Scottish Renewables written evidence to the House of Commons Environmental Audit Committee inquiry into Technological Innovations and Climate Change: Onshore Solar Energy

About Scottish Renewables

Scottish Renewables is the voice of Scotland's renewable energy industry, working to grow the sector and sustain its position at the forefront of the global clean energy transition. We represent over 320 organisations across the full range of renewable energy technologies in Scotland and around the world, ranging from energy suppliers, operators and manufacturers to small developers, installers, and community groups, as well as companies throughout the supply chain.

Executive Summary

Scottish Renewables welcomes the opportunity to provide written evidence to the House of Commons Environmental Audit Committee inquiry into Onshore Solar Energy.

Our submission focuses on solar energy in Scotland, which has different circumstances compared to solar energy produced elsewhere in the UK.

In the Sixth Carbon Budget[1], achieving the Balanced Pathway would require solar generation to increase from 10 TWh in 2019 to 60 TWh in 2035 and 85 TWh in 2050, and that 3GW per year will need to be installed to reach this level of solar generation. Scotland has some powers over new solar energy systems, such as planning and building regulations however subsidy schemes and grid mechanisms are reserved to the UK Government.

Scottish Renewables believes that to achieve the Sixth Carbon Budget Balanced Pathway The Scottish Government needs to set Scotland-specific targets of 4–6GW of solar PV by 2030. Having specific solar targets provides assurances to the industry of both The Scottish and UK Government's commitment to this sector and builds investor confidence.

Written Evidence

What role can developments in solar panel technology play in the UK's transition to net zero?

1. Developments in solar panel technology, especially in the weight of solar panels and how long they last, can play a role in the UK's transition to net-zero. Lighter, sturdier solar panels will enable developers to use solar technologies to complement other technologies in heating buildings and build solar farms for power generation.

2. It must be emphasised, however, that there needs to be a plan in place for how solar panels fit into a circular economy, with thought given as to what happens to end of life panels. Scotland is developing its own Circular Economy Bill and there is a Circular Economy Package policy statement which covers England, Scotland and Wales. This should include recycling solar panels when they reach the end of their lives.

3. A clear path for solar thermal deployment in Scotland and the UK is also needed.

   Solar thermal deployment is treated as a secondary technology in The Scottish Government's Heat in Buildings Strategy, and, as such, receives less emphasis in policy and support.

   The UK Government Heat and Buildings Strategy regards solar in terms of it having a role as a flexible technology and storage solution, however this role needs to be further developed by the UK Government.

What are the current barriers (regulatory, technological or otherwise) to expanding the number of small and large-scale solar installations in the UK?

4. There are currently barriers, both Scottish-based and UK-based, which prevent the operational deployment of much onshore solar in the UK.

[1] The Sixth Carbon Budget: The UK's path to Net Zero. The Climate Change Committee. December 2020.

The lack of exemplar projects to showcase ‘learning by doing’ for co-location of solar and storage in Scotland. It is difficult for the economic case for these projects to stack up. The storage aspect of these projects is usually not incentivised, which results in it being added on afterwards.

Gaps in the supply chain for solar in the UK is a major barrier. The current demand for solar is huge, driven by the cost-of-living and the energy crises, so support for SMEs (small medium enterprises) and businesses needs to be considered by both the UK and The Scottish Government.

- Barriers to expanding solar installations in the UK include:
    - · Grid and network capacity.
    - · Regulatory uncertainty – for example, relating to fiscal and planning policy.
    - · Building regulations and related policy.
    - · The availability of labour.
    - · Access to finance

The recently announced temporary 45% windfall tax levied on renewable electricity generators in the Autumn Statement is a barrier as it will result in lower investment confidence in the solar sector.

To what extent is the contribution of solar technologies to the UK’s renewable energy mix limited by storage and distribution capacity?

5. The lack of distribution network capacity is a major limitation on the deployment of solar (and other onshore generation technology) in the UK. There is not enough physical electricity network infrastructure (such as cables, transformers and substations) available to distribute electricity to where it is needed. The solar industry is collecting extensive evidence on this and can confirm that it is a problem for projects connecting at all scales: residential rooftop, commercial scale, and solar farms.

6. We believe that storage and distribution capacity play a complementary role alongside solar, however the economic case for storage must be made separately, in many cases.

7. The inter-seasonal storage of energy to enable peak winter demand to be balanced using underused summer capacity will be essential to decarbonizing Scotland’s and the UK’s heat use.

8. Seasonal thermal storage should be part of any solar strategy, following the example of countries such as Denmark where seasonal pit heat storage is used to store sunlight in summer for heating purposes in winter.

Furthermore, thermal storage will be essential to ensuring the decarbonisation of heat. Solar thermal systems can be paired with inter seasonal storage to deliver clean and affordable heat year-round. At district scale, solar heat projects can provide renewable heat at a levelised cost which is competitive with that of more conventional heat sources (like gas or heat pumps), even including the cost of seasonal storage.

9. Distribution Network Operators should facilitate hybrid co-located solar and battery storage systems (BESS) for their role in improving the dispatchability of solar generation, especially as the economic case for BESS systems improves in the next few years.

How significant are current technological developments in energy storage and distribution networks for the potential contribution of onshore solar to the UK’s renewable energy mix?

10. There is significant potential for solar energy storage to contribute to the UK’s renewable energy mix. The nature of the solar generation curve (which peaks in the middle of the day) means that solar generation is a natural complement to storage because surplus produced during the day can be stored and used at night.

Evidence from solar technology wholesalers and distributors in the UK indicates that approximately 80% of new residential solar systems are now installed with a home energy storage system, such as a battery. The aggregate value of millions of home batteries is huge and can make a major contribution to the UK’s grid balancing requirements.

Similarly, many solar farm developers are now seeking to “co-locate” grid-scale battery storage

systems with their projects, or to retrofit large batteries to existing solar farms. This helps maximise the energy and economic value of the grid connection, and to overcome some of the grid congestion challenges outlined in this response.

Equally, thermal storage offers a flexible solution to deliver clean heat. Thermal storage is particularly beneficial for optimising heat consumption in industrial processes, and this will be essential to the UK achieving its climate goals.

What needs to be done to facilitate solar farm access to grid connection, to enable wider distributed energy generation from solar installations?

11. The main barrier to utility-scale solar in Scotland is the proposed changes to the Transmission Network Use of System (TNUoS) charging regime. These changes mean that from 2025, all distribution-connected assets may be liable to pay TNUoS.

TNUoS is a significant barrier for the deployment of renewable generation, particularly in northern UK areas. Today, the UK has one of the highest locational charges in Europe and it is one of the few countries that charges a locational element for transmission charges. This is putting UK generators, particularly in Scotland, at a disadvantage to European generators which today do not pay for using the Great Britain Transmission System.

Distribution connected assets will come into the TNUoS charging net which will add a layer of cost that they currently do not carry.

The net effect would be to make solar and some wind unviable to develop and operate. In addition, the current approach to TNUoS charging results in highly volatile and unpredictable charges. This volatility can deter investors and increase the cost to consumers due to increased developer risk.

As a short term priority, Ofgem should seek to stabilise the inputs that feed into the TNUoS charging as soon as practically possible.

Are government support schemes sufficient to encourage small-scale solar technology deployment by consumers? What role does the pricing of energy under these schemes play in the uptake of solar technology by domestic and commercial properties?

12. The solar industry is currently subsidy-free, after the closure of the Feed-in-Tariff scheme.

13. There are still some uncertainties, however, around the Smart Export Guarantee (SEG) Scheme. We are concerned that the SEG is focused on too narrow an area – and an area where the market itself is likely to develop without government intervention. The SEG is not designed to bring forward new generation plus it is complex and administratively burdensome. It only supports a small segment of the market.

We recommend that The UK Government revisits the SEG scheme to redesign it to align with the Sixth Carbon Budget commitments.

14. Although not directly relevant to consumers at point of sale, there is still a pressing need for support for larger-scale solar which will benefit consumers in the future. This would be done by mitigating against rising energy bills, by decarbonising the electricity grid and helping small businesses, farmers for example, generate potential revenue.

Therefore, we welcome the commitment in the British Energy Security Strategy to include solar in the future Contracts for Difference auction rounds. However, this is in direct competition with onshore wind auctions, so we recommend that solar has its own separate pot.

15. The Scottish Government's Home Energy Scotland and Business Energy Scotland programmes may offer an example for the EAC. Each programme offers interest free loans to homeowners and SMEs to invest in energy efficiency or renewables.

Does Government policy and current planning guidance adequately address the issues raised by proposals to install solar farms on land with high agricultural or ecological value?

16. As planning is a devolved matter, we have no comments to make, apart from recommending that all planning regimes work together flawlessly across the UK and align with each other. This will assist companies to work effectively across the UK.

How sustainable is the supply chain for solar panel manufacture? Do levels of sustainability differ between mature and emergent technologies?

17. As noted in answer to question 2, gaps in the solar supply chain are a major barrier, especially now when the demand for solar to help bring down the costs of energy bills is very high.

Does the concentrated global distribution of solar panel supply chains (80% manufacture in China) pose a risk to solar technology expansion in the UK? If so, how could this be mitigated?

18. Our comments relate to solar energy produced in Scotland, therefore have no comments on solar energy produced abroad.

Are there opportunities for solar energy generated abroad (e.g. in the Sahara desert) to be delivered to the UK via interconnectors?

19. Our comments relate to solar energy produced in Scotland, therefore have no comments on solar energy produced abroad.

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