

Net Zero, Energy and Transport Committee
Scotland's electricity infrastructure: inhibitor or enabler of our energy ambitions?

Response from RWE

Cover Letter

RWE is the largest power producer in the UK, accounting for around 15% of all electricity generated, with a diverse operational portfolio of onshore wind, offshore wind, hydro, biomass and gas, amounting to over 10 gigawatts (GW) of generation pro rata.

Scotland has been a natural partner for RWE for over 20 years, where we own and/or operate around 480 megawatts (MW) of installed renewable capacity across 26 sites, including 15 small scale hydroelectric projects, 10 onshore wind farms and 1 offshore wind project. RWE also operates a 55MW biomass combined heat and power district heating plant at Markinch, Fife.

We plan to continue expanding our renewables portfolio in Scotland, which includes a further 16 onshore wind projects under development, totalling over 1.3GW, which will actively contribute to the Scottish Government's clean energy targets. These consist of a range of projects at different stages of the development process, from early scoping stage through to projects that have received planning consent.

RWE is also exploring the possibility of producing green hydrogen from our projects for use in homes and businesses across a number of Scottish communities. Our Memorandum of Understanding with SGN, signed last year, includes work to look at the provision of hydrogen to off-gas grid towns across Scotland, as well as the development of an electrolyser at Markinch power station.

Since first generation, renewable energy projects operated by RWE have invested more than £6 million into Scottish communities neighbouring our sites, through their community benefit funds. Over their lifetime, renewable energy projects operated by RWE renewables will invest more than £17 million into Scottish communities.

RWE welcomes the opportunity to provide a contribution to the Net Zero, Energy and Transport Committee's electricity infrastructure inquiry. Our submission flags some of the issues, barriers and hurdles we face in developing future energy projects in Scotland.

For more information on our footprint in Scotland, please see our RWE in Scotland website [here](#) and infographic [here](#).

We would be happy to provide more information on any of the issues raised in this submission if helpful.

Yours sincerely,

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Senior Public Affairs Manager
RWE

Response to Questions

Electricity network readiness

1. Do the current business plans from Scottish and Southern Energy Networks (SSEN) and ScottishPower Energy Networks (in relation both to transmission and distribution) allow for sufficient investment in networks to realise the Energy Strategy's ambitions?

2. To what extent are SPEN and SSEN able to alter investment plans in response to a fast-moving policy environment?

- Electricity Network Operators (both at the transmission and distribution level) have business plans set on a 5-year rolling basis under the RIIO framework. Network operators submit their plans to OFGEM for review, and it is on the basis of these plans that their allowed revenues are set. Where additional investments are required that aren't contained within the business plans, there are a number of criteria for additional approvals, known as "reopeners". Budgets for these reopeners is limited, and the processes that the networks must go through to get infrastructure investments approved can be lengthy (this is an entirely separate process to planning approval).
- Although it is right that OFGEM provides a high level of scrutiny whenever networks are considering spending that must be paid for by consumers, the current design of this process limits the extent to which network companies are able to be agile to developing needs of the electricity system. OFGEM's Accelerated Strategic Transmission Investment (ASTI) framework is designed as a response to this issue, to accelerate the development of essential infrastructure necessary to deliver the Offshore Holistic Network Design (HND), and consequently the 50GW offshore wind by 2030 target.
- OFGEM is currently considering the future of network regulation, looking to better support a cost-efficient and swift transition to Net-Zero through their 'Consultation on frameworks for future systems and network regulation: enabling an energy system for the future'. We believe there is significant potential to speed up commissioning of essential network infrastructure, and a central part of this is the way that network companies are regulated.
- In addition to the regulations, the remit of the regulator itself must be reformed to ensure it is best-placed to deliver Net Zero. There is concern that Ofgem's interpretation of its remit focuses heavily on short-term consumers costs, and does not consider enough the long-term consumer impacts. This, coupled with a lack of focus on a strategic route to achieving net zero, leads to concerns that Ofgem's remit is a barrier rather than an enabler of a net zero energy system.
- OFGEM's primary duty should therefore be reformed to include net-zero as part of its principal duty – e.g. to protect current and future consumers whilst supporting an economically efficient transition to net zero. Such a remit change would allow OFGEM to work to support government targets with a more strategic approach. Inclusion of net zero in OFGEM's remit is supported by the National Infrastructure Commission, The House of Lords Industry and Regulators Committee, and the recent Skidmore Net Zero Review.
- The heavily delayed Strategy and Policy Statement (SPS) is intended to guide OFGEM's approach to policy making. However it is not clear that, even when it published, it will have sufficient legal strength to guide OFGEM's behaviour appropriately, therefore remit reform remains the surest option to ensuring that network companies are regulated in such a way as to give them sufficient agility to meet the changing needs of the energy system.

System resilience

3. What role will dispatchable electricity sources - pumped hydro, battery technologies, thermal generation (hydrogen power, gas with CCS) - play in ensuring security of supply and system resilience? Should any other technology play a role in supporting Scotland's electricity system?*

- Gas-fired power stations are essential in the UK's transition to a decarbonised energy system, through the provision of firm, flexible power 365 days a year, especially on days where there is a lack of sun and wind. The role gas has played in the UK and Scotland's power system has evolved over time, and continues to do so. As coal power stations have shut down, gas has played an increasingly central role, providing just over 40% of the UK's power in 2022 and up to 50% at certain times, as well as representing a cleaner alternative to traditional coal.
- As the UK's power system continues to transition towards a majority renewables mix, the role gas plays will also evolve, towards an increasingly supportive and complimentary role to green energy generation. In the future, low-carbon flexible power will operate in partnership with renewables to ensure security of supply, including during periods of low renewable generation and periods of peak demand, as well as in the provision of technical services such as system inertia.
- We also note the role conventional hydro can play, particularly those with storage. However, with Feed-In Tariffs no longer available there is not the necessary support for smaller hydro schemes below 5MW – with fewer opportunities for schemes larger than this generally.

4. What are the key barriers to deploying these technologies and how should they be addressed?

- Alongside this continued role, there is a need to decarbonise gas power through technologies such as carbon capture and the use of hydrogen. This requires the development of associated political regulatory and financial support frameworks. These include provisions contained within the UK Government's Energy Security Bill and associated processes like hydrogen funding competitions and the Carbon Capture Cluster Sequencing process. Progress on confirming and delivering these frameworks (principally by the UK Government) is a critical action to ensure delivery of nascent technologies and the decarbonisation of existing gas power assets.
- Other barriers to deployment exist for the full range of energy projects, including grid infrastructure and connection dates, consenting delays and resourcing of associated bodies and wider institutional 'bottlenecks' in the form of supply chain and skills gaps. See response to Question 6 for more details on some of these issues.
- Currently, locational network charges do little to incentivise demand to locate in Scotland or to consume energy at times of peak wind output. The transmission network charging regime is in need of significant updating, and we propose that properly valuing the system benefits that battery storage and hydrogen electrolyzers can bring is an essential part of this update.
- RWE does not support recent proposals to introduce Locational Marginal Pricing which, although many suggest could help incentivise more storage to be developed in Scotland, we believe would be highly damaging for investment in renewable generation across the whole of Great Britain – pushing up the cost of capital significantly. LMP also does nothing to solve the current failure to upgrade the transmission network fast enough to accommodate the required renewable buildout. A full assessment of LMP must cover the role of long-term changes to the network planning and regulation to improve transmission build and locational decisions. Updating the current approach to transmission network charging represents a faster, and lower risk pathway to properly valuing the benefits of these sorts of assets.

5. Do proposed UK Government reforms to the electricity capacity market align with the Draft Energy Strategy?

- The proposed reforms to the Capacity Market, if implemented, will ensure that new-build generation that is awarded a multi-year capacity agreement will be required to generate low carbon electricity or to significantly limit hours of operation. The capacity market will, for some time, have an important role to play in ensuring security of supply, which will include maintaining the availability of very low load-factor generating plant that would otherwise close. This will be a key component of a decarbonising energy system.
- Specific support for low carbon generation in significant volume will come from other mechanisms outside the Capacity Market. CfDs and Dispatchable Power Agreements will be key to driving the bulk of investment in renewable and low carbon investment. Alongside these, the Capacity Market will play an important part in ensuring that sufficient capacity is available when needed.
- Competitive markets for flexibility products outside the Capacity Market will help to drive investment in the types of flexibility that are needed to support a decarbonised electricity system. This in turn will ensure that the technologies needed by the system will succeed in the Capacity Market as they will be receiving the bulk of their incomes through other markets.

Wind energy

6. What are the key barriers to achieving the Scottish Government's ambition for onshore and offshore wind contained in the Draft Strategy; could the readiness of the electricity network to accommodate new projects affect the business case for the proposals?

- RWE supports the ambition for renewables deployment set out by the Scottish Government in its Draft Energy Strategy. Onshore wind is one of the lowest cost forms of renewable generation available today, meaning not only will it support delivery of Net Zero, but Net Zero at least cost – whilst providing thousands of jobs across Scotland.
- RWE welcomed The Scottish Government's proposal to set an ambitious target of an additional 12GW of onshore wind capacity by 2030. However, at present onshore wind developments take an average of seven years to navigate the planning system, receive a grid connection, and be constructed - with 2030 less than seven years away this issue is critical if targets are to be achieved. To increase installed onshore capacity by more than double in only seven years the Scottish Government needs to go further than just maintaining the status-quo.
- RWE welcomes the steps taken by the Scottish Government to establish and develop an 'Onshore Wind Sector Deal', setting out a vision for the deployment of onshore wind in Scotland. We urge that this process should have a strong focus on the identification and removal and/or mitigation of associated barriers and hurdles to deployment. Urgent action will need to be taken to address these barriers in order for the Vision to be achieved – noting that some of the more notable of these are reserved matters that will require engagement with the UK Government and wider UK bodies.
- In our responses to previous consultations around its updated Onshore Wind Policy Statement and the revised National Planning Framework 4 last year, we set out a number of barriers we currently encounter to further onshore wind deployment. This included:

- **Network Reforms:**
 - Transmission – A lack of anticipatory investment in the network capacity and long-term certainty alongside Net Zero.
 - Distribution - Ofgem’s ongoing distribution network reforms
 - **Network access:** Getting connections of suitable size, location and cost to deliver Net Zero, including new links to remote island projects
 - **Support for Repowering:** Access to CfD scheme for repowering projects and support in the planning system.
 - **Onshore wind radar mitigation/lighting and Eskdalemuir:** Work needs to continue on these topics to ensure renewables and aviation industries and co-exist. Wind Farms are increasingly becoming part of the built environment and as such wind farms cannot be expected to continually pay for costly mitigation in perpetuity. Whilst it is encouraging that radar mitigation is able to be deployed, it is the financial cost that is a financial barrier for projects. The ongoing uncertainty surrounding Eskdalemuir is a barrier for future onshore development. The doubt about the remaining budget allocation and how to appoint exclusion zones encourages uncertainty and prevents investment decisions and identification of future sites.
 - **Reforms to consenting processes:** Currently lengthy and uncertain.
 - **Wild Land designations and co-existence of onshore wind turbines and biodiversity/environmental management efforts.**
 - **Turbine heights and access to sites:** Getting taller turbines to site and ensuring adequate Police Scotland support. Addressing the complex issue of compulsory purchase rights to allow maximum deployment at lowest cost to the consumer is a controversial but important point to unpicking access constraints for project and timely delivery of renewable energy. Taller turbines generate more energy and increase the likelihood of project viability.
 - **Community benefit / shared ownership:** Best practice and approach, steps to facilitate participation.
 - **Hydrogen:**
 - **Hydrogen capital funding and business models** to support renewable deployment for green hydrogen.
 - **Planning policy support** for electrolyser developments co-located with onshore wind (including retrofit), without diminishing policy support for electrolysers that are not co-located.
- Grid connection timescales represent one of the biggest delays to RWE developing and connecting its clean energy projects across the UK, including projects in Scotland. Whilst grid infrastructure sits outside of its devolved responsibilities, the Scottish Government should take all actions possible to facilitate the delivery of a coherent and costed plan to upgrade Scotland’s grid infrastructure to prepare the network for the arrival of new renewable energy developments, without this further increasing costs to renewable generators in Scotland.
 - In addition to grid, RWE experiences project delays at all stages of the planning process. Planning departments in local authorities, as well as statutory consultees, whose advice and input is critical in terms of moving projects forward to consent, are already overwhelmed and under-resourced. Whilst supportive in principle and headline policy terms, in practice the planning system in Scotland represents a continued barrier due to resource and personnel constraints in planning departments and associated consenting bodies, as well as due to a lack of a statutory examination/determination period for Section 36 energy project applications. We would encourage the Scottish Government to seek to address the chronic levels of under-resourcing in planning authorities and within statutory consultees, so as to allow the employment of more officers and specialists responsible for dealing with project applications.

- One suggestion to remedy this issue is to create a ‘pool’ of specialists at a level who would be experts (noise, L&V, ornithology, ecology, cultural heritage etc) in advising on planning/s36/DNS/DCO applications for clean energy and associated infrastructure, rather than having specialists embedded in each local authority. A pooling of specialists working on major infrastructure projects (which contribute to net zero) would enable that expertise to develop and allow resource to flex to where it is required.
- Electricity Transmission Network Charges currently form a barrier to development of onshore wind in the most northerly and westerly areas of Scotland. Transmission charges are a produce of how far a unit of power must flow to be consumed. Therefore, as set out in our response to Question 4, updating network charging to properly value demand, and most notably flexible demand such as H2 electrolysers and battery storage, could help to alleviate these high charges by encouraging more demand sources into Scotland.
- If these policy, regulatory, technical and environment issues can be resolved in a timely fashion, then onshore wind projects in Scotland will have improved viability and will be more likely to make a contribution towards the 2030 target and wider delivery of Net Zero.

7. Given the generation potential, and market ambition, is there a risk of oversupply if options for use of surplus electricity (e.g. green hydrogen production) do not become reality?

- Given the forecast increased demand for electricity via increasing electrification, we do not anticipate a major long-term risk of oversupply – particularly when considered in the context of the wider GB energy market. However, we do acknowledge that current network infrastructure creates capacity issues on the grid, which results in constraint issues for projects, particularly in Scotland, where these are located further from areas of high demand.
- On green hydrogen specifically as a solution for surplus energy use, there may be some opportunities for co-location of onshore wind and electrolysers that minimises costs through shared infrastructure, particularly grid connections. However, it is expected that the majority of electrolysers will, and should, be grid-connected and located close to hydrogen users, optimised to meet off-taker hydrogen demands and hence delivered at lowest costs to hydrogen users. Co-location on onshore wind sites may not always be viable because of the availability of water or difficulty of getting water on site, the onsite requirements of hydrogen storage, potential visual impact, and access for hydrogen transport (especially in bad weather).
- The Scottish Government has acknowledged the potential role for hydrogen export in its plans, which has the prospect of representing a significant demand source for use of surplus power produced at peak generation times.

Hydrogen and the electricity system

8. How much of the Scottish Government ambitions for 5 GW of hydrogen production capacity by 2030, and 25 GW by 2045 should come from green hydrogen?

- Ultimately, to achieve net zero, all low carbon hydrogen should come from electrolysis. Blue hydrogen requires fossil fuels and will still result in the release of a degree of greenhouse gasses into the atmosphere since not all carbon dioxide produced in the process can be captured, whilst maintaining the UK’s reliance on imported gas. As such, and given Scotland’s potential for producing electricity from renewables, a large proportion of the hydrogen target should come from green, particularly in the long-term where green hydrogen production will have had the opportunity to scale up.

- It is likely that in the meantime blue hydrogen will be utilised – which would still represent a major reduction when replacing the use of grey hydrogen.

9. What are the key infrastructure barriers to building a hydrogen economy in Scotland and how should they be addressed?

- From RWE's experience of early-stage green hydrogen project development in Scotland, the key infrastructure barriers have been around securing grid electricity supply for electrolyzers in a timely manner (in some cases connections can take up to 10 years), and water supply issues in some areas (particularly the east of Scotland).

Ofgem

10. Ofgem are "working with government, industry and consumer groups to deliver a net-zero economy". What changes have recently been made to support the delivery of net-zero? What more could be done to support a regulatory regime that delivers decarbonised energy supplies affordably?

- As referenced in our response to Questions 1 and 2, Ofgem's remit must be reformed to ensure it is best placed to deliver Net Zero. Currently, Ofgem interprets that net zero is already implicit in its principal objective to 'protect the interests of existing and future consumers' via a subparagraph stating that this includes consumers' "interests in the reduction of greenhouse gases in the security of the supply of gas and electricity".
- In 2019 the National Infrastructure Commission recommended a reform of Ofgem's formal duties to support strategic investment. In 2022, the House of Lords Industry and Regulators Committee published a report: "The net zero transformation: delivery, regulation and the consumer" calling for OFGEM to have a net-zero remit, as did the Welsh Affairs Select Committee. In 2023 Chris Skidmore's Net Zero Review also called for OFGEM's remit to be reformed. RWE supports a change in OFGEM's formal remit to include net-zero as part of its principal duty.
- The UK Government has committed to publication of the Strategy and Policy Statement (SPS), designed to steer the actions of the regulator to ensure consistency with government policy, including around Net-Zero. This is heavily delayed but now expected in Spring 2023.
- Remit change - placing net zero alongside consumer protection - in Ofgem's primary duty would be more aligned to ensuring Ofgem is able to take a long-term strategic approach to delivering a cost-efficient transition to net zero.

11. What are the most important issues for the UK Government's Review of Electricity Market Arrangements to address? What are the benefits of the current system, and the potential pitfalls of moving away from it? What are the implications for the Draft Energy Strategy of the Review?

- The current market arrangements are well-understood by investors and have been extremely successful to-date in delivering significant low carbon investment and security of supply, while ensuring efficient dispatch. It makes sense to review the current arrangements to ensure they are fit for purpose and cost effective and facilitate the decarbonisation of the electricity system, subject to security of supply. However, with fewer than 13 years to decarbonise the power system to meet the UK Government's 2035 target, it is crucial that the ongoing Review of Electricity Market Arrangements (REMA) does not overlook the successes of the current system nor undermine the investment that we are seeking to accelerate.

- Overall, the transition can be achieved through incremental changes to the current market structure and we would caution against some of the more radical, untested and novel interventions, such as the proposals to physically split the wholesale market or introduce a green pool or, as outlined in our response to Question 4, a move towards Locational Marginal Pricing (LMP).
- Decoupling electricity from gas markets to protect consumers will be achieved under the current market arrangements, which under current arrangements will evolve into a 'financial split market' where the vast majority of intermittent renewable production is covered by two-way CfDs at long-run prices.

Community energy

12. Are community and locally owned projects inhibited by the current electricity network?

13. What are the key infrastructure barriers to Scottish Government community energy ambitions and how should they be addressed? Is it enough to "encourage" shared ownership models, or should a more formal mechanism be implemented?

- RWE is committed to engaging, supporting and building relationships with the communities in which we operate and we are actively in discussions with community groups on a number of our projects. Community investment is inhibited by the current electricity network to the extent that the barriers and delays to deployment of onshore wind that developers face equally impact on the communities wishing to invest.
- For shared ownership opportunities, such as those offered by RWE, to be taken up in line with the Scottish Government's ambition there are still significant obstacles which communities need ongoing support to overcome. These include access to capital, skills, resources, and tried and tested successful models. A major barrier is the respective financial commitments involved in investing in such projects, which are often not available to communities and associated organisations.
- One of the biggest challenges is the voluntary nature of most community activity. Our experience has shown that not every community has people with the time or inclination to progress shared ownership opportunities, with this often a barrier to investment. Communities also face challenges when multiple offers of shared ownership are presented from different project developers.
- RWE has however worked to help facilitate community energy projects where grid access issues have presented barriers to deployment. Via its Braevallich hydro project, RWE entered into an innovative 'Active Network Management' (ANM) arrangement to overcome a severely constrained grid connection that was preventing the development of a local community project – the 350kw Avich Hydro Scheme in Argyll & Bute. This solution resulted from strong partnership working, with several organisations and groups working together to facilitate the project's development.
- RWE's An Suidhe onshore wind farm community fund, located in the area, also then invested in an equity share in the River Avich project to help provide further financial support. This represented the first example of investment in a new community-owned renewable project from a community benefit fund in Scotland - representing a double win for the local community, with the hydro scheme also establishing its own additional community benefit fund for Dalavich.

- Alongside the option for shared ownership stakes our projects also offer community benefits, in line with Scottish Government best practise guidelines, usually valued at £5,000 per MW installed capacity. These are usually delivered as a community fund over the projects lifetime with grass roots decision making, by local people. This does not require any upfront investment or involvement from the community in the project itself (and is therefore completely risk free), it is also long term allowing communities to make plans for the future and consider larger, longer term and ambitious projects. Local decision making panels are usually established (supported by independent third party organisations with community development and grant making expertise) to manage the funds on behalf of the community.
- Since their first generation Scottish renewable energy projects operated by RWE have invested over £6 million into Scottish communities. We take a bespoke approach, with community benefit funds set up following extensive local consultation and engagement. Increasingly local communities are highlighting fighting climate change and supporting their local journey to net zero as key priorities. Across the UK community funds from projects operated by RWE are being used to fund projects including energy efficiency and generation initiatives on community building (including insulation, solar and air source heat), electric vehicles for community transport schemes, charging points as well as energy audits and advice for domestic properties.