

# Hello and Welcome

- Turn your video off
- Mute yourself to reduce background noise, but unmute to ask questions
- You can also use the chat function to ask questions
- The webinar will be recorded
- There is a Q & A session at the end so please interact



# Renewable energy and green transport

## Agenda

### First part: Green Transport

- 14:00 – 14:05 Welcome and housekeeping
- 14:05 – 14:20 David Pipe – Senior Officer, Transport Strategy, Coventry City Council

### Coventry Transport Strategy Draft

- 14:20 – 14:30 Amy Shakespeare – Electric Fleet First Project Manager, Coventry City Council

### Electric Fleet First Programme

- 14:30 – 14:35 Giuliana Famiglietti Pipola – Business Delivery Manager, CUE: E-smart tech and Pe4Trans INTERREG project
- 14:35 – 14:45 Q&A session



# Renewable energy and green transport

## Agenda

### Second part: Green Transport

- 14:45 – 14:50 Bernadette McCullagh – Business Advisor, Coventry City Council: Green Business Programme and other funding opportunities
- 14:50 – 15:00 Gordon Bradford – Senior Consultant, Enzen: Renewable energy
- 15:00 – 15:10 Richard Fuell – Sales Manager, SolarEdge Technologies: Solar PV solutions
- 15:10 – 15:20 Bean Beanland – Director, Heat Pump Federation: Heat pump solutions
- 15:20 – 15:30 Q&A session



# Coventry Transport Strategy Draft

David Pipe

Senior Officer, Transport Strategy

Coventry City Council



# Coventry Draft Transport Strategy

# Background

- Sets out a long-term (15 year) vision for how we will travel differently in the future
- Supported by an implementation plan focused mainly on years 1 -5
- Aims to address major issues caused by current reliance on car travel e.g. climate change, public health, accidents, inequality
- Draft strategy approved by Cabinet in October 2021
- Public consultation recently closed, but stakeholder engagement still ongoing
- Final version expected Summer 2022



# Public Transport – Very Light Rail

- A ‘first-of-its kind’ in the world system
- High frequency, ‘hop on, hop off’ service
- Lightweight, battery operated vehicles - prototype already developed
- City centre demonstrator project - Railway Station to Pool Meadow expected 2022/23
- Complete first route – Railway Station to University Hospital expected 2025/26
- City wide network of routes to follow



# Public Transport - Rail

- Additional bay platform at Coventry - follows recent opening of new building, car park & bus interchange
- More frequent services to Nuneaton, Kenilworth and Leamington
- New direct rail services to Nottingham & Leicester
- Improvements to Tile Hill Station
- Explore potential for up to 4 additional local stations





# Public Transport - Bus

- All electric bus fleet by 2025
- Other improvements to existing services:
  - Aim to maintain citywide coverage and 'turn up and go' frequencies on key routes
  - Targeted use of bus priority measures
  - More spaces for wheelchair users
  - Improvements to stops and shelters
  - Ticketing improvements
- Further expansion of WM On Demand – a new type of bus service with no timetable or fixed route



# Active Travel – New cycleways

- Coundon and Binley cycleways currently under construction - the start of a network of safe, segregated cycleways
- Further pedestrianisation of the city centre and other local centres
- A programme of Low Traffic Neighbourhoods and School Streets
- Further expansion of the WM Cycle Hire scheme
- Possible wider rollout of e-scooter hire
- More detailed Local Cycling and Walking Infrastructure Plan to follow (Autumn)



# Highways

- Aim to have fewer journeys made by car
- But some highway improvements are still needed to enable development and to remove congestion/pollution hotspots
- Examples:
  - Keresley Link Road
  - A46 Binley & Walsgrave Junctions
  - Various A444 junctions
  - Spon End air quality improvements
- Increased spending on maintenance
- Further rollout of average speed cameras
- 5G rollout – to improve monitoring and prepare for Connected Autonomous Vehicles



# Highways – Zero emission vehicles

- Those journeys that are still made by car, will need to be made with zero emission vehicles in future
- Further increase in public charge points (currently >400)
- New ‘Super Charging Hubs’
- ‘Try before you buy’ electric vehicle scheme for local businesses
- Electric taxis - will only grant licenses to zero emission capable vehicles from 2024

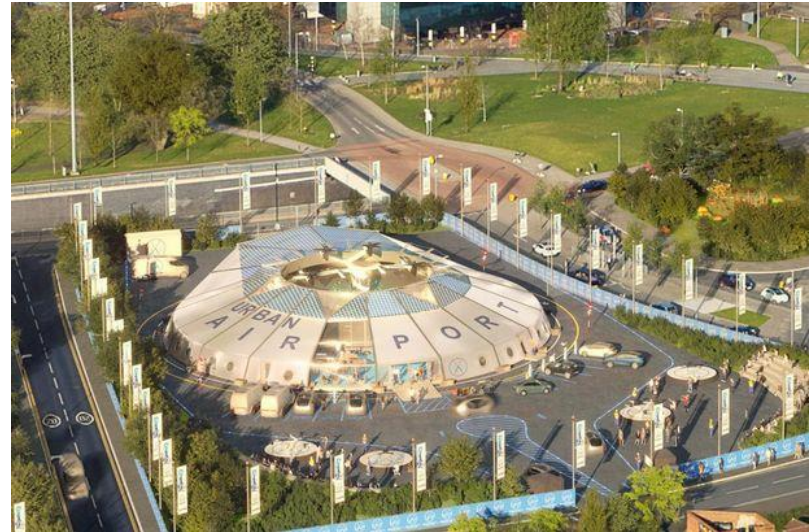


Original concept by SE. Images produced by BDS Architects, further modified by SE



# Other measures

- Urban Airport - exploring the potential for drone transport (people and goods)
- Use of freight consolidation centres
- Encouraging behaviour change:
  - Incentive schemes – ‘Mobility Credits’
  - Engagement with schools and business
  - Community events, cycle training schemes



# Further information

- The draft strategy is available online at <https://www.coventry.gov.uk/transport-strategy-2/transport-strategy>
- Questions or comments can still be sent to [David.pipe@Coventry.gov.uk](mailto:David.pipe@Coventry.gov.uk) or [Transportstrategy@Coventry.gov.uk](mailto:Transportstrategy@Coventry.gov.uk)



# Electric Fleet First Project

Amy Shakespeare

Electric Fleet First Project Manager  
Coventry City Council



# Electric Fleet First

Amy Shakespeare



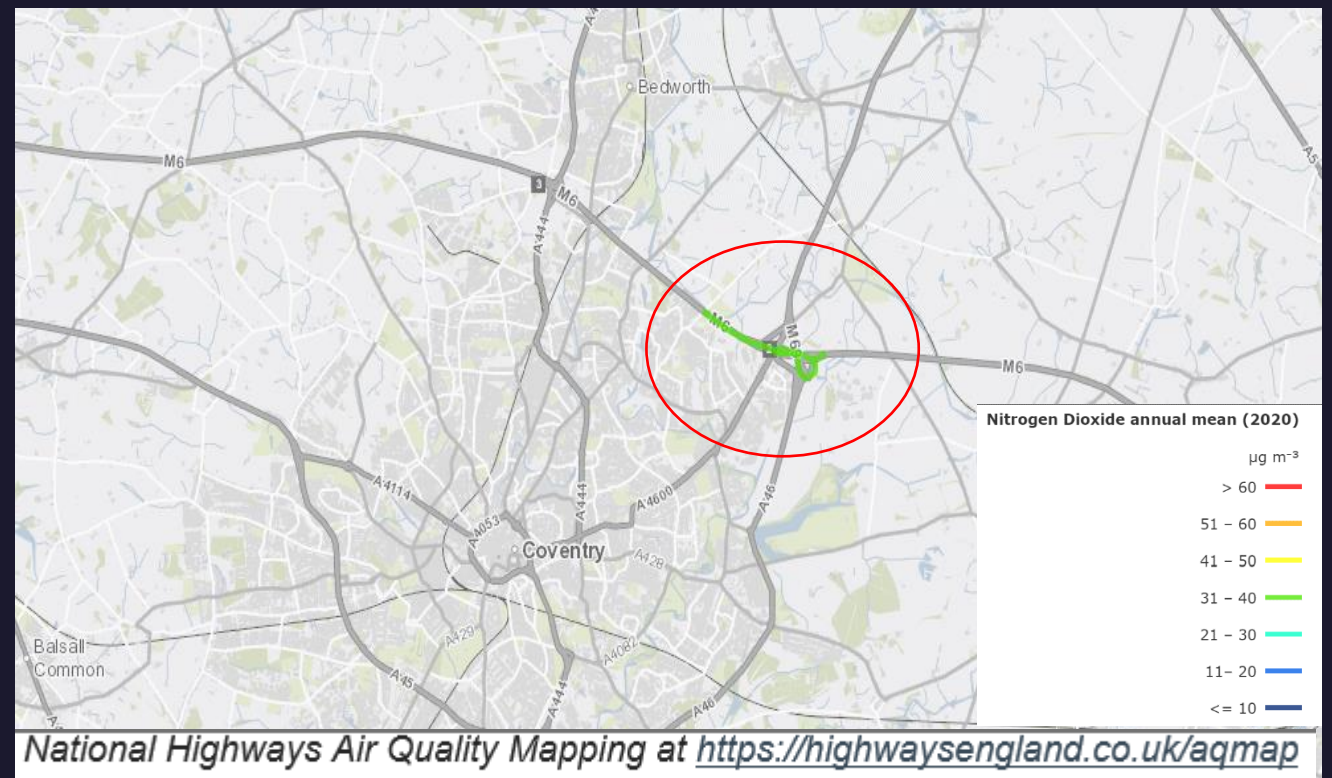


# Why electrify your fleet?

- Rising fuel prices
- Helping the environment
- Reducing tailpipe emissions
- Clean air zones and tax
- Increase in consumer engagement

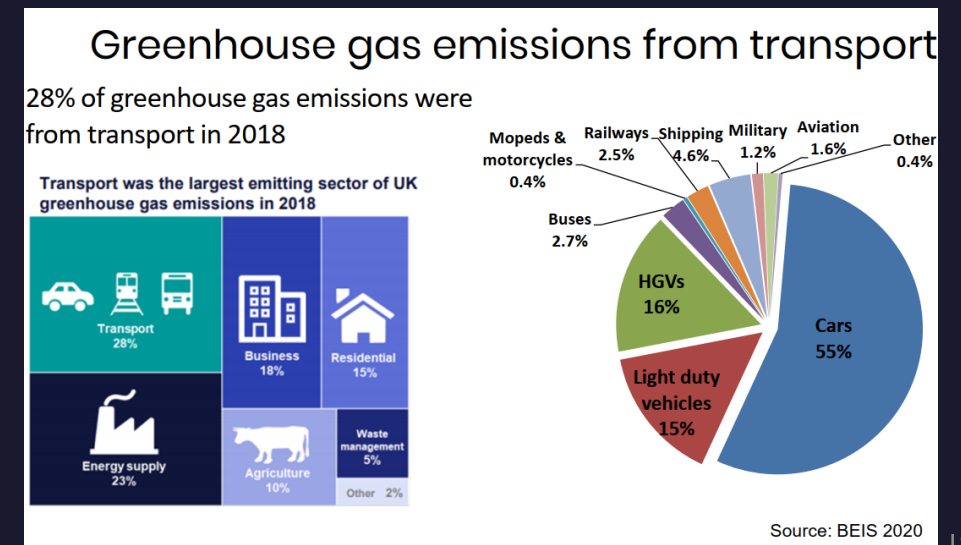


# How to apply?



## Electric Fleet First - Express your interest

- With tailpipe emissions at an all-time high, it is important to reduce our own footprints in order to make our air cleaner, reduce the global warming impact, and to make a long-term saving in the process.



# Electric Vs Diesel/Petrol



£5,811 per year



£2,241 per year

Daily Mileage – 60 miles  
Average electric cost (per kwh) – 22p  
Average Diesel cost (per litre) - £1.70p  
Cost per mile – 26.5p

**£3,570**


**fuel saving**

# What does your business get from this?

- Full usage report at the end of your trial to show your savings, both financially and environmentally
- A useful trial to experience electric and the constraints you may face
- Exposure to grants and incentives on offer from Coventry Council
- A no strings attached trial; your only cost will be insurance for the trial period



Charging  
installation grant



EV purchasing  
grant



# Thank You

Project manager – Amy Shakespeare

[Amy.Shakespeare@coventry.gov.uk](mailto:Amy.Shakespeare@coventry.gov.uk)

[www.coventry.gov.uk/electricfleet](http://www.coventry.gov.uk/electricfleet)

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# E-smart tech and Pe4Trans INTERREG project

Giuliana Famiglietti Pipola  
Business Delivery Manager  
Coventry University Enterprises





**e-smartec**  
Interreg Europe



**e-smartec project**

Giuliana Famiglietti Pipola

Business Delivery Manager- Economic Policy  
International, Coventry University Enterprises Ltd



**PE4Trans**  
Interreg Europe



# E-smartec = enhanced sustainable mobility with marketing techniques

- Funded by the Interreg Europe funding programme 2014-2020
- 9 International Partners
- AIM: increase use of marketing techniques with the objective of enhancing citizens and stakeholders engagement in sustainable Urban Mobility

[www.interregeurope.eu/e-smartec/](http://www.interregeurope.eu/e-smartec/)



# Free Online course

- "Build the engagement strategy of a SUMP"
- Part of the Mobility Academy
- Marketing techniques to engage audiences ( citizens and stakeholders ) in sustainable mobility planning
- Structured around three themes:
  - participatory approach
  - marketing techniques
  - engagement methods.

- These concepts are presented and illustrated with good practices coming from the project partners in 6 snappy units:
  - Introduction
  - Preliminary Concepts
  - Marketing techniques
  - Engagement methods
  - Capstone case study
  - Conclusions

# Mobility Academy

The graphic features a green background with various icons representing technology, communication, and community. At the top, the text 'E-COURSE REGISTRATION' is displayed in large white letters, with 'A Quick How-To' in a smaller white box below it. A QR code is positioned on the left side. Below the QR code is a dark blue 'Log in' button. To the right of the button is a white box containing the text 'Engagement-SUMP'. At the bottom, three white boxes contain the following instructions: 'SCAN THE QR CODE', 'LOGIN TO THE MOBILITY ACADEMY', and 'USE THE SELF-ENROLMENT KEY'.

**E-COURSE REGISTRATION**  
A Quick How-To

QR Code

Log in

Engagement-SUMP

SCAN THE QR CODE

LOGIN TO THE MOBILITY ACADEMY

USE THE SELF-ENROLMENT KEY

## Link to the course

<https://projects2014-2020.interregeurope.eu/e-smartec/news/news-article/13002/how-to-build-the-engagement-strategy-of-a-ump/>

**Available online until 31.12.22**



**e-smartec**  
Interreg Europe



European Union  
European Regional  
Development Fund

Thank you!



**PE4Trans**  
Interreg Europe



European Union  
European Regional  
Development Fund

Questions welcome



*Project smedia*

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# Q&A



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**GREEN BUSINESS**  
PROGRAMME

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ENGINE



# Green Business Programme overview

Bernie McCullagh

Business Energy Advisor

Coventry City Council





# Green Business Programme



**Bernie McCullagh**  
**[Business Energy Advisor]**  
**Coventry & Warwickshire's**  
**Green Business Programme**



# COVENTRY & WARWICKSHIRE GREEN BUSINESS PROGRAMME

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## Green Business Programme

### Coventry & Warwickshire region

*(please note there are also other regional ERDF schemes)*

#### - Basic SME eligibility:

- Less than 250 employees
- Turnover of less than €50 million
- Have received less than €200k in public aid over 3 years
- Generally at least 50% of sales through business to business
- N.B. lots of other criteria; case-by-case basis



# COVENTRY & WARWICKSHIRE GREEN BUSINESS PROGRAMME



## Aims of Scheme:



1. Help businesses **reduce carbon**
2. Access to **grant funding** to assist with investment
3. Provide energy efficiency **advice and guidance**



# COVENTRY & WARWICKSHIRE GREEN BUSINESS PROGRAMME

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## Ends Spring 2023

- a) Grant funding; up to **£50k** max – **40%** subsidy (minimum £1k). *Must save at least 1 tonne CO<sub>2</sub>e per £1k of grant*
  
- a) Energy audit (**worth £840**) carried out FOC
  - **Carbon** saving calculation
  - **Maximising** potential energy savings
  - **Supports** funding bids/compliance/ISO14001





# COVENTRY & WARWICKSHIRE GREEN BUSINESS PROGRAMME

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## How the programme works:

- Businesses provide us with **12 months energy bills** (if available).
- We carry out an **on-site energy audit** of the premises; heating/lighting/processes/machinery/**energy wastage**.
- We provide a recommendations report with a range of options.



# COVENTRY & WARWICKSHIRE GREEN BUSINESS PROGRAMME

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## Example areas for recommendations:

- Insulation
- LED lighting
- Heating
- Glazing
- Shutter doors
- **Solar PV**
- **Heat Pumps**
- HVAC (*Heating, Ventilation, Air Conditioning*)

Energy efficient LED lightbulbs are the efficiency measure most likely to be taken (according to 40% of businesses surveyed).

Natwest survey 2021



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## Grant example 1:

- **Alchemie Ltd:**

- a) LED Lighting
- b) Solar PV 49.8kWp size system
- c) Roof insulation

- £21.5k grant
- £53.7k project spend
- 22.3 tonnes of carbon saved

*See GBP podcast for further details...*



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## Grant example 2:

- **Patrick Steel Ltd:**

- a) **Solar PV 31.08kWp size system**

- ❑ **£7.3k grant**

- ❑ **£18.3k project spend**

- ❑ **6.10 tonnes of carbon saved**

*See GBP podcast for further details...*



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## Green Business Network

Membership is **free** and offers a range of **benefits**:

- Events, workshops & webinars
- Monthly e-newsletter – news, events, legislation, case studies
- The opportunity to promote your news/projects
- Expert advice with team of sustainability advisors
- Enhance green credentials to secure new business
- Networking and supply chain opportunities (join our **Green Business Directory**)
- Currently 1,850 other organisations you can network with

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WARWICKSHIRE  
GREEN  
BUSINESS  
NETWORK







## Other funding resources:

- Various additional funding, resources and business advice is available within the region: specialist grants and business support.
- In the **first instance**, contact the **Growth Hub** who will then guide you to the most appropriate resource -
- Coventry & Warwickshire Growth Hub:  
[www.cwgrowthhub.co.uk](http://www.cwgrowthhub.co.uk)

# COVENTRY & WARWICKSHIRE GREEN BUSINESS PROGRAMME



## CW Innovation Programme Overview

- Help to address barriers to innovation and develop products, services or technologies which are new to the market and company
- Financial support up to £50k towards design work, acquiring IP, research and prototype costs
- Non-financial support in workshops and 1-1 advice
- SMEs must be registered in Coventry & Warwickshire
- Please send enquiries to [innovation@coventry.gov.uk](mailto:innovation@coventry.gov.uk)



**European Union**

European Regional  
Development Fund



# COVENTRY & WARWICKSHIRE GREEN BUSINESS PROGRAMME

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European Union  
European Regional  
Development Fund

**For free energy advice, energy audits, funding support - get in touch:**

**Coventry & Warwickshire:**

[greenbusiness@coventry.gov.uk](mailto:greenbusiness@coventry.gov.uk)

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NETWORK

024 7683 2040 [www.coventry.gov.uk/greenbusiness](http://www.coventry.gov.uk/greenbusiness)  
 [@cwgreenbusiness](https://twitter.com/cwgreenbusiness)  <http://bit.ly/greenbusinessprogLinkedin>



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# Renewable energy

Gordon Bradford

Senior Consultant

Enzen





# Net Zero and Renewable Energy



# An **Exclusive** Energy, Water and Renewables Expert

## Power

Power generation  
(Coal, Hydro,  
CCGT)



Transmission &  
Distribution



Retail/Supply



## Water

Desalination,  
Fresh and  
waste water  
treatment



Distribution



Retail/Supply



## Oil & Gas

Gas production,  
Primary transport,  
Interconnectors



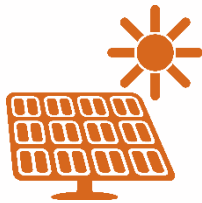
LNG Terminals  
Transmission &  
Distribution



Retail/Supply



## Renewables



Standard wind and solar PV



Concentrated Solar Power



Geothermal



Offshore wind



Storage



Bio-fuels

# Enzen, a trusted partner with a strong record of delivering renewable projects

enzen



**600Mw+**



Solar energy connected to the grid



**400Mw+**



Solar energy in development



**100+**



Solar energy projects undertaken



**500,000+**



Consumers connected to electricity



**Save Energy,**

**Save Money,**

**Save Carbon**





# What is Net Zero ?

*Put simply, net zero refers to the balance between the amount of greenhouse gas produced and the amount removed from the atmosphere. We reach net zero when the amount we add is no more than the amount taken away. [Source: [www.nationalgrid.com](http://www.nationalgrid.com)]*

# Why do you need Net Zero Carbon?

- Corporate Social Responsibility
- Regulation and Future Legislation
- Consumer Pressure
- Keeping costs low & predictable
- Appealing to talent
- Demonstrates a sustainable ecosystem
- Good for the environment
- Cultural and behavioural change
- Competitive advantage
- Increased resilience
- Business independence
- Enhanced credibility & brand reputation
- Ability to drive innovation
- Increased investor confidence
- Taxation

# SME Carbon Emissions

Emission-releasing activity	Source of information
Electricity use	Total kilowatt hours used from electricity bills
Natural gas use	Total kilowatt hours used from gas bills
Water supply	Total water supplied in cubic metres (m <sup>3</sup> ) from water bill
Water treatment	Total water treated in cubic metres (m <sup>3</sup> ) from water bill
Fuel used in company owned vehicles	Litres of fuel purchased from invoices and receipts (more accurate); or Vehicle mileage from vehicle log books/odometers (less accurate)
Employee passenger travel	Employee receipts for details of travel, and Use distance calculation websites to obtain flight, rail and road distances
Waste disposal/recycling	Tonnes of waste-to-landfill and recycled from waste collection provider

# Some Hard Facts

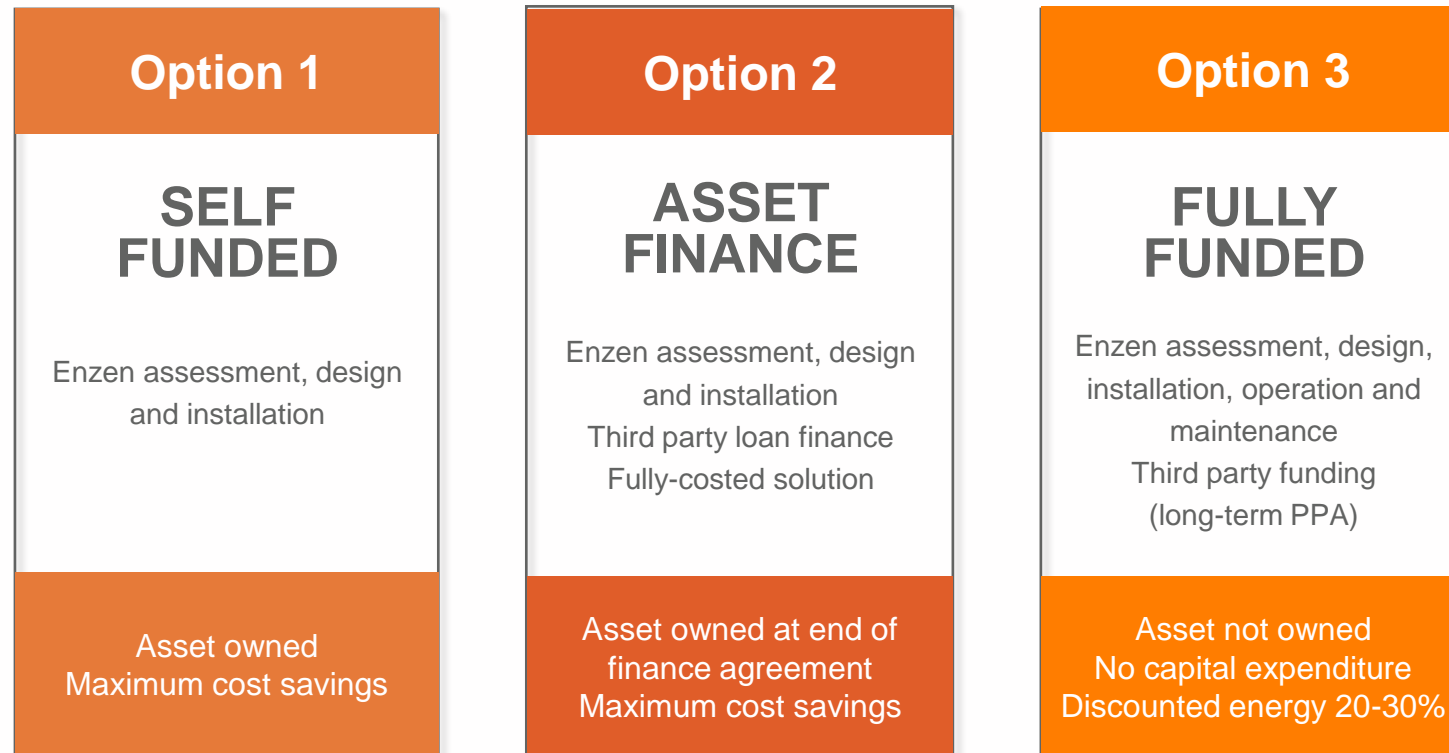
- There are no grants for renewable energy: Feed-in Tariff (PV) and RHI (biomass and heat pump) are gone!
- Carbon reductions (Net Zero) is going to cost all of us. New carbon taxes in the pipeline?
- Medium and long term financial benefits are greatly improved by recent energy price hikes!
- “If the UK continues to decarbonize heat, at the current rate, Net Zero will take 150 years!” *[LinkedIn article, 2020]*

# Renewable Energy Options

- **Solar PV** – simple and easy to install! We should all be doing this. Can be modelled accurately.
- **Solar Thermal** – Not so expensive, but can have minimal financial impact. Can also be modelled.
- **Heat Pumps** – tricky one! Can be very expensive (Ground Source). Worth evaluating for small to medium heat loads. Works fairly well with PV.
- **Biomass** – Expensive. 10x cost of new gas/oil boilers.
- **Wind Turbines** – Rurally, yes (if you can get planning permission!). Urban areas, no (they will not work well at all).
- **Battery Storage** – Perfect match with PV. Expensive. Doubles the project cost. Questions over battery lifespan (7 – 10 years?!)
- **CHP** – *not renewable, BUT can bring huge savings. Only viable for clients with large heat loads.(e.g. 180,000kWh p.a., or over £7k on gas)*

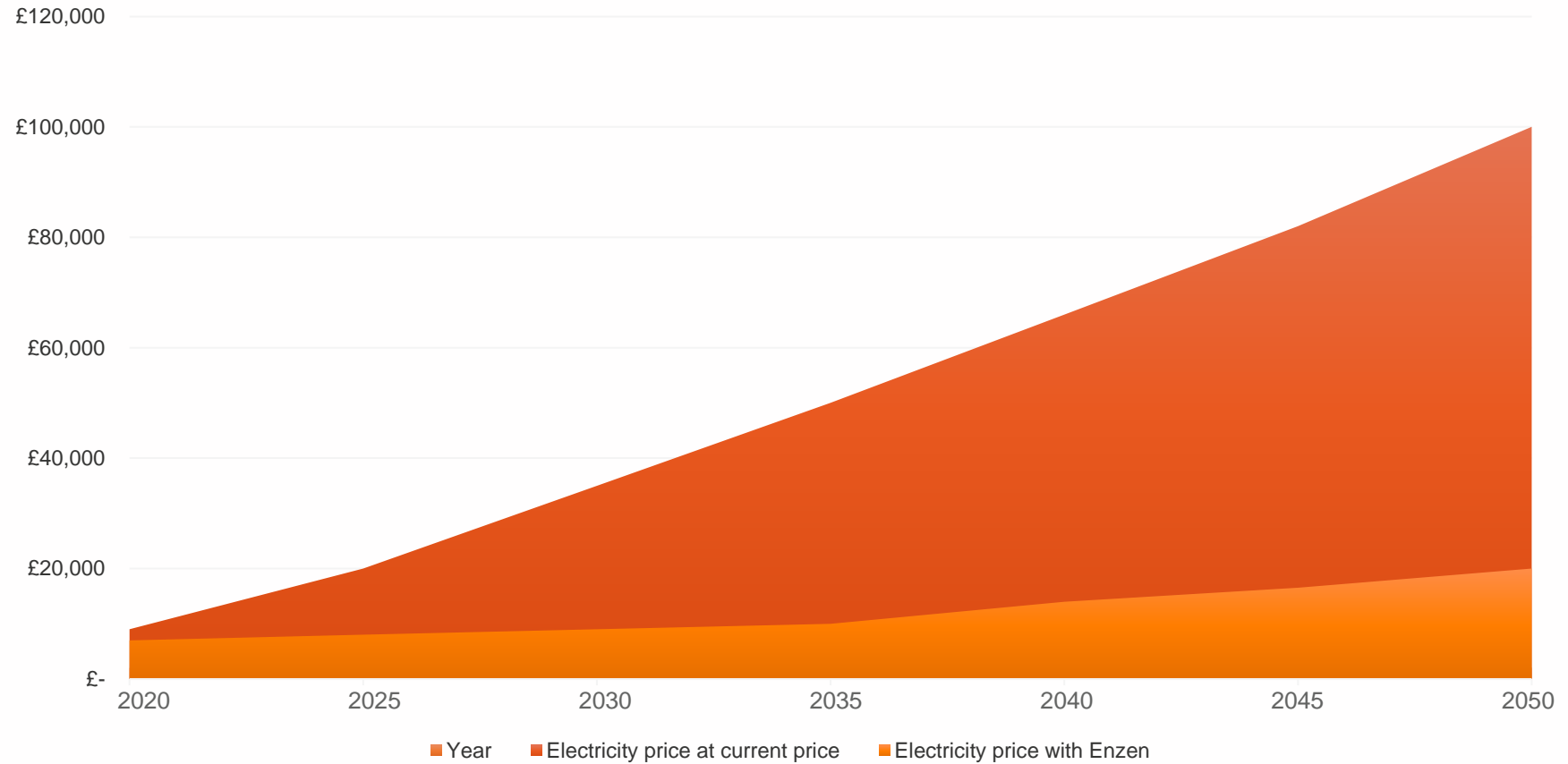


# How might an SME pay for Renewables



# Energy price protection

## CURRENT PRICE OF ELECTRICITY VS. PPA



# Benefits

	Self Funded	Asset Finance	Fully Funded
Carbon savings	✓	✓	✓
Business resilience – fixed long-term cost	✓	✓	✓
Flexible solution – can be added to if more power needed	✓	✓	✓
Immediate savings on electricity bill	✓	✓	✓
Improved EPC rating	✓	✓	✓
Integration into wider low carbon energy strategy	✓	✓	✓
Long-term protection against energy markets volatility	✓	✓	✓
Buy out asset to full ownership		✓	✓
No capital required		✓	✓
Zero cost for green credentials			✓
No maintenance or insurance costs			✓
Free solar system			✓



# HM Treasury: Super-deduction

- For expenditure incurred from 1 April 2021 until the end of March 2023, companies can claim 130% capital allowances on qualifying plant and machinery investments.
- Under the super-deduction, for every pound a company invests, their taxes are cut by up to 25p.
- This change makes the UK's capital allowance regime more internationally competitive, lifting the net present value of our plant and machinery allowances from 30th in the OECD to 1st.
- <https://www.gov.uk/guidance/super-deduction>



## Budget 2021 – Super-deduction

- For expenditure incurred from 1 April 2021 until the end of March 2023, companies can claim 130% capital allowances on qualifying plant and machinery investments.
- Under the super-deduction, for every pound a company invests, their taxes are cut by up to 25p.
- This change makes the UK's capital allowance regime more internationally competitive, lifting the net present value of our plant and machinery allowances from 30th in the OECD to 1st.

### The new Capital Allowances offer

As a result of measures announced at this Budget, businesses will now benefit from four significant capital allowance measures:

- The **super-deduction** – which offers 130% first-year relief on qualifying main rate plant and machinery investments until 31 March 2023 for companies
- The **50% first-year allowance (FYA) for special rate** (including long life) assets until 31 March 2023 for companies
- **Annual Investment Allowance (AIA)** providing 100% relief for plant and machinery investments up to its highest ever £1 million threshold, until 31 December 2021
- Within Freeport tax sites, companies can access new **Enhanced Capital Allowances (ECA+)** and companies, individuals and partnerships can benefit from an increased level of **Structures & Buildings Allowance (SBA+)** for investments until 30 September 2026

### Why is the government introducing a super-deduction?

- Since the Covid-19 pandemic, existing low levels of business investment have fallen, with a reduction of 11.6% between Q3 2019 and Q3 2020.
- Much of the UK's productivity gap with competitors is attributable to our historically low levels of business investment compared to our peers. Weak business investment has played a significant role in the slowdown of productivity growth since 2008.
- Making capital allowances more generous works to stimulate business investment. As a result, these measures can promote economic growth and counter business cycles.
- The super-deduction will give companies a strong incentive to make additional investments, and to bring planned investments forward.
- A tax information and impact note for the policy, and draft legislation, is [published here](#).



***“Roofs are not just for  
keeping the rain out!”***

***Gordon Bradford, Enzen***

# PV System Size / Performance

- System sizing guideline:
  - Divide annual usage (kWh) by 3 to get system size (e.g. 300,000kWh p.a. = 100,000W or 100kW)
  - Will provide approximately 25% of annual demand.
- System pricing: £1,000 per kW (small systems up to 100kW)
- Payback period: 5 years or less (much less for bigger systems!)

## Project Overview



Figure: Overview Image, 3D Design

## PV System

### 3D, Grid-connected PV System with Electrical Appliances

Climate Data	
	Clwyd, New Brighton, GBR (1991 - 2010)
PV Generator Output	107.03 kWp
PV Generator Surface	526.9 m <sup>2</sup>
Number of PV Modules	278
Number of Inverters	3

## Simulation Results

### Results Total System

#### PV System

PV Generator Output	107 kWp
Spec. Annual Yield	959.32 kWh/kWp
Performance Ratio (PR)	91.9 %
Yield Reduction due to Shading	1.3 %/Year

PV Generator Energy (AC grid)	102,749 kWh/Year
Own Consumption	83,098 kWh/Year
Down-regulation at Feed-in Point	0 kWh/Year
Grid Feed-in	19,650 kWh/Year

Own Power Consumption	80.9 %
CO <sub>2</sub> Emissions avoided	23,924 kg / year

#### PV Generator Energy (AC grid)



■ Own Consumption  
■ Down-regulation at Feed-in Point  
■ Grid Feed-in

#### Appliances

Appliances	356,641 kWh/Year
Standby Consumption (Inverter)	72 kWh/Year
Total Consumption	356,713 kWh/Year
covered by PV power	83,098 kWh/Year
covered by grid	273,615 kWh/Year

Solar Fraction	23.3 %
----------------	--------

#### Total Consumption



■ covered by PV power  
■ covered by grid

#### Level of Self-sufficiency

Total Consumption	356,713 kWh/Year
covered by grid	273,615 kWh/Year
Level of Self-sufficiency	23.3 %

**enzen**

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# Solar PV solutions

Richard Fuell

Sales Manager

SolarEdge Technologie





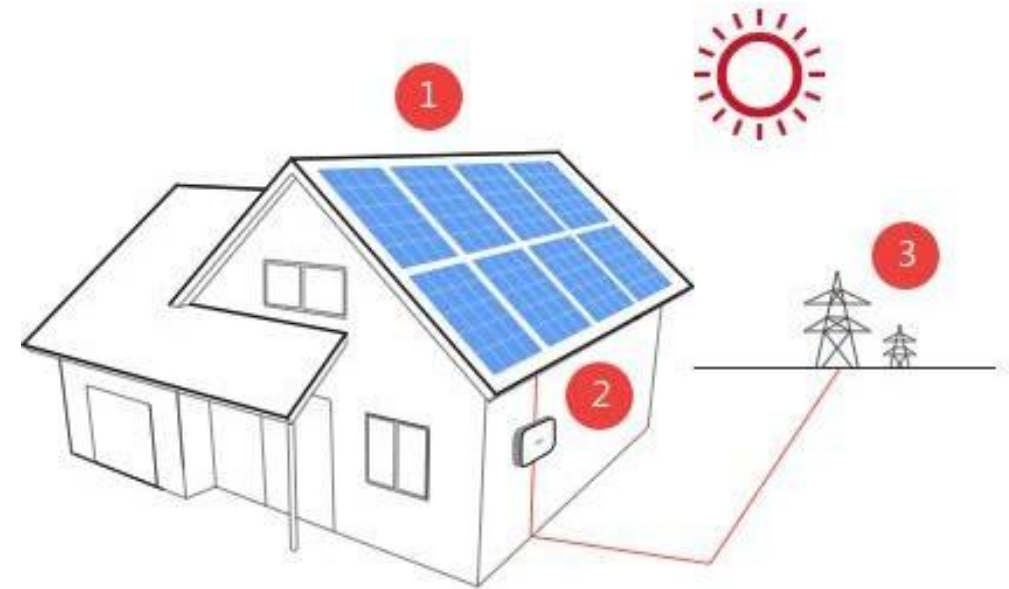
SolarEdge Smart Energy Solutions

Richard Fuell - SolarEdge UK Sales Manager

solar**edge**

# How Does Solar Energy Work?

- Solar photovoltaic (PV) modules capture and convert sunlight into clean DC (direct current) electricity
- Solar modules (panels) are connected in a series circuit to a PV inverter.
- A solar inverter converts DC electricity generated by modules into grid compliant AC (alternating current) power
- The inverter produces AC power at the system level, and interacts with the utility grid



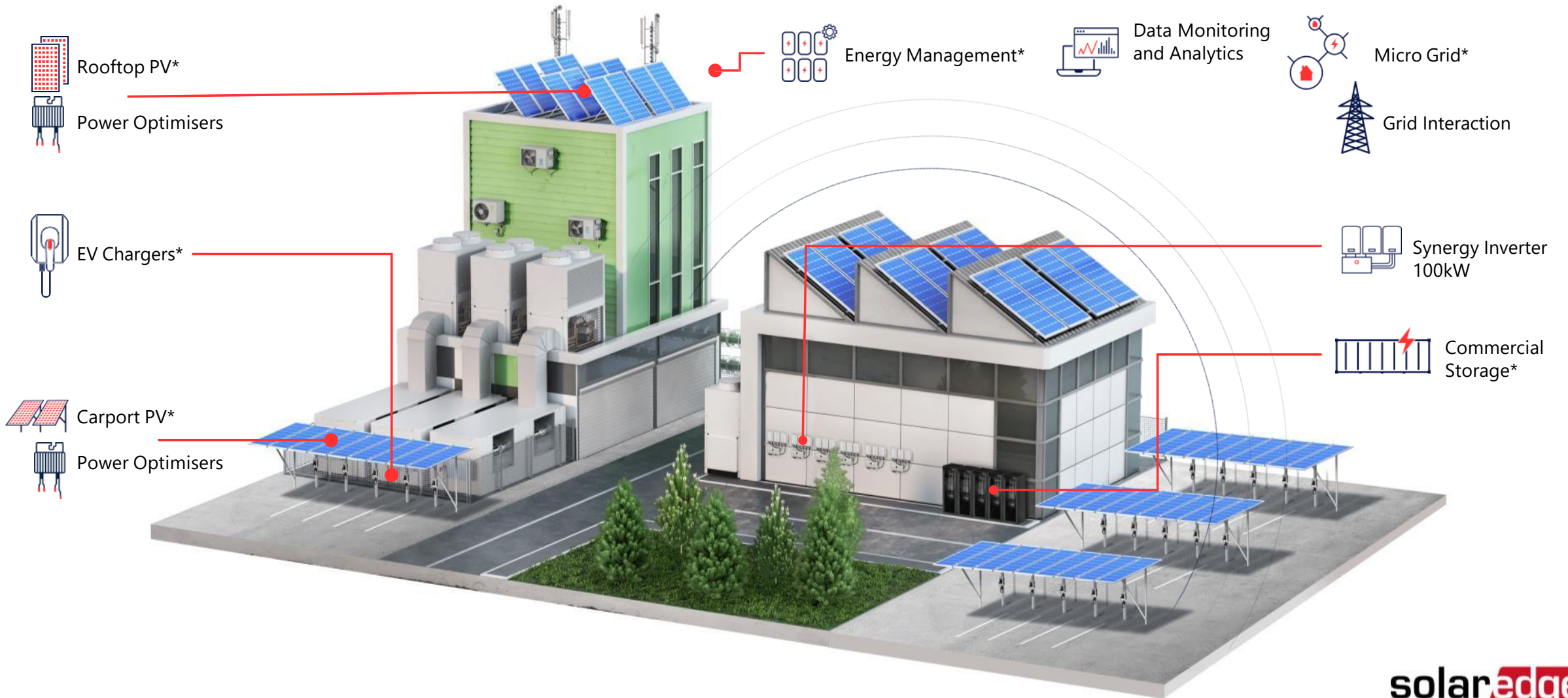
1. Solar modules 2. Solar Inverter 3. Electricity grid



# One-Stop-Shop for Smart Energy Solutions



# SolarEdge Commercial Solution



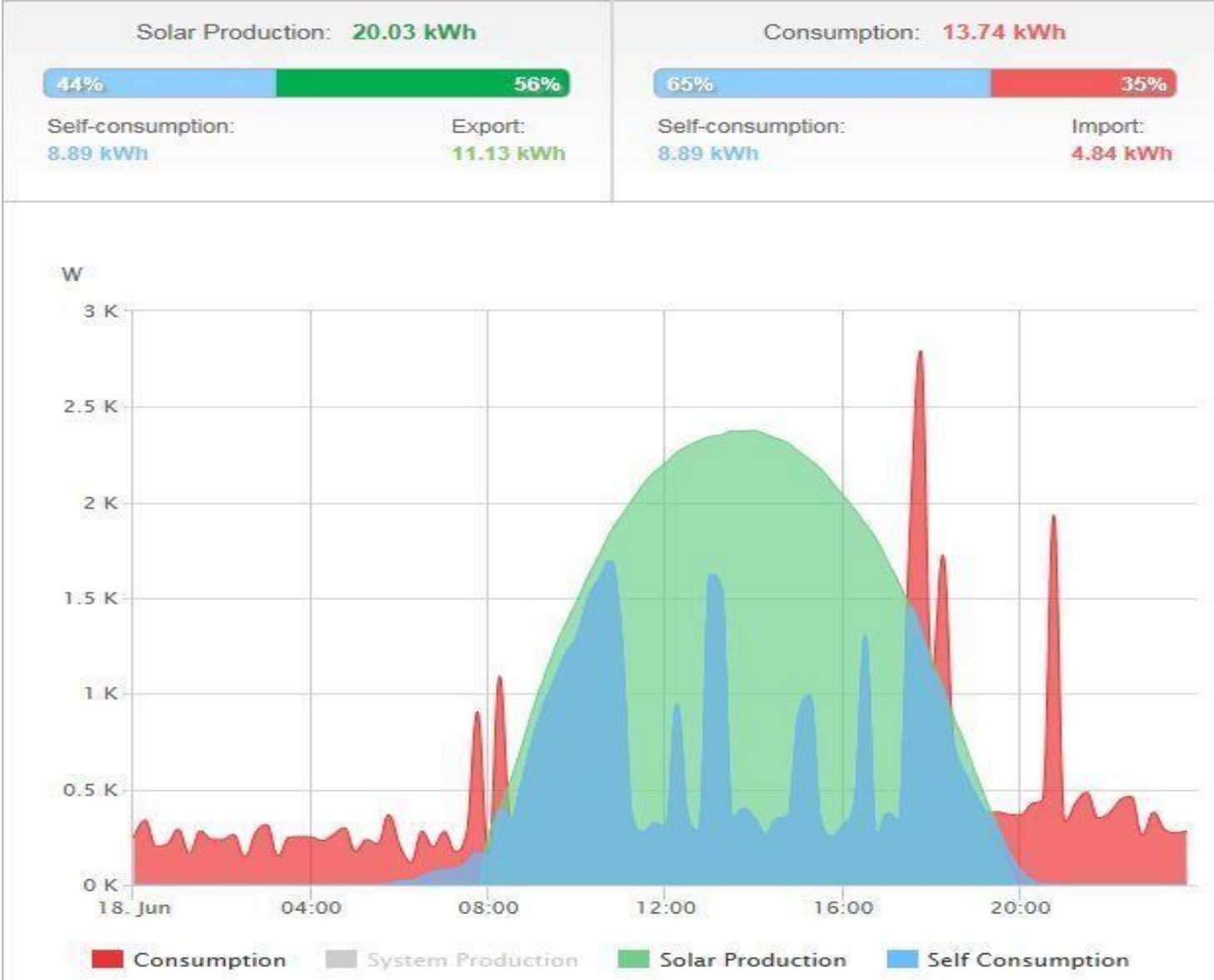
\*Products or solutions owned by partners

# SolarEdge – SafeDC™

- With SolarEdge SafeDC™ feature, whenever AC power is off, DC wires are designed to de-energize in order to protect installers, maintenance personnel, and firefighters
- Power optimizers are designed to drop to 1VDC in any of these cases:
  - A building is disconnected from the electrical grid
  - The inverter is turned off
  - Insulation faults for example in cases of flooding or structural collapse (ground fault or RCD will trip the inverter)



# Monitoring example - Daily output



# Monitoring example - Weekly output



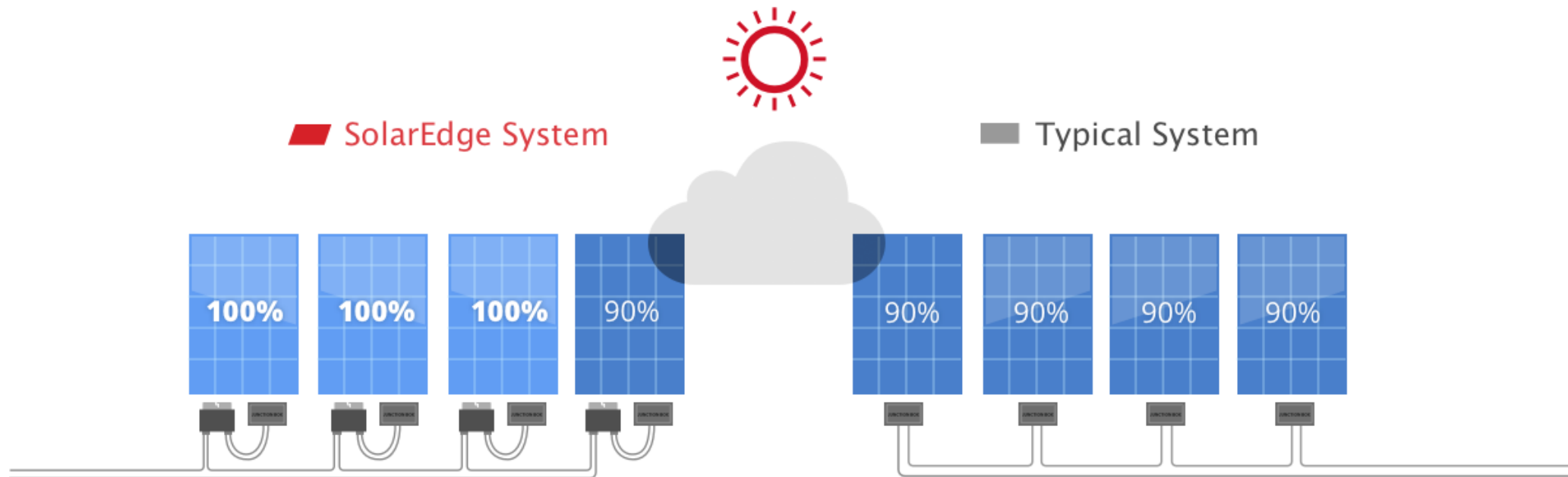
### Environmental Benefits

CO2 Emission Saved  
**3,707.52 kg**

Equivalent Trees Planted  
**169.71**

# More Energy = More Revenue

- In a PV system, each module has an individual maximum power point
- Traditional inverter — weakest module reduces the performance of all the modules
- SolarEdge — each module produces the maximum energy
  - The weakest module does not affect the performance of the rest of the system



# Why SolarEdge?



## Strong Company

SolarEdge is a financially strong and bankable company

- Profitable
- Publicly traded on the NASDAQ
- Substantial track-record in commercial PV



## Better Bottom Line

The lifetime benefits of the SolarEdge solution offset the slightly higher inverter cost

- Reduced BoS costs
- Reduced O&M costs
- Increased energy production



## Improved Asset Management

System owners enjoy enhanced lifetime system performance

- Higher system uptime
- Risk mitigation and long-term investment protection
- Superior safety



## Complete Service Suite

EPCs and installers enjoy enhanced support from SolarEdge's local service team

- Pre-sale and post-sale support
- Installation & commissioning support
- Advanced O&M tools and capabilities

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# Heat pump solutions

Bean Beanland

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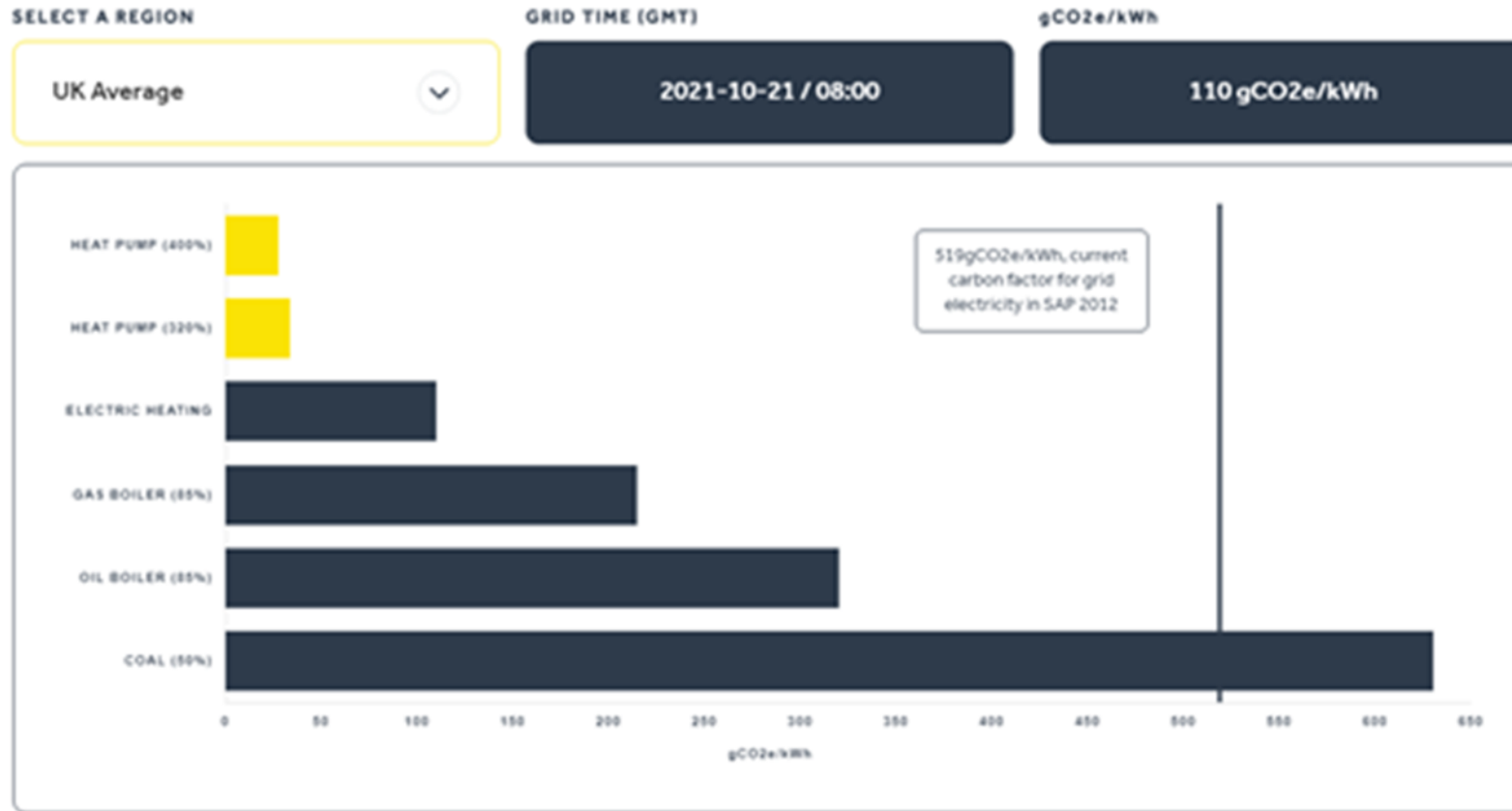
COVENTRY & WARWICKSHIRE  
**GREEN BUSINESS**  
PROGRAMME

# GreenTalk Live webinar: Renewable energy and green transport

May 2022

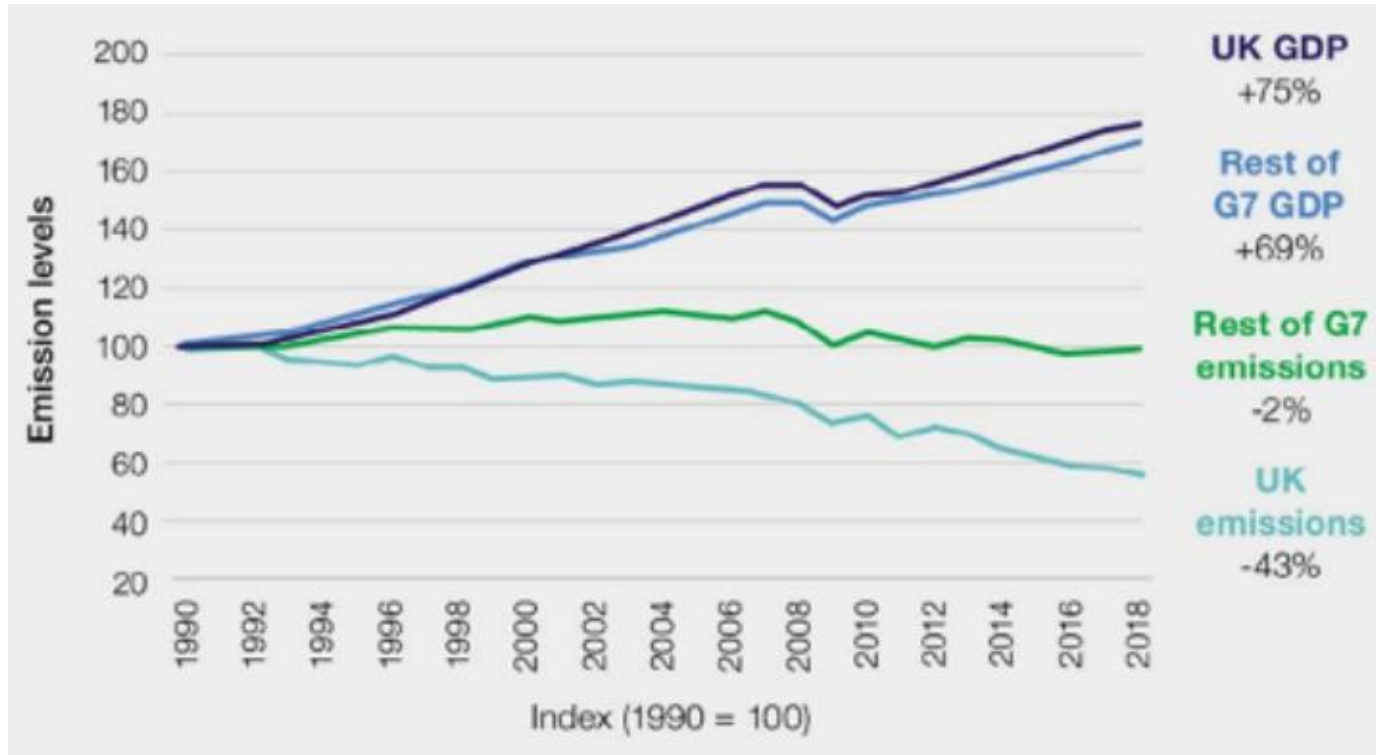


# Why is electrification carbon-efficient?



<https://www.hpf.org.uk/carbonwatch>

# Can the UK economy afford decarbonisation?



Decarbonisation is currently still very much an affordable investment opportunity

# The future in Government consultations



## Heat network zoning

Closing date: 19 November 2021

October 2021



## PHASING OUT THE INSTALLATION OF FOSSIL FUEL HEATING IN HOMES OFF THE GAS GRID

Closing date: 12<sup>th</sup> January 2022

October 2021

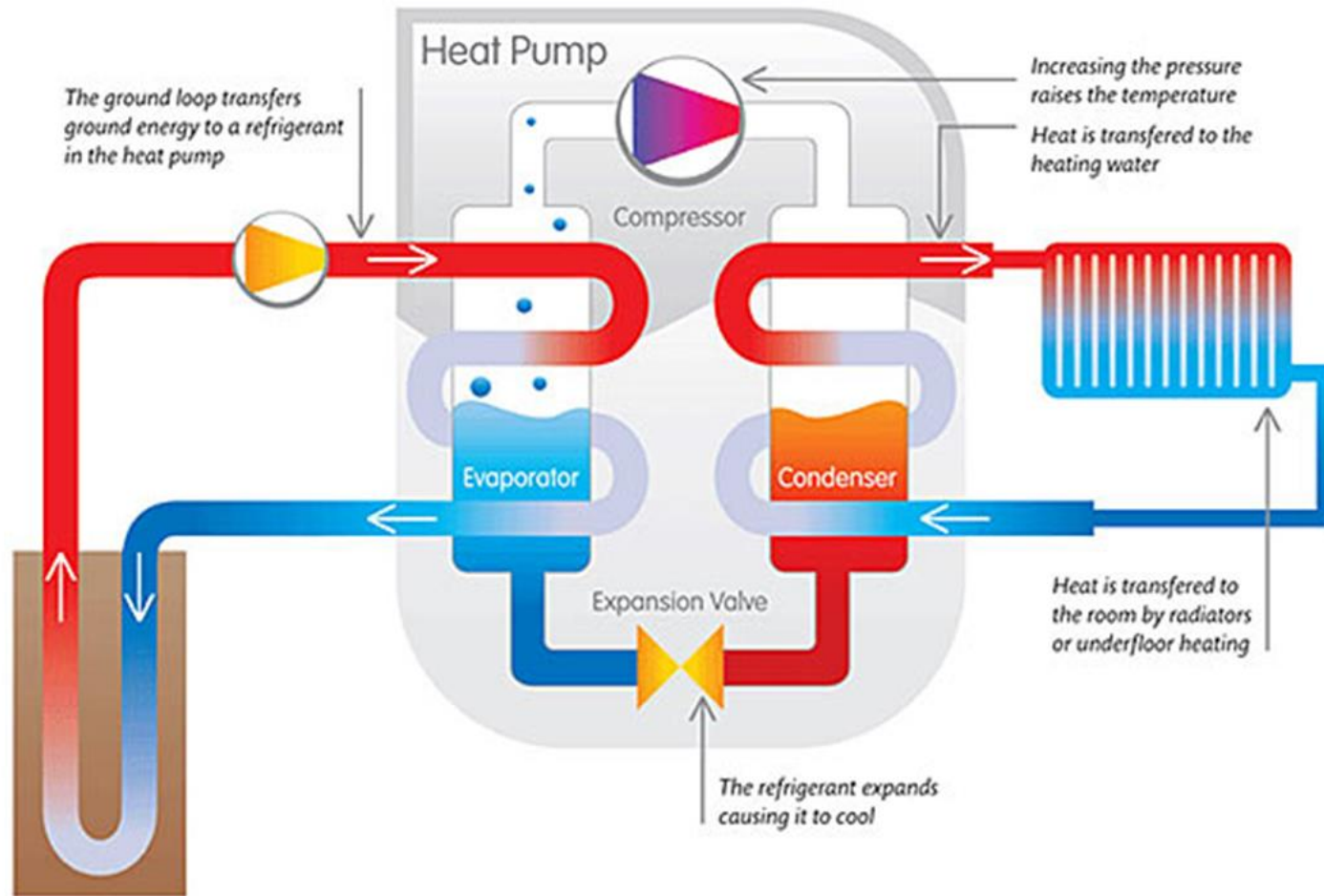


## Phasing out the installation of fossil fuel heating systems in businesses and public buildings off the gas grid

Closing date: 12 January 2022

October 2021

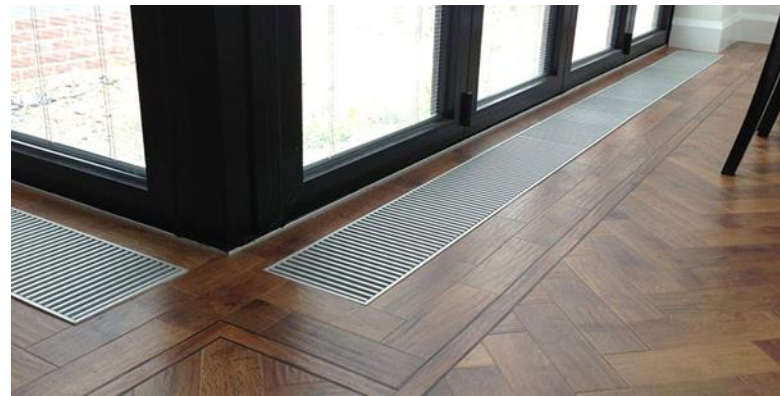
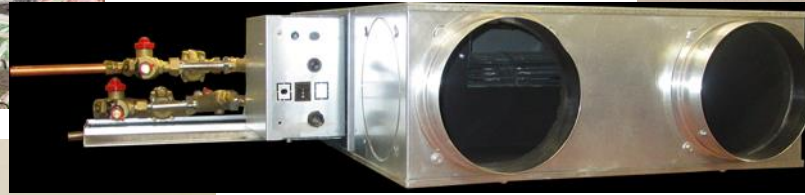
# Heat pumps 101



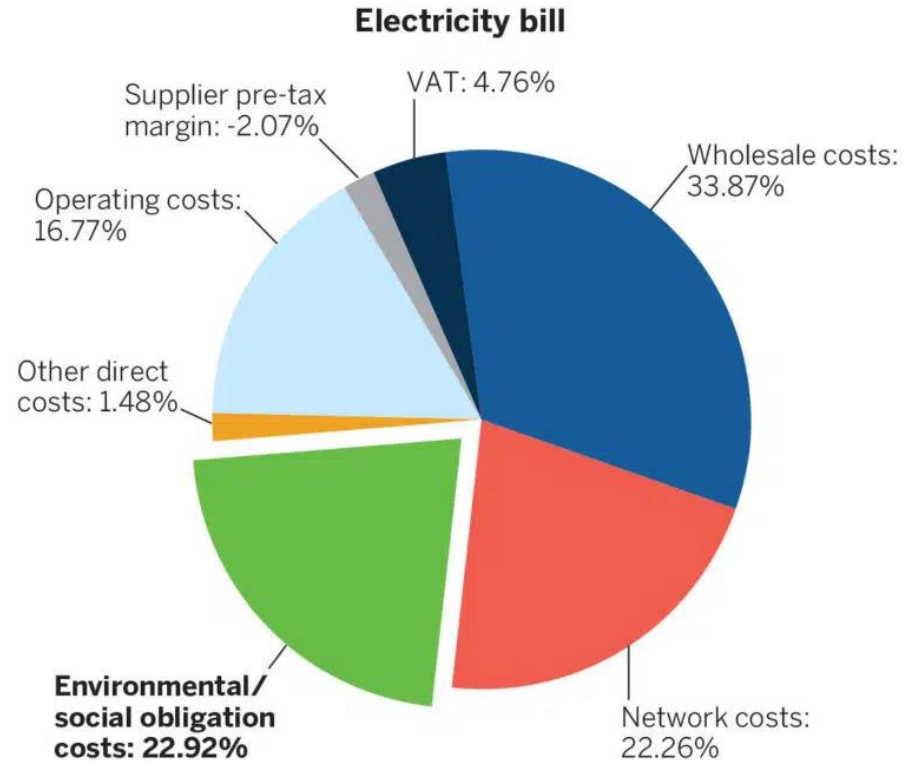
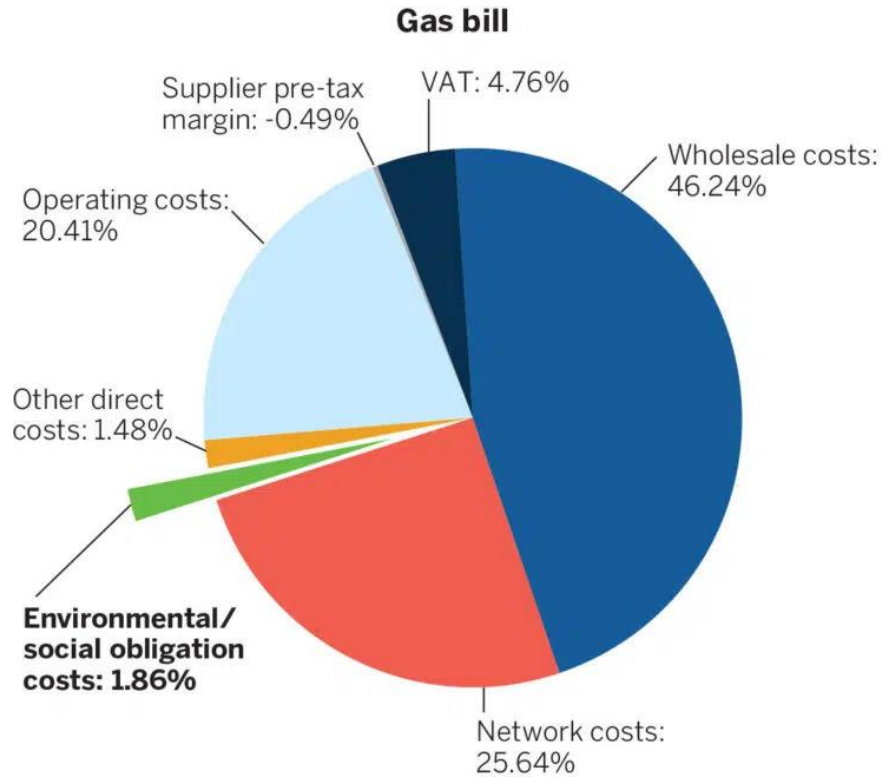
# Heat pumps 101 – what do they look like?



# Heat pumps 101 – any emitter type



# Two aspects to affordability – operational costs



Source: Ofgem. (2021). Infographic: *Bills, prices and profits.*



## Two aspects to affordability – capital costs

- Boiler upgrade scheme
  - fine for small air-source, very poor for ground-source
  - still doesn't help with capital, except for small air-source
  - budget & voucher limits may throttle the market
  - closure cliff edge doesn't encourage long term investment
- Commercial buildings & process heat
  - enhanced capital allowances?
  - carbon pricing?
  - flexibility value?
  - long term loans?
  - willing to contribute?
  - off-balance sheet third-party investment?

## Heat outputs & the value of “design”

- Heat outputs; can a heat pump system provide enough heat or are supplementary systems required? What are the benefits and limitations of heat pump systems?
  - Heat loss calculations & proper design – the lost art
  - Flow temperatures and losses – where does the heat come from, and does the building know?
  - Supplemented or hybrid systems – what is the Plan B?
  - Benefits – improved comfort, internet control (landlords), carbon, air quality (both internal and external)
  - Procurement advice –  
<https://www.hpf.org.uk/advice/homeowners>

# Opportunities: in every sector



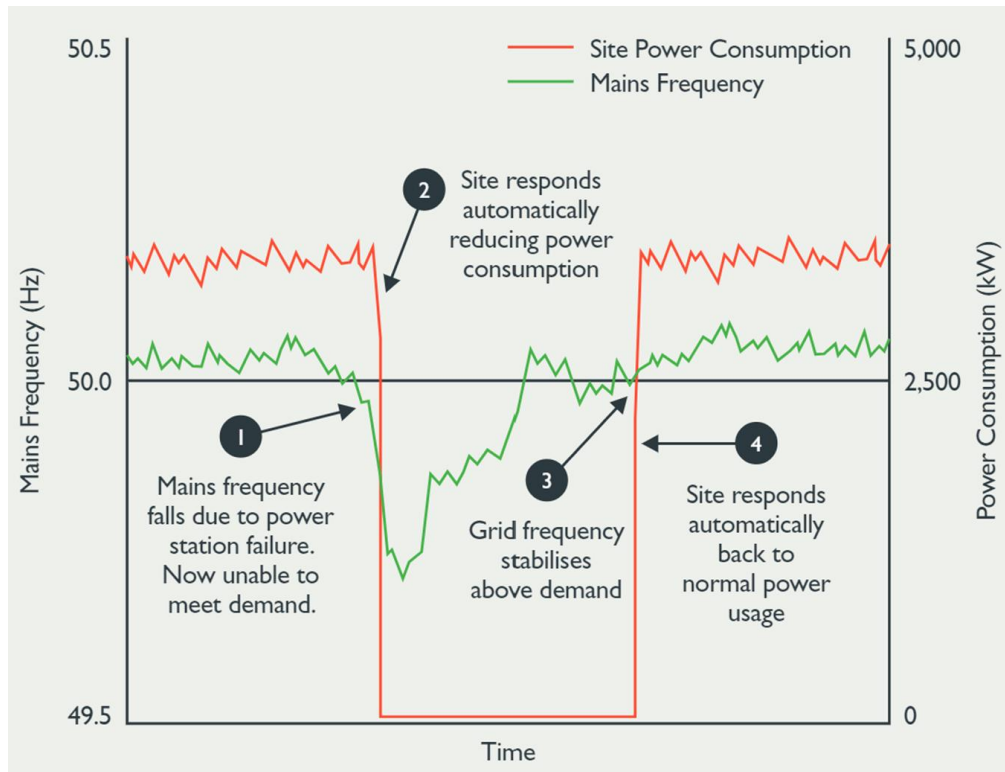
## Opportunities: the new order in horticulture



16 and 13 acre glass houses  
20 tonnes of tomatoes/day  
12% of UK demand  
Minimises “food miles”  
Ground-source heat pumps driven by waste heat from water treatment plant  
Supports the current NFU target for Net Zero British farming by 2040

360 full-time & 120 additional seasonal rural jobs

# Potential: unlocking the value of flexibility



- Carbon Trust/Imperial College report on this has projected a value from flexibility of £16.7bn per annum by 2050 : <https://www.carbontrust.com/news-and-events/news/groundbreaking-analysis-reveals-a-fully-flexible-energy-system-could-cut-the>

# The ultimate renewable energy resource



“The stone age did not end because the world ran out of stones,  
and the oil age will not end because we run out of oil”  
Don Huberts (Shell) 1999

# Thank you

[www.hpf.org.uk](http://www.hpf.org.uk)

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## Q&A





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