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Decommissioning – economic opportunities for Scotland

Chaired by Finley Becks-Phelps, UK Development Director, Fred. Olsen Renewables

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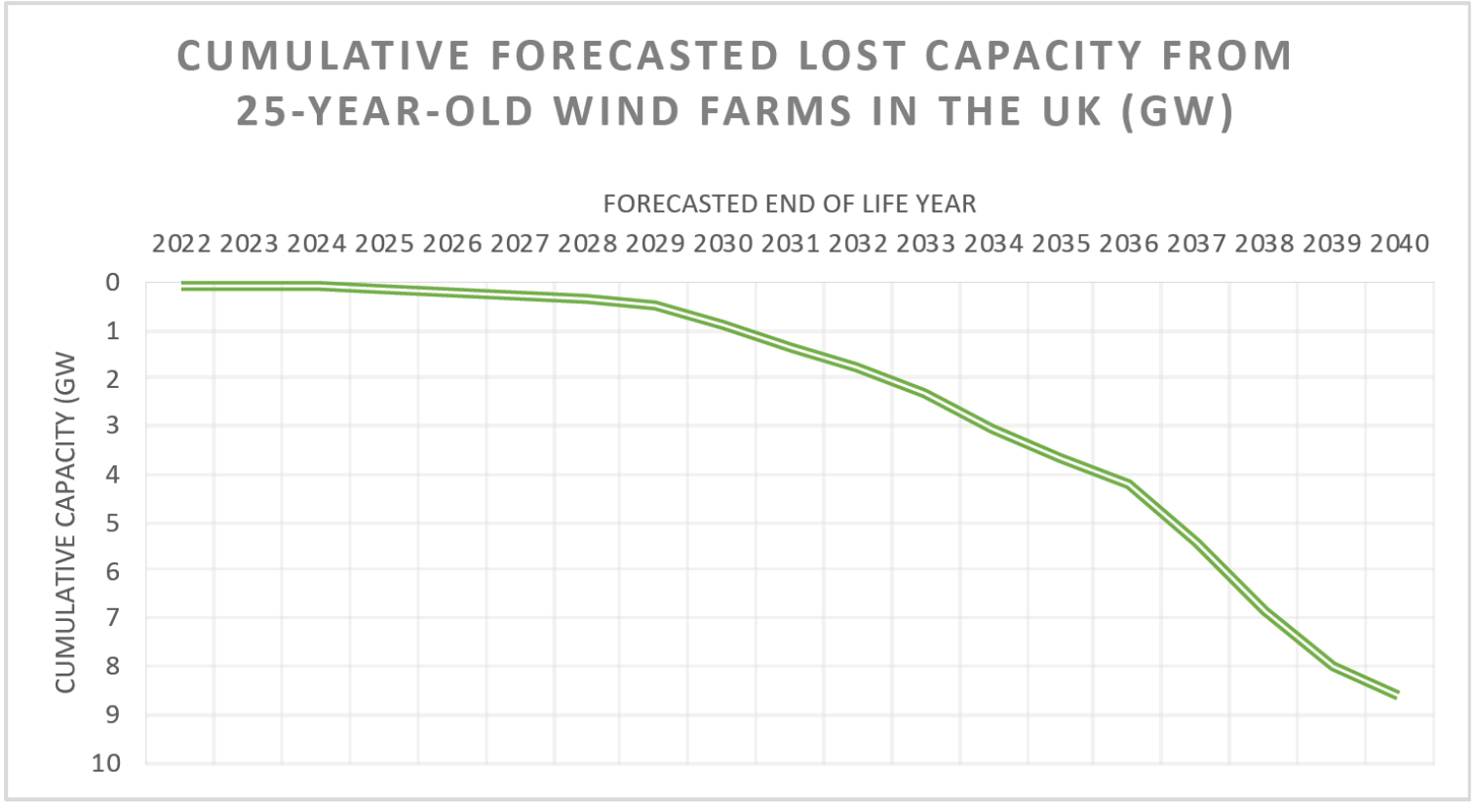
Repowering – from generation to generation

Chaired by Craig Whelton, Consenting Lawyer, Burges Salmon

Craig Whelton
Partner, Burges Salmon LLP

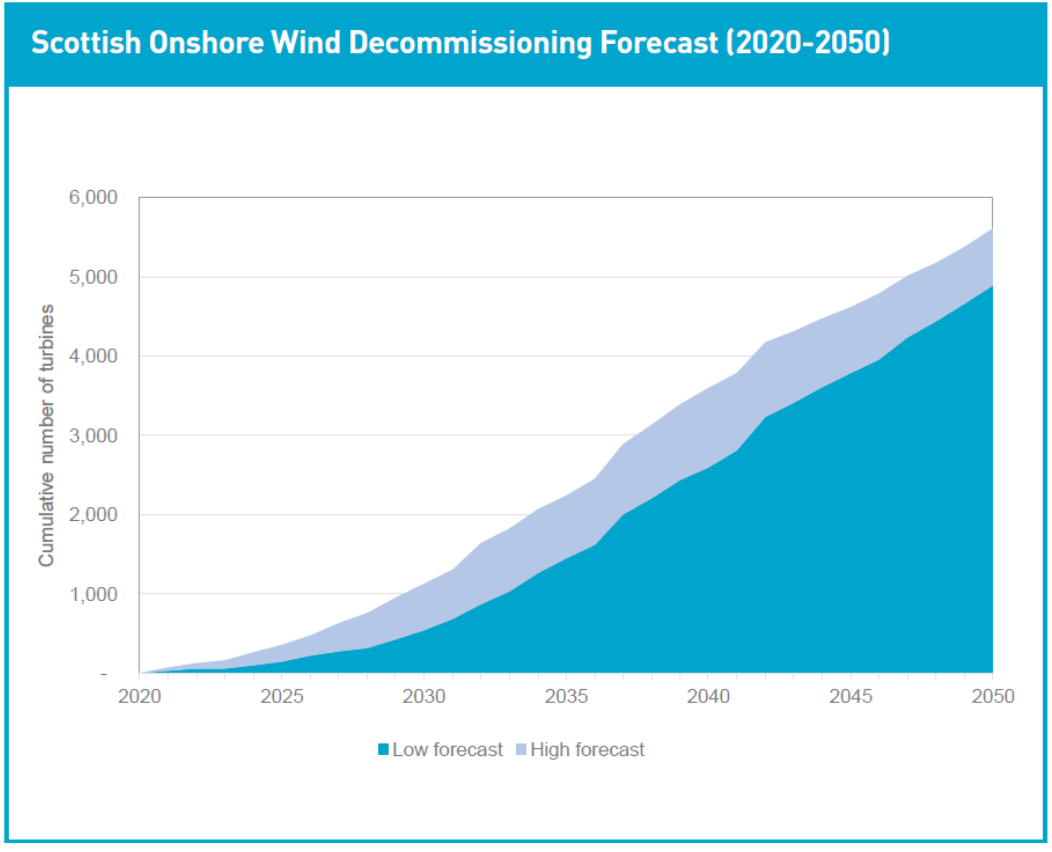
6 June 2023

Projected Capacity Loss



Source: RenewableUK, Energy UK and Scottish Renewables, 'Repowering Onshore Wind' (January 2023)

Onshore Wind Decommissioning



Source: Zero Waste Scotland, 'The future of onshore wind decommissioning in Scotland' (April 2021)

Repowering Onshore Wind

- 12 GW of additional onshore wind by 2030
- Repowering – running to standstill or a massive opportunity
- Economics, Technical & Design, Policy

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Head of Net-Zero Programmes

National Manufacturing Institute Scotland

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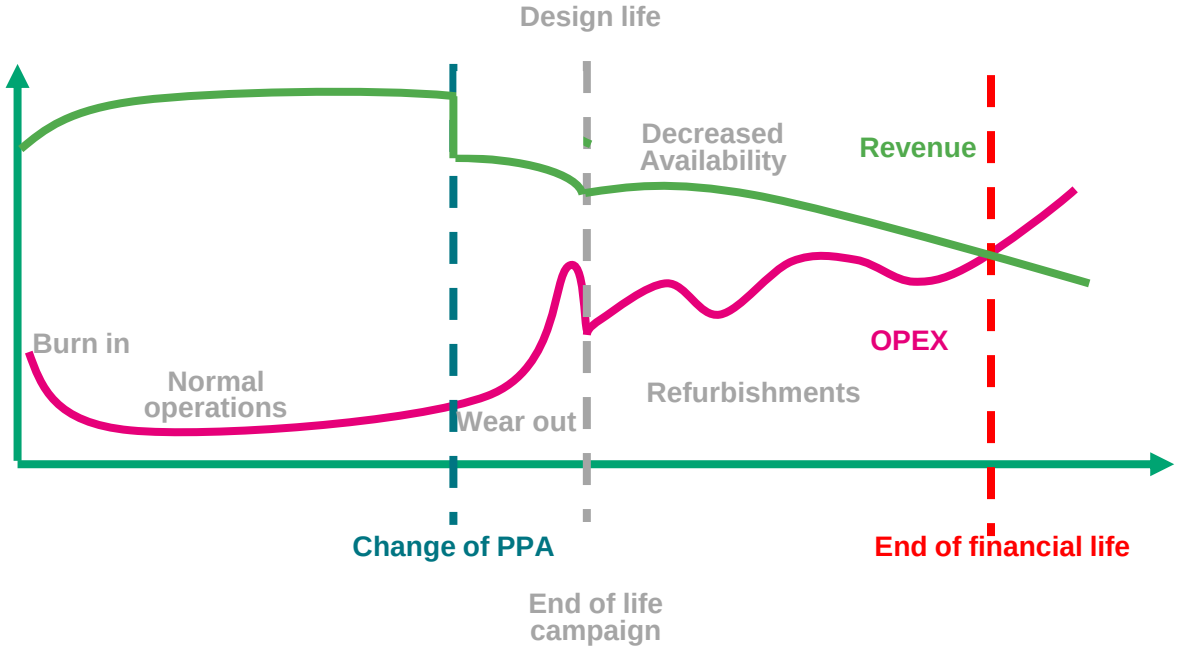
Neil Marshall

Advisory Lead – Onshore Wind

Natural Power

Through life management of single wind farm



Revenue

Function of external market and availability

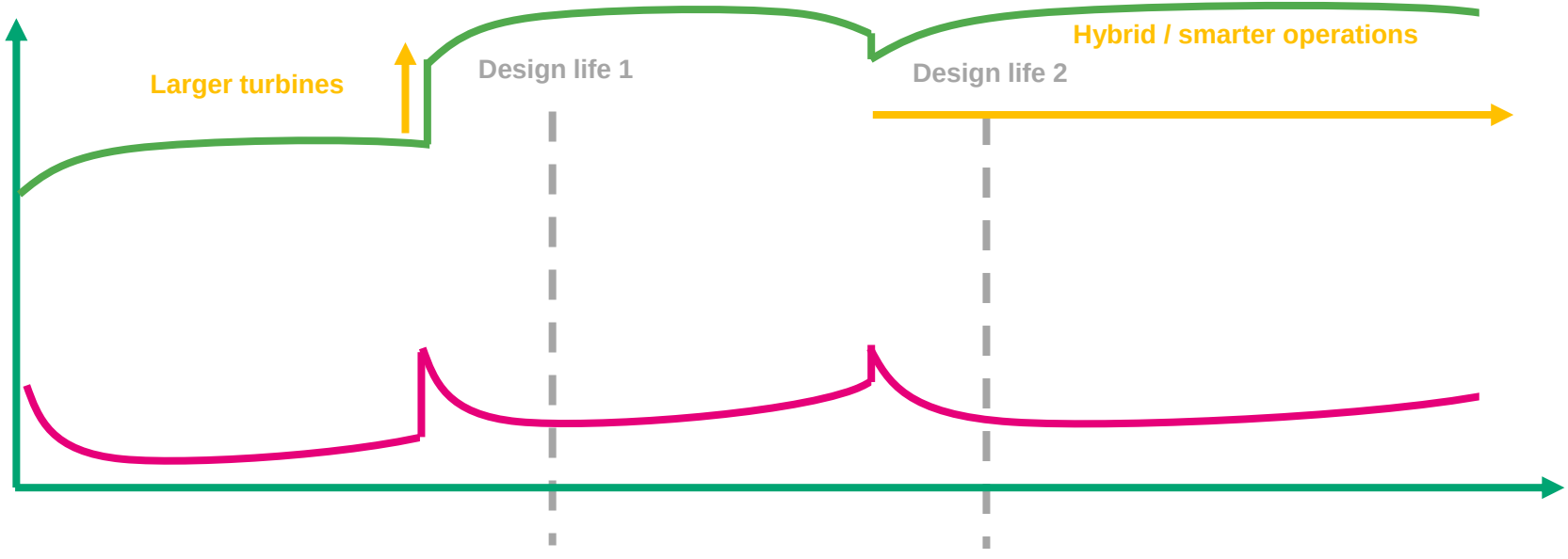
External market revenue possibilities

OPEX

Variable with periodic costs

External market will drive costs, competition may lower, poor performance may increase

Repowering scenario



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Helen Thrasher

Head of Technical

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Turbine Evolution and Generational Gaps

- Over 14 GW operational onshore wind projects in the UK
- Typically utilising turbines <2.5 MW capacity
- Most large scale turbine suppliers now offering turbines >6.0 MW
- Tip height increase from <100m to up to 250m
- Rotor diameter increase from <100m to >150m
- Opportunity to significantly increase the energy generation of existing sites with fewer, larger turbines

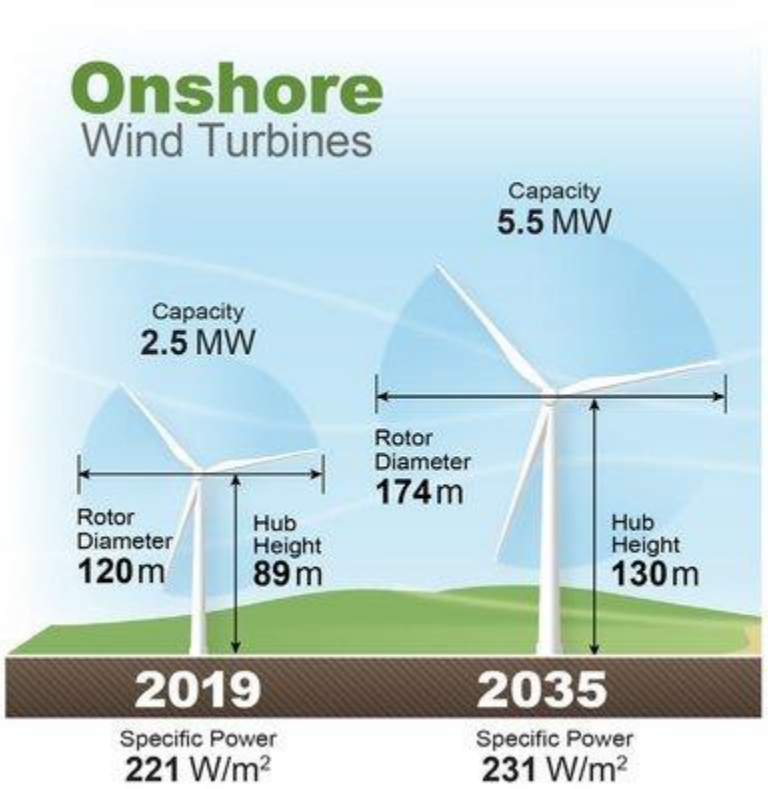

Image Source: Wiser, Ryan & Rand, Joseph & Seel, Joachim & Beiter, Philipp & Baker, Erin & Lantz, Eric & Gilman, Patrick. (2021).

Repowering – Technical Advantages

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Hybrid Projects

- Range of technology mixes deployed in co-location project
- Storage being considered from project initiation
- Increased energy generation from same land area as original project

Wind turbines produce electricity over a solar park near Klettwitz, Germany, 1 November 2022. (Photo by Sean Gallup/Getty Images). Source: www.energymonitor.ai

Informed Project Design

- Lifetime of operational data from existing project
- Greater understanding of the on-site wind resource
- Allows for more accurate design of the repowering project
- Optimised site layout and turbine technology selection
- But, potentially more complexities than developing a greenfield site

Thank you

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