

From: M Davies

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To: Climate Change, Environment, and Infrastructure Committee | Pwyllgor Newid Hinsawdd, yr Amgylchedd a Seilwaith <SeneddClimate@senedd.wales>

Subject: Urgent Look At Renewable Energy Figures Required

Dear Llyr Gruffydd, Janet Finch-Saunders, Delyth Jewell, Julie Morgan, Carolyn Thomas, Joyce Watson

I am writing to you, as members of [the Climate Change, Environment, and Infrastructure Committee](#), with reference to all the renewable energy developments throughout Wales. The Homes supplied estimation figures have been quoted by officials and the media, as a way, to try and justify, to the public, the level of countryside and indeed peat destruction for which these developments are responsible. However, none of these developments can meet anywhere near the homes supplied estimations they are claiming.

Homes supplied estimations

The estimations are based on the average homes energy consumption for electric. But the energy **supply to the homes is produced from a number of different sources such as gas Fire power stations**. So the amount of energy produced by (onshore) wind, in the average homes supplied, only makes up a small part of that supply figure. This means that the **developers** estimations are not accurate as they are **implying to supply homes solely**. If they supply homes solely from their own energy, this results in a far lower end figure.

Calculations

Onshore Capacity (MW) :- The total installed capacity of all onshore wind farms.

Load Factor

The load factor is the **actual output** of a turbine **benchmarked against its theoretical minimum output** in a year.

The load factor is calculated by RenewableUK as a rolling average of the past five years using data (on an Unchanged Configuration Basis) from the [Digest of UK Energy Statistics](#) published by the Department for Energy Security and Net Zero, using stats 2019-2023 (released in July 2024):

- onshore wind: 26.34%
- offshore wind: 40.58%
- DESNZ "all wind" (onshore + offshore): Average = 30.82%

Homes Powered Equivalent

Calculated using the most recent statistics from DESNZ showing that annual GB [average domestic household consumption](#) is **3,239kWh** (as of January 2024, updated annually). RenewableUK calculates homes powered as: number of megawatts installed, multiplied by DESNZ's "all wind" (onshore + offshore) **load factor expressed as a fraction of 1**, multiplied by number of hours in a year, divided by average annual domestic electricity consumption expressed in Mwh.

To Demonstrate, I have used 3 examples of Figures for proposals near me. I finish on 5 examples of the many developments approved that have inflated, inaccurate figures :-

WIND

DNS/3276725 for (RES) Wind farm

So The 55Mw wind farm claims to supply estimated 55,000 homes...

Onshore load Factor Calculation using 26.34%%

$55\text{mw} \times (0.2634 \text{ onshore load factor}) \times (8760 \text{ Hours per year}) = 126906.12$
divided by 3.239Mwh (average annual consumption) = 39180.648 homes

Some searches reveal (onshore alone) contributed to only 12.3% energy in 2024.

$39180 \text{ Homes} \times 12.3\%$ (onshore wind produced energy) = **4,819 Homes Supplied estimation** (not 55,000 Homes estimation claimed to supply)

CAS-02114-J9X4S6 for (Pennant Walters) Trecelyn Wind Farm

The 4 turbine 16.8Mw (Actual Rating) Wind Farm developer claims to supply a estimated 13,135 Homes.

Using the above calculation, 16.8 Mw and (Onshore load factor)

$16.8\text{Mw} \times (0.2634 \text{ onshore load factor}) \times (8760 \text{ Hours per year}) = 38764.05$
divided by 3.239Mwh (average annual consumption) = $11,967.90$ homes
 $11967 \times 12.3\%$ (onshore wind produced energy) = **1,471 homes supplied estimation**

Also transmission losses (up to 17%) would reduce those numbers.

SOLAR

Solar is much the same in this country and due to the nature of the British weather, its debatable if they ever repay their carbon foot print in the UK.

CAS-02446-R8X8W2 for (Cenin) Solar Farm

Here is the Solar Farm Calculation which claim an estimated 12,500 Homes from 35Mw

Using:- UK Solar capacity Factor and Calculation for solar Annual Energy Output including capacity factor of 10%

The **capacity utilization factor** refers to the ratio of the **actual output** of a solar plant compared to its rated or installed capacity over a period of time

PV panels have a **capacity factor** of around **10%** in the **UK** climate. Note:- Nothing produced at night in dark & minimal production on winter days or downtime and Maintenance.

Calculation:-

1. Calculate Annual Energy Output:

Convert the solar farm's capacity to kilowatts: $35 \text{ MW} = 35,000 \text{ kW}$

Calculate the total energy produced in a year at full capacity: $35,000 \text{ kWh} \times 8760 \text{ hours/year} = 306,600,000 \text{ kWh}$

Apply the capacity factor (10%): $306,600,000 \text{ kWh} \times 10\% = 30,660,000 \text{ kWh}$

2. Divide by Average Household Consumption:

Divide the total energy output by the average household consumption: $30,660,000 \text{ kWh}$ divided by 3239kwh annual consumption per home = 9465 homes

According to the DESNZ average household electric consumption data for 2024, solar energy contributed 5.2% , so $9465 \times 5.2\% = 492$ homes supplied Estimation

((But if you **can only use 80% of the batteries storage without damaging them**)) (80% of 35MW) = $28000\text{kW} \times 8760 = 245,280,000 \text{ kWh}$

$245,280,000 \times 10\%$ (capacity Factor) = 24,528,000 kWh
 $24,528,000 \text{ kWh} \text{ divided by } 3239 \text{ kWh}$
annual consumption per home = 7572 Homes
 $7572 \times 5.2\% = \mathbf{393 \text{ homes Supplied Estimation}}$
Also up to **as much as 17% power losses can arise from transmission losses** through cables. Which could result in (393 Homes – 17%) **Only 326 Homes supplied Estimation**

This has resulted in Developments being passed on an inaccurate basis, For example :-
(See attached screenshot of developer estimation figures)

DNS/3244499 - Garn Fach **Wind Farm** EDF Energy:-

In this example I will use their average household consumption figure of 3772 Kwh the developer has used.

So The 85Mw wind farm claims to supply estimated 69,000 homes...

Onshore load Factor Calculation using 26.34%%

$85 \text{mw} \times (0.2634 \text{ onshore load factor}) \times (8760 \text{ Hours per year}) = 196127.64$

divided by 3.772Mwh (average annual consumption) = 51995.66 homes

Some searches reveal (onshore alone) contributed to only 12.3% energy in 2024.

$51995 \text{ Homes} \times 12.3\%$ (onshore wind produced energy) = **6,395 Homes Supplied estimation** (not 69,000 Homes estimation claimed to supply) Minus transmission losses.

Here's some others passed (I have used 3239Kwh for the average annual consumption figure-

DNS/3279676 - Craig -y- Perchych (Cyp) **Solar Farm** (10MW Developer estimates 5300 Homes) **Actual 112 Homes supplied Estimation** (@ 80% battery) or **92 Homes** if 17% transmission losses were to be Factored in.

DNS/3270299 - Mynydd Carn - y - Cefn **Wind Farm** (34MW Developer estimates 21,084 Homes) **Actual 2979 Homes supplied Estimation** or **2472 Homes** if 17% transmission losses were to be Factored in.

DNS/3251545- Bretton Hall **Solar Farm** (30MW Developer estimates 8400 Homes) **Actual 337 Homes supplied Estimation** (@ 80% battery) or **279 Homes** if 17% transmission losses were to be Factored in.

DNS/3260565 Brynrhyd **Solar Farm** (30MW Developer estimates 10,000 Homes) **Actual 337 Homes supplied Estimation** (@ 80% battery) or **279 Homes** if 17% transmission losses were to be Factored in.

Wind Turbine Electric Consumption

All turbines consume electric from the grid when in service mode (to keep the viable). **None of the wind farms developers are providing their turbine annual electric consumption?** This would reduce their homes supplied estimations even lower.

Peat

There is also a bid to keep a lid on the true depths of peat at some of the selected sites with both PEDW and NRW assessing inaccurate desk study data rather than actual depths.

The End Result

The developers are deceiving for their own financial gains with their homes supply estimation claims. Both wind and Solar developers are making false claims about their products capabilities and misleading the public.

This has resulted in the renewable developments being passed by PEDW and the Welsh Government on an inaccurate basis and without the full development information and incorrect details.

Most people are unaware of the bogus figures. I ask if you could investigate these issues with urgency. Currently not only is the destruction being carried out throughout the country unjustified but it has resulted in excessive energy bills all at the extra cost to the public through Curtailment Money (money developers are paid to switch off) and Subsidies added to the energy bills, which they have no choice but to pay.

These developments are about the Curtailment money not electric. American and a number of European Countries have already faced up to the facts. The intermittent renewables are not working and don't warrant the needless countryside destruction.

I will look forward to your response. Thank you for your help!

sincerely, Matthew Davies, 19th August 2025