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## Low Carbon Hub CIC (company no. 7583663) & Low Carbon Hub IPS (company no. 31903R)

### Notes of the pre- and post-AGM meetings

Held online on Monday, 11 October 2020, 6.30–8 pm

#### 1. Welcome and introductions

Tim Sadler, chair of both Boards of Directors, welcomed all to this joint meeting for the LCH CIC and IPS, before and after the business of both companies' AGMs. The presentation slides are [available on our website](#).

Other LCH IPS and CIC directors present were Adriano Figueiredo, Steve Drummond, Sue Halliwell, Barbara Hammond, Tom Hoines, Al Kitchen, and Luke Marion. Sue Halliwell sent apologies. Low Carbon Hub staff were also in attendance.

This year we again held the meetings online. Questions could be submitted via email or typed into the chat and were answered either during the meeting or afterwards.

Tim started by introducing himself and his role, as well as other directors, adding:

- This would be a **concurrent meeting** for both LCH IPS and CIC apart from the formal AGM business including voting, which had been open for a little while and we will confirm results afterwards, giving indicative results tonight
- The meeting will be recorded for administrative purposes only
- Having the second online AGM was a precaution, considering the still high Covid case rates in Oxford
- Members are welcome to ask questions in the chat; there will be a question session at the end of this meeting, as well as the opportunity to ask about financial matters as part of the Treasurer's presentation
- We are currently in the middle of developing our largest community energy resource, a solar park which is going well
- We are knee-, or perhaps neck-, deep in one of the most exciting innovation projects in the UK, and perhaps Europe and further, about how you balance the energy system at the grid edge, using Low Carbon Hub resources
- At this moment everyone is talking about energy: cost, access and equitable distribution – being associated with the Hub we are all interested in these
- We want to brief you on the Hub activities and performance, what your investments have been achieving and that they are secure, and to illustrate how the Hub group works together.

#### 2. Year in reflection

Barbara Hammond, CEO, looked back over 2020/21, noting:

- Last year she introduced the AGM saying it felt like we were trying to swallow a frog, but this year we are starting to see our **hard work bearing fruit** and



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- hope there will be more to come – some may be exotic, as the pineapple that Joanna Tamburino, our Investment Support Co-ordinator, has been growing
- The Low Carbon Hub overall now still includes both the IPS as a community benefit society and the CIC, but the IPS now has another wholly owned subsidiary in addition to Sandford Hydro Limited which is Ray Valley Solar Limited (RVS) – we will hear more about this later
  - She also showed the other programmes and big things we have been involved with over the last year: you will all know about our Community Energy Fund share raises, and some will be keeping up to date with LEO, Cosy Homes Oxfordshire, OxFutures, and ESOx
  - So we are growing the businesses we are involved with; most are run through the CIC, but LEO involves both the CIC as contract signatory and the IPS as a beneficiary and raising shares to help fund projects contributing to LEO
  - It requires **an amazing team** to do amazing things; she is awed how we managed to keep the show on the road during Covid, also down to our partnering and everyone supporting us – including our IPS and CIC members
  - She moved on to share some **figures about the year**:
    - £4.5m equity raised (this raise started in 2020/21, closed this year)
    - 7 community groups recruited
    - Almost 10,000 social media followers – including programmes we are involved with
    - Almost £4m turnover across all the companies to deal with
  - And this current year, with RVS, we will see the IPS moving up from a small to medium-sized enterprise, looking at the balance sheet; Barbara didn't imagine starting up ten years ago that we would get to this point
  - Every single one of the team working for LCH is a winner as we have to be for that performance to happen, and Barbara wanted to focus on it for this presentation; it felt great to meet everyone in real life again after 18 months of remote working at our recent team away day
  - Adriano Figueiredo had come up with the idea of the Hub having 'to look after our undercarriage', i.e. numbers and projects, but also people
  - So **doing the day-to-day stuff** as well as new stuff is important: without Rachel Boyes'-Watson's team, working across all the companies and programmes, we couldn't land our accounts and bring the CIC in as close to zero as possible every year
  - And Saskya Huggins' team is keeping together what we say about ourselves, how we operate with our communities, and also for the social impact outcomes we set out to achieve (noting we are replacing Tabitha Whiting who left in the summer)
  - Over the last year we have done something that will be critical to moving forward and bear more fruit: to get our heads round how we **communicate what Project LEO is doing** which is critical to our future, both in terms of energy security and net zero
  - What we found up to March (the end of the financial year) is that it is really difficult to make that story easy and simple so that people feel they can do something about it



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- We have done a lot of work with the LEO consortium on that messaging too, which is why Barbara mentioned previously the 10k of social media followers, including building the LEO brand
- [A video with Mairi Brookes](#) explains about Project LEO and our work looking at the 'grid edge', including how to balance energy there; this comes from work on developing a communications strategy with Alison Stibbe
- We have learned that the Low Carbon Hub is about **helping the community to make a difference at that grid edge**, and we hope that that story is getting across there – this will be the Hub's job for the rest of the transition, as we expect to double our electricity use to get to zero carbon
- Doing that work is also necessary for our energy security
- LEO has been making waves, both in the media and we have been invited to take part in COP26
- We hope that next year we will report on real things we have done with real people at the grid edge that make a difference as they will be repeatable.

Tom Heel, Business Development Director, had been leading on **delivering RVS**:

- We worked on the project intensively for 6 months last year but have since reached some significant milestones as shared in our newsletters; this has been done in challenging circumstances as Barbara had mentioned
- He put into the context what RVS will mean in terms of delivering local renewables and what it means for Low Carbon Hub:
  - A steep curve of renewables, most of which will be solar, need to be deployed for Oxfordshire to deliver on the zero carbon targets we need to reduce its greenhouse gas emissions by 50% by 2030
  - RVS is the largest community energy installation in the country, we think, and represents a step change in generation capacity for the Low Carbon Hub – and will also be a great engine for community benefit in the county
- It is located at the edge of Arncott, south of Bicester, and construction on site started this May, with all the frames now completed, and we are waiting for over 40,000 solar panels to arrive
- We have completed all inverter installations, and much of the cabling, with the grid connection expected at the end of this month
- But it has not been all smooth sailing, with the impact of Covid and timelines for statutory permissions causing some delays
- The global shipping crisis has also impacted but the solar panels are now in Europe, so we hope to install them soon and expect RVS to be operational in January and for us to fully take it on in February 2022
- Up to then we are working on delivering our ambitions on biodiversity for the site, having funded a paid student intern to find out about best practice, and now also employing a specialist consultant to advise on optimising the plans we already have for the site
- Finally, there is ongoing work that is now well advanced to sell the energy that will be generated by RVS locally; it was a condition of the debt from Triodos Bank to have a local 2-year deal in place which we do but we hope to have one for the longer term



- We aim to keep energy spend local, within the county, and achieving local sales should also be helping the business case for projects in future
- Our expectation is for RVS to be a catalyst for the step change we need to see towards our zero carbon targets, and will signal a path forward for the many large-scale solar projects coming forward locally – showing a map indicating some
- Larger roof-top solar projects are also becoming viable again, with a drop in costs and more owners of larger roofs coming forward again
- With one large roof-top installation to happen before Christmas and more coming up, do keep a look out for announcements in our newsletter – including opportunities to bring more projects into community ownership and control.

## Question

John asked about **what scale of roof-top solar was large enough to be viable again**. Tom replied that:

- James Ochiltree, Projects Manager, has just done some calculations to understand precisely that, and broadly it is installations of around 50kw at this point, though perhaps energy prices will change that again.

## 3. Treasurer's report

Luke Marion has been an independent director and treasurer for the Low Carbon Hub IPS and CIC for six years, besides his role as Finance & Commercial Director for the Oxford Bus Company and sister companies.

His treasurer's report covered:

- The **Low Carbon Hub IPS** is the company the investor members invest in
- Last year was the first time that we had a turnover of just over £1m, a 18% increase from the previous year (PY), helped by record generation from Sandford Hydro of £240k and assisted by grant income from Project LEO of £242k for using our assets in LEO trials
- Generation income grew by 13.5% to £829k, with the first full year for four of our solar PV arrays
- Income from the Feed-in Tariff and electricity sales indexes with inflation (the Retail Price Index), which for us is positive at 4%
- The LEO Grants will continue for another two years, with the recent extension due to Covid, until the project finishes at the end of March 2023
- Last year had been a flat one for us but this year we have grown significantly, with an increase of £2.2m in our fixed asset value, growing to a total of £9.2m (the cost having been £10.8m, with depreciation to date of £1.6m)
- We spent 2.3m towards purchasing RVS and its construction, plus £100k to optimise Sandford Hydro and capitalised finance costs of £100k, less depreciation which reflects a net £2.5m increase in equity in the year
- Looking at how the IPS is funded, we now have £10.2m in the entity, an increase of £1.9m from the previous year



- Share equity increased with a net £2.5m increase in equity; a £2.59m new equity raise was completed with £49k of shares repaid
- We paid back £100k of the loan from the Charity Bank, in accordance with the facility terms, so that long-term debt reduced
- We still have the Oxford City Council construction facility of up to £2.3m further debt finance available; we paid down £0.5m in the year, with nothing outstanding at year end but have since drawn down funds again to assist with early construction of RVS, in advance of the share offer
- After the year end we also agreed a £2.4m loan facility with Triodos Bank to support RVS construction
- The policy we have on IPS funding is that:
  - We aim to eliminate all debt over time, other than long-term project debt, e.g. that held in Sandford Hydro or required for major ground mount schemes
  - New debt or bonds if required should be at less than 5%
  - The debt to equity ratio should not be more than 50:50
- Our operating surplus increased by 18% this year to £795k, assisted by the £100k increase in generation income
- Surpluses are used to pay interest to debt providers and investors, and to fund community benefit
- We record accounting losses due to depreciation on our installations – this is based on the accounting principle of businesses needing to replace assets.

## Question

Mark asked about **potential increases in interest rates and how our model could be affected by this in the coming year**. Tom replied that:

- Inflation might also be rising; at the moment we have been operating in a low interest rate environment, which has been beneficial for debt
- We do watch this closely though have not made any decisions at this point as we are not sure yet where it might land but expect upwards trend.

Luke Marion continued his presentation, moving on to the **Low Carbon Hub CIC**:

- The accounts for the IPS had been signed in advance of the AGM, but the CIC ones have not yet been signed due to timings and availability of the auditor
- The CIC is funded by operation and management fees from the IPS, community benefit donations from IPS surpluses and other grants and project funding as Barbara had mentioned
- These sources of income fund our staff, office, any consultants, so the work we do, and also deliver community benefit including our Helpdesk and community grants
- We had a record year of £1,565k turnover, a 48% increase; of this £435k was IPS-project related (PY £339k) and grants were £1,130k (PY £715k), which broke down into:
  - £507k from Project LEO, of which £360k passed to other LCH entities (PY nil)
  - £396k from OxFutures European Regional Development Fund income (PY £308k)



- £117k from the Department for Business, Energy and Industrial Strategy for Cosy Homes Oxfordshire (PY £115k)
- Other grants: £45k
- As Barbara had said these were significant increases and also mean an increased complexity of transactions going through the company
- Costs had also gone up to £1,651k, a 53% increase, with details including:
  - Community benefit funding of £3,331k, inc. SHL/IPS values (up from £1,409k in PY)
  - Project LEO £2,485k
  - OxFutures £426k
  - Community grants £25k
  - Cosy Homes Oxfordshire £370k
  - Energy Solutions Oxfordshire (ESOX) £171k
- Although we try to reach zero by year end, balancing profits and losses, the past we had made a £87k loss which related to Project LEO transactions on things that had been outstanding the year prior
- The retained profit at year end still stood at £35k, though this is different from what we had projected at the end of the year.

## Questions

Simon asked about **depreciating the Sandford Hydro plant and machinery** over just 10 years, rather shorter than he was imagining. Does this mean that the three screws, generator etc. will have to be replaced every ten years or is this just an accounting device? Luke and Barbara replied that:

- This figure relates just to items such as the switchgear, transformers etc. not the screws themselves.
- We are taking these as a bundle although items have different lifespans; this is a bit like our solar installations where we've got replacements of things like inverters built into our models.
- Most of the initial investment with a hydro goes into the concrete housing; the rest of the plant is only a small part.

Nina asked about **table 1 in the accounts** which lists community benefit income as around £2.8m, while the turnover mentioned here is around £1.5m, and could we clarify the difference please? Luke replied that:

- With LEO funding from IUK, where the CIC acts as the lead entity for a number of partners inc. the IPS and RVS, we only recognise income that belongs to us in the turnover figure, as the rest is just passing through.

## 4. Delivering community benefit

Al Kitchen, the new CIC Communities Director elected at the last CIC AGM, thanked Nina Alpey for the smooth handover. He gave a presentation on the theme of community benefit:

- First, he said a massive thanks to the entire Low Carbon Hub team on behalf of the CIC community groups to Cathy Ryan, Community Engagement Manager, supported by others



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- Over 2020/21 a lot had happened, inc. seven **new community groups joining**, which he wanted to welcome – some are close to him, such as Deddington Environment Network, but others across the county: Greener Henley and Henley Climate Emergency 2030 Working Group, Hook Norton Community Land Trust, Sustainable Duns Tew, Sustainable Woodstock, Watlington Climate Action
- Another six already joined this financial year so far: Chinnor and Thame FoE, Cholsey Environment Champions, Cutteslowe, Sunnymeade and Wolvercote: Neighbourhoods for Resilience and Sustainability, Greener Great Coxwell, One Planet Clanfield, Thame Green Living
- They are all different communities facing different problems, of course
- We are growing faster than we ever have done, with now 38 groups (one is yet to pay their £1 member's share)
- The **community benefit** donation received from the IPS in 2020/21 was £95,475, as Luke Marion had noted, which was used to support low carbon community energy activity that:
  - Cuts Oxfordshire's carbon footprint
  - Contributes to the creation of a decentralised and locally owned renewable energy system
- Our total community benefit spend of £3,319,365 is split out in a whole variety of different ways
- £12,030 was for our community grant programme, just £2,935 for community benefit management and then £3,304,400 for our local energy programme, including supporting energy efficiency and innovation across the county, which breaks down into:
  - Helpdesk service: £4,324
  - Next Generation programme funding: £12,275
  - Community building grant audit scheme: £7,330
  - LESS CO<sub>2</sub> school energy efficiency programme: £1,130
  - Project LEO: £2,485,654
  - OxFutures project to support Oxfordshire SMEs: £252,046
  - CosyHomes Oxfordshire: £370,000
  - Energy Solutions Oxfordshire: £171,363
  - People's Power Station: £279
- As well as making renewable generation grants of £7,592, we awarded seven **community grants**, which are open only to our CIC community shareholder groups, of £12,030, made up of:
  - 5 small grants of £500 – one example is [RHILC's video of their tree planting](#) involving the wider local community, a project that Deddington had looked at in preparing for their own community orchard planting this weekend
  - 2 large grants totalling £9,530, one a continuation grant for the Coalition for Healthy Streets and Active Travel led by LCON, and the other was for the exhibition 'From the Ground Up. 20 Studies of Climate Action' at the Old Fire Station in Oxford which Tim Sadler and Al visited together and which will now go on tour in Oxfordshire as well as digitally



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- One thing we have done is a massive revamp of the [communities pages](#) on the **Low Carbon Hub website**, with community stories added and a 'Group of the Month', which in October is Banbury Community Action Group
- On the **local energy support** side, with Covid numbers were down on this:
  - 27 energy audits (15 businesses, 1 school, 11 community organisations)
  - 41 hours of Helpdesk support given to 57 individuals and organisations
- Cathy and the team put together a fantastic array of **virtual events** that connected people during lockdown, including:
  - Community coffee mornings, with a range of contributors and conversations
  - The 'Cocktail of Climate Change Conversations' event with Brenda Boardman MBE
  - Energy Collaborate meetings with CAG Oxfordshire
  - Recently this financial year, the Talking Climate Change workshop with Rebecca Nestor
  - The Project LEO webinar series and last year's AGM as well this year's
- **Local energy innovation** included retrofitting programmes mentioned like ESOx and Cosy Homes; not forgetting what the community groups are doing to support these as trusted local advisors to get the messages out
- **Future dates** for the diary inc. deadlines to apply for our community grants:
  - For small grants: 14 February 2022
  - Large grants: outline applications by 5 January 2022 and detailed ones (if the outline one is approved) by 9 March 2022
- This year we have been thinking about how we can improve the process for large grant applications, to make sure we have time to support people and help with developing these
- Al asked everyone running a mailing list for a CIC community group to please add [communities@lowcarbonhub.org](mailto:communities@lowcarbonhub.org) to it, as hopefully he will be able to make it out to more communities and meet with more of them next year
- He closed by saying that he couldn't do the job without so many brilliant and active communities and the team that also support the groups.

Nina On behalf of Westmill Solar Co-operative, we are pleased to Expertly carried out by and managed brilliantly by the LCH team. Great to work with you.

Saskya Huggins, Social Impact Director, added a huge thank you to Westmill Solar Co-operative for their ongoing support of the **community energy audit programme**. They donate from their own community funding to support the LCH CIC's programme of free energy audits for community buildings and schools. This means they to get free expert advice to make their buildings more sustainable, with audits managed by the Low Carbon Hub and carried out by the EiE at Oxford Brookes. You can [nominate a building in your community to benefit](#) through our website.

***This section was followed by the official LCH IPS AGM and then the LCH CIC AGM; separate formal minutes are available.***





## 5. Looking ahead

Tim Sadler introduced Mairi Brookes, now Smart Energy Systems Director at Low Carbon Hub, who joined us for the first time at this AGM, having previously worked at Oxford City Council alongside the Hub.

Mairi wanted to use this slot to talk about what we call the ‘**People’s Power Station 2**’, or PPS2:

- The concept is hopefully a familiar one, as we have talked about it at the Hub for a long time: it is about getting away from old-style power stations to new ones like Sandford Hydro and solar installations, so powering up renewables, as well as energy efficiency measures or powering down
- If you search for People’s Power Station currently it will bring up the website that we call our version 1, capturing both the **powering up and down** happening in Oxfordshire
- So why are we thinking about a version 2? It comes back to the changes we are seeing in the energy system around us, as Barbara mentioned, moving towards **the grid edge and a smart local energy system**
- Mairi showed a slide illustrating the different scenarios for the UK to reach net zero by 2050 that we are looking to influence from a community energy perspective
- As heat and transport become electrified, we will need more local generation but another game in town will be **flexibility**, or that smart local energy system, so it will not just be about only powering up and down
- So this flexibility means being clever how much energy we use, how much we store, as well as how much we generate and doing so flexibly
- And it means being smart in terms of people and place: who’s doing what at the grid edge (where we already have a lot going on in Oxfordshire) – and then the digital side, which is what this is all about
- The Hub background image and slide template is a great illustration of what we mean by the grid edge – people, businesses, organisations wanting to put energy to use, and the connections between them and the grid supplying energy: flexibility at that grid edge is what we are interested in
- PPS2 will be similar to the PPS1; it will be a cloud-based software tool to gather intelligence from energy assets of all kinds, also able (to an extent) to control the amount of energy they import and export
- We expect a number of **benefits from PPS2**, starting with just looking improving operations of our own portfolio of installations, or energy assets: it will allow us to:
  - Read inverter data and access data more efficiently
  - Automatically flag issues and diagnose issues remotely, and allow us to address issues quicker
- As well as reading data PPS2 will also allow us to control the assets, such as how much electricity is exported, so that we can deliver flexibility services – as we are trialling with Scottish & Southern Electricity Networks in LEO, who will offer payment for turning generation up or down, or ‘behind the meter’ as



with the battery at Rose Hill Primary School to provide more energy to the school when they need it

- The aim is for PPS2 to help generate revenue as a business so we can improve our impact; and if we can do that for ourselves maybe we can do it for others too – though this is currently a work of the imagination, as we need to test if it works first with our own assets
- We are exploring the art of the possible and using PPS2 to deliver part of the trials that LEO is running, with our own roof-top solar installations and other generating assets, alongside the work with five pilot communities in our Smart and Fair Neighbourhood trial areas – this could be about business models to make projects deliverable, so potentially leading to more renewables across the county
- This gives a picture of our broader ambitions, but where are we now? We:
  - Have started on the software to get the nuts and bolts of PPS2 set up in the cloud
  - Are integrating some pathfinder sites (Rose Hill Primary School solar PV and battery, Sandford Hydro), as we are testing the system and getting ready for those initial LEO trials
  - And are preparing it for Ray Valley Solar and then roll out to the rest of the portfolio
  - Can see live what is happening in our energy system locally, having also been given access to local grid ‘open data’ through LEO
  - Are also piloting live community energy dashboards.

## Questions

Ruth, Peter, and Robin asked about **cloud storage and the energy consumed** which can have a large footprint; are there other ways of doing it? Mairi and Barbara replied that:

- In the short term we have not prioritised looking at this impact, as we are currently taking baby steps in developing PPS2
- This is a good challenge and longer term it is a question we need to ask ourselves (especially if it were to be scaled up), even if the answer will not necessarily be simple – we are clear that PPS2 needs to be open source.

## 6. Questions for directors and close

Tim Sadler said we wanted to end the meeting with an opportunity for general questions.

## Questions

Ben asked about what community-based information might be available about **replacements of gas-fired central heating systems** by electrical-based systems for properties where heat pumps are not feasible. Saskya Huggins replied:

- Assuming it’s about domestic heating, Cosy Homes Oxfordshire is your first port of call, [starting with their website](#)



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- It has a raft of information and resources, with the [free Planbuilder tool](#) that can start to help you learn about some of the possible energy efficiency measures that may be suitable for your home and a range of videos all for free
- Cosy Homes Oxfordshire also offers a paid-for service if you would like expert help to carry out the measures
- If you cannot find the right information there, we will try and give more specialist advice.

Lee asked how we are dealing with the issue of **forced labour in the solar PV supply chain**. Tom Heel replied we are taking a two-fold approach:

- We have an [FAQ on our website](#) (scroll down to the bottom) and have one of the signatories to a [call on supply chain traceability protocols](#) by the UK Solar Industry
- The procurement decision to source panels for RVS from LONGi, a Chinese company, had been made before the report came out that highlighted these issues, esp. that Uighurs were being used in this way in China
- We did what we could, meaning we challenged LONGi to provide details about the supply chain for the modules and cells involved; they came back with information and reassurance that none of the RVS panels were implicated
- We appreciate that while we have all the right assurances from the supply chain that is not a complete guarantee
- For the longer term we are doing quite a lot of work so that in future we can procure materials that are not implicated, although this is tricky as the origin of silicon chips is hard to track
- On this, we are working with Triodos Bank who have looked into this before, and are keen to do more.

Sarah asked if **solar thermal** features anywhere in the Hub's work. Barbara and Tom replied:

- We have not prioritised that because it is useful but only to a certain extent, and it is hard to make it work, for example on a school roof, as it is only beneficial when hot water is being used such as for showers
- Solar PV is more flexible as the energy, when not being used otherwise, can be diverted to heat water for use later
- So solar thermal has not worked out for us as an investable option or business proposition, and we would have to find a way of making it work on a commercial scale but it can be appropriate at domestic level and it is an option covered by Cosy Homes Oxfordshire.

Dave asked about what **volatility in carbon and energy prices** over the next 10 years may mean for the Low Carbon Hub's existing portfolio and future pipeline, and whether it might provide accelerating advantages or risky points of inflection? Steve Drummond, a non-executive Director of LCH IPS and chair of its Investment Committee, replied:

- Currently, what we have is a mixture as we have a portfolio of projects, with different arrangements with different energy companies



- Some of the electricity we sell, i.e. of projects for which we still receive the Feed-in Tariff, is affected (positively) as it goes up by inflation but not changes in other energy prices
- Some of the electricity we sell to energy retailers through agreements that are renewed either annually or biennially, which smooths out changes over the long-term
- All our installations also supply electricity to our hosts, and indeed the financial benefits to hosts are also greater if and when energy prices generally increase, though we update our contracts with hosts over time
- Tim added rising energy costs make our investments to date more secure, overall.

Nina asked if the Low Carbon Hub has its **plans to become net zero itself**, such as reducing the footprint of its operations, while appreciating the huge positive from its renewables generation. Barbara replied:

- This is a good question and, while we have focused on reducing carbon, we should and will look at our carbon footprint too
- Our travel budget is virtually nearly nothing; we do not fly but generally go by train instead
- A year ago we moved from an energy-intensive old building to a brand spanking new one at the Wood Centre for Innovation which has much better credentials
- But we are about to move again to a new office: it is huge honour to have been invited by Oxford University to be part of The Energy Systems Accelerator (TESA) – which will initially be in a more leaky, refurbished building on Osney Mead while a new one is being built; but it will make it easier for visitors arriving by train and bus.

Other questions that were asked and received written responses include:

**Q** Are **grants only for community groups**, or also for individuals in need?

**A** Our Community Grants are only for CIC community group members.

**Q** What needs to change to make more **hydro projects on the Thames** viable?

**A** It is all about the difference in level across the lock or weir. That needs to be at least 1.6m to make hydro work, and even then (post-Feed-in Tariff) the investment in the civil engineering is difficult to make them work as a viable project. Pretty much all of the viable weirs on the Thames now have a hydro; for the others to come forward we will need energy prices quite a bit higher.

**Q** How do you reconcile developing **ground-mounted PV farms** with the sacrifice of huge areas of greenfield sites to housing?

**A** We have [a FAQ on our website](#) (scroll to the bottom). Nick Eyre, Oxford University, has done some great work on this question, showing that the requirement of land for solar parks to meet UK targets is not so different from what we use for playing golf. So there is lots of debate to be had about land use. If done well, solar



ground mount can be one of a number of layers – sheep, bees, and other biodiversity improvements.

**Q** Are all the Low Carbon Hub projects **dependant on the grid?**

**A** All our projects are connected to the grid, but much of our power is sold directly to our host organisations, rather than exported into the grid.

**Q** What work is LEO doing on how much electrical energy storage is optimal for the different types of renewable energy generation regionally in our area, especially over \*seasonal\* timescales?

**A** Seasonal flexibility will be important, but it isn't something we are currently looking at as part of LEO.

**Q** One of the big differences between Fossil energy and renewables is that FF is about both capital investment and fuel cost, whereas RE is mostly capital, and some machinery operating costs, but the "fuel" cost is essentially zero. What will this mean for the strategic advantage of community renewables RE capital infrastructure versus historical FF-focussed energy companies, and how does LCH intend to take advantage of this?

**A** The Low Carbon Hub solar model is based around a high CapEx/low OpEx financial model. In terms of strategic advantage, the key one is it provides power without burning fossil fuels. Not having ever explored the CapEx associated with fossil fuels it is hard for us to quantify the strategic advantage in financial terms.

Tim Sadler **closed the meeting**, thanking everyone for their attendance and noting:

- We will of course report back next year – there is an awful lot to get on with
- Over a hundred people participated in this online event
- We are aware some experienced audio problems, but we will do a follow-up to find out what worked and see what improvements we can make for next year, though perhaps we can go back to in-person events
- He hopes we succeeded in our aim to:
  - Show how we have applied the investments made by IPS members to move to a low carbon economy
  - Give confidence that their investments are well looked after and insights into future
- We are about to enter our **tenth-anniversary year**; so please keep a look out for upcoming events at which hopefully we will some of you in person, to celebrate the great work we have done together.

*Meeting closed 8.04 pm*