Future Energy Landscape Workshop

Clanfield Parish, Monday 30th September

This note summarises what happened and what was said on the day by residents but cannot be assumed to be representative of the full range of opinion in the local community. The workshop should therefore be seen as the start rather than the end of the conversation.

Please read through this report and provide your views via our short survey here.

The workshop was to enable a conversation about change and open possibilities so barriers such as planning and grid capacity were intentionally left outside of the room. These workshops are using the Parish boundary to pinpoint the discussion around an area which is familiar and frequented by the participants. It is an arbitrary boundary, but it is useful to focus the conversation on how acceptable people would find renewable technology in their local landscape.

Clanfield Parish sits mainly in the South Downs National Park and is home to roughly 6,000 people living in 2,700 homes mostly concentrated to the south of the Parish. It has Queens Elizabeth Country Park in the north and Butser Ancient Farm in the east.

Workshop Context

The Centre for Sustainable Energy (CSE) has developed a workshop-based approach to involve local communities in considering what their local energy needs are, what aspects of their local community and landscape are particularly important to them, and what mix of renewable technologies might be appropriate and acceptable to local people.

With support from South Downs National Park Authority and Winchester City Council, Energise South Downs are leading this workshop in various communities in and around the South Downs National Park. The workshop draws on local data and research to explore what might be feasible and create space for an informed, balanced conversation about what communities feel is acceptable. See **Appendix 2** for details of the data, research and assumptions that have been used to build this workshop.

The workshops, follow up reports and surveys are to demonstrate that it is possible to develop a local vision for sustainable energy that is acceptable to the local community, and to use this as a springboard for project and policy development.

Why the Future Energy Landscape workshop?

- Transforming the way that we generate and use energy is key to reducing carbon emissions and tackling the climate emergency.
- Generating more energy from renewable sources like wind or sun, so we produce less carbon is critical to a transition away from fossil fuels.
- Developing these energy systems can lower our energy bills, reduce carbon emissions and increase energy security.
- Communities need to be engaged in an informed discussion about the different renewable energy solutions and about the types and scale of renewable energy projects that might be acceptable to local people.

Workshop summary

Attendance: 15 people attended the workshop including representatives from the Parish and District Council.

Workshop purpose: To learn together and explore how a combination of different renewable energy technologies might meet the heat and power needs of Clanfield Parish.

People of Clanfield Parish at the workshop

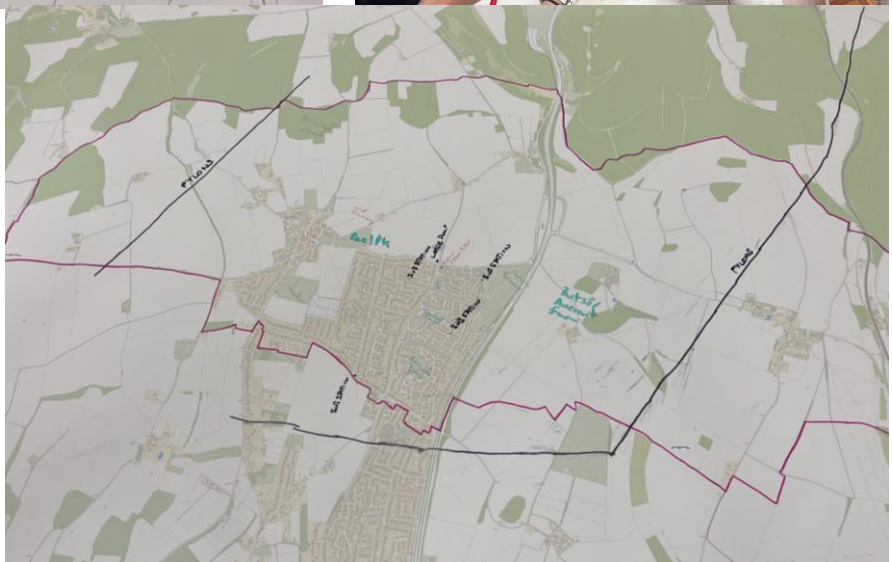
Workshop process:

1) Map the local landscape, considering areas which are special or not and where energy infrastructure already exists.
2) Consider types of renewable energy that might be acceptable and choose locations where these technologies might be located, and the barriers to implementing them.
3) Understand the contribution each renewable technology or a combination of them, can make to the energy demands of the location, Clanfield Parish.

What was said?

Mapping the landscape

Participants were first invited to reflect on the local area and gather around a large map to mark on the areas that were important to them and the community. We also discussed areas that were less used and where energy infrastructure, such as pylons and substations, already existed in the parish boundary.



The conversation surfaced attitudes towards the extensive pylons that already cross the parish and the large mast on Butser Hill. People. People cherished the protection of the South Downs National Park and the access to Queen Elizabeth Country Park whilst noting the recent development of Clanfield village.

Table discussions on acceptability and scale

After watching short videos about the different renewable technologies available the group was invited to break into three different technology groups. Each group took on the discussion of how a particular renewable technology might be deployed to meet the community's energy needs (domestic and non-domestic use).

Each group discussed the scale of a potential development* and their comfort with the technology asking:

- How do they feel about the technology overall?
- How much of the technology would they be happy to see in their landscape (i.e. quantity of rooftops with solar or the no. of a particular sized wind turbine)
- Where might this technology be located?
- How does it impact the landscape? Who would this affect most?
- Is this a realistic suggestion and what might the barriers be to implementation?

Renewable technology groups were as follows:

a) Wind Power
b) Solar Farm (12 Acres)
c) Domestic solar & domestic heat pumps

So what might be the impact of different renewable energy technologies?

Each group fed back their reflections about their specific technology, and where they felt, and on what scale, the technology might be located, if at all, in the Parish boundary.

The group's suggestions on the amount of each technology were inputted into the CESAR tool [1], which showed how much energy, or heat would be generated. The data showed the impact each technology might have on Clanfield's energy needs and the difference each technology has on the area's carbon emissions. The ideas of the different groups were then offered for further comment to the wider group.

PLEASE NOTE: The summary shared below are not definitive opinions but were the result of an extended conversation with a group of local people who were learning together about these technologies. This was a discussion about possibilities and is seen as the start of further activities for the community of Clanfield. Appendix 1 shows the full details of the table conversations.

Solar Power

The consensus from the group was positive towards solar technology though they acknowledged that they were possibly not reflective of the wider local population. They weighed up solar vs. wind and felt solar was less visible, could be put out of sight and might increase biodiversity. Through the discussion others challenged the use of good farmland for solar. Though there is a place for solar people voiced concerns about food security and felt brownfield sites were to be used[2]. To optimise energy generation the panels need to be south facing but when on sloping ground they become more visible so that needs to be considered.

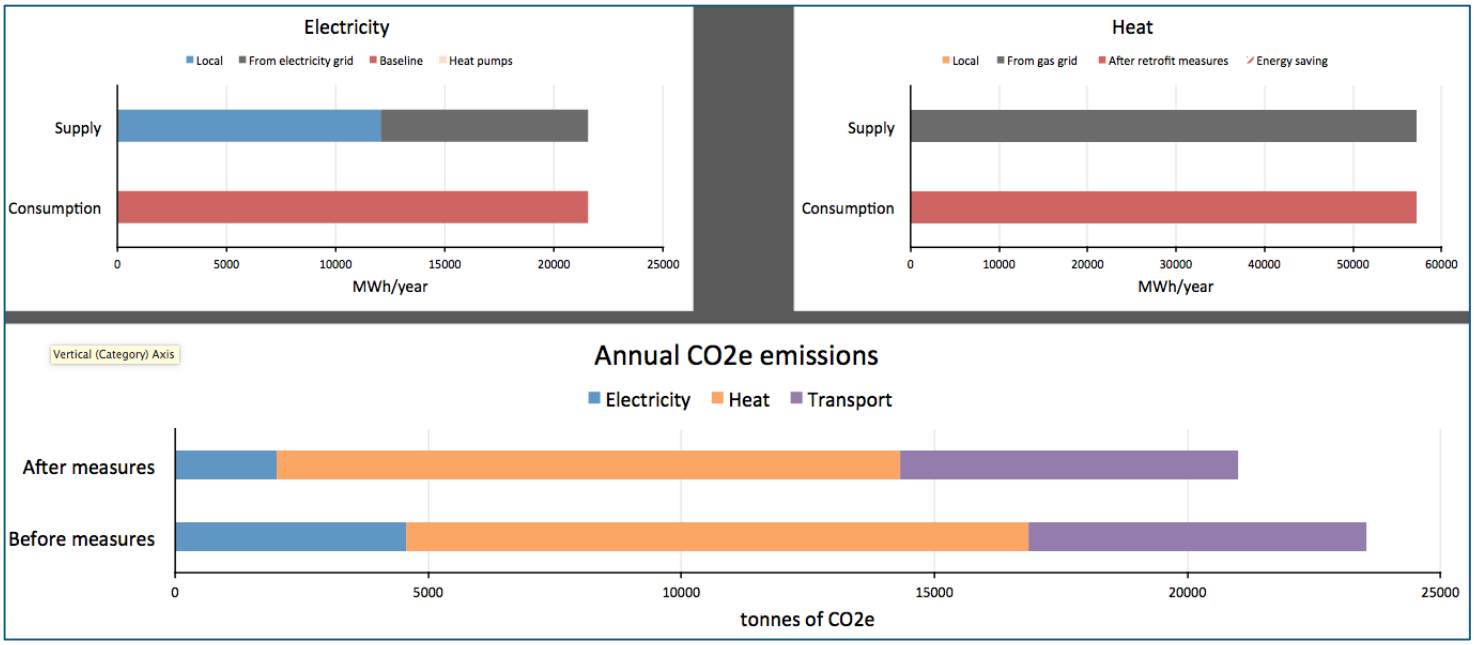
The group thought five, 12 acre solar farms might be practical and reasonable considering the large area of land around Clanfield and particularly because this amount of solar would generate enough electricity to meet the needs of all the homes in the parish. They did not identify specific sites but said they should be located near pylons to reduce the infrastructure to build and perhaps around the A3 corridor where there are less people and the main road already being very visible.

---

[1] The Community Energy Saving and Renewables (CESAR) tool was developed by the Centre for Sustainable Energy and is designed to help workshop participants think about how they would provide some or all their energy needs from renewable energy and to see the different amounts of heat or power generated by the different renewable technologies in their local context.

[2] In reality developers are unlikely to get permission for a solar farm on good agricultural grade land.

From the electricity graph below you can see that five, 12 acre areas of solar would generate over half the amount of electricity (blue 'supply' bar) needed by the parish (domestic and non-domestic) and it would reduce local carbon emissions by over half, indicated by the blue bar at the bottom. The group agreed that any solar infrastructure had to be 'done properly' ensuring that visible impact was minimised and panels should be installed to allow grazing animals and to increase biodiversity.

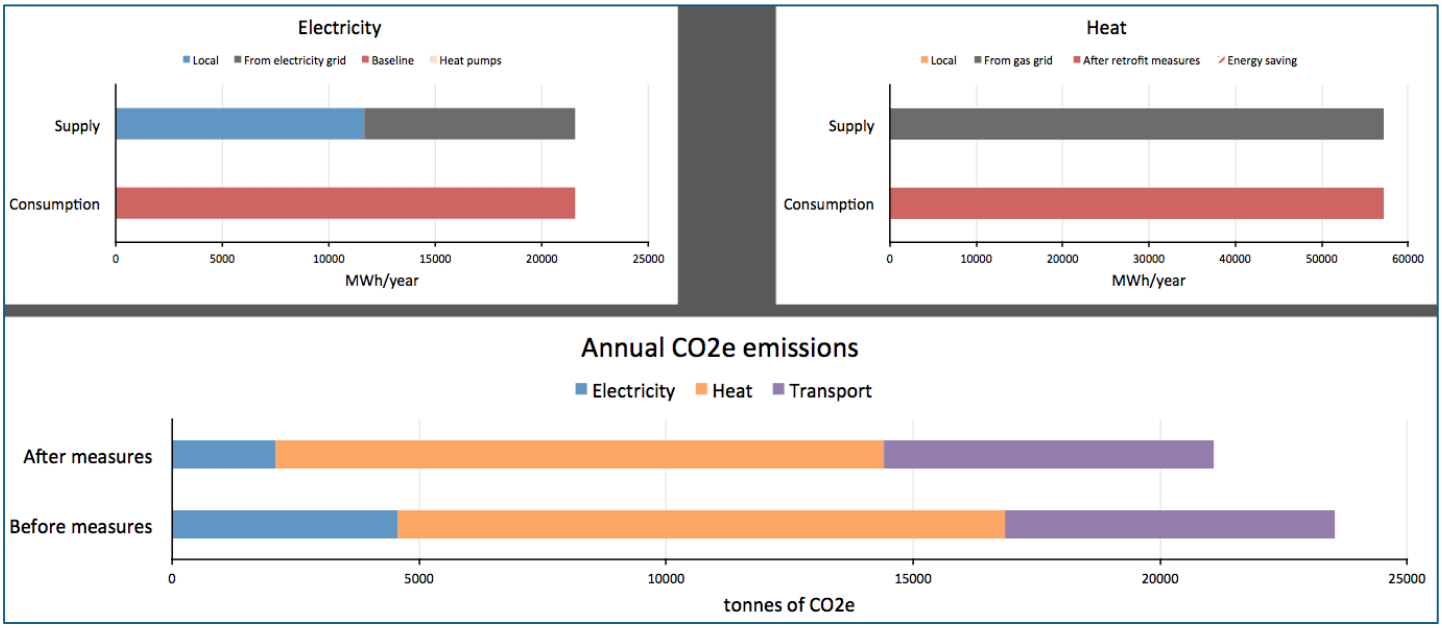


Wind Power

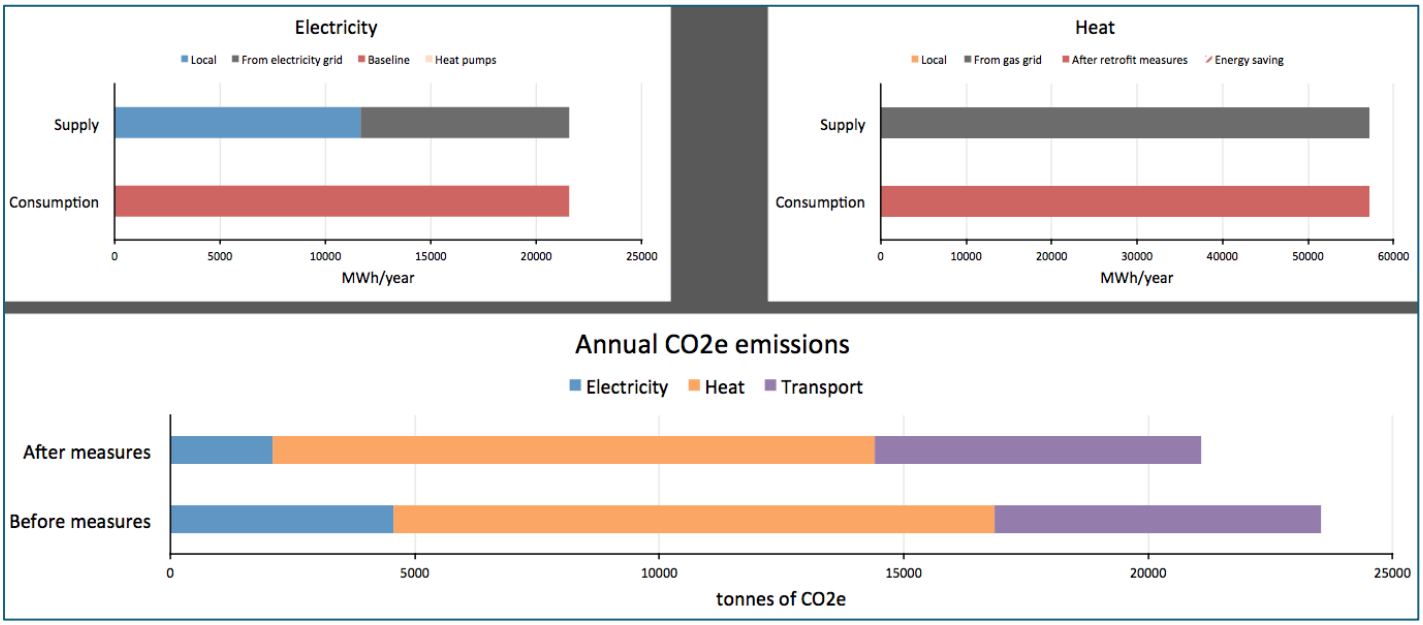
This group thought wind turbines were lovely things, graceful, less intrusive than solar farms as land could still be used but they did acknowledge that opinions about visual impact are very subjective. They discussed the trade off between having 10 small wind turbines (40m hub height) or 2 large ones (100m hub height), and how that would actually cover the needs of all 2,700 houses. They imagined having one big turbine on Butser Hill next door to the existing mast but as it is outside the parish boundary they agreed that it might be more acceptable to have turbines a similar size to the numerous pylons that cross the parish already. It was suggested lots of small turbines might looked cluttered across the landscape but also commented that a windmill already exists locally (Chalton Windmill) so could we imagine lots of them across the area.

We compared the results of both options to see how they compared and both options could generate 50% of domestic and non-domestic electricity used by Clanfield having an equally important impact on reducing CO2e emissions.

Impact of 10 x small wind turbines on Clanfield's electricity needs



Impact of 2 x large wind turbines on Clanfield's electricity needs



Domestic Renewable Technologies

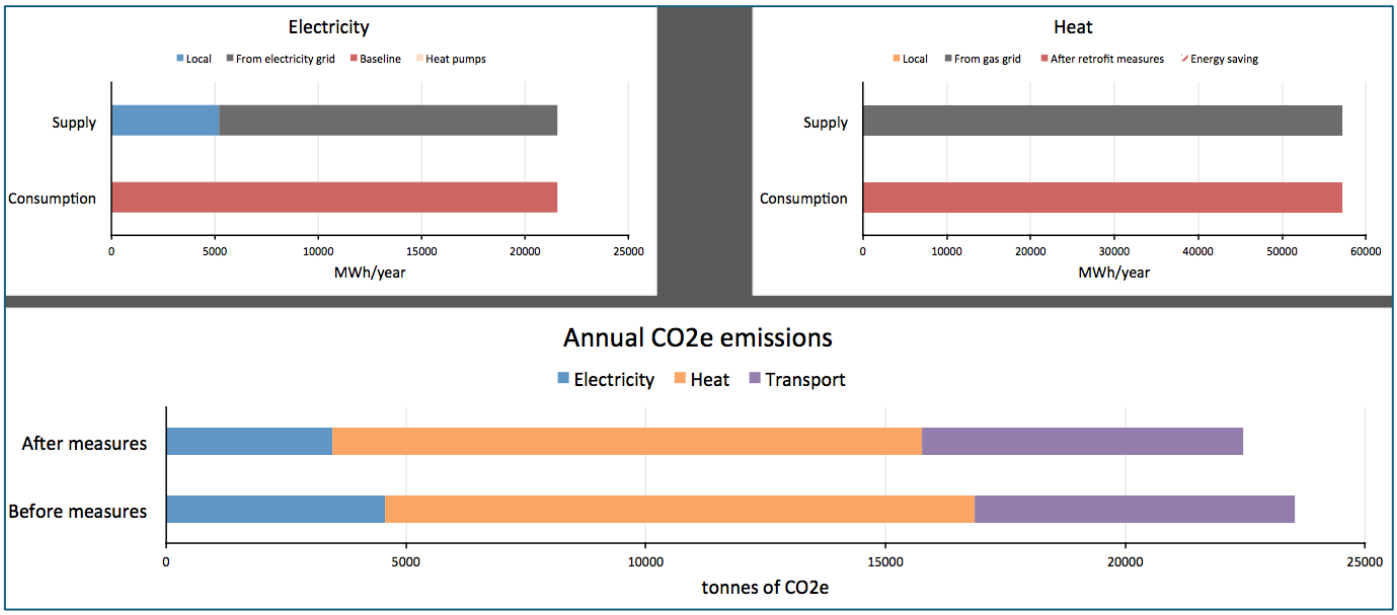
The final table took on a discussion about the domestic use of **solar PV** and also where **air source and ground source heat pumps** might fit into the picture of Clanfield meeting its energy needs from renewables.

There were no objections to the visual impact of either technology however the group discussed the financial issue on individual households. For older householders they are unable to justify the costs because they would not get their money back and for younger householders they might not be in the house for the next 10 years to see the payback. Though the value is priced into the value of your house finance is still a barrier as there is an upfront cost.

In reality they felt 50% of houses could have solar, 30-40% of households could have an air source heat pump and maybe 15% with a ground source heat pump as there are a number of rural properties with the external space required. Some felt that 15% (405 homes) with ground source was too optimistic.

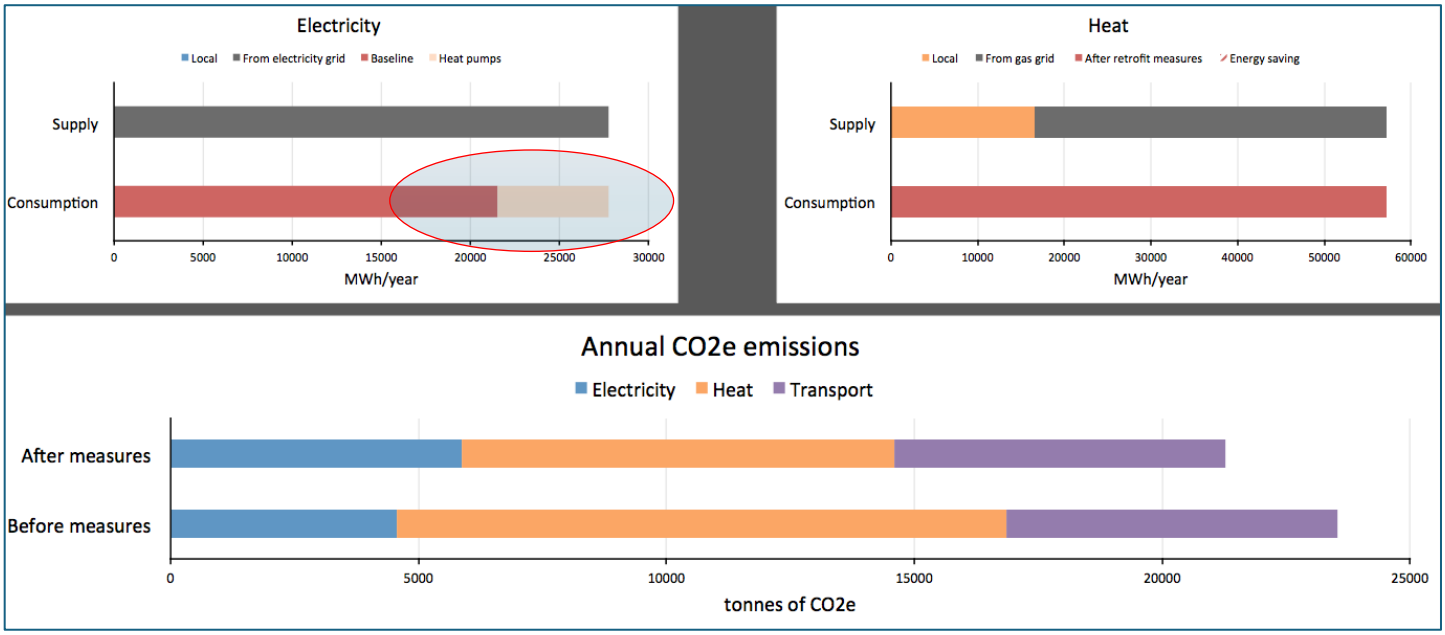
The impacts of these domestic technologies were put into the CESAR tool and the results are below.

Supply against consumption of energy with 50% of homes with solar panels



With 50% of households having solar on their roofs Clanfield would meet approximately a quarter of its total electricity needs. There was a comment that those 1,350 homes (ie 50%) might not have the right elevation and there was concern about how suitable the roofs were to take the weight but domestic solar has its part to play in getting to net zero. It was also noted that in the new development homes have 4 or 5 panels and may feel that they are doing really well but they could have more on there.

Supply against consumption of energy with 35% of homes with an air source heat pump and 15% of homes with a ground source heat pump



With the heat pumps it's about carbon reduction and creating heat rather than supplying power. As you can see the proposal that 50% of households take on a heat pump would increase electricity consumption (see highlighted area of first graph) as heat pumps use electricity to run but they would supply heat more efficiently for the equivalent of those 1,350 homes, meeting about a third of the local heat demand whilst reducing carbon emissions significantly.

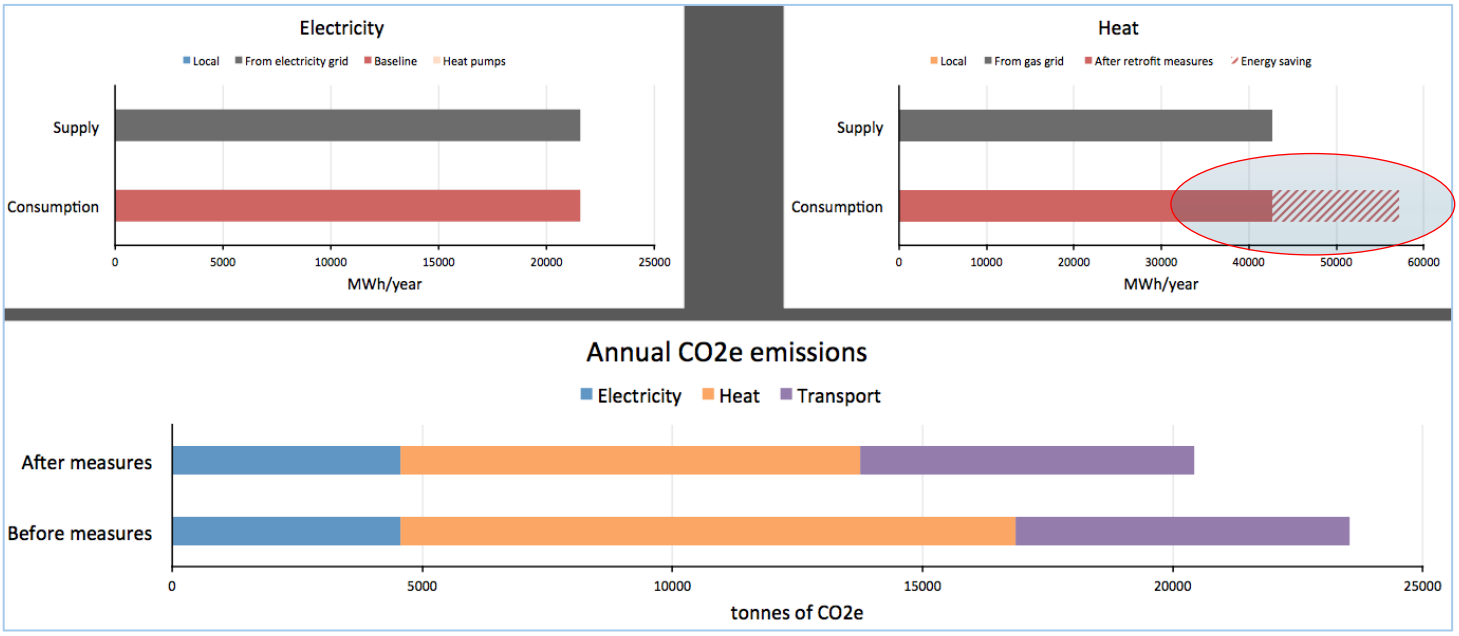
The room appreciated that education of local home owners was really important for these technologies and that street or neighbourhood level schemes might be available. The more that was invested in domestic initiatives the less large-scale technologies are therefore needed.

Retrofitting

As with any community discussion about energy it starts with seeing what house owners can do to reduce their energy demand. The CESAR tool allowed us to look at how retrofitting could reduce the heat demand, and therefore the energy required by Clanfield, based on some broad assumptions made about the local housing.

These graphs demonstrate that energy efficiency measures like draught proofing, insulation and double or triple glazed windows to improve the energy efficiency of the lowest performing houses could reduce the local heating requirement by a quarter and therefore the energy needed to heat the homes and the resulting carbon emissions would be lower.

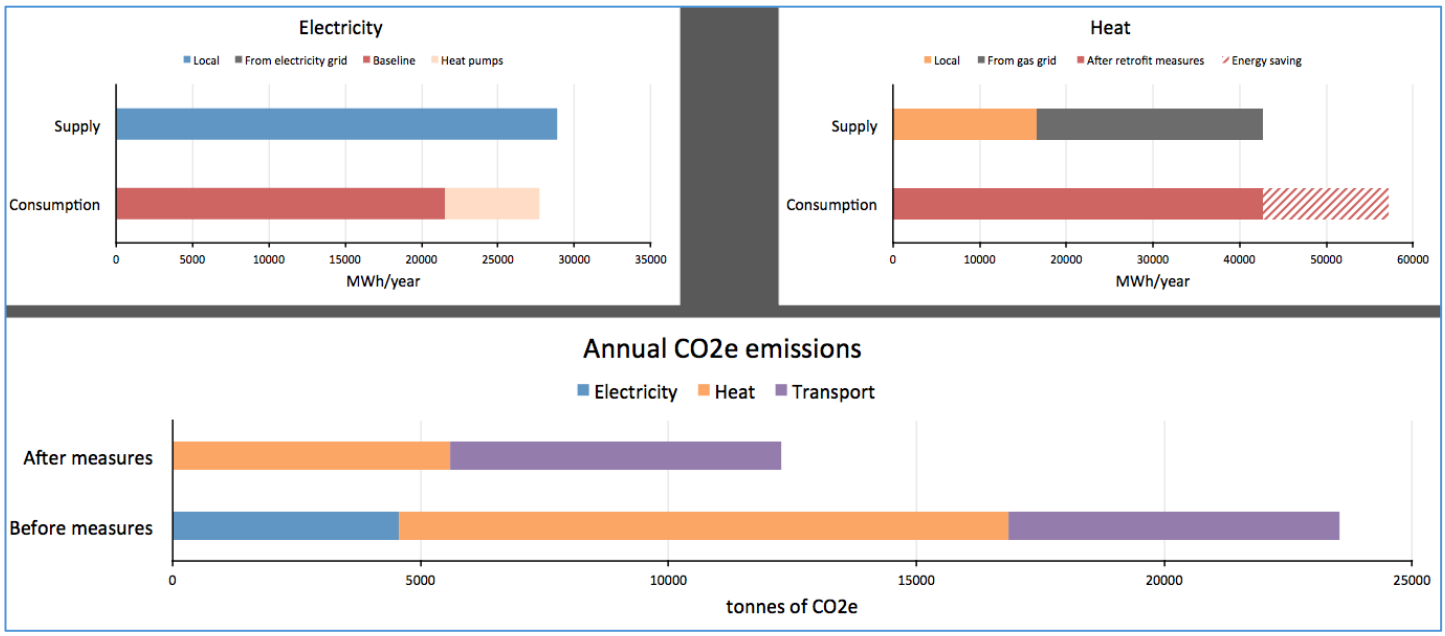
ENERGISE
SOUTH DOWNS



Conclusion

It was acknowledged by the group that those who attended the workshop were in support of these technologies and therefore wider local opinion might differ hugely. There was still a healthy conversation about the different technologies, as people got to understand the different trade offs when thinking about how communities decarbonise their energy supply.

We combined the ideas about acceptability for the large scale technologies and the domestic ones to see what overall impact on generation and carbon emission they would have in combination.



The table above shows the results of the ten small wind turbines, five 12 acre solar panel farms and 50% of households having heat pumps and / or solar panels. Clanfield would generate more electricity than it needs and have no carbon emissions associated with electricity production and almost halving its total emissions. The increase in electricity demand from the heat pumps is expected but almost entirely supplemented by the electricity supplied by the combination of renewables.

The workshop participants spent two hours imagining how renewables might meet our local populations energy needs. They shared what they wanted to protect in their landscape whilst exploring what might be possible if various combinations of renewable technologies were deployed. This was a hypothetical conversation based on data and research and putting to one side constraints such as planning, expense and grid capacity. The discussion format aims to help people learn together about what the different technologies are, how they work and so open local possibilities about possible projects helping us all transition away from fossil fuels.

Appendix 1 – Table Discussion notes

Scale & generation	Location (& further comments)	Discussion notes
Wind Power		
10 small wind turbines or 2 large turbines *Generation: approx. 11.000 MWh meeting half of the electricity needs for Clanfield and significantly reducing CO2 emissions.*	North of Peel Park Along SDW ridge 'Windmill Hill' Open land suitable	**Acceptability score:** 4-5 - Lovely things and graceful - Less intrusive than solar farms - Land can still be used - Already have visible energy infrastructure – turbines better than pylons - Butser and the mast - What about hydrogen? *Impact / Barriers:* - Visual impact or noise?/ (noise?) - People who live nearby - Visitors / walkers to SDW etc - SDNPA – keep pristine - Local population – how do we persuade people of the benefits?
Solar Power		
5 x 12 acres of solar (12 acres = 2.5MW) *Generation: 12,000 MWh and meet half of the electricity needs and reducing CO2 emissions by the same*	Near pylons Around the A3 corridor	- Consensus was broadly positive accepting some issues with them - it is being done locally (Denmead may be extended) - Solar panels vs wind - Has to be done properly - Could increase biodiversity - Takes up a lot of space, but we have a lot of space? - Wind on hill tops, solar can be hidden - Sacrifice of quality land - More or less maintenance? - Not in my back yard - Restoration of landscape - Dual land use with grazing but not a lot of grazing animals locally Impact/ Barriers: - Acceptance from south downs - Construction time - Payback? - Construction time

Domestic Technologies		
5-10% of houses for domestic solar is a realistic target 15%* GSHP 30-40% ASHP *Generation: Would efficiently heat a 1/3 of local homes and the solar would generate enough electricity to meet the needs of the heat pumps.*		- No major issues re visual impact - Financial payback times? **Acceptability score:** Heatpumps 4 Solar 4 *later discussion suggested that this would be very difficult to achieve

Appendix 2 - Tools, assumptions and research

Tools

Future Energy Landscapes: toolkit here

CESAR workbook: Showing renewable energy generation in relation to how much energy the community uses and the impact of renewables on carbon emission reduction.

Impact Tool: An estimator of a community's carbon footprint that works for parishes, wards, district councils and unitary authorities here.

Assumptions

Onshore wind and solar farms
Assessments of suitability of landscape for different technologies represent an upper bound estimate and do not take full account of the impacts associated with potentially limiting characteristics (proximity of roads, railways land type etc.) (LUC, 2018). Spacing of wind turbines is based on an allowance of five times the rotor diameter (LUC, 2018).

Rooftop PV
Suitable rooftop is defined as one on which a minimum of a 1 kW solar PV system can be installed (8 m2 rooftop area required), with an orientation east through south to west and at an angle between 15° to 70° (Palmer et al., 2018).

Analysis suggests that in the City of Southampton district 67% of rooftops had one area that satisfied the criteria (Ridett and Anderson (2023), p19), while in the wider Winchester City area 78.8% had a rooftop surface that was deemed as suitable for a rooftop PV installation of at least 1 kW (Ridett and Anderson (2023), p20).
These figures are likely to represent an upper bound estimate of solar PV potential. For the purpose of the CESAR tool, an estimated potential of 75% suitability would provide a realistic upper bound estimate.

ASHP/GSHP
Based on assumption that dwellings need to be reasonably airtight and well insulated. Significant proportion of post 1990 houses plus an allowance for others that might have had deep retrofit we assumed 50% of homes could have an ASHP. We then considered that older homes in the centre of the towns / villages would have bigger gardens so assumed 25% would have room for GSHP.

Research

LUC (2018), Renewable and Low Carbon Study for the East Hampshire District, p48

Palmer D., Koumpli E., Cole I., Gottschalg R. and Betts T. (2018). A GIS-based method for identification of wide area rooftop suitability for minimum size PV systems using LiDAR data and photogrammetry. Energies, 11(12): 3506

Ridett, E., and Anderson, B. (2023) An assessment of the wider Hampshire distribution network capacity and potential constraint points for renewable generation (v1.0) Southampton: University of Southampton.

Ridett, E., and Anderson, B. (2023) An updated assessment of the technical and economic potential for renewable electricity generation in the pan-Hampshire area (v2.0). Establishing a Robust Evidence for a Pan-Hampshire 2025-2050 Energy Strategy project report. Southampton: University of Southampton.

UK Government (2023) Figures for English Housing Survey headline report 2022 to 2023.

Petersfield Climate Action Network & Alton Climate Action Network (2023) East Hampshire District – Green House Gas Emissions Based on the DESNeZ 29 June 2023 data release