

The role of manufacturing and technology in delivering the zero carbon agenda

Professor Dave Worsley

Constructing Excellence London January 15th 2020

GRAND CHALLENGE MISSIONS



#INDUSTRIALSTRATEGY

WE WILL USE NEW TECHNOLOGIES TO

HALVE

THE ENERGY USE OF NEW BUILDINGS BY 2030



#INDUSTRIALSTRATEGY

ALL NEW CARS AND VANS WILL BE EFFECTIVELY

ZERO EMISSION

BY 2040



#INDUSTRIALSTRATEGY

PEOPLE WILL ENJOY

5 MORE YEARS

OF HEALTHY, INDEPENDENT LIFE IN THEIR OWN HOMES BY 2035



#INDUSTRIALSTRATEGY

WE WILL SAVE AROUND

20,000 LIVES

A YEAR BY 2033 BY USING AI TO IMPROVE CANCER DIAGNOSIS RATES



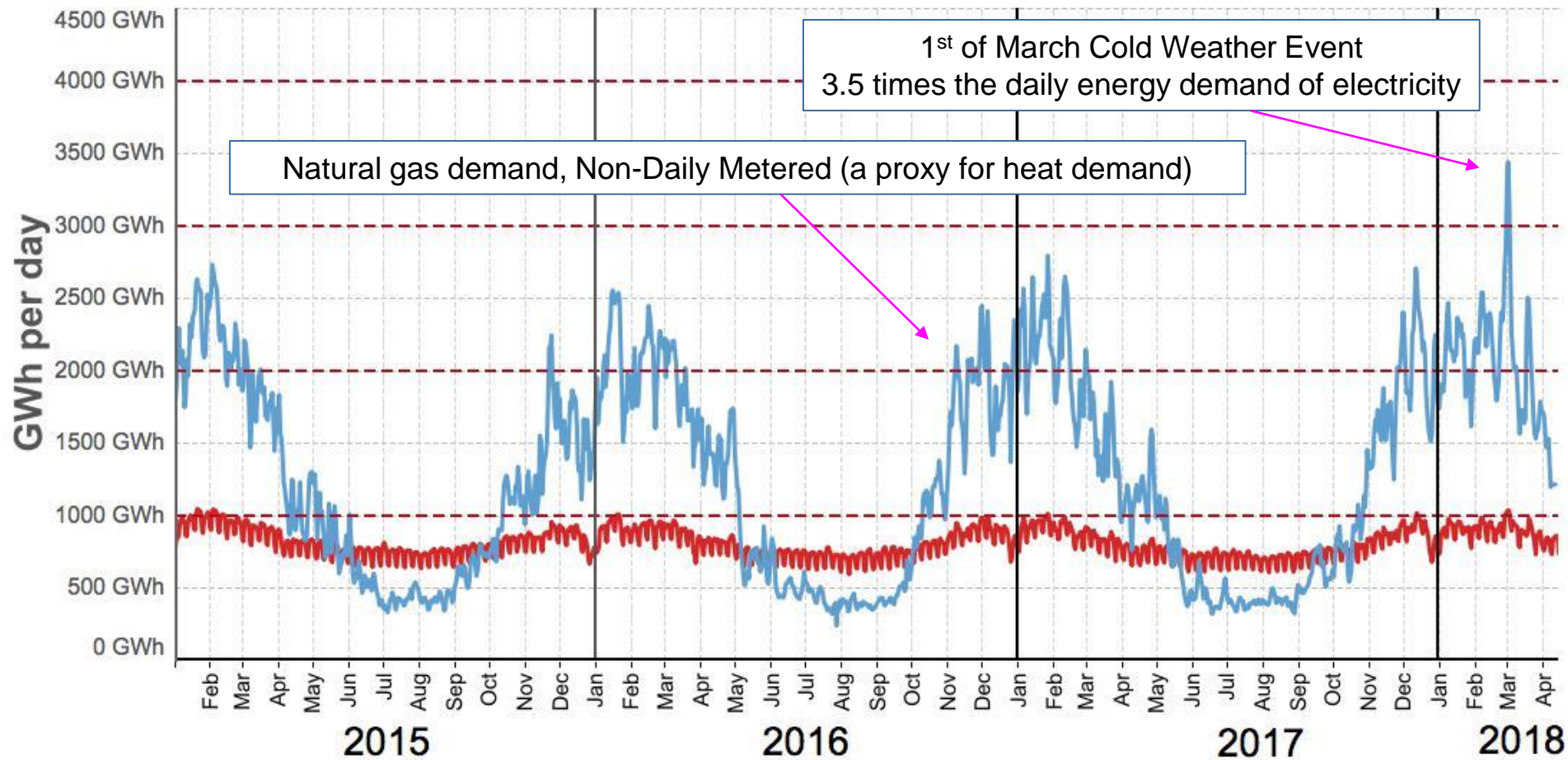
INSPIRATION



INSPIRATION



THE ENERGY CHALLENGE



More than 8 tonnes CO₂ emissions per person per year in UK

40% from Buildings

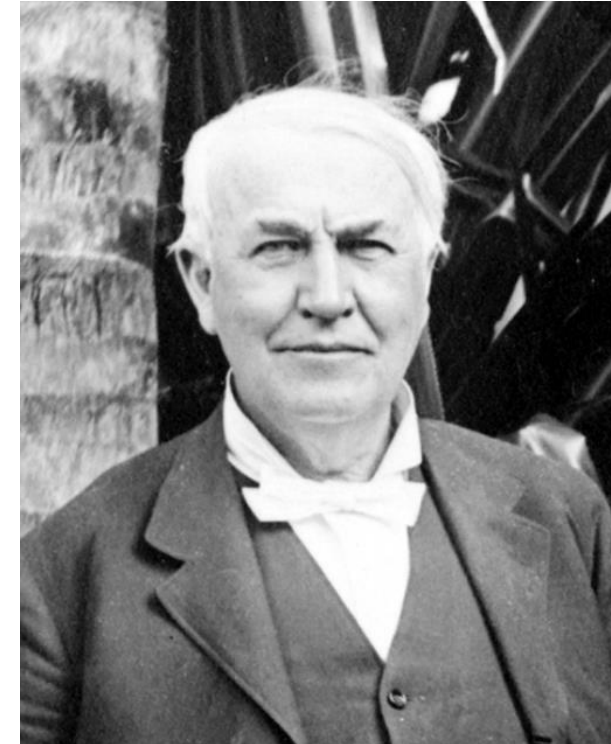
Data are from National Grid, Elexon and BEIS. Charts are licensed under an Attribution-NoDerivatives 4.0 International license

Charts can be downloaded from <http://bit.ly/energycharts>



by Dr Grant Wilson grant.wilson@sheffield.ac.uk

INSPIRATION



1931

“I'd put my money on solar energy...I hope we don't have to wait till oil and coal run out before we tackle that”

INSPIRATION



ACTIVE BUILDINGS DEFINITION

An Active Building supports the energy network by intelligently integrating renewable energy technologies for heat, power and transport

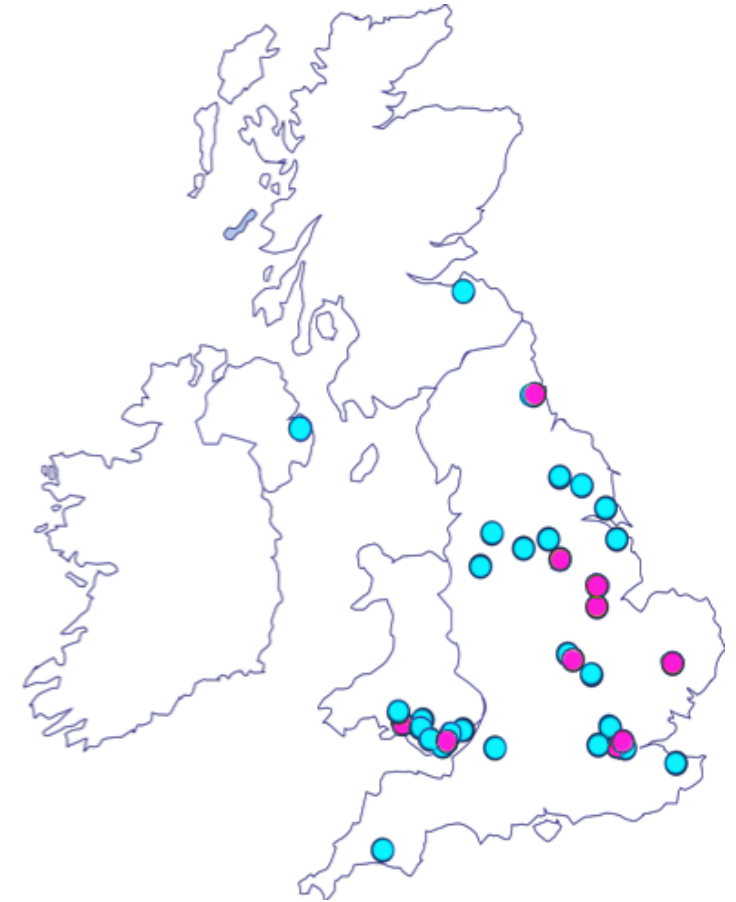


PARTNERSHIPS ACROSS INDUSTRY, GOVERNMENT & RESEARCH

DELIVERY PARTNERS

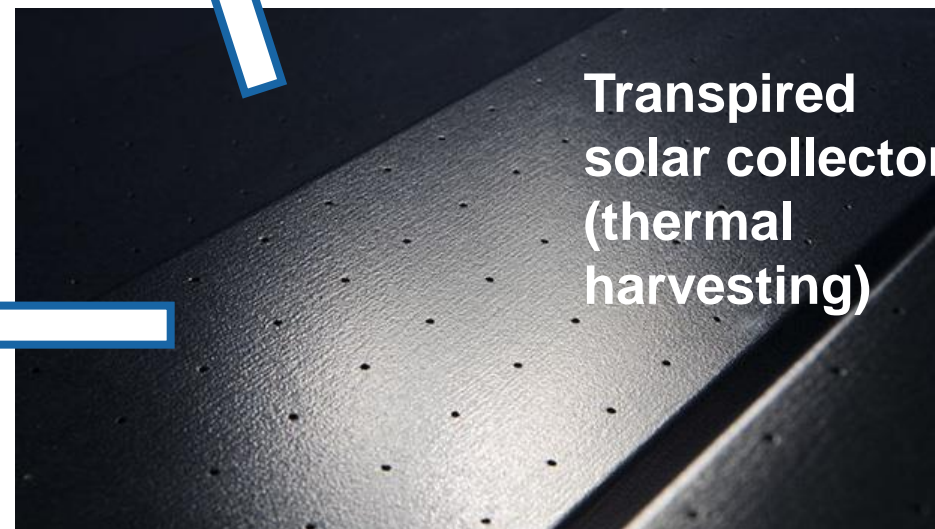
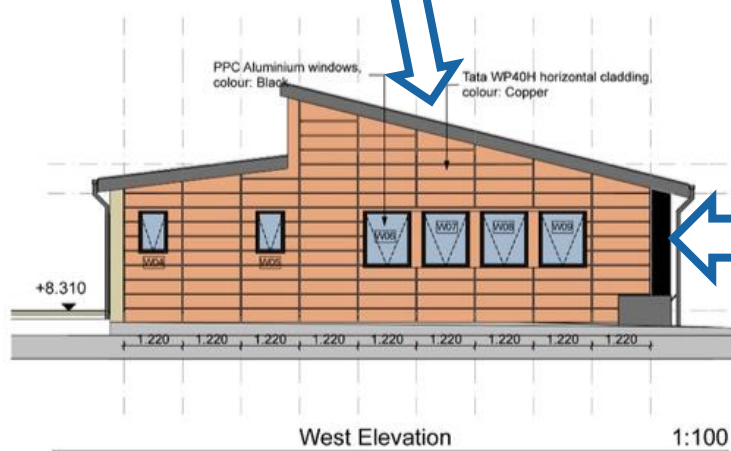
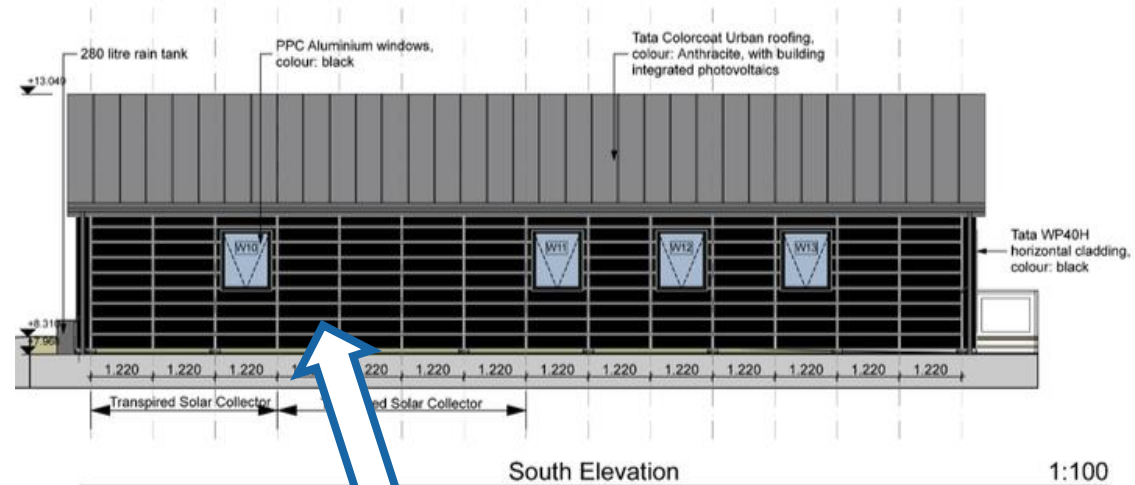


UNIVERSITY PARTNERS

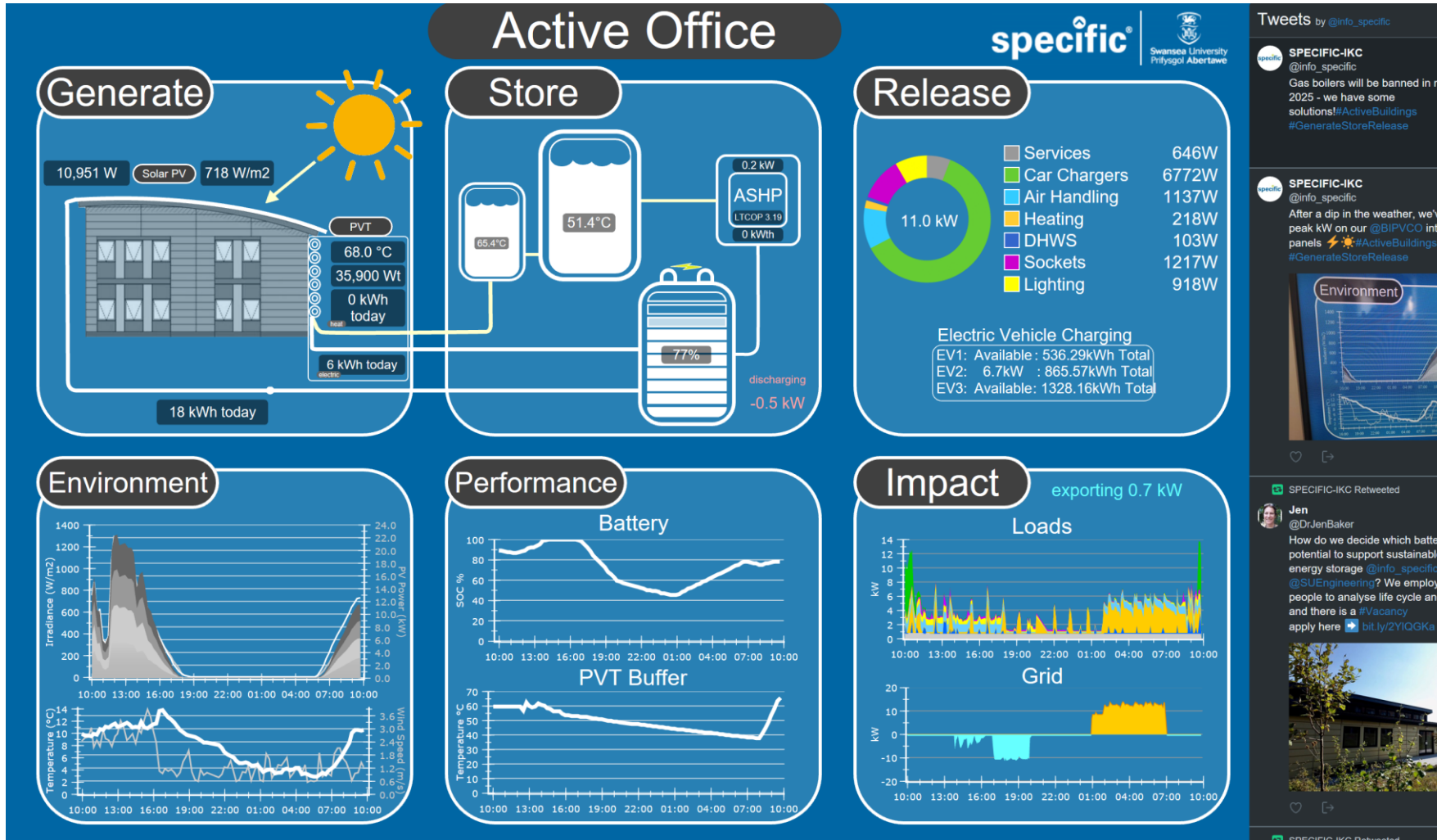


PROVING THE CASE

17 kWp integrated roof panels (CIGS)




PROVING THE CASE



Tweets by @info_specific


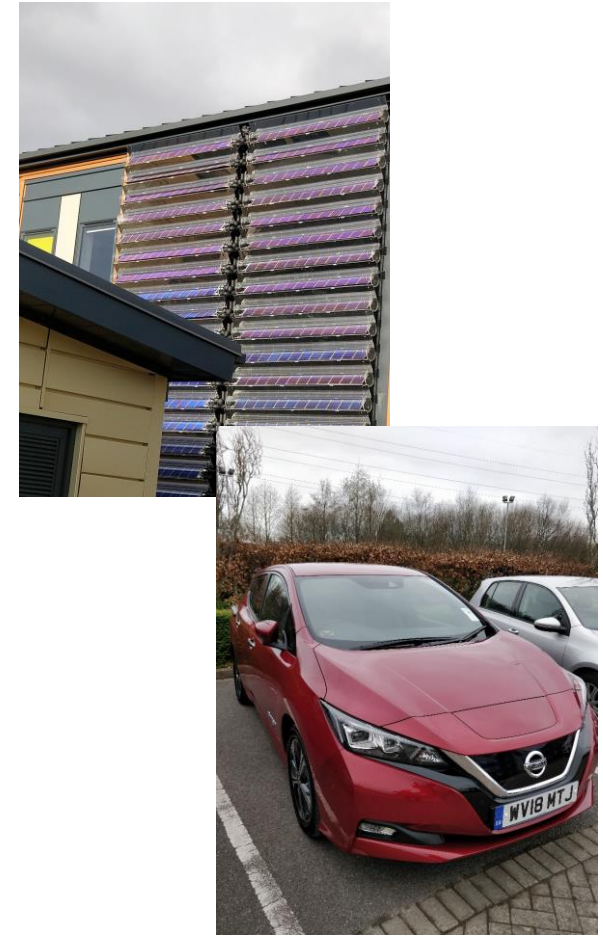
SPECIFIC-ICK @info_specific
Gas boilers will be banned in ne 2025 - we have some solutions! #ActiveBuildings #GenerateStoreRelease

SPECIFIC-ICK @info_specific
After a dip in the weather, we've peak kW on our @BIPVCO inter panels ⚡ #ActiveBuildings #GenerateStoreRelease



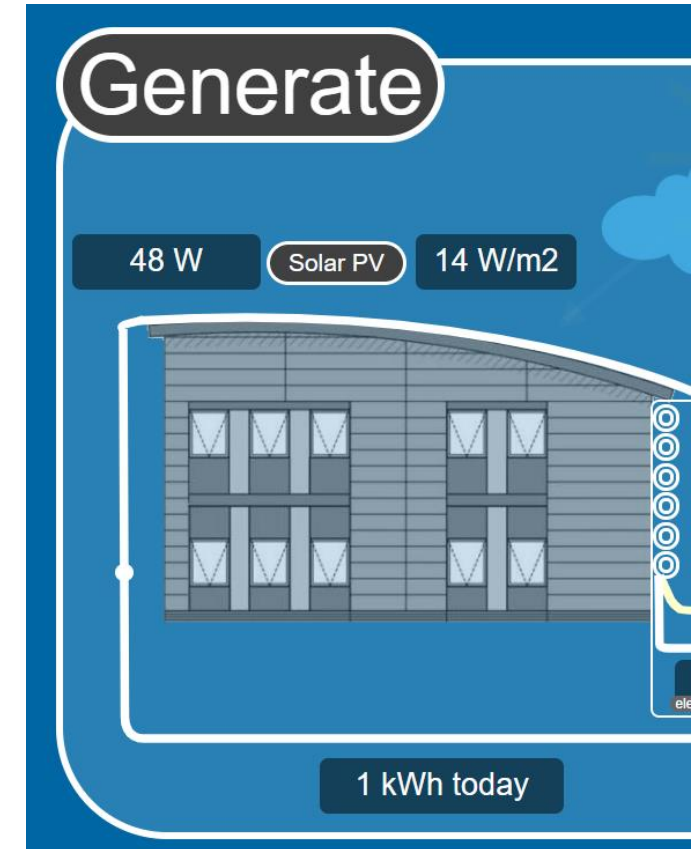
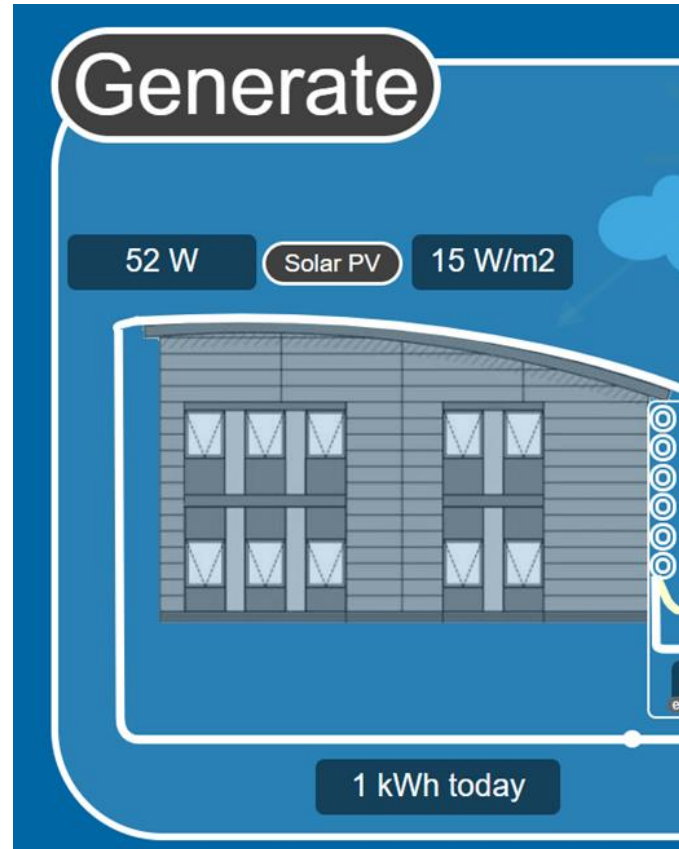
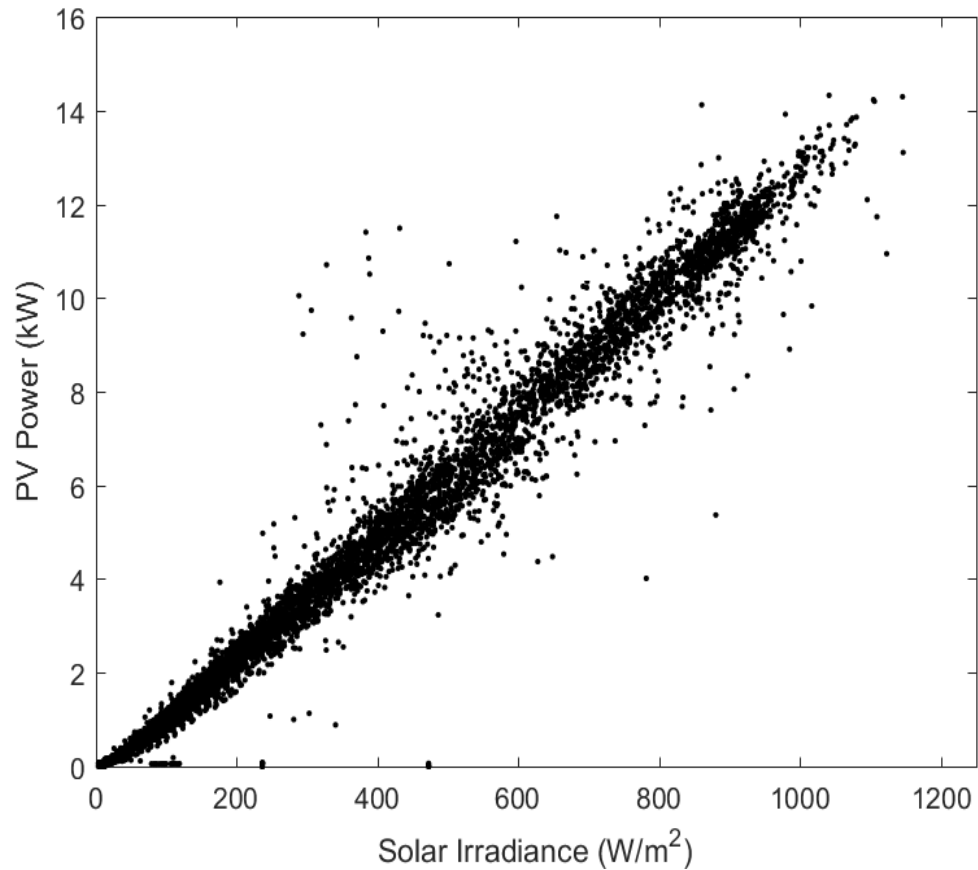
SPECIFIC-ICK Retweeted

Jen @DrJenBaker
How do we decide which batteri potential to support sustainable energy storage @info_specific @SUEngineering? We employ people to analyse life cycle and and there is a #Vacancy apply here bit.ly/2YIQGKa #

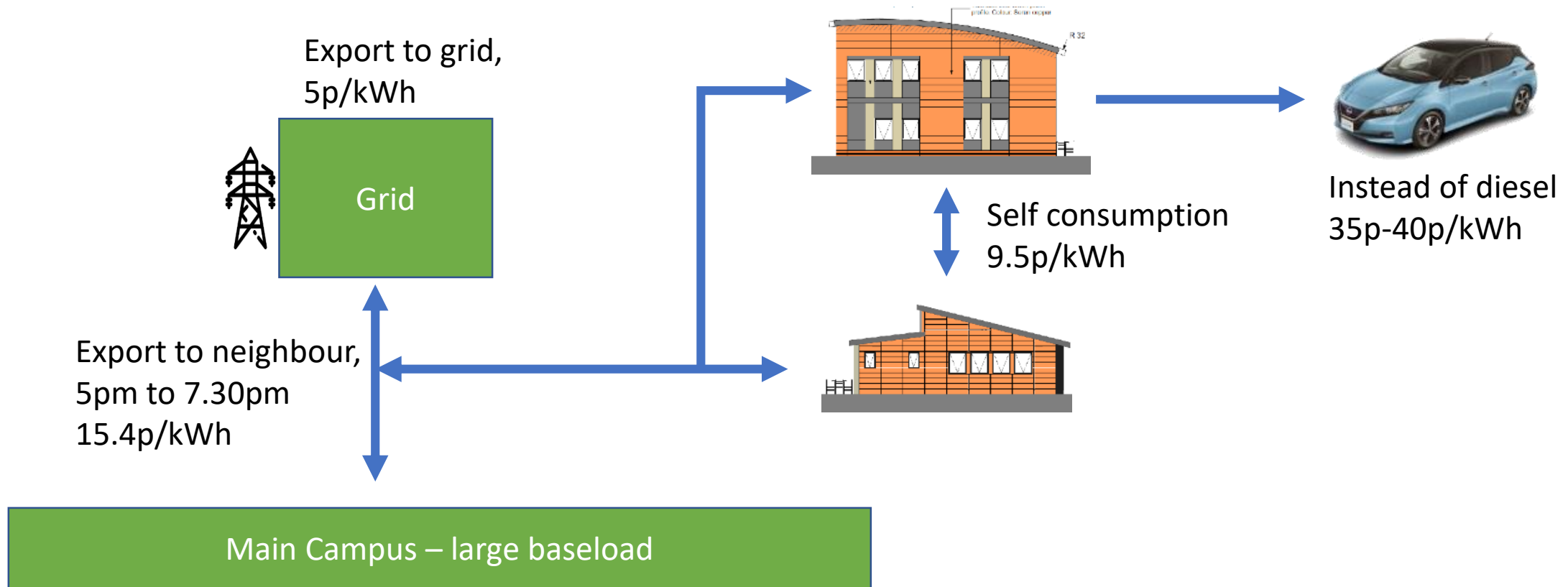
<https://dashboard.specific.wales/ActiveOffice/foyerv2.dg5>

PROVING THE CASE



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Microgrid Flexibility



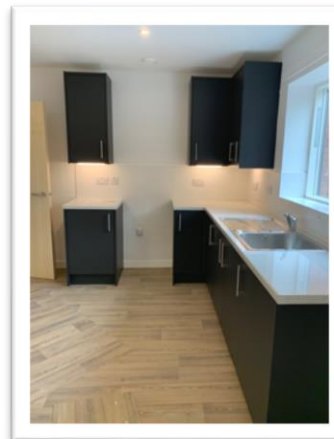
PROVING THE CASE



PROVING THE CASE



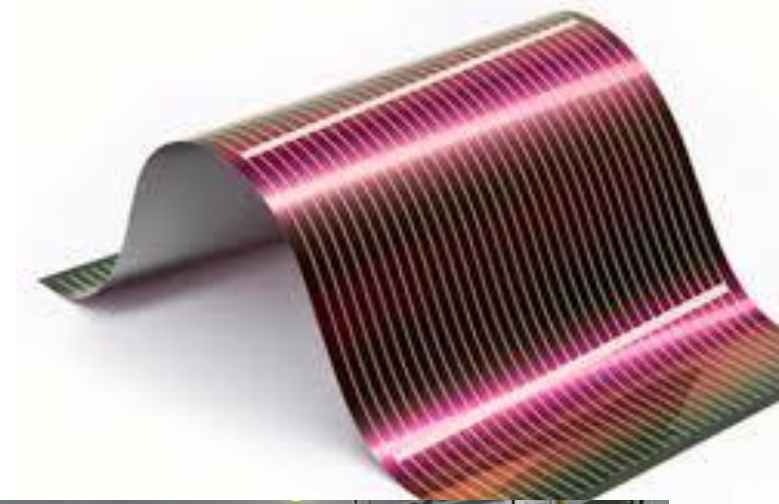
- 16 low carbon homes – no gas
- Fuel poverty reduction a key driver
- Fabric first plus Active Building Technologies
- Significantly lower Energy Bills and Carbon Footprint Homes that feel homely
- Funded by Welsh Government Housing Innovation fund & part of BEIS 2050
- Occupation due to commence early 2020.



PROVING THE CASE



SCALING NEW TECHNOLOGY



INTERNATIONAL IMPACT



THANKS

