

**Call for Evidence:**

**VAT energy savings  
materials relief—improving  
energy efficiency and  
reducing carbon emissions**

## About us

Since 1978, Solar Energy UK has worked to promote the benefits of solar energy and to make its adoption easy and profitable for domestic and commercial users. A not-for-profit association, we are funded entirely by our membership, which includes installers, manufacturers, distributors, large-scale developers, investors, and law firms.

Our mission is to empower the UK solar transformation. We are catalysing our members to pave the way for 40GW of solar energy capacity by 2030. We represent solar heat, solar power and energy storage, with a proven track record of securing breakthroughs for all three.

- Respondent details (for consultations)
- Respondent Name: Simran Massey/Kara Davies
- Email Address: [smassey@solarenergyuk.org](mailto:smassey@solarenergyuk.org) / [kdavies@solarenergyuk.org](mailto:kdavies@solarenergyuk.org)
- Contact Address: The Conduit, 6 Langley Street, London, WC2H 9JA
- Organisation Name: Solar Energy UK
- Would you like this response to remain confidential? No
- Submission date: 31 May 2023

## Introduction

We welcome the opportunity to respond to the HM Revenue and Customs department's "Call for evidence: VAT energy saving materials relief—improving energy efficiency and reducing carbon emissions". The solar and energy storage industry has a major role to play in addressing the cost of living and climate crises, and the Government can act to ensure as many homes as possible benefit from home electricity storage. This should be regardless of whether it is fitted alongside another measure, such as solar panels. In our view, the tax status of energy storage should not be dependent on the point at which it is installed.

The inclusion of battery storage within the list of energy-saving materials will be a critical driver for the UK to decarbonise its housing stock. There are key benefits of storage, such as energy security/self-consumption, reducing strain on the grid as well as cost savings, especially during the current cost of living crisis. Moreover, eliminating VAT would help the UK to meet the solar industry's ambition of deploying 70GW of solar by 2035 ambition. We develop this in our response below.

### **1. Do you think battery storage should be included in the relief when:**

#### **Retrofitted to a solar panel or other ESMs (please provide details)?**

In our view, battery storage should be included in the relief when retrofitted to a solar panel or other ESMs for a multitude of reasons. Firstly, cutting VAT on solar and storage would help to increase the resilience of individual households and reduce their energy costs, while also increasing our national energy security. This is because any heat or power a home produces itself does not need to be bought from the grid, reducing costs and increasing the UK's energy self-sufficiency. According to Solar Energy UK's own research, Smart Solar Homes, homes fitted with solar and smart controls provide additional revenue. In addition, the research shows that 4.4 million "Smart Solar and Storage" homes would eliminate the evening peak demand on a typical winter's day, providing 12GW of energy storage capacity, which would offer approximately 40GWh of system balancing dispatch.<sup>1</sup>

The financial benefits of storage are also articulated in Solar Energy UK's 'The Value of Solar Heat'<sup>2</sup>, our research shows that a typical home fitted with both solar and storage can save the consumer a significant sum of money—an annual effective saving of the solar systems increases to £1,151 – £1,428 per year. Thus, there is a strong investment case to retrofit a home with both solar and storage technologies. Maximising the deployment of solar and storage systems will be critical to decarbonising the UK's housing stock which is fundamental to achieving a net zero economy.

<sup>1</sup> <https://solarenergyuk.org/resource/smart-solar-homes/>

<sup>2</sup> <https://solarenergyuk.org/resource/the-value-of-solar-heat/>

## **Question 2: Do you think battery storage should be included in the relief when: As a standalone technology not connected to another ESM?**

Yes, in our view battery storage should be included in the relief when used as a standalone technology not connected to another ESM. The exclusion of storage from the Government's list of energy-saving materials is in direct opposition to its net-zero targets. As it stands, the current system provides no fiscal incentive to install storage, in fact, it penalises those who do not have the money to install solar technology and a battery at the same time, which is detrimental to what should be the policy objective of maximising our energy self-sufficiency and directly opposes the Government's levelling up agenda.

For a typical home, installing a battery will in general at least double the amount of electricity generated by a solar system installed on the roof. According to our research report on "The Value of Solar Property"<sup>4</sup>, the financial benefits of installing a solar system for a typical home include an effective annual saving of £349-£316 over the lifespan of the system, an indicative sale price increase of £1,688-£2,431, and an effective payback period of 10 years.

Therefore, this is critical for saving consumers money in the context of the energy price crisis. Existing VAT regulations can be a significant financial burden on retrofit projects, costing an additional £200,000 on a £1 million retrofit project. New research<sup>5</sup> by MCS highlights the wide range of benefits that reducing VAT would have, such as stimulating the green retrofit market, helping to decarbonise the UK's housing stock, and enabling homeowners and occupiers to make significant savings on their energy bills.

The research proposes that zero rating VAT will send a clear signal to businesses and consumers that the UK government is serious about retrofitting homes with domestic renewables and energy efficiency measures. This means that homeowners would not have to pay VAT at up to 20% on the installation of energy efficiency measures and domestic renewable technologies, making it more affordable for them to adopt these measures. This would also generate public revenue from increased employment.

## **Question 3: If so, can you explain how this type of battery storage would meet each of the 3 objectives set out in Chapter 2?**

In terms of meeting the three objectives set out in Chapter 2, battery storage can improve energy efficiency and reduce carbon emissions by storing excess energy generated by renewable sources for later use. It can also be cost-effective by reducing reliance on grid electricity and potentially lowering energy bills. As for alignment with broader VAT principles, battery storage can contribute to the UK's goal of transitioning to a low-carbon economy

<sup>4</sup> [https://solarenergyuk.org/wp-content/uploads/2021/10/VSP\\_Appendix\\_CaseStudies.pdf](https://solarenergyuk.org/wp-content/uploads/2021/10/VSP_Appendix_CaseStudies.pdf)

<sup>5</sup> <https://www.mcscharitablefoundation.org/news/2021/10/26/new-report-reveals-that-the-chancellor-should-zero-rate-vat-on-heat-pumps-and-energy-efficiency-measures> <sup>6</sup> <https://solarenergyuk.org/resource/smart-solar-homes/>

- **Improving energy efficiency:** Battery storage can help improve energy efficiency and reduce carbon emissions by storing excess energy generated by renewable energy sources, such as solar panels or wind turbines, during periods of low demand and then releasing it during periods of high demand. This helps to reduce the need for traditional energy sources, such as fossil fuels, and ensures that the energy generated from renewable sources is used efficiently.

For instance, according to Solar Energy UK's research on 'Smart Solar Homes'<sup>6</sup>, if 4.4 million homes were equipped with Generation 3 "Smart Solar and Storage" technology, it would eliminate the evening peak demand on a typical winter's day. This means that the energy stored in these homes' batteries would be sufficient to meet the energy demand during peak hours, reducing the need for additional energy generation from traditional power plants. The report estimates that this would provide 12GW of energy storage capacity, which could offer approximately 40GWh of system balancing dispatch. This is significant because it demonstrates the potential for smart solar and storage technologies to contribute to a more flexible and resilient electricity system.

- **Cost-effectiveness:** Battery storage can also be cost-effective by helping to reduce the cost of energy bills. By storing excess energy during periods of low demand, battery storage can help reduce the need to purchase energy from the grid during periods of high demand, when energy prices may be higher. This can help to reduce energy bills for households and businesses. Moreover, battery storage can help to reduce the need for expensive grid infrastructure upgrades by balancing the energy supply and demand at a local level.
- **Alignment with broader VAT principles:** Battery storage can align with broader VAT principles by promoting energy efficiency, reducing carbon emissions, and supporting the transition towards a more sustainable and circular economy. By reducing the need for traditional energy sources and promoting the use of renewable energy, battery storage can help to reduce greenhouse gas emissions and improve air quality.

### **Question 5: What is the typical cost of installing this type of battery storage in residential accommodation?**

- Standalone battery storage technologies are from £5500–£10,200 depending on the brand and storage potential<sup>7</sup>. Despite the upfront costs, installing battery storage for solar energy in a residential property can provide significant long-term cost savings by reducing reliance on grid electricity and maximising the use of solar energy.

<sup>6</sup> <https://solarenergyuk.org/resource/smart-solar-homes/>

<sup>7</sup> [https://www.deegesolar.co.uk/solar\\_batteries/](https://www.deegesolar.co.uk/solar_batteries/)

Additionally, battery storage can provide added resiliency in the event of a power outage, which can be particularly beneficial for households or businesses with critical power needs.

### **Question 6: What are the advantages and disadvantages of including this type of battery storage within the relief?**

#### **Advantages:**

- From a consumer perspective, including this technology in the relief could help more households install battery storage, either to complement their solar PV array or as a standalone technology. In both circumstances, battery storage helps reduce energy bills, either through storing cheaper electricity with time-of-use tariffs, or through making solar PVs more efficient.
- Typically, a household will use between 35–50% of the energy that their solar PV array generates, whereas including a battery storage system increases this to 80%<sup>8</sup>. Battery storage increases the efficiency of a Solar PV array, decreasing bills for consumers and supporting the grid

To achieve a decarbonised power sector, a considerable amount of battery storage will be required, including 22GW of short-term (0–4 hours) battery storage<sup>9</sup>. Domestic buildings are the perfect portal for battery storage systems. Consumers should be encouraged as much as possible to install them.

Short-term battery storage technologies have many important uses. Batteries have increased flexibility and can react to sudden changes<sup>10</sup> allowing them to manage thermal constraints throughout the transmission, maintain system stability, and ease locational constraints<sup>11</sup>.

If more domestic buildings install Battery Energy Storage Systems (BEES), there is more opportunity for households to participate in demand-side response, especially as technologies become smarter and more digitalised. Demand-side response mechanisms will have an important role to play in increasing the flexibility of a decarbonised power grid.

OVO, in conjunction with Nissan, has recently set up a scheme, whereby households can save £590 on household bills per year by installing a BEES<sup>12</sup>.

<sup>9</sup> <https://auroraer.com/wp-content/uploads/2022/02/Aurora-Report-Long-Duration-Electricity-Storage-in-GB.pdf>

<sup>10</sup> Redesigning capacity markets: Innovation landscape brief (irena.org)

<sup>11</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1095997/benefits-long-duration-electricity-storage.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1095997/benefits-long-duration-electricity-storage.pdf)

<sup>12</sup> <https://www.thisismoney.co.uk/money/bills/article-4944098/Is-battery-storage-answer-rising-bills.html>

This is from £240 of energy bill savings, as well as a fixed credit of £350 for allowing OVO to use the battery for demand-side response purposes. Schemes such as these show the dual potential of battery storage in simultaneously reducing energy bills, whilst also providing the necessary flexibility to the grid.

Domestic Storage Batteries are likely to be an important component of local flexibility, which could help manage demand to meet supply and avoid intense and costly network updates.<sup>13</sup>

### **Disadvantages:**

Unless defined clearly, it is possible that a loophole will be created, in which consumers will try and receive 0% VAT for all batteries. For this reason, we would suggest the implementation of a clear definition e.g. (Domestic Energy Storage Systems or Battery Energy Storage System (BESS)).<sup>14</sup>

Alternatively, there could be a prerequisite added that only battery storage systems installed by a MCS or equivalent registered installer would be valid for 0% VAT rating.

---

<sup>13</sup> Western Power Distribution, The Role of Local Flexibility file:///C:/Users/Jenny%20Russon/Downloads/The\_role-of-local-flexibility-FINAL.pdf

<sup>14</sup> [deegesolar.co.uk/home\\_battery\\_storage\\_without\\_solar\\_panels/](http://deegesolar.co.uk/home_battery_storage_without_solar_panels/)