



# Environmental Audit Committee

House of Commons, London SW1A 0AA

020 7219 8890 - [eacom@parliament.uk](mailto:eacom@parliament.uk) - [www.parliament.uk/eacom](http://www.parliament.uk/eacom) - [@CommonsEAC](https://twitter.com/CommonsEAC)

Rt Hon Grant Shapps MP  
Secretary of State for Energy Security and Net Zero  
Department for Energy Security and Net Zero  
1 Victoria Street  
London  
SW1H 0ET

*Sent by email only*

4<sup>th</sup> May 2023

Dear Secretary of State,

## **Technological innovations and climate change: onshore solar power**

The Environmental Audit Committee has been examining how to accelerate the deployment of solar photovoltaic (PV) technology to achieve the Government's target of 70 gigawatt of generating capacity, as part of our inquiry into *Technological innovations and climate change: onshore solar energy*. Our call for evidence, issued in November 2022, resulted in 75 responses, including a response from your Department.<sup>1</sup> On 11 January 2023 we held an evidence session at which we heard from representatives of the solar industry and other stakeholders.<sup>2</sup> I am writing to you with our observations and recommendations following this work.

In our recent related report on *Accelerating the transition from fossil fuels and securing energy supplies*, we argued that low-carbon solutions like solar deliver synergies between affordability, security and sustainability.<sup>3</sup> This was something we heard again during this inquiry. Solar PV is now considered to be a mature technology, having undergone substantial cost reduction over the last 20 years. To date, there has also been a 3-4% improvement in the efficiency of solar PV technology every 10 years.<sup>4</sup> Together, these improvements have resulted in solar PV having one of the lowest levelised costs, compared to other energy sources.<sup>5</sup> Therefore not only can solar PV make a significant contribution to the UK achieving its goal of decarbonising the power sector by 2035; it can also enhance overall energy security and reduce the burden of high energy costs for households and businesses.

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<sup>1</sup> The responses to the call for evidence are published on the Committee's website at:

<https://committees.parliament.uk/work/7037/technological-innovations-and-climate-change-onshore-solar-energy/publications/written-evidence/>

<sup>2</sup> The transcript of the evidence session is published at: <https://committees.parliament.uk/oralevidence/12516/pdf/>

<sup>3</sup> Environmental Audit Committee, [Accelerating the transition from fossil fuels and securing energy supplies](#), Fourth Report of Session 2022-23, HC 109, 5 January 2023

<sup>4</sup> Solar Energy UK ([OSE0001](#))

<sup>5</sup> HM Government, [BEIS Electricity Generation Costs 2020](#)

## **Achieving the 70GW installation ambition**

We welcome the British Energy Security Strategy's ambition to increase solar energy generation capacity by up to 70GW by 2035, five times what it is at present. However, it is evident to us that achieving this goal will be challenging given existing barriers and current rates of deployment.

The evidence we heard shows that solar has a bright future in the UK. Chris Hewett, the CEO of industry body Solar Energy UK, told us that 'With the energy price crisis, and the spike in the price of gas, we are seeing huge demand for residential and commercial rooftop solar'.<sup>6</sup> Nevertheless, a dark cloud of delay hangs over the industry. In this inquiry and our recent inquiry on *Accelerating the transition from fossil fuels and securing energy supplies* we have identified difficulties in securing grid connections as a key barrier to rolling out renewables at the speed necessary to achieve the Government's stated ambitions. In some cases, customers are having to wait ten to fifteen years to secure a connection for potential solar installations. This is not only holding back the UK from achieving its decarbonisation goals, but it is also hampering the economy by preventing businesses and households from investing in solar PV installations to reduce their energy costs.

## **Grid connection delays**

The UK's grid was originally designed to accommodate a small number of large fossil fuel and nuclear plants on land. The increasing number and changing nature of electricity generators, including more ground mounted and rooftop solar installations, is putting strains on the current systems. We were told that our electricity networks are not currently 'fit for purpose' for an electrified net zero economy.<sup>7</sup> A lack of physical infrastructure, poor availability of data on solar PV generation across the system, and a 'queuing system' of applications is slowing progress. The delays and issues obtaining grid connections described above were attributed to several factors:

- **Physical infrastructure:** Several stakeholders highlighted the issue of grid infrastructure, stating that there is "not enough physical electricity network infrastructure (such as cables, transformers and substations) available to distribute electricity to where it is needed." The larger number of solar installations required to meet the 70GW target may also require control systems in transformers, to ensure the grid can cope with new solar flows.<sup>8</sup>
- **The 'queuing' system:** At present, solar farm developers can make speculative applications for grid connections relating to projects that have not yet secured planning permission. It was suggested that this makes it longer to obtain grid connections, as the queue is 'clogged' with projects that will never be completed.<sup>9</sup>

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<sup>6</sup> [Q15](#)

<sup>7</sup> [Q19](#)

<sup>8</sup> Dr Amanda Jane Hughes, Dr Theodore D C Hobson, and Dr Laurie J Phillips ([OSE0069](#))

<sup>9</sup> Bluefield Partners LLP ([OSE0043](#))

- **Network monitoring:** Proactive planning for investments in grid infrastructure by network operators is limited by the lack of available data on solar energy generation, particularly for small-scale installations, where metering data is subject to GDPR rules.<sup>10</sup>

The solar industry argues that grid operators and regulators bear responsibility for these delays. We have been told that Distribution Network Operators (DNOs) are unresponsive and that there is a regulatory failure with Ofgem failing to prioritise net zero. The committee will be examining grid connection delays in more detail in its recently announced inquiry into *Enabling sustainable electrification of the UK economy*. We would welcome a Government submission to that inquiry that addresses some of the concerns raised in this letter and the report of our *Accelerating the transition from fossil fuels* inquiry, which has not to date received a satisfactory Government response in terms of engagement with many of the specific conclusions and recommendations made in the report.

**We recommend that the Government works with DNOs and National Grid ESO to seek some short-term solutions to unblock the pipeline of delays given the continuing energy price crisis facing businesses and households—as well as working to deliver long term fixes to improve grid connections.** The solar industry told us that there were short term changes that could be made without changing the law: for instance encouraging DNOs and the National Grid to drop requirements for unnecessary export limiters designed for fossil fuel generators.<sup>11</sup> Queue management systems may also be able to be streamlined.<sup>12</sup>

We also heard that the Government must consider changing the duties of Ofgem with a new policy statement to help speed up deployment.<sup>13</sup> Ofgem must be required to change the way it assesses investment from the DNOs and the National Grid so that investment can be accelerated.<sup>14</sup> This is an issue that echoes evidence we heard relating to another economic regulator, Ofwat, in our *Water quality in rivers* inquiry earlier in this Parliament. We will examine Ofgem's role in facilitating grid investment in our upcoming inquiry into grid connection.

Chris Hewett argued that upgrading the grid should be regarded as a 'critical infrastructure' issue for the UK because these delays are slowing economic growth as well as the net zero transition. He made the case that the UK Infrastructure Bank should step in and say: 'we will put some of this money in from the public sector – on the public sector balance sheet – to invest in this now'.<sup>15</sup>

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<sup>10</sup> Exawatt, Open Climate Fix, The University of Sheffield ([OSE0040](#))

<sup>11</sup> [Q19](#)

<sup>12</sup> [Q20](#)

<sup>13</sup> [Q23](#)

<sup>14</sup> [Q24](#)

<sup>15</sup> [Q24](#)

## **Access to finance for solar**

We heard that the economics of solar have changed dramatically in the last ten years. Solar no longer needs subsidy.<sup>16</sup> It is the cheapest form of power. However, access to appropriate finance to cover the capital costs of solar installations was noted in several of our written evidence submissions as a barrier to the rollout of solar technology in the UK, particularly for households. Finance solutions such as property-linked finance or green mortgages, have been identified as possible tools to help citizens with the capital costs of solar panel installation.

**The Government should consider consulting on how it can facilitate affordable loans for households to be able to join the solar revolution.**

## **Economic incentives**

The main economic incentive for households and businesses to install solar PV is the high electricity price. The only Government-mandated incentive scheme for household solar installations is the Smart Export Guarantee scheme. This requires large energy retailers to provide SEG tariffs for customers who sometimes export excess electricity to the grid and sign up to the tariff (it is not provided automatically). The price per kilowatt hour paid in these tariffs remains low, and with electricity prices at their current levels, households with solar PV are more likely to save or make money by reducing the amount of electricity they use from the grid.

Electricity prices appear likely to stay high for some time. However, if they were to fall back to levels the seen in the 2010s then the economic incentive to install solar panels will reduce. **We recommend that the Government monitors the situation regarding deployment levels and economic incentives for installation.**

## **Deployment rates**

We heard that the Government's welcome ambition was achievable, but that current rates of deployment of rooftop solar need to double to reach the 70GW target. Solar UK has said that reaching the Government target 'implies around 23GW on rooftops, about 18GW more than there is now'.<sup>17</sup> To achieve the capacity envisaged in the British Energy Security Strategy, researchers from the University of Liverpool have estimated that an average monthly installation rate of 361 MWp would be required. The researchers argued that the peaks that the UK achieved during its feed in tariff policy, and that Germany achieved in its rate of solar installation in 2011 and 2012 – when it installed at a rate of 680 MWp per month – were evidence that these rates are achievable. As recently as 2019, Germany was recording rates of solar installation of 320 MWp per month.<sup>18</sup>

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<sup>16</sup> Q15

<sup>17</sup> Blog for MCS by Gareth Simkins, Solar Energy UK, *The rooftop solar market is big – but it has to get bigger*

<sup>18</sup> University of Liverpool researchers ([ATFF0042](#))

**We recommend that the Government work with the newly created Joint Government Industry taskforce to establish milestone installation ambitions on the path to 2035.** This will provide impetus to regulator and DNO efforts to remove grid connection barriers.

One way that the Government can use regulation to significantly increase installation rates is through the Future Homes Standard due to come into force in 2025. We heard that the Government's interim changes to building regulations through part L will help to ensure that most new homes will have some degree of solar capacity installed, but Ian Rippin, CEO of the Microgeneration Certification Scheme, warned that there is a tendency for developers 'to just fit the minimum they need'. Chris Hewett suggested that the final iteration of the Future Home Standard should be strengthened:

"...house builders will build to the regulations. The good news is about part L. What we are hearing from our members in conversation with the big home builders is that pretty much every English home from June 2023 will have some solar on. It won't have enough. The key when we move to the 2025 future homes standard is that what we need to see is solar, heat pump or other forms of electric heating, EV charging and maybe a battery. That needs to be the standard for a new home by 2025."<sup>19</sup>

**We agree. We urge the Government to be ambitious in these regards when it sets out technical specifications for the Future Homes Standard this year, and we recommend that the Future Homes Standard incorporate installation of solar PV and heat pumps as a minimum requirement for newly constructed housing.**

### **Encouraging the installation of household battery storage alongside solar**

Widespread uptake of household battery storage is going to be crucial to realise the full benefits of solar PV. Several stakeholders highlighted that the current rules for gaining grid connections do not reflect the beneficial nature of co-locating solar with battery storage capacity. One of the key constraints for solar + battery grid connections is the line capacity – current rules require that the peak capacities of the solar panels and battery asset are summed when making the connection. In reality, we were told that electricity generated from solar installations is likely be stored at peak generation times, resulting in a reduction in the peak line capacity required.<sup>20</sup>

The Government's introduction of a zero-rate of VAT for the installation of certain Energy Saving Materials in March 2022 effectively provides a 20% discount on the installation of solar PV. This is very welcome and has no doubt contributed – alongside high electricity bills – to the large growth seen in PV installation in the last year. We were told in the evidence session that although this VAT discount is available to those wish to install solar and storage together, it is not available to anyone who wishes to install storage to an existing PV array retrospectively. Increasing household storage capacity brings many

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<sup>19</sup> [Q41](#)

<sup>20</sup> Public Power Solutions ([OSE0020](#))

benefits not only for households but also for the grid – for instance increasing its capacity to use and store wind power when it is being generated.<sup>21</sup> **We recommend that the Chancellor of the Exchequer extend the VAT discount to household battery storage at the next opportunity.**

### **Skills and supply chain issues**

We heard that in common with other internationally connected industries there have been supply chain delays post-Covid. We also heard worrying concerns raised about the potential use of forced labour in Chinese solar manufacturing.<sup>22</sup>

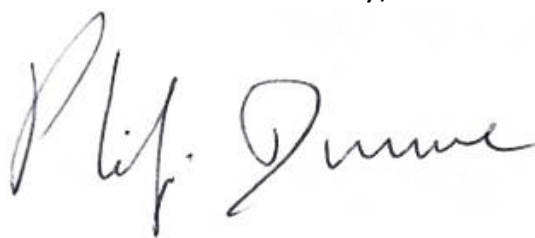
The sector is also concerned about the availability of trained staff. We were told by Ian Rippin that the industry – in common with other sectors – is facing a ‘labour shortage’ and ‘a challenge for skilled resources’.<sup>23</sup> We were told by Dr Chris Case of Oxford PV that ‘about 40% of the world’s production is probably subject to these concerns about forced labour’.<sup>24</sup> The industry told us that it was working to improve transparency in this area.<sup>25</sup> We welcome the announcement of the Joint Government Industry taskforce to work on these skills and supply chain issues. These issues further reinforce the case for the Government to encourage solar manufacturing in the UK.

### **Conclusion**

If barriers identified in this letter are not addressed with some urgency there is likely to be a very considerable shortfall in installed capacity compared with the Government's target set out in British Energy Security Strategy. Accelerating the solar transition will enhance the UK's energy security, help enable households and businesses to slash their energy bills, and make a significant contribution to decarbonising the UK's electricity supply.

The Committee would be grateful to receive a response to this letter not later than 17<sup>th</sup> May 2023 in time for your next scheduled appearance before the Committee. This letter will be published on the Committee's website, and I expect the Committee will wish to publish your response.

Yours sincerely,



**Rt Hon Philip Dunne MP**  
**Chairman of the Environmental Audit Committee**

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<sup>21</sup> [Q37](#)

<sup>22</sup> [Q51](#)

<sup>23</sup> [Q29](#)

<sup>24</sup> [Q51](#)

<sup>25</sup> [Q52](#)