

## **Totnes Community Wind Farm response to questions regarding Capacity Factors**

The John Muir Trust state that wind farms 'produce below 10% of capacity for more than a third of the time'. Wind power has variable output by its very nature so within the year there will naturally be months that the capacity factor is higher than in other months. However, factual information is available on the load factors year on year. The on average 30% capacity factor is derived from all wind farms in the UK, both onshore and offshore. Offshore capacity factors are often higher than onshore ones, due to less turbulence and higher average wind speeds at sea. According to Scottish Renewables, the John Muir Trust study only takes 61 onshore wind farms into consideration, however there are now over 300 in the UK. Also, the John Muir Trust study looks at 2 years, 2009 and 2010, and unfortunately 2010 was a very calm wind year (for onshore). Scottish Renewables had independent wind specialists Garrad Hassan (<http://www.glgarradhassan.com/en/OnshoreWind.php>) undertake a counter study and they came up with better load factors for that period than Stuart Young Consulting Ltd, an average of 24.8% versus 22%. In general, it is more representative to consider load factors over a longer period of time as highs and lows are then levelled out.

DECC gives the **load factor** statistics at their DUKES stats as follows:

<http://www.decc.gov.uk/en/content/cms/statistics/publications/dukes/dukes.aspx>

See table 7.4 in particular: **7.4 Capacity of, and electricity generated from, renewable sources**

### **Load factors (per cent)**

#### **2006 2007 2008 2009 2010**

Onshore wind 27.2 27.5 27.0 27.4 21.7

Offshore wind 28.7 25.6 30.4 26.0 30.5

### **Load factors on an unchanged configuration basis (per cent)**

#### **2006 2007 2008 2009 2010**

Onshore wind 26.7 27.3 29.4 26.9 21.5

Offshore wind 27.5 28.3 34.9 33.7 29.6

As you can see above, there are 2 ways of calculating load factors, some experts prefer one, and some the other (RenewableUK thinks "unchanged configuration basis" is the most reliable), so DECC gives both. From these figures, combining onshore and offshore over a period of years, we get an average figure of around 30%.

We expect Totnes Community Wind Farm to run at an average 29% capacity factor. What we do is we look at the NOABL wind database which gives average wind speeds on site and then correlate that with long term wind data. We then look at the capacity of the machine we're suggesting for that site and are then able to calculate its expected output, which for the two Totnes Community Wind Farm turbines is expected to be around 11,500 MWh per year. The number of households calculated from that is conservative as we have calculated around 2660 but we allow for less production at lower wind speed years.

### **Further Reading**

A briefing sheet on load factors from our trade organisation Renewable UK with some more background information can be found at

[http://www.bwea.com/pdf/briefings/FS05\\_Efficiencies\\_Load\\_Factors.pdf](http://www.bwea.com/pdf/briefings/FS05_Efficiencies_Load_Factors.pdf)