

## The need for onshore wind

### National Development

We are in a climate emergency, cost of living crisis and also seeking to enhance the security of our energy supply. Onshore wind can address all of these. This is recognised by the Scottish Government's National Planning Framework 4 (NPF4)<sup>1</sup> which was published in February 2023.

NPF4 is Scotland's long term spatial planning strategy and categorises onshore wind projects with a generating capacity in excess of 50MW as National Development. In principle it supports all forms of renewable energy generation including onshore wind.

### Net zero carbon targets

A 'climate emergency' was declared by the UK Government and the Scottish Government in 2019. The UK Government has set a legally binding target for reducing greenhouse gas emissions to 'net zero' by 2050 and the Scottish Government has a net zero target of 2045<sup>1</sup>. Renewables, and specifically onshore wind, will play an important role in helping achieve these targets.

Scotland currently has almost 9GW of operational onshore wind capacity. The Scottish Government has a target of achieving 20GW of installed onshore wind capacity across Scotland by 2030<sup>2</sup> in order to help meet the legally-binding 2045 net zero carbon emissions target. This is a substantial increase and will require a significant deployment of new onshore wind projects in order to meet this demand for green, low-carbon electricity.

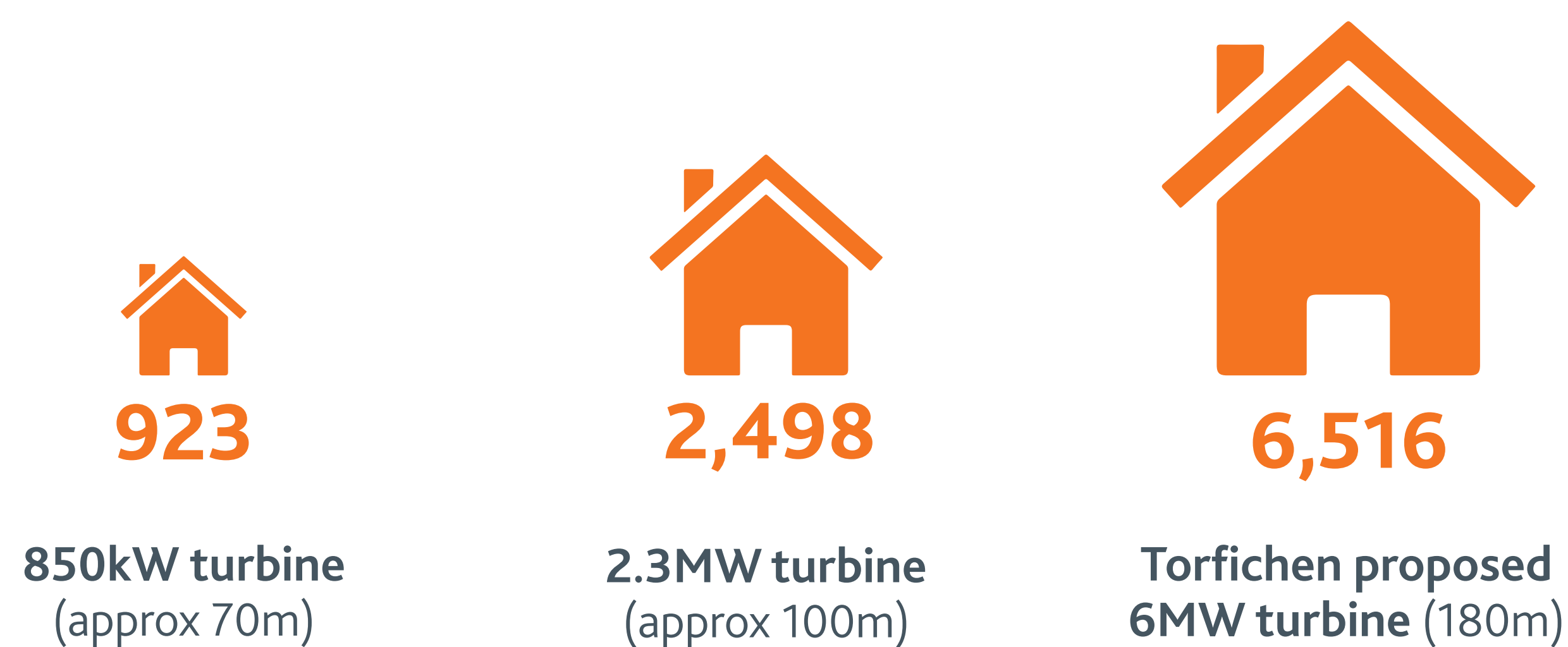
### Improved performance and output

Wind turbine technology has advanced considerably in recent years, meaning that wind turbines are now taller and more efficient which enables them to generate a significantly greater amount of electricity per wind turbine.

Modern taller wind turbines provide more electricity, which helps address the climate emergency, cost of living crisis, and security of energy supply. The 180m tall wind turbines proposed at Torfichen Wind Farm would allow for far greater benefits in terms of renewable electricity generation per wind turbine than smaller turbines would.

*This indicative infographic shows the approximate number of homes that could be powered annually<sup>3</sup> by each of the three different turbine models.*

**Please note that images are not to scale.**



<sup>1</sup> <https://www.gov.scot/publications/national-planning-framework-4/>

<sup>2</sup> Onshore Wind – policy statement refresh 2021, Scottish Government, October 2021

<sup>3</sup> The indicative homes equivalent figures for the site (a conservative estimate of 117,000 homes) and for the three different wind turbine models shown above (923 homes, 2,498 homes, and 6,516 homes) have each been calculated by taking the predicted annual electricity generation (based on the site's installed capacity of 108MW, or each wind turbine's capacity i.e. 850kW/ 2.3MW/ 6MW) together with RES' predicted capacity factor of 43.5% (based on a 6MW [megawatt] candidate turbine) and dividing this by the BEIS annual average electricity figure (showing that the annual UK average domestic household consumption is 3,509 kWh [December 2022]). The final wind farm capacity and the wind turbine models used for Torfichen Wind Farm will vary depending on the outcome of any planning permission and the wind turbine procurement process.

<sup>4</sup> NASA (<https://climate.nasa.gov/evidence/>)

<sup>5</sup> The carbon emissions reduction figure of 110,136 was calculated using the Scottish Government's Renewable Electricity Output Calculator (<https://www.gov.scot/publications/renewable-and-conversion-calculators/>)

### Low-cost electricity

Onshore wind, alongside other renewable energy technologies, can generate the cheapest form of new electricity generation. If consented, the Torfichen Wind Farm scheme would be capable of generating enough clean, low-cost renewable electricity for approximately 117,000 homes<sup>3</sup> based on the current design presented at this exhibition. With the rising cost of living and climate change emergency, it is imperative that we deliver electricity efficiently and at lowest cost to the consumer.



### Energy security

Wind energy is a free and inexhaustible resource which has an important role to play as part of a balanced energy mix. It increases energy security by reducing our reliance on imports and is not subject to sudden price fluctuations or the uncertainty of global markets. It is also quick to build (12-24 months), and the carbon payback time is usually within 1-3 years. Advancements in energy storage solutions will also help capture excess electricity generation. The current 108MW Torfichen Wind Farm proposal also includes a 100MW battery energy storage system to help maximise the efficiency of the proposal and further contribute to energy security.

### Tackling climate change

Whilst temperature and weather patterns have naturally fluctuated throughout history, scientists now agree that there is *"unequivocal evidence that Earth is warming at an unprecedented rate"* not seen in the past 10,000 years and that *"human activity is the principal cause."*<sup>4</sup>

Rapidly melting ice sheets, accelerated rises in sea levels and ocean warming, longer droughts, more frequent floods, wildfires and tropical storms are just some of the devastating effects of climate change seen across the globe which are affecting humans and other species. With the ever-growing threat of climate change and the catastrophic impacts that it could have, it is critical that we transition to a zero-carbon future. If consented, Torfichen Wind Farm would be capable of reducing carbon emissions by approximately 110,136 tonnes<sup>5</sup> each year – displacing fossil fuels.