Sustainable Business Breakfast

Electric Vehicles & Renewable Energy

Chichester, 17th July 2014

Sustainable Business Network

Working in partnership with:

GreenGrowth PLATFORM

University of Brighton

Supported by:

HIGHER EDUCATION FUNDING COUNCIL FOR ENGLAND hefce

Sustainable Business Partnership

Community Interest Company

Working in partnership…

Sustainable Business Network

GreenGrowth PLATFORM

University of Brighton

What's coming up?

08:30 Welcome
Rowan Wallis, Sustainable Business Partnership CIC

08:35 Electric Vehicles
Keith Lewis, Society of Motor Manufacturers and Traders

08:50 Renewable Energy: Worthwhile for business?
Andrew McBean & Steven Peace, Peace Marsh Renewables

09:05 Best Practice Case Study
Keston Williams, Barfoots

09:20 Round-the-Tables

09:30 Networking & Refreshments

Go Ultra Low

Putting ultra low emissions and ultra low running costs at the heart of business fleets

Transforming transport

- Road transport is responsible for 92% of the UK's domestic transport greenhouse gases
- The Department of Health estimates poor air quality costs the our economy up to £17bn per year through increased health problems
- The automotive industry faces tough EU legislation on CO2 emission, 95g per km by 2020
- We all have a social and corporate responsibility to future generations
- But we all still need to move, transport mobility helps drive social mobility

Go Ultra Low

An answer:
Ultra Low Emission Vehicles (ULEVs)

- Vehicles producing 75g CO_2 per km or less from the tailpipe
- Currently all vehicles capable of this have a plug
- Over 20 models on the UK market

Go Ultra Low

And not a milk float amongst them...

Committed to the transition

- £500m announced by Government to support uptake of ULEVs during the next parliament
- New models launched this year by manufacturers across the globe
- Huge investments made by industry – Nissan have invested over $4bn in the LEAF worldwide
- Unique commitment to work together to promote the concept not the car – Go Ultra Low

BMW NISSAN RENAULT TOYOTA VAUXHALL

Office for Low Emission Vehicles

Go Ultra Low

Our top-line aims

- To move ultra low emission vehicles (ULEVs) from ‘novel to normal’
- By cutting through the myths
- To increase consideration of purchase in target audience segments
- To sell more ultra low emission cars and vans
- To transform transport

Go Ultra Low

Pop Quiz

The best in class ULEV can travel how far in a single journey?

a) 110 miles

b) 350 miles

c) 700 miles

d) Surely it's flux capacitor can take it all the way back to the 1950s?

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Pop Quiz

- A 100% zero emission car costs how much per mile to fuel?

a) Less than 2p per mile

b) About 11p per mile

c) 35p per mile

d) More than an arm, but less than an arm and a leg

Go Ultra Low

Pop Quiz

- And of those, (2p, 11p, 35p, arm, leg) which is closest to the cost of petrol per mile?
- The AA puts petrol costs between 12p and 21p per mile depending on engine size
- 1000 miles in an ULEV = £20
- 1000 miles in a conventional ICE = £210

Go Ultra Low

Why this is relevant for your business

ADVERTISEMENT FEATURE

POWER TO THE FLOWERS

Busy London florist **Derek Isaac** ditches his petrol delivery van for an electric Renault Kangoo, and starts watching the savings bloom

Our business currently runs a large diesel van, which we chose for its load capacity and fuel economy, and a smaller petrol van. Before that, we owned one of the first-generation electric vans, which was slow, unreliable and ugly. The new ultra-low emission Renault Kangoo showed us just how much the technology and driving experience have improved.

The Kangoo is every inch an ordinary van, inside and out, except for its amazing quietness. The Kangoo also feels surprisingly powerful, something our previous electric van never did. There are no gear changes so you can accelerate quickly to the speed limit without really noticing.

On the first day I drive it in my normal style and cover 31 miles around town, using up 75% of the charge. When the roads are empty at 5am around the flower market, I can be a bit heavy on the accelerator. I consult the owner's manual for tips to extend the range. The biggest of these is Eco mode. When engaged, the onboard computer makes minor adjustments to the motor to squeeze out more from the battery. A dashboard gauge tells you how efficiently you are driving. It's a bit like a rev counter: avoid sending the needle into the red zone and you are doing well. By freewheeling downhill you can even re-charge the battery.

On day two I drive in a less sporty manner and cover 33 miles with 50% of the battery charge remaining. Those miles cost me around 66p in "fuel", and the range is more than enough for my daily requirements.

Central London has lots of available charging points, and since I'm always up early, finding one of these unoccupied is easy. Still, it is very convenient to charge the Kangoo overnight at home.

The biggest incentives for me to own one of these are financial. Many of my clients are in central London and I drive into the congestion charge zone most days – costing me £1,969 per year. Also, parking in Westminster parking bays for up to four hours is free with a ULEV. On average I need to park for 20 hours per week – at a cost of £80. The free parking also takes the stress out of deliveries that require us to arrange flowers on site. Then there's the cost of fuel. Recharging is around six times cheaper than refilling, at 2p or 10p per mile.

There's still a place in my business for the big diesel van to carry large loads over long distances, but the Renault Kangoo is a compelling option for my business around town.

Derek Isaac, contract florist, is online at supersaturateflowers.com

Learn more about ULEVs

Ultra-Low Emission Vehicles are motor vehicles that emit less than 75g of CO_2 per kilometre.

A growing number of cars fit this criterion. They divide into three categories. **Pure electric cars and vans**, like the Renault Kangoo van Derek Isaac drives here, are powered solely by a rechargeable battery that drives an electric motor. **Plug-in hybrids** have an electric motor, plus a regular engine that kicks in when the batteries run down. **Range-extended cars** combine an electric motor with a small petrol engine that maintains battery charge.

For information, see **goultralow.com**, and for a chance to win a luxury weekend away in one of these cars, see **theguardian.com/go-ultra-low**

Making savings

- £5,000 off price of a car
- £8,000 off price of a van
- Savings on running costs, servicing costs and local benefits such as no congestion charge

Cornwall Partnership NHS Foundation
Purchased 15 ULEVs, estimate savings to be £300,000 a year, the equivalent of 12 nurses

- Right vehicle + right duty cycle = savings

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Cost Comparisons

www.goultralow.com

		Petrol C Class	Diesel C Class	Plug-in Hybrid	Range-Extended EV	100% Electric	100% Electric (battery leased)
	Upfront costs						
A	Retail price	£15,890	£17,115	£32,465	£33,100	£25,935	£17,793
B	Plug-in Car Grant	£0	£0	-£5,000	-£5,000	-£5,000	-£4,448
C	VED	£125	£20	£0	£0	£0	£0
D	Registration fee	£55	£55	£55	£55	£55	£55
	Total upfront cost	**£16,070**	**£17,190**	**£27,520**	**£28,155**	**£20,990**	**£13,400**
	Running costs (36,000 miles/3 years)						
E	Battery leasing	£0	£0	£0	£0	£0	£3,348
F	Fuel	£4,716	£3,525	£2,118	£1,446	£1,449	£1,215
G	Insurance	£802	£1,050	£988	£975	£977	£854
H	Servicing	£570	£570	£447	£225	£327*	£225
	Total running costs	**£6,088**	**£5,145**	**£3,551**	**£2,646**	**£2,753**	**£5,441**
	Total cost of ownership (over 3 years)						
	Total upfront costs	£16,070	£17,190	£27,520	£28,155	£20,990	£13,400
	Total running costs	£6,088	£5,145	£3,551	£2,646	£2,753	£5,441
I	Residual value	-£6,375	-£6,454	-£10,145	-£12,531	-£6,340	-£6,723
	Total cost of ownership	**£15,783**	**£15,881**	**£20,926**	**£18,270**	**£15,403**	**£12,118**
	Additional information						
K	CO2 g per kilometre	136	109	49	13	0	0
L	Insurance group rating	11	11	16	21	23	15

Notes
Costs are indicative to allow comparison across vehicle types. Costs may vary and other costs may apply.
A: Recommended retail price (Incl. VAT) as advertised in manufacturer brochures
B: Plug-in grant applied at 25% of price up to a maximum of £5,000
C: VED (car tax) rates as listed by Driver and Vehicle Licensing Agency V149
D: Registration fee applicable for all new cars
E: Costs for leasing battery over 36 months taken from manufacturer's brochure
F: Liquid fuel (petrol & diesel) and electricity costs sourced from VCA database http://carfueldata.direct.gov.uk/
G:Insurance quotes from esure
H:Servicing costs taken from manufacturers brochures. *Standard annual service costs applied as no specific annual electric servicing costs available
I: Residual values sourced from Fleet News website www.fleetnews.co.uk
K: Sourced from VCA database http://carfueldata.direct.gov.uk/
L: Taken from manufacturers brochures

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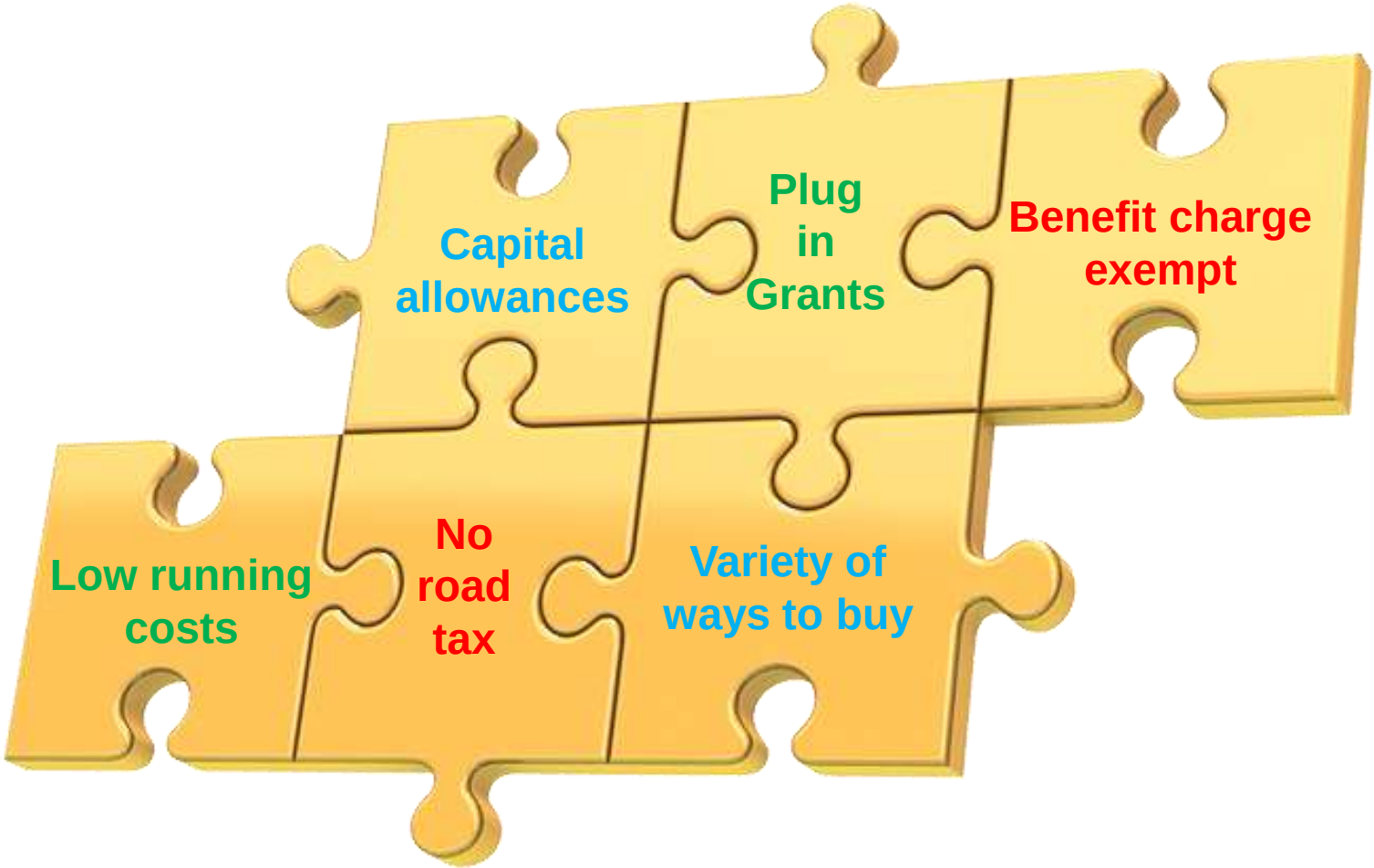
Piecing together a business case



- Regional benefits
- Leasing options available, including battery leasing
- Consultancy advice

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Making a CSR commitment

- Even with today's electricity generation ULEVs offer an environmental saving
- Well-to-wheel for combustion adds about 20g CO_2 per km

  2014 average new car emissions 128g
  128g + 20g = 148g CO_2 per km
- Well-to-wheel for electric adds about 87g (based on 2010 figures – it is improving year on year)
- Plus local air quality benefits

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The Royal Society for the Protection of Birds (RSPB)

- “We have a strong culture here and try to make it part of daily life to look at our emissions. We do lots of things to reduce our emissions across the board, be it switching off the lights or whatever. Electric vehicles are just one part of that programme.”

David Waller, Head of Central Services

Go Ultra Low

Making employees happy

- It is estimated that a company car ‘user-chooser’ could save up to £300 per month, a significant bonus in the paycheck

- Employees like them once they’ve used them

  “I have been driving an electric vehicle for over a year now and have been very impressed. Its pick up on acceleration is very handy for nipping across busy roundabouts in Oxford. I have noticed during the summer months I only need to charge it overnight once a week, whereas in the colder weather it needs charging a bit more often because of the greater demand from lights and heating.”

  Trevor Jackson: Oxford City Council

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The infrastructure issue

- Grants for domestic chargepoints
- Public chargepoints increasing, with a network of rapids across UK by 2016
- Provision at work – seek advice
- Supporting a longer duty cycle
- But remember, ULEV with furthest range goes 700 miles

Go Ultra Low

Find out more

The website is:

Honest

Impartial

Straightforward

Easy to navigate

Go Ultra Low

Additional support

- Plugged-in-fleets run by the Energy Saving Trust (EST)
- Fleet consultancy, such as Cenex
- OLEV fleet forum – an online community https://www.linkedin.com/groups/OLEV-Fleets-Forum-6547857/about

Go Ultra Low

Any questions?

Find out more at
www.goultralow.com

or

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Head of Communications
Society of Motor Manufacturers and Traders

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Go Ultra Low

Sustainable Business Breakfast

Electric Vehicles & Renewable Energy

The Benefits Of Renewable Energy For Your Business

By Steven Peace and
Andrew McBean

If I Said You Could Have Totally Free Heating For 20 Years, What Would You Think!


“Free heating for 20 years, you’re having a laugh”

What is RHI?

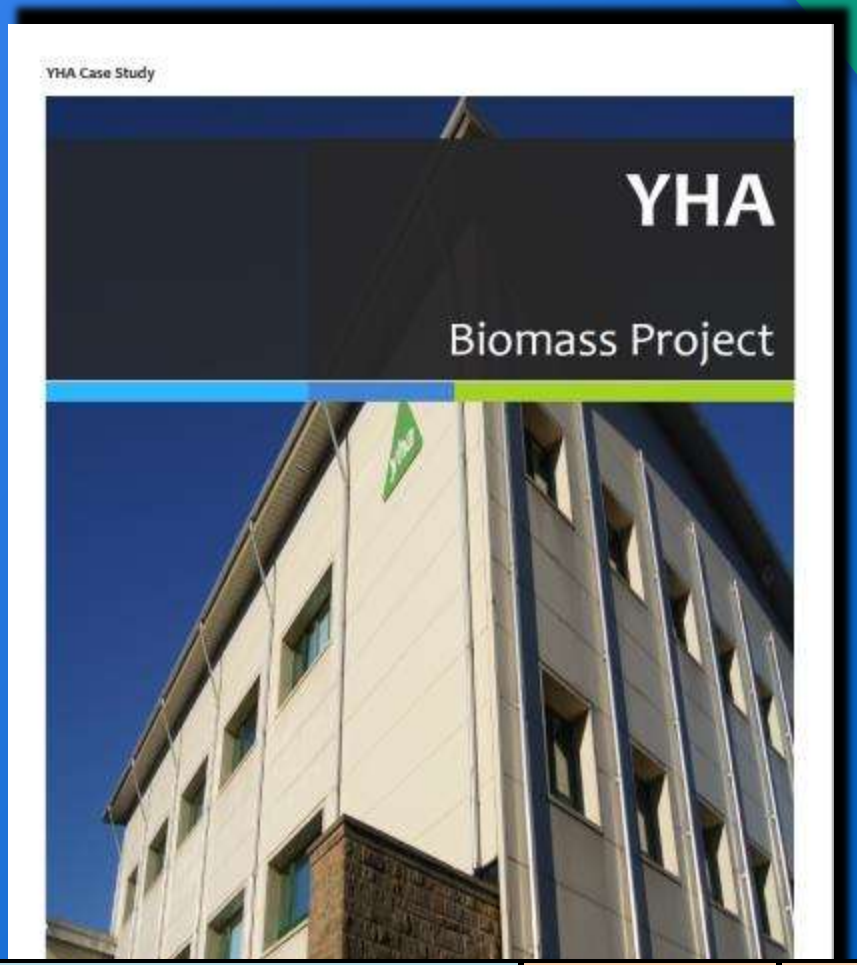
RHI is the Renewable Heat Incentive, it is a Government payment for every kWh of heat generated from a renewable source.

- The commercial RHI pays out for 20 years.
- Payments are index linked to keep up with inflation.
- The tariff paid is dictated by the size and type of renewable heating equipment used.
- The payment is in addition to any savings achieved and can be paid quarterly into a business or personal account.
- Most technologies would also still qualify for enhanced capital allowance.

400 kW wood pellet for Care Home

400 kW Biomass	Savings and Cash Income			ROI	Costs	Payback
	Fuel Saving	RHI Cash Income	Total Cash Income and Savings	Return on Investment	Siemens Carbon Trust Payments (over 7 years)	
Year One	£29,000	£28,418	£59,096	21%	£51,174	4-5 Years without finance
Total over 20 Year Tariff Term	£1,154,469	£763,597	£1,918,066	53%	£358,215	5-6 years with finance

110 kW pellet boiler replaced gas boiler



110 kW Biomass	Savings and Cash Income			ROI	Costs	Payback
	Fuel Saving	RHI Cash Income	Total Cash Income and Savings	Return on Investment	Siemens Carbon Trust Payments (over 7 years)	
Year One	-£503	£14,211	£13,708	12.6%	£18,058	6-7 Years without finance
Total over 20 Year Tariff Term	£269,065	£381,868	£650,933	56.8%	£126,403	7-8 Years with finance

Smaller 75kW Log boiler

75kW Central Biomass boiler	Biomass Savings and Cash Income			ROI	Estimated Cost	Payback
	Fuel Saving	RHI Cash Income	Total Cash Income and Savings	Return on Investment	Estimate of Supply & Installation Cost	
Year One	£6,203	£9,468	£15,671	38.7%	£40,500	2 - 3 Years
Total over 20 Year Tariff Term	£246,621	£254,414	£501,034	93.2%		

Care Home

20 Year Totals				
Install cost	Pellet Cost	Total Costs	RHI Cash Income & Savings	Net Gain
£213,320	£829,488	£1,042,808	£2,747,554	£1,704,746

Head Office

20 Year Totals				
Install cost	Pellet Cost	Total Costs	RHI Cash Income & Savings	Net Gain
£95,725	£263,249	£358,974	£914,182	£555,208

Cheese Dairy

20 Year Totals				
Install cost	Log Cost	Total Costs	RHI Cash Income & Savings	Net Gain
£40,500	£50,018	£90,518	£551,053	£460,534

Free heating plus a net gain over 20 years

Examples of Biomass Boiler Installations

Modern Biomass boilers are clean, highly efficient and automated.

We normally recommend:

- wood pellet as a fuel, but
- wood chip can also be used or
- logs if you have your own supply.

But not all sites are suitable for a biomass boiler.

Where space or access is restricted it could be better to consider alternative technologies, such as heat pumps, or solar thermal.

Electricity generating renewable technologies and Feed in Tariffs (FiT's)

Like the RHI, renewable technologies that produce electricity qualify for a Government payment over 20 years. These technologies include:

- Solar PV (photovoltaic)
- Small wind turbines
- Small hydro
- CHP (Combined Heat & Power)

Solar PV generates electricity from sun light and connects directly into your buildings power supply. You get paid a FiT for every kWh generated, weather it is used in the building or exported to the grid with an additional export payment.

YHA Hostel Manchester 30 kW PV array

Small wind turbines also earns a FiT payment for every kWh generated. Unlike Solar PV it will generate at night and In the right location it can be very profitable and can pay for it self in 3 – 4 years. However, in the wrong location, it may take many years to payback..

Small hydro can take 2 years or more to implement and can be quite costly due to the civil works and planning required. However, given that it generates 24 hours a day 365 days a year, a good site will pay for itself in between 3 – 5 years

Small scale CHP is normally provided by an internal combustion engine that drives a generator and runs on gas. The water used to cool the engine provides hot water for heating or process heat. These machines are often connected to an Anaerobic Digester or an old land fill site and burn the gas they give off.

An Anaerobic Digester produces bio-gas (methane) from organic waste. If your business creates high volumes of food, agricultural, or other organic waste, then this type of system running a CHP plant could be very profitable, both in tariff income and savings.

Renewables can also be used in many other applications, including process heating and cooling.

A key consideration for many customers is to finance the upfront supply and installations costs, where the repayments closely match the income and savings.

Energy saving assessment by CARBON TRUST

Financial Services provided by SIEMENS

THANK YOU FOR LISTENING

Feel free to ask any questions

Please contact us for further information and advice on 0845 600 9799

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Sustainable Business Breakfast

Electric Vehicles & Renewable Energy

Barfoots Case Study

Keston Williams

Technical Director

Barfoots of Botley Ltd

BARFOOTS
fresh thinking

Sustainable Business Network

GreenGrowth PLATFORM

University of Brighton

Barfoots - Overview

- Founded by Fifth Generation Grower Peter Barfoot, with 21 acre smallholding in 1976
- Now farming 5,000 acres of field scale vegetables in Southern England
- Farming Partnerships in Senegal, Peru and 28 other countries around the world
- Products include Sweetcorn, Sweet Potatoes, Asparagus, Butternut Squash, Pumpkins, Legumes, Chillies, Courgettes, Peas and Beans

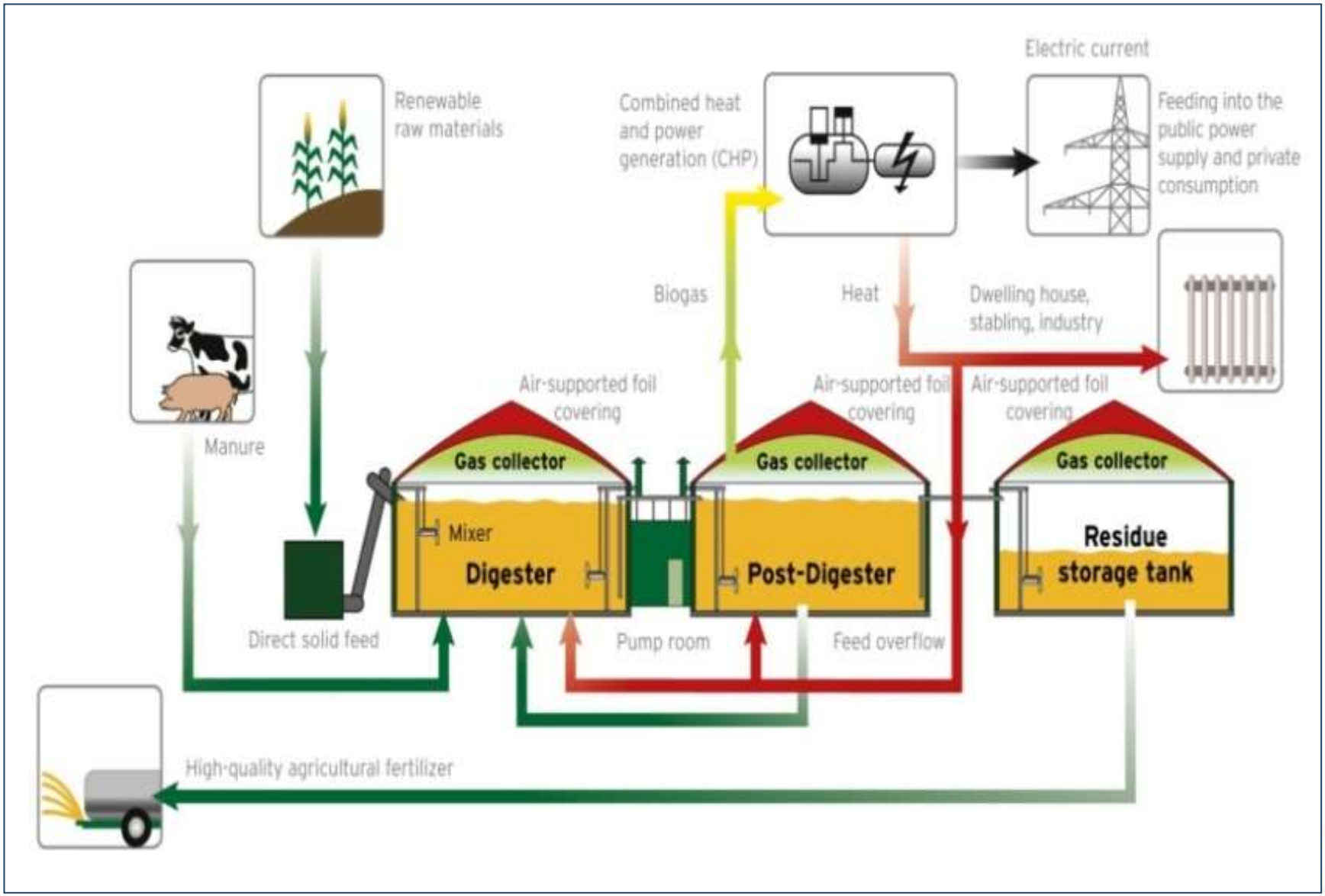
Why Anaerobic Digestion?

- Waste Problem (40,000 tn. per annum waste)
- Not enough cows to eat sweetcorn by-product.
- Considered alternatives:
  - Landfill
  - Composting
  - Own beef lot
- Legislation changing, Government support increasing (Renewable Obligation Certificates, Development Grants)
- AD provided a solution

The AD Plant

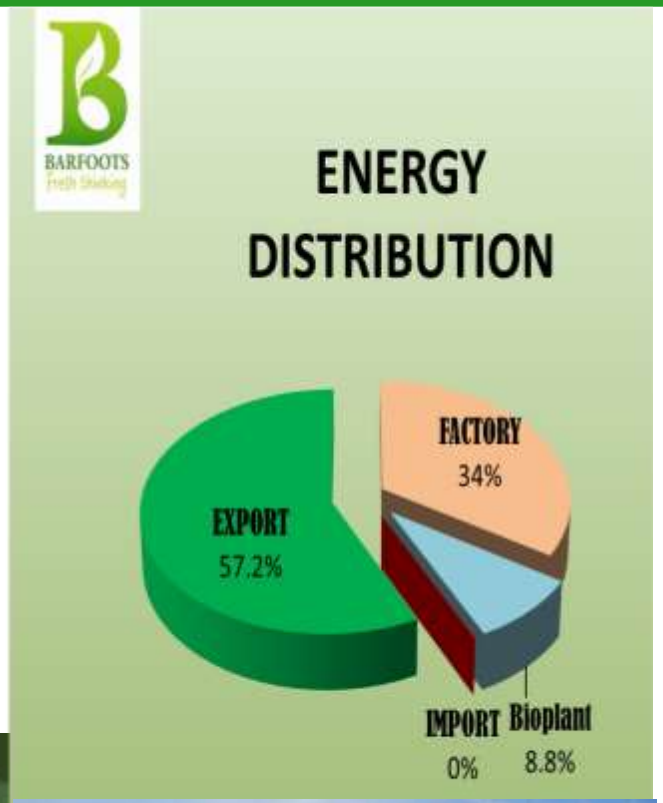
SEFTER FARM, PAGHAM ROAD, PAGHAM

How does it work?



The End Result

- 100% Energy from waste
- Digestate provides fertiliser for next crop
- Soil conditioner improves soil structure
- 5000 tractor journeys removed from local roads



What Next?

Herriard AD Plant

What else is possible?

- 3rd AD plant – planning granted.
- 4 further plants in planning

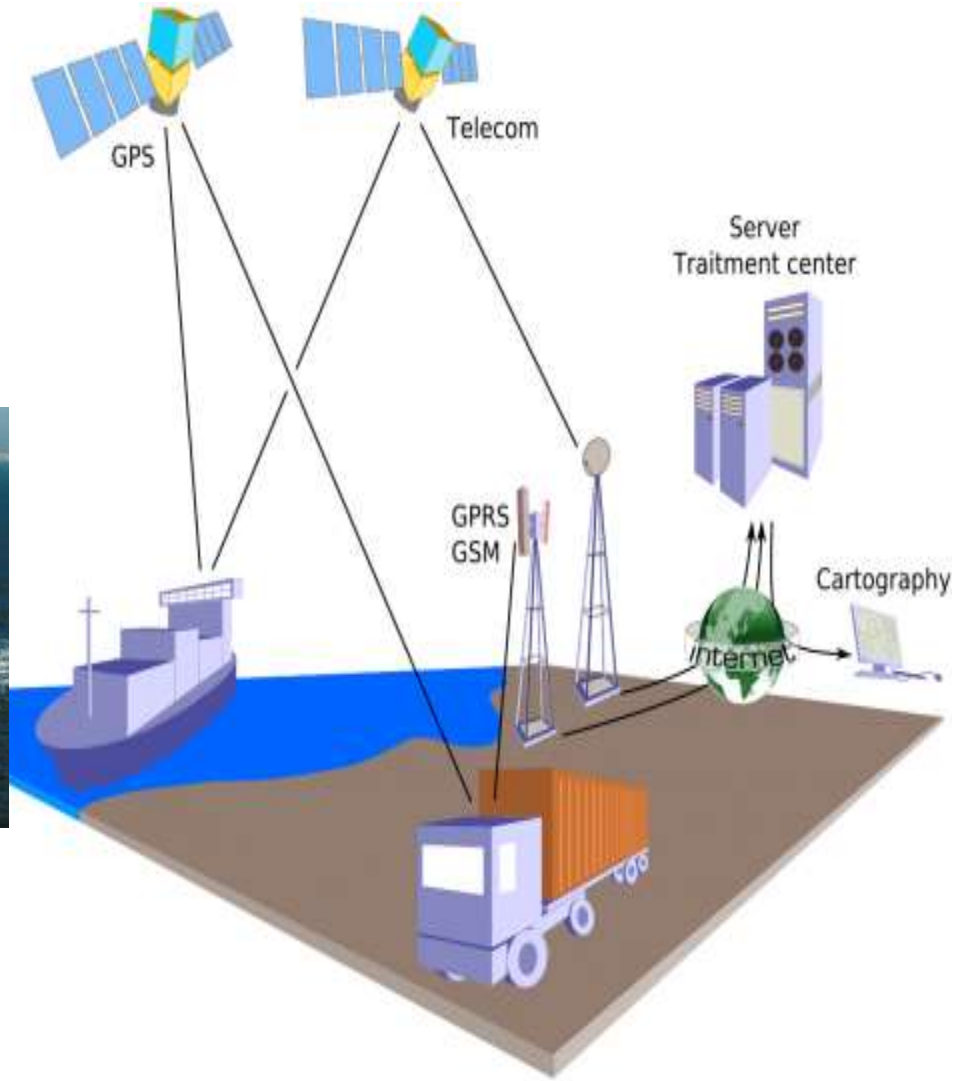
- What could we unlock?
  - Use store waste to produce electricity and fertiliser
  - Gas to grid
  - Carbon dioxide
  - Heat
  - Digestate – product / transport.
  - Cellulose – packaging

Other business areas

- Electric Car, Van and Hybrids
- Investment in factory efficiency
  - Compressors
  - Sub metering
  - Employee engagement
  - Electric (Lith ion) Forklifts / PPT's
- Supply Chain
  - New farming techniques
  - Sea freight not Air

Container Management

- Real time location data
- Temperature and MAP monitoring



Any Questions?

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Sustainable Business Breakfast

Electric Vehicles & Renewable Energy

Round-the-Tables

Business intros…

GreenGrowth
PLATFORM

University of Brighton

Unlocking business potential

GreenGrowth PLATFORM

University of Brighton

4 SERVICE AREAS

1-2-1 BUSINESS SUPPORT

BUSINESS EVENTS AND OPPORTUNITIES

INNOVATION, RESEARCH AND DEVELOPMENT

SKILLS AND TRAINING

www.greengrowthplatform.co.uk

Join us again…

Brighton, 25th September

Raising Green Finance

www.sustainablebusiness.org.uk

Sustainable Business Network

Working in partnership with:

GreenGrowth PLATFORM

University of Brighton