the Carsphairn Community Garden Project.
- The opportunity to positively influence the local primary school has also been taken, in the case of Carsphairn Primary School. The School have taken advantage of Community benefit funding a school grounds project and playground bench, the purchase of compost bins for the gardening club and contributions towards a mountain bike outing.
- A total of 21 local people have enjoyed grants to fund their studies and enhance their future employment opportunities.

4. Ochil Youth Community Improvement (OYCI)

EDF's cluster of wind farms in the Ochil Hills provide a Community Fund that benefits several villages and small towns (the Hillfoots villages). In 2016, the Community Panel that oversees the Fund reviewed awards made in the previous two years and identified low levels of spend on activity for children and young people. It was also felt that there weren't many services or engagement activities in the Hillfoots for young people.

Following discussions on the best way to address this, the Panel decided to commission consultation work to find out what improvements young people would like to see in the area. An independent consultant with experience in working with young people was appointed, designed a research process and recruited a group of 10-17 year olds from local schools to get involved. The group came together to share their ideas then consulted with hundreds of their peers on what they would like to see offered for young people in the area.

In light of the group's shared passion to make their community better, they named themselves Ochil Youth Community Improvement (OYCI). Their findings and recommendations were presented to the Fund Panel in February 2017, in the Improving Our Communities Consultation Report. The consultant has since set up OYCI Community Interest Company (CIC) in June 2017 to take forward many of the recommendations.

Ochil Youth Community Improvement (OYCI) is a youth led social enterprise making change happen locally, entirely driven by young people's participation. The group is making real, positive change including launching a drama club, organising community clean ups, running a study club, developing enterprise initiatives, organising a drop in youth space and improving access to sports facilities.

You can watch a video about OYCI here.

5. Strathnairn Community Benefit Fund

Strathnairn Community Benefit Fund (SCBF) uses community benefit income from nearby wind farms and a hydro scheme to improve the lives of residents in this rural community.

SCBF has funded things like community transport, after school activities for children and running costs for community halls, as well as providing grants to help residents pay their fuel bills, make their homes more energy efficient or install renewables.

Changes to the fund governance in 2018 have helped the local community become more involved in SCBF. In 2018, SCBF also committed to making a number of large capital grants from accumulated reserves, to address strategic priorities that had been identified through community surveys and conversations. These priorities include supporting a community broadband initiative and major refurbishments of community halls. Further consultation on the proposed large grants was carried out before the awards were made. This should increase the impact of the funding and make sure it provides a long-term legacy.

Annex 4: Responding to this Consultation

We are inviting responses to this consultation by 31 January 2022.

Please respond to this consultation using the Scottish Government's consultation hub, Citizen Space (http://consult.gov.scot). Access and respond to this consultation online at https://consult.gov.scot/energy-and-climate-change-directorate/onshore-wind-policy-statement-refresh-2021. You can save and return to your responses while the consultation is still open. Please ensure that consultation responses are submitted before the closing date of 31 January 2022.

If you are unable to respond using our consultation hub, please complete the Respondent Information Form to:

Onshore Wind Policy Team
Scottish Government
5 Atlantic Quay
Glasgow
G2 8LU

It would be helpful to have your response by email or using the electronic response form. The electronic response form can be accessed at the following website address: – https://consult.gov.scot/energy-and-climate-change-directorate/onshore-wind-policy-statement-refresh-2021

You can also email your response to OnshoreWindPolicy@gov.scot

Handling your response
If you respond using the consultation hub, you will be directed to the About You page before submitting your response. Please indicate how you wish your response to be handled and, in particular, whether you are content for your response to published. If you ask for your response not to be published, we will regard it as confidential, and we will treat it accordingly.

All respondents should be aware that the Scottish Government is subject to the provisions of the Freedom of Information (Scotland) Act 2002 and would therefore have to consider any request made to it under the Act for information relating to responses made to this consultation exercise.

If you are unable to respond via Citizen Space, please complete and return the Respondent Information Form included in this document.

To find out how we handle your personal data, please see our privacy policy: https://www.gov.scot/privacy/

Next steps in the process
Where respondents have given permission for their response to be made public, and after we have checked that they contain no potentially defamatory material, responses will be made available to the public at http://consult.gov.scot. If you use the consultation hub to respond, you will receive a copy of your response via email.

Following the closing date, all responses will be analysed and considered along with any other available evidence to help us. Responses will be published where we have been given permission to do so. An analysis report will also be made available.

Comments and complaints
If you have any comments about how this consultation exercise has been conducted, please send them to the contact address above or at OnshoreWindPolicy@gov.scot

Scottish Government consultation process
Consultation is an essential part of the policymaking process. It gives us the opportunity to consider your opinion and expertise on a proposed area of work.

You can find all our consultations online: http://consult.gov.scot. Each consultation details the issues under consideration, as well as a way for you to give us your views, either online, by email or by post.

Responses will be analysed and used as part of the decision making process, along with a range of other available information and evidence. We will publish a report of this analysis for every consultation. Depending on the nature of the consultation exercise the responses received may:

- indicate the need for policy development or review
- inform the development of a particular policy
- help decisions to be made between alternative policy proposals
- be used to finalise legislation before it is implemented

While details of particular circumstances described in a response to a consultation exercise may usefully inform the policy process, consultation exercises cannot address individual concerns and comments, which should be directed to the relevant public body.

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The Scottish Government
St Andrew's House
Edinburgh
EH1 3DG

ISBN: 978-1-80201-499-0 (web only)

Published by The Scottish Government, October 2021

Produced for The Scottish Government by APS Group Scotland, 21 Tennant Street, Edinburgh EH6 5NA
PPDAS958846 (10/21)