



COMMUNITY ENERGY MANIFESTO

An energy system you can feel good about,
for Oxfordshire and the UK

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WHAT IS LOW CARBON HUB?

Low Carbon Hub is a pioneering social enterprise based in Oxford UK. We are working for a decentralised, renewables-based energy system for Oxfordshire and the UK that puts ownership of local power in the hands of local people.

We develop renewable energy with local schools, businesses and community groups and reinvest 100% of our own surplus revenue in our mission to (1) scale up renewable energy generation and (2) scale down energy demand.

Our systemic approach to energy builds in solutions to energy efficiency, retrofitting, demand reduction and fuel poverty and does not cause expensive externalities of environmental damage.

Our mission is to work with you to power Oxfordshire with renewable energy, and to create an energy system we can all feel good about. Is this the future model of business? We hope so!

BE A PART OF IT

Invest in our community-owned renewables projects lowcarbonhub.org/invest

Follow us @[lowcarbonhub](https://twitter.com/lowcarbonhub) / newsletter lowcarbonhub.org

Work with us (schools, businesses, communities, innovation)
lowcarbonhub.org/services

**A MUCH BETTER ENERGY
SYSTEM IS POSSIBLE, IN
OXFORDSHIRE AND THE REST
OF THE UK: A DECENTRALISED
ENERGY SYSTEM BASED
ON A COMBINATION OF
COMMUNITY-OWNED
RENEWABLE ENERGY SUPPLY
AND VERY LOW ENERGY
DEMAND.**

THE QUALITY OF THE UK'S ENERGY RESOURCES IS AMAZING



Foreword

Dr Barbara Hammond MBE
CEO, Low Carbon Hub

Despite the challenging new environment for renewables in the UK, we at Low Carbon Hub continue to develop our social enterprise approach to energy in Oxfordshire. We set out here what *community energy* means for us and why we think it is a fundamentally important part of our national energy transition from a centralised, fossil-based energy system to one that not only decarbonises energy supply, but also lowers energy demand and alleviates fuel poverty.

Globally, we think the transition to a decentralised, renewable energy system is now *unstoppable*. The EU countries now firmly ahead of us in the transition to renewables include not just Germany, Denmark and Sweden, but 21 other EU countries. The trend is now clear and the *tipping point* is coming fast, even if UK policy is temporarily out of step.

For the UK, we think such a transition should really be a *no-brainer*.

THE UK'S RENEWABLE ENERGY RESOURCES

- we have the best onshore wind resource in Europe
- we have a world-leading offshore wind programme, and we export engineering and project development expertise all over the world
- we have the best tidal resource in the world
- our solar resource turns out to be much better than early models and forecasts suggested
- our farming and forestry industries are crying out for the business benefits they could get by diversifying into energy.

OXFORDSHIRE'S RENEWABLE ENERGY RESOURCES

- Solar: The UK's temperate climate makes it (strangely) good for solar.
- Biomass: We have a large resource of unmanaged woodland.
- Agricultural arisings/food waste: Oxfordshire is a very rural county, which means we have plentiful 'waste fuel' to feed into anaerobic digestors.

ENERGY ECONOMICS

With our indigenous energy resources running out, we can either seek out more remote sources of coal, oil, gas and uranium for the UK's energy, or we can develop our renewable indigenous resources, and create a new locally-owned renewable energy system for the UK.

This is the only future scenario that secures our well-being into the very long term, keeps fossil fuels in the ground and 'stands up' for local economies and the economic future of the UK as a whole. Without it our economic and environmental future look precarious indeed.

For Oxfordshire, the economic benefits of this transition are clearly understood, as a result of the *Low Carbon Economy Report* of 2014.¹

Every year, Oxfordshire spends about £1.5 billion on energy. This money goes out of the local economy to the big energy companies that are now mainly owned by foreign companies. But we also make about £1.15 billion per year out of 570

low carbon businesses that employ 8,800 people (more than twice the workforce of the BMW car plant at Cowley).

The low carbon economy is already an important part of our economic development, supporting many jobs and delivering 7% of Oxfordshire's GDP.

The economic risk to our households of changing policy should be equally clearly understood. During the early part of the last government, energy policy was set to achieve a reduction in energy bills of £72 overall by 2020² whilst paying for development and deployment of renewable energy. This was policy-making that understood that green taxes are about positive investment in the future, not about an unnecessary burden on bill-payers.

This policy framework is unfortunately now largely dismantled, and so households are put at risk both because energy costs will not reduce as expected and also because the energy efficiency policies - that have been taken away - will not deliver the health benefits of

LOW CARBON HUB'S BUSINESS MODEL

warmer, more comfortable homes.

In Oxfordshire, this presents us with a problem because serious issues are now much more difficult to address. In the City, which has almost twice the national average of households in the private rented sector³, it is very difficult to engage private landlords in improving the energy efficiency and therefore healthiness of their properties. In the rural areas of the county, a large proportion of houses are off the gas grid, old and therefore hard to heat and hard to improve and are lived in by an increasingly elderly population with increasing amounts of fuel poverty⁴.

We don't think it has to be this way. So we are working with low carbon community groups our six Local Authorities, our two universities and our many businesses to address these issues in Oxfordshire.

Social businesses like ours that are decentralising ownership of energy resources and reinvesting surpluses in community-benefit activities like fuel poverty alleviation and energy efficiency projects have a critical role to play in ensuring that the UK's energy transition does not recreate 'business as usual'. This community-benefit business model is what separates us from commercial developers and is a key reason why people collaborate with us and invest in our projects.

1. *Oxfordshire's Low Carbon Economy Report* (Environmental Change Institute, Oxford University, and Low Carbon Oxford 2014)
2. *The Levy Control Framework* (National Audit Office 2013), p.36 Figure 12
3. Oxford City Council statistics: oxford.gov.uk/info/2016/housing/458/housing
4. Chart of the Month June 2015: Fuel poverty (District Data Service, Oxford City Council 2015)



CITIES DIDN'T HAVE
NATIONAL GRID?

POWER STATIONS FOR PUBLIC GOOD

THE ROLE OF COMMUNITY ENERGY IN THE UK'S ENERGY TRANSITION

Community energy is not an optional extra, but a fundamentally important part of the national energy transition we are undergoing right now. Without community energy we will struggle to keep the benefits of local energy generation in local economies, and we will struggle to meet the commitments we signed up to at the Paris climate conference at the end of 2015.

A new, cleaner energy system is not just about decarbonising our energy system. It will also need built-in incentives to lower energy demand and increase energy efficiency. *That means developing energy companies that are as interested in selling less energy as they are in selling renewable energy.*

The Community Energy Service Company (CESCO) model we propose on page 18 builds in the incentive to help customers reduce their energy use; it is all about matching local demand and supply.

SCALING UP INTO A MOVEMENT

Our work over the last three years demonstrates that Oxfordshire's renewable energy resources can be developed democratically, by building new 'energy partnerships' between social developers (like us), local councils, communities, schools and businesses.

As we move out of our start-up phase and begin to scale up, we can take the next steps towards our vision for a renewables-based energy system for Oxfordshire – and indeed the whole of the UK.

If we want a renewable energy future in the UK – and specifically one that is developed for the benefit of local economies and communities – we can have one, but we will need to stand up for it together. We are feeling very optimistic that many of the components of the new system we have been dreaming of are now either there or within our grasp.

We look forward to working with you to make it happen.

Dr Barbara Hammond MBE
CEO, Low Carbon Hub

CASE STUDIES

New 'energy partnerships' will be at the heart of a decentralised energy system, with social developers like us working with businesses, schools, community groups, local councils and innovation partners to develop local renewable energy resources for the benefit of local communities.

SCHOOLS CASE STUDY:

SOLAR ENERGY FOR SCHOOLS



Just 20 schools can save 470 tonnes of CO₂ and generate £1 million for low carbon initiatives – while enjoying cheaper, greener electricity!



Oxfordshire has around 300 schools. Many of them have under-utilised roof space that could generate clean electricity for the school. So far, Low Carbon Hub has partnered with eighteen of these schools on rooftop solar PV projects. We have ten more schools in our 2016 pipeline. These projects bring the wider school community together. Schools projects have inspired and supported further low carbon projects among pupils, staff and parents. Schools solar PV projects deliver:

- discounted, green solar electricity for the school
- a tool to engage pupils about energy and sustainability
- a tangible contribution to UK and Oxfordshire CO₂ emissions reduction targets.

We are very grateful for the support of local low carbon community groups, Oxford City Council and Oxfordshire County Council who have helped to make introductions and pave the way for relationships with our solar schools. It's one example of what we mean by 'new energy partnerships'.

We recognise that schools have pressing educational and operational priorities, so we have project managed each installation to minimise the burden on the schools. Together with these partners, and with the head teachers, governors, business and site teams who have worked closely with us, we have achieved amazing results.

4000 SOLAR PANELS

with an installed capacity of 1MW on schools

470 TONNES

CO₂ avoided a year

£625,000 savings on electricity bills by this group of schools over 20 years

11,000 CHILDREN get a great way to learn about climate change and the benefits of renewable energy

£1,000,000 in community-benefit funds over 20 years, for local community energy projects

Schools in Oxfordshire and nearby areas keen to explore similar projects can get in touch or find more information on our website. ('Work with us')



BUSINESS CASE STUDY:

OXFORD BUS COMPANY

A bus depot roof can create warmer homes and smaller bills in a deprived area of Oxfordshire.



226,000

KILOWATT HOURS

of electricity generated from OBC's solar panels since October 2013 – the equivalent of an OBC bus making 3.5 carbon-free trips around the world

£5000

saved on electricity in a year for the Oxford Bus Company

£12,000

generated in community benefit funds in its first year, used by Low Carbon Hub to fund energy-saving measures for homes in Barton

121.3 TONNES

of CO₂ emissions avoided since October 2013

Local businesses keen to explore similar projects with us can get in touch or find more information on our website ('Work with us').

In 2013, the *Oxford Bus Company (OBC)* became the first Oxfordshire business to develop a community-benefit renewables project with Low Carbon Hub; a commitment that led to them being commended by the Prime Minister. The company has a public commitment to reduce carbon emissions by 3% each year in line with Low Carbon Oxford's targets.

Oxford Bus Company was interested in solar PV as part of its plan to reduce its carbon emissions. However, with a projected payback period of ten years, the business would have had to take a bus off the road to fund it. Low Carbon Hub's proposition to Oxford Bus Company was to pay the costs of the solar PV installation and maintenance of the project for the full 20 to 25 year term. Put simply, Low Carbon Hub was offering the Oxford Bus Company Solar PV for free, enabling them to focus on their core business.

In this model, the 'host' business gets the green electricity (at a good discount) and the social developer (Low Carbon Hub) gets the Feed-in Tariff and the electricity sales income. This income is used to pay Low Carbon Hub's capital costs, investor returns and to fund its community benefit activities. In one year, the installation saved Oxford Bus Company £5,000 on electricity bills, achieved a 15% reduction in its depot's CO₂ emissions and generated £12,000 for Low Carbon Hub's community benefit work.

Low Carbon Hub contributed community benefit funds from the Oxford Bus Company installation to an external wall insulation project that saves householders in Barton an average of £450 a year. Barton is in the 10% most deprived neighbourhoods in the UK and only a few miles from the bus depot.

BUSINESS CASE STUDY:

NORBAR TORQUE TOOLS



A factory roof becomes the largest community-owned roof top solar PV project in the UK



The Norbar solar PV project in Banbury is a 250 kW scheme and was at the time of installation the largest community-owned roof top solar PV scheme in the UK. Over 1,000 solar panels have been installed on Norbar's factory roof, and we are now exploring an extension of the project. Over its twenty-year lifetime this project will generate £170,000 in community benefit funds.

"One thing that struck me quite forcibly when standing on the roof of our factory looking at our scheme is just how much commercial roof space there is in Banbury (and no doubt every other town and city in the country) on which solar schemes could be placed. The added benefit of the Low Carbon Hub model is that approximately one third of the money generated from the installation funds further community projects in the local area. So, for example, they have installed solar schemes on local schools including Banbury Academy and the Warriner. This creates a kind of virtuous circle and also has an educational value in exposing children to the benefits of solar (and other renewable) energy. It gives people a direct stake in moving to a low carbon economy."

CATHERINE ROHL

Commercial Director Norbar Torque Tools Ltd

1000 SOLAR PANELS

making this the UK's largest community funded roof top solar project

60 HOMES

the number of homes that could be powered by this 250kWp installation

£150,000

funds to be generated over the project life to support local community projects & savings to the business electricity bills

1840 TONNES

CO₂ saved over the life of the project

2 SITES

we are exploring the possibility of a phase 2 installation

300 EMPLOYEES

benefiting from this pioneering and inspiring project

Local businesses keen to explore similar projects can find more information at www.lowcarbonhub.org/services/business-services



COMMUNITY CASE STUDY: **OSNEY LOCK HYDRO**

The first community-owned hydro scheme on the Thames



14 YEARS
in the making

200 COMMUNITY MEMBERS
came together

40% OF THE INVESTORS
live within 1 mile of the project and

82%
are based in Oxfordshire

60 HOUSEHOLDS
supplied with clean energy

40 YEARS of clean energy
expected providing an income
for community projects

£2 MILLION
in community-benefit funds
projected, to fund local energy
projects

*Community groups keen
to work with us can get in
touch via our website.*

Osney Island is a 200-household riverside community in west Oxford. Osney Lock Hydro was set up by a group of local residents to enable the development of the first community-owned hydro scheme to be built on the Thas. It became fully operational in May 2015 and will generate clean electricity for the equivalent of 50 households and a long-term income stream for local environmental projects.

Low Carbon Hub and Osney Lock Hydro identified a few areas where Low Carbon Hub could help the project move forward. As a result, we contributed legal costs as well as marketing costs, outreach and expertise to develop a community share offer in 2013 to raise the money to build the hydro project.

The use of an Archimedean screw turbine for the hydro was a positive choice in terms of allowing sediment and fish to move downstream; but it cannot provide upstream passage for fish. So as part of the construction of Osney Lock Hydro, a new fish pass was installed, allowing fish to move freely upriver for the first time in 400 years.

Surplus funds will be donated to local community projects. Over the 40-year project lifetime; this could be in excess of £2 million.

Image: Oxford Mail

INNOVATION PILOTS



We develop innovation pilots that help the community energy sector expand more rapidly.

Low Carbon Hub is at the heart of a move by leading organisations (including Oxford City Council, Oxfordshire County Council, University of Oxford, Oxford Brookes University and the Local Enterprise Partnership) to develop a strategic approach to low carbon economic development opportunities in Oxfordshire.

As part of this work, the Low Carbon Hub team develops pilot projects to bring researchers, businesses and communities together around themes with a direct impact on community energy, including:

RENEWABLE HEAT AND POWER – HINKSEY HEAT

We are looking into the feasibility of developing a district heating network, using renewable heat sources, such as the neighbouring lake, to provide heat to Hinksey Heated Outdoor Pool and surrounding buildings.

The finding? There is enough latent heat stored in the lake to heat nearly 100 houses, the local primary school and Hinksey Outdoor Heated Pool. All the users could potentially get cheaper heat, but more importantly, they could cut their combined carbon emissions by 75%.

BIOMASS FEEDSTOCKS

Low Carbon Hub is proposing to create an enterprise which installs and operates district heat scale wood fuel boilers in Oxfordshire and links these installations with nearby managed woods to produce a supply of feedstock equivalent to the boilers' demands.

Twinning the boilers with local woods serves three purposes:

1. It helps communities and woods. It also captures people's imagination – people like the idea of having a link to a wood.
2. It helps build capacity in local wood fuel supply chains.
3. It helps us to secure the fuel supply to our boilers and ensures it is sustainably produced.

NEXT GENERATION PV

Perovskites are a new class of photovoltaic materials and will eventually be cheaper than silicon and other PV chemistries. The world leader in this technology is Oxford PV, and we have put ourselves forward as a potential partner for trialling this new technology.

SMART GRIDS

We have are devising a pilot project for trialling meter aggregation and local balancing of electricity at street level. Combined with smart metering, this will enable:

- time of use as well as local generation tariffs
- visualisation of how the community is doing in the total balance of energy demand and local generation, against imports from the grid.

STORAGE

The combination of renewable, distributed generation and storage is a cornerstone of the new electricity system we are proposing. Storage is a hot topic globally, and we are planning our first trial at Rose Hill Primary School in partnership with Moixa and Bioregional.

EXPORT LIMITER

Orchard Fields School in Banbury is in a highly constrained area of the National Grid, with no capacity for new generation. Working with JoJu Solar Ltd and Macklin Controls, we recently commissioned our first solar PV installation with an export limiter – a system that automatically switches off part of our solar panels whenever generation exceeds the school's demand.

Visit our website to read about our innovation work or to get involved! lowcarbonhub.org/services/innovation-pilots

PART 2:

OUR ENERGY VISION

Many of the components of the new system we outline here are now either there or within our grasp. A new energy system is possible.

Starting with a wave of community-benefit solar PV and hydro schemes, Low Carbon Hub's ambition is for the whole of Oxfordshire to be powered by an interconnected series of smart micro grids centred around multiple small scale, community-controlled renewable energy schemes. For this to work, households and businesses will need to be incentivised to reduce their energy demand massively – by 80% by 2050. The business model we are looking at to deliver both smart grids and massive demand reduction is the Community Energy Service Company (CESCO).

**8 OUT OF 10 PEOPLE
THINK RENEWABLE
ENERGY DEVELOPMENTS
SHOULD PROVIDE
DIRECT BENEFITS
TO THE COMMUNITIES
WHERE THEY ARE
LOCATED.**

Source: DECC's Public Attitudes Tracker 2016

Community-owned energy for Oxfordshire & the UK

POWERING UP WITH COMMUNITY-OWNED RENEWABLE ENERGY

We are three years into our business plan. By the end of 2016 we will have installed 35 renewables projects in Oxfordshire with a total installed capacity of 3.78 megawatts generating 4,362 MWh of clean electricity every year. These projects will bring our total impacts to £3.5M in community benefit funds (over the lifetime of the projects), and an annual CO₂ emissions saving of over 2344 tonnes (46,880 tonnes over 20 years).

In addition to projects owned by the Low Carbon Hub, we have also assisted the development of 6 community energy projects owned by Oxfordshire community groups.

Our 2016 pipeline of projects will yield enough community benefit funding to support us while we develop the new business models we will need post-FiTs to continue to put a community-owned renewables-based energy system in place in Oxfordshire.

POWERING DOWN WITH ENERGY EFFICIENCY AND DEMAND REDUCTION

In the current system, energy is always there, at the same price, any time of day or night, regardless of where it comes from and no matter how much is being used or how much everyone else is using. For some people, it is such a financial burden that they have to make a choice between heating their home or doing the weekly shop. Our buildings are poorly insulated and energy inefficient, and no effective incentives exist to improve efficiency, since commercial operators simply want to continue to sell more energy.

Let's take a local community as an example. It could be a village or part of a town or city. The community imports

almost all of its energy from outside. The money spent on that energy flows out of the local economy. There is no difference in price for the electricity consumed at different (e.g. 'off-peak') times of the day and no difference in price for locally-generated energy.

Rural areas rely on oil for their heat while local woods remain unmanaged and not used as sources of fuel. Poorly insulated homes are not improved because of the high upfront costs, lack of incentives and lack of coherent national policy. Electricity generated locally is fed into the grid and sold at 4.5p per unit while neighbouring homes are buying it back for three times as much.

A community working together can change this. The crucial ingredient of a successful community approach is to look at the energy needs and usage of the whole community, rather than individual households.

SMART GRIDS & COMMUNITY ENERGY SERVICE COMPANIES

Part of Low Carbon Hub's long term vision includes the development of Community Energy Service Companies (CESCOs) in Oxfordshire. CESCOs are a concept developed by Energy Local⁵. They sell not just power, but also heat and energy efficiency, and ultimately, 'ambient temperature'.

Working with all of the people in our communities living in non-standard, old housing to increase energy efficiency and reduce demand needs time, care and attention – which has proved impossible to build into a 'for-profit' business model.

The CESCO approach is the only social business model we are aware of where the incentive to help customers reduce their energy use can be built into the business model – because it is all about matching local demand and supply.

5. See: energylocal.co.uk

**IMAGINE
AN ENERGY SYSTEM
WE CAN ALL
FEEL GOOD
ABOUT**

Households and business will be part of an energy community

By 2030 every household and business could be:

SAFE, EFFICIENT AND HEALTHY

- all electric on a district heat network; radiators, dangerous gas supplies and open electric fires will be things of the past
- fitted with solar or wind and energy storage technologies
- very well insulated; so that they are easy and cheap to heat; healthy and comfortable to live or work in

IN CONTROL OF THEIR OWN ENERGY

- using smart meters to decide how much energy they use, how much they store for later and how much they or sell to neighbours
- a supplier to their energy company, not just a consumer of energy
- helping to balance the grid by using energy when it is available and therefore sold at the best price
- using the ‘internet of things’ where so their smart appliances talk to the grid and switch themselves on and off to make the most efficient use of energy
- using their electric car or bike to store energy for later
- using phone apps to control the energy system in their house or business.

PART OF AN ENERGY COMMUNITY

The energy system will become a set of independent energy-producing grids taking energy from households

and businesses, feeding it into energy companies and taking out energy when the grid needs it:

- we will be able to plug our cars into the parking meter and pay for parking by adding energy to the grid
- our buses will be electric and charged from local renewable energy sources
- our heat will be supplied from local resources: air, water, ground and woodlands.

SUPPLIED BY COMMUNITY ENERGY SERVICE COMPANIES

This future of local, interdependent smart grids could be supplied by Community Energy Service Companies:

- running the independent energy-producing grid
- running heat installations and networks
- supplying comfort and convenience to households and businesses
- making a business out of reducing energy demand and balancing demand to local supply
- keeping the capital circulating locally and in plain sight
- building and maintaining public assets; using surpluses to invest in supporting household energy efficiency retrofitting and funding retrofitting for those in fuel poverty
- strengthening human and social capital by building resilient local communities with a shared public energy infrastructure
- customers, companies, citizens and councils working together within the CESCO structure.

All of this will mean that our energy prices will not be set by global oil prices that are out of our control.

SOCKET TO THE BIG SIX

The technology and business models exist for our vision

- Existing technology makes it possible to know the time of day when electricity is being used. Changes in regulation and how the electricity market works are needed to enable users to benefit from it by being charged different rates at different times of the day – with prices being lower at times of lower total demand.
- By selling direct to local users, local generators would get better prices for the generation used locally, and users would pay less for it than for imported electricity.
- With these changes in place, the community would have the right incentive to work together to change energy use behaviour: taking advantage of lower prices either at times when demand is low or when there is local generation available.
- With local generation being owned by local shareholders, money spent on energy would stay in the local community and attract further local investment, further reducing the need for imported electricity. This quickly becomes a virtuous cycle.
- This way of working can be used to supply heat as well as power to our homes. Community investors would make the capital available for improving energy efficiency and developing renewable heat supply through CESCOs. These would supply an agreed temperature to customers rather than the actual fuel. Since better-insulated homes use less energy to achieve the same ambient temperature, the CESCO would have a strong incentive to provide insulation as well as heat.
- The business model has built into it the incentive for improving energy efficiency and this can be designed in such a way that local investors receive a fair return and households significantly reduce their total bills.

POLICY CHANGE

TLC POLICY: TARGETED, LONG-TERM AND CERTAIN, INCLUDING

- a) revised and implemented Community Energy Strategy
- b) the Green Investment Bank retained in public ownership and tasked to support the development of locally-owned and small-scale energy projects

RENEWABLE ENERGY

A COMPREHENSIVE NATIONAL TECHNOLOGY POLICY FOR RENEWABLE ENERGY

- a) **Solar PV retail price parity:** make sure the EU removes the Minimum Import Price next December to bring prices down by 25%, moving us closer to retail price parity and enable the market to operate without subsidy
- b) **Onshore wind:** recognise the fact that onshore wind is the lowest price new energy technology, i.e. cheaper than new gas or nuclear generation, and let the market and planning system operate freely to develop projects where technically most feasible and efficient
- c) **Offshore technologies (*wind and tidal*):** maintain the UK's position leading the world in installing offshore wind; put the UK into a position leading the world on tidal energy; offer communities the opportunity to invest in both
- d) **Hydro:** maintain subsidies on hydro just for bona fide community benefit projects until retail price parity is achieved
- e) **AD:** maintain the RHI at current levels for anaerobic digester plants operating on waste biogenic material
- f) **Renewable heat:** apply TLC policy-making to the Renewable Heat Incentive so that confidence is maintained in developing complex renewable heat projects based on local district heat networks

GRID ACCESS AND DEVELOPMENT

DIRECT ACCESS TO NETWORK INNOVATION FUNDS

A requirement on DNOs and the National Grid to work with Local Authorities and communities to:

- a) Ofgem to enable and facilitate communities and local authorities to apply directly for Network Innovation Funds with the local Distributed Network Operators' (DNO)
- b) the DNO's regulatory framework to recognise the importance of the move towards distributed renewable energy and to reward DNOs for innovation and positive action to support it

OUR TEN POINT MANIFESTO FOR CHANGE

POLICY CHANGE

DEVOLVED POLICY

- a) Local Enterprise Partnerships and local authorities tasked to put local energy strategies in place working in partnership with Distribution Network Operators
- b) communities given the opportunity to develop Local Energy Plans that can be adopted by local authorities and given Supplementary Planning Guidance status

ENERGY EFFICIENCY

A COMPREHENSIVE NATIONAL POLICY FRAMEWORK FOR ENERGY EFFICIENCY

A national policy that takes responsibility away from the energy companies, helps the hidden fuel poor and those struggling with chaotic lives and is done where possible without levies on fuel bills; in particular:

- a) Government announce a clear set of mandatory minimum energy efficiency performance standards, covering all energy use for all tenures, leading up to Energy Performance Certificate (EPC) Band A by 2050
- b) responsibility given to local authorities to deliver on an area-based approach, e.g. each local authority has to deliver a rolling programme that covers one tenth of its area each year, to make sure everyone is being covered
- c) supported by a series of policies:
 1. *obligation on privately-rented landlords and social landlords to achieve EPC Band A for all their properties by 2050*
 2. *low/zero-interest loans for owner-occupiers who are on benefits or elderly, e.g. through the Green Investment Bank*
 3. *extended mortgages at low interest rates to buyers for energy-efficiency improvements*
 4. *energy companies to pay a sum of money (equivalent to the current ECO+) into a pool; this is then distributed to local authorities to support programmes in their area for reducing the percentage of homes below EPC Band F (SAP 35) and increasing the percentage above Band D (SAP 65)*
 5. *energy companies to deliver on consumption reduction obligation (ACCRO), to be measured either as kWh/m² or CO₂/kWh*

What we need from Government to make the transition to a good energy system

GRID ACCESS AND DEVELOPMENT

QUICK ACTION ON GRID CONSTRAINTS

A requirement on DNOs and the National Grid to work with Local Authorities and communities to:

- a) deal swiftly with grid constraints
- b) implement new technologies trialled under the Ofgem Innovation Framework to deal with thermal and fault level issues (where cables overheat or short-circuiting occurs)
- c) develop new business models for local investment in infrastructure upgrades
- d) develop better mechanisms and incentives for investing in anticipation of need



GRID ACCESS AND DEVELOPMENT

KNOWLEDGE TRANSFER OBLIGATION


a knowledge transfer obligation on DNOs to fund events hosted by communities and local authorities where the results of innovation fund projects are presented and funds made available to roll out successful pilots



LOCAL EVENT MANAGEMENT

SMART METER ROLL-OUT DEVELOPED LOCALLY

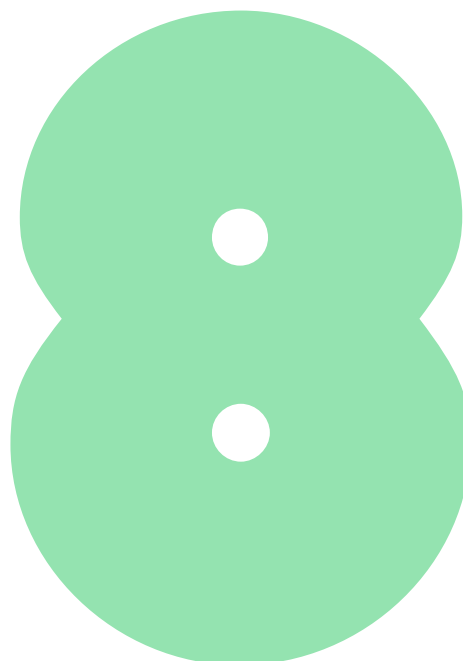
energy companies required to work with communities and local authorities on a geographic approach to smart meter roll-out which takes advantage of opportunities to combine with local trials of the ‘internet of things’, i.e. smart appliances, new apps, local balancing projects



LOCAL EVENT MANAGEMENT

INVENT A SUBSIDY MECHANISM TO SUPPORT NEW STORAGE TECHNOLOGIES

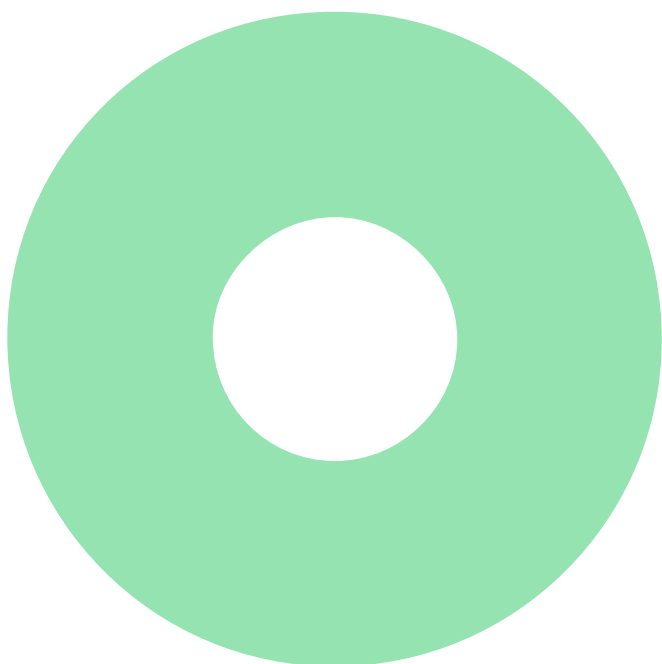
New Energy Balancing Incentive to support combined renewables and storage projects



LOCAL EVENT MANAGEMENT

MICROGRID INNOVATION FUNDING

Ofgem allocates part of the Network Innovation Fund to the development of pilot microgrid and local balancing projects where the funding is only available for bids from communities and local authorities; DNOs and Elexon are required to work in support of successful bids



PART 3:

ENERGY REVOLUTION

Oxfordshire is the perfect living lab for innovation in the community energy sector, and ideally placed to lead an energy revolution in the UK.

If we don't choose it, we won't get it

IT'S TIME FOR OXFORDSHIRE TO CHOOSE A LOW CARBON ENERGY FUTURE.

Oxfordshire spends £1.5 billion on energy every year⁶. That is roughly 10% of the region's GDP. Almost all of that money flows out of the local economy. The energy companies we pay are often not even UK-owned but owned in France, Germany or Spain.

This is because the UK's energy system is very centralised with massive power stations pushing out electricity to passive consumers.

Many of these power stations are coming to the end of their life and need renewing. The wires and switches and sub-stations making up the transmission network and the local distribution network are also feeling the pressure – in some areas the grid cannot connect any new renewables projects.

The energy system is already changing all around us as this ageing infrastructure is rebuilt and new technologies are brought to market.

What does this massive change mean for Oxfordshire, the UK, the EU, the world?

The approach to this change in the UK is top-down, reliant on out-dated business models and too slow. There is underinvestment in R&D, and it's centred around corporations driven by profit over purpose. It's not people-centred.

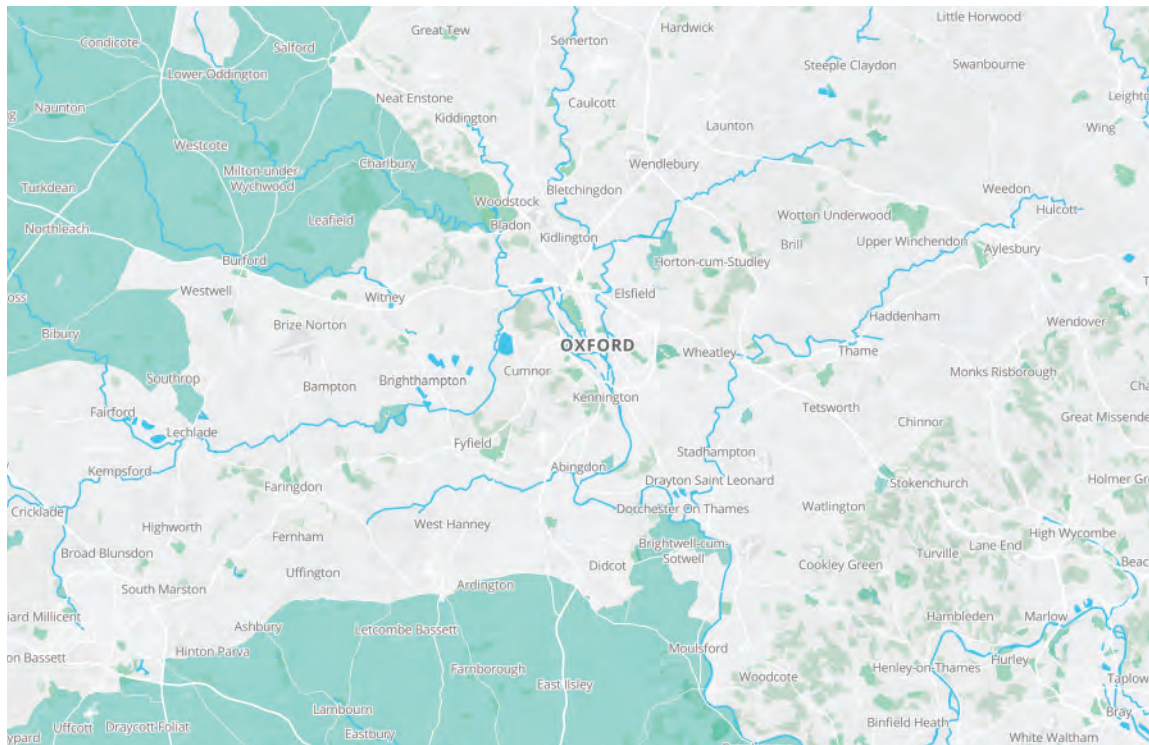
One of the massive power stations at the end of its life is in Didcot, Oxfordshire: Didcot A was coal-fired and operated for 40 years until it closed in March 2014. Didcot B is a combined-cycle gas turbine likely to close by the end of the decade.

Would you rather replace Didcot power station with more enormous, coal, gas-fired or nuclear power stations, locking us in to more of the same type of energy economics, or invest in a shift to a decentralised and clean energy system that enables us to keep this money in our local economy, supporting local jobs and the low carbon economy?

A new energy infrastructure like the one we are proposing will require public support. Low Carbon Hub will need to find many more partners like Oxford Bus Company, Norbar Torque Tools, Owen Mumford, Prodrive and the many schools and community groups we have worked with to develop community-owned renewable power stations.



Why Oxfordshire is a living lab for community energy



THE WORLD'S HIGHEST CONCENTRATION OF LOW CARBON GROUPS

Oxfordshire County has over 50 low carbon community groups⁷ – believed to be the world's highest concentration of grassroots low carbon groups. Of these, 25 are now community shareholders of the Low Carbon Hub Community Interest Company (CIC).

Oxfordshire also ranked first in the UK for social investment in 2014⁸, with community owned renewable energy making up a significant part of this.

LOCAL NEED IS DRIVING INNOVATION

Oxfordshire is the most rural county in South East England, with a third of the population of around 670,000 living in towns or villages of less than 10,000 people⁹. Our rural areas, market towns and Oxford City itself have different needs and priorities.

Flooding and air pollution are major economic, environmental and health risks.

Fuel poverty is a persistent and systemic challenge. Data published by DECC in 2015 showed that:

- 11.9% of Oxford City
- 7.4% of South Oxfordshire
- 6.9% of West Oxfordshire
- 7.1% of Vale of White Horse and
- 7.2% of Cherwell households

were in fuel poverty, that is where more than 10% of household income is spent on heating the home to an adequate standard.

More than 20,000 Oxfordshire households are off the gas grid¹⁰, many of these are in rural areas. The high costs of oil-based heating, and the prevalence of older, poorly insulated housing stock exacerbate fuel poverty in these rural areas.

In the City of Oxford, rented households are at almost twice the national average, often in energy-inefficient properties. House prices here are the highest in the country, relative to income.

There are untapped opportunities. For example, it's estimated that 50,000 tonnes of woodchip could be produced locally – enough to heat 8,000 homes. This presents a significant opportunity to meet local demand for locally owned renewable energy, create jobs, reduce fuel costs and increase market share of the £1.5 billion Oxfordshire spends annually on energy. The UK currently imports a third of the world's supply of wood pellets.

OPPORTUNITY: COMMUNITY ENERGY WILL DRIVE TRANSITION TO A LOW CARBON ECONOMY

Low Carbon Hub commissioned the University of Oxford to identify the renewable energy capacity in Oxfordshire¹¹. This revealed that Oxfordshire-generated renewable electricity could supply 32% of demand. This energy potential is the source of our future growth.

We already have the foundations of a thriving low carbon economy in Oxfordshire. An ambitious low carbon investment programme over the next fifteen years could add £1.35 billion annually to the Oxfordshire economy by 2030 and create over 11,000 new jobs¹².

COMMITTED LOCAL AUTHORITIES

Oxfordshire's local authorities are massively committed to the transition to a low carbon economy:

Oxford City Council are award-winning pioneers in energy efficiency, renewable energy, fuel efficiency and waste reduction. In 2010, they established Low Carbon Oxford¹³, a network of organisations with a shared vision of Oxford as an inclusive low carbon city. Over 40 diverse organisations work together to achieve the ambitious target of reducing carbon emissions in Oxford by 40% by 2020.

The City Council has also supported the

development of community energy social enterprises, supporting first West Oxford Community Renewables and then helping it to replicate its work through Oxford North Community Renewables, Low Carbon South Oxford and Low Carbon Barton. Most areas of the City of Oxford now have their own active group.

The City Council also supported West Oxford Community Renewables in developing and launching the Low Carbon Hub in 2011 as a social enterprise with the mission to develop community energy across Oxfordshire county.

Oxfordshire County Council has set a target of a 50% reduction in carbon emissions by 2030, based on 2008 levels.

The County Council helped fund both the *Oxfordshire Low Carbon Economy Report* and phases 1 and 2 of the collaborative grid innovation project in Bicester¹⁴. It has also been a supportive partner in Low Carbon Hub's solar schools work.

WHERE DOES LOW CARBON HUB GO NEXT?

In our work we are creating the conditions, partnerships and power stations needed to catalyse the shift to a renewables-based energy system in Oxfordshire. Our specific role is to champion community involvement in that transition.

6. Oxfordshire's Low Carbon Economy Report (Environmental Change Institute, Oxford University, and Low Carbon Oxford 2014)

7. CAG Network cagoxfordshire.org.uk

8. The Ethex Positive Investment Report 2014 (Ethex 2014)

9. See Oxfordshire Insight : insight.oxfordshire.gov.uk

10. Chart of the Month June 2015: Fuel poverty (District Data Service, Oxford City Council 2015)

11. Oxfordshire Capacity Study (Dr Malcolm McCulloch and Andrew Alkiviades, Department of Engineering Science, Energy and Power Group, University of Oxford 2012)

12. To find out more read the County's Strategic Economic Plan and Oxfordshire's Low Carbon Economy Report

13. See lowcarbonoxford.org

14. *Bicester: a new vision for community energy* (Steve Drummond, Low Carbon Hub 2015)

PART 4:

HELP CREATE A MOVEMENT

As a sector, community energy has the potential to scale up, nationally, and globally and to deliver many social, economic and environmental targets and objectives that existing frameworks have not achieved. We need to scale up community energy into a movement for change.

Everyone in Oxfordshire can get involved

If we are to achieve the cleaner, more efficient and equitable energy system outlined here, we will need to make positive choices for change.

- all 670,000 people
- all 260,000 households
- all 30,000 VAT registered businesses
- all civic organisations and local authorities.

Everyone can play a part:

INVEST

Low Carbon Hub launched a new Share Offer on the 18th April 2016 to fund a second wave of renewables projects across Oxfordshire. These are some of the last community energy projects in the UK to qualify for the 2015 Feed-in Tariff. This is your chance to help shape the energy future of Oxfordshire! Investments start at £250.

WORK WITH US

Lease your roof space or land for community energy projects, or partner with us on an innovation pilot. If you have a project, or an idea for one, please get in touch.

GET INVOLVED LOCALLY

Get involved in the local organisation and management of energy by joining your local low carbon community group (if you are an individual) or by joining Low Carbon Oxford (if you are a business or organisation). Again, get in touch if you can't find the contact details you need.

LOBBY & ADVOCATE

Help to lobby for new regulations, finance and technology, and help to build awareness of what community energy is and what it can do. Sign up to our newsletter and twitter feed and make sure they circulate amongst your network.

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RECHARGE LOCAL ECONOMIES

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Bicester: a new vision for community energy?

National Audit Office (2013)
The Levy Control Framework

Oxford City Council,
District Data Service (2015)
Chart of the Month June 2015: Fuel poverty
goo.gl/uVb1SL

University of Oxford, Department of Engineering Science, Energy and Power Group, Dr Malcolm McCulloch and Andrew Alkiviades (2012) *Oxfordshire Capacity Study*

University of Oxford, Environmental Change Institute, and Low Carbon Oxford (2014) *Oxfordshire's Low Carbon Economy Report*

Glossary

AVERAGE CONSUMER CONSUMPTION REDUCTION OBLIGATION (ACCRO) – proposed as the replacement for the current Energy Company Obligation (ECO) in a 2014 *Beyond the EC* study by the Centre for Sustainable Energy (CSE), funded by energy supplier SSE

ANAEROBIC DIGESTION (AD) – process by which organic matter such as animal or food waste is broken down to produce biogas and biofertiliser

COMMUNITY BENEFIT – a social enterprise business model that reinvests surpluses in activities like fuel poverty alleviation, community renewables and energy efficiency projects

COMMUNITY ENERGY SERVICE COMPANIES (CESCOS) – an innovative form of company that has the purpose of selling energy services to end customers; generally, it sells ‘heat’ itself, rather than selling equipment (e.g. a boiler) and/or supplying fuel, which differentiates it from a typical energy supplier (see *A guide to Community Energy Service Companies* by Centre for Sustainable Energy, January 2013)

DEPARTMENT FOR ENERGY AND CLIMATE CHANGE (DECC) – works to make sure the UK has secure, clean, affordable energy supplies and promote international action to mitigate climate change

DISTRICT HEATING – system for distributing heat generated in a centralized location for residential and commercial heating requirements

DISTRICT NETWORK OPERATOR (DNO) – licensed by Ofgem to own and operate the distribution network of towers and cables that bring electricity

from national transmission network to homes and businesses; they don’t sell electricity to consumers

ELEXON – organisation that deals with electricity market balancing in the UK

ENERGY BALANCING INCENTIVE – a proposal by Low Carbon to adapt the Feed-in Tariff to encourage the combination of renewable energy generation and storage, to encourage commercialisation of energy storage

ENERGY COMPANY OBLIGATION (ECO) – government scheme to obligate larger suppliers to deliver energy efficiency measures to domestic premises in Britain; ECO1 ran from January 2013 to March 2015; ECO2 is running from 1 April 2015 to 31 March 2017

ENERGY PERFORMANCE CERTIFICATE (EPC) – presents the energy efficiency of dwellings on a scale of A to G, with the most efficient homes in band A; each band comprises a range of Standard Assessment Procedure (SAP) ratings

FEED-IN TARIFF (FIT) – a government programme designed to promote the uptake of a range of small-scale renewable and low-carbon electricity generation technologies, available through licensed electricity suppliers; changes to the FIT scheme came into force on 15 January 2016

FUEL POVERTY – where more than 10% of household income is spent on heating the home to an *adequate* standard

GREEN INVESTMENT BANK – created by the UK Government, its sole Shareholder, and capitalised with public funds to back green projects on commercial terms and mobilise other

private sector capital into the UK’s green economy; on 3 March 2016 the UK Government launched the process to move the Green Investment Bank into the private sector

INTERNAL RATE OF RETURN (IRR) – discount rate at which all future cashflows equal the initial outlay, or used to evaluate investments and business cases

LOCAL BALANCING – managing local energy demand to match local supply

MICROGRID – a small-scale power grid that can operate independently or in conjunction with the area’s main electrical grid

NETWORK INNOVATION FUND – Ofgem funding for innovative projects which aim to help make the energy networks smarter, accelerate the development of a low carbon energy sector as well as deliver financial benefits to consumers

PHOTOVOLTAIC (PV) – solar panels generating electricity

RENEWABLE HEAT INCENTIVE (RHI) – government financial incentive to increase the uptake of renewable heat

SMART GRID – a modernised electricity grid that uses information and communications technology to monitor and actively control generation and demand in near real-time

TLC – targeted, long-term and certain

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AWARDS

Winner 2016 Ashden Award for
Sustainable Communities

Winner 2015 Solar Power Portal
Award for Community Benefit

“Low Carbon Hub in Oxford is one of the most important community energy organisations in the UK. It’s poised to start a real revolution in the way we develop and use our energy”

JONATHAN PORRITT CBE

Co-Founder, Forum for the Future

“Like Low Carbon Hub, we believe that the UK needs a clean, low carbon energy revolution – and that people power needs to be at the centre of this.”

RAMSAY DUNNING

General Manager, Co-operative Energy