

# Repowering the UK's oldest wind farms could boost energy generation by 171%

November 19 2018, by Rebecca Windemer

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Credit: Mike Liu from Pexels

Wind energy has been identified as having an important role to play in the [world's move towards a low-carbon future](#). But, due to short-term planning rules, it may not have as big a part as it could in the UK's own

sustainable energy generation.

To date, when most UK [wind](#) farms were under development, temporary planning consent of 25 years was granted. Under the terms of this consent, when the two and a half decade period comes to an end, the turbines have to be removed and the land returned to its previous use. Now, a significant number of the country's wind farms are starting to reach the end of their permission period, 62 wind farms in England, Wales and Scotland are aged 15 and over and 22 of these are more than 20 years old. If existing sites are removed without replacement this could decrease the overall amount of [energy](#) generated from UK renewables.

There are other problems too: the government has warned that there is a risk of equipment being abandoned on some of the oldest sites, because some original planning consents failed to specify the removal of all of the infrastructure. In some cases, large equipment and cables do not have to be removed. And in 2015, the government created major planning hurdles for onshore wind farms and ended subsidies. As a result, there has been a [94% drop in applications](#) to build new wind farms in England alone.

But all is not lost. To combat the issue, in July 2018 it was announced that the repowering of existing [wind turbines](#) would not be subject to the same planning hurdles as new sites. And our analysis has now confirmed that repowering can massively increase the energy output of the UK's wind farms.

## **End of life options**

There are three options for wind farms that reach the end of their planning consent. First, they can be decommissioned, the infrastructure removed and the land returned to its previous condition. Another option is for the operational life of the existing turbines to be extended. This

involves getting planning permission to keep the turbines in place, usually for another five to 10 years. Or the farm can be repowered, which means old turbines will be replaced by newer ones.

### Output increase of repowered wind farms

		CURRENT OUTPUT (MW)	POTENTIAL AFTER REPOWERING (MW)
1	End of life decision within 5 years	666	1,806
2	End of life decision within 10 years	3,225	8,740

So far, most wind farms that have reached the 25 year limit have been repowered and given a 25-year consent for the new turbines. Or they have had the permission for the original turbines extended, allowing them to continue working for up to 10 additional years. Across Britain, 23 sites have already been repowered and at least three have extended their life, while only two have been decommissioned. Repowering sites has proved to be a great opportunity to increase the energy produced. On average repowering has increased the output of sites by 171%.

The following table shows the potential increase in power (measured in megawatts) from sites repowering in England, Wales and Scotland within the next 10 years. In all, 54 sites are due to come to the end of their life within five years, and 161 more within ten years. This data is

based on 23 sites that on average (excluding sites that repowered early for technical reasons) repowered after 18 years of operation. Although not all farms will repower this early, or have the same increase in output, these estimates show that repowering has the potential to greatly boost wind farms' contribution to UK energy supply. If all 215 sites did repower at this level within the next ten years the energy increase will be enough to power an additional 3.8 million homes.

Repowering doesn't come without its challenges, however. It can change how a wind [farm](#) looks, which is not always popular with the general public. On average, repowering has reduced the number of turbines on a [site](#) by 24%, but turbines have got 89.5% taller. This has caused difficulties for local planning authorities when assessing the visual impact of planning applications.

Public opinion and the benefits for local communities that come from repowering should be an important consideration – but this hasn't played a major part in approval decisions, and the public response to repowering schemes has varied. Some approved schemes – such as [St Breock wind farm in Cornwall](#) – have received significant support, while others ([Ovenden Moor in West Yorkshire](#), for example) have come up against local opposition.

Crucially, despite the evident benefits to repowering wind farms, there is still not enough governmental guidance to ensure that decisions can be made quickly and fairly in a way that balances energy production with local environmental, social and economic benefits.

This is not an issue that the country can sit on. With so many [wind farms](#) approaching their 25th year, we need to act quickly in order to maximise the potential benefits to energy generation and carbon reduction targets.

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