Future Energy Landscapes Workshop

Denmead Parish: Tuesday 12th March 2025

This note summarises what happened and what Denmead residents said during the Future Energy Landscapes workshop in March 2025. It cannot be assumed to be representative of the full range of opinions 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.

Workshop Background

The Centre for Sustainable Energy (CSE) developed the Future Energy Landscape workshop to enable communities to have informed conversations about their understanding and feelings about renewable energy technologies. It is a community consultation process that ensures communities are being listened to and enables them to shape ambitious plans as we transition away from fossil fuels.

Energise South Downs worked with Greening Denmead and were funded by Patricia Stallard, Hampshire County Councillor as well as Winchester City Council and South Downs National Park to run this workshop in order to understand how local people felt and what they thought about renewable energy technologies in their local context.

The workshop draws on local data and research to explore what might be feasible and create space for an informed conversation for communities to see what is possible. See **Appendix 1** for details of the data, research and assumptions that have been used to build this workshop.

This is one of a series of workshops that we are running in and around the South Downs National Park. The objective is 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 tackling the climate emergency.
- Generating more energy from renewable sources, so we produce less carbon is key to a transition away from fossil fuels.
- Communities need to be better informed about low carbon renewable energy technologies.
- Local people need to be consulted about the energy transition towards renewable technologies and supported to have informed discussions about the different solutions.
- Community energy should be recognised as a key part of this energy transition so local communities benefit from renewable energy generation.

Workshop summary

Workshop purpose: To explore the question *'How might Denmead power its community using locally generated renewable energy?'*

Workshop boundary: These workshops use the civic Parish boundary to pinpoint the discussion around an area that 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.

Denmead is a civil parish of approximately 4,000 acres and is made up of around 6,900 residents living in 2,900 homes. The South Downs National Park boundary comes in to the north east and to the south is the beautiful Creech Wood.

Workshop process:

1. **Connect to the landscape,** considering areas that are important.
2. **Learn together** about different types of renewable energy
3. Have an **informed discussion** about how we feel about the technologies.
4. Discuss if and **where different technologies might be acceptable** in the local landscape.
5. Use graphs and data, to understand how much electricity and heat the different combinations of technologies would **generate,** the impact on current local energy needs and related carbon emissions.

What was said?

After marking up maps and spending time sharing local stories about the local landscape and people's connection to it, the group watched short videos about the different renewable technologies that were locally feasible. In a couple of groups we then started a detailed discussion about the following four technologies:

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

One table discussed wind power and domestic heat pumps and the other discussed solar farms as well as the domestic use of solar power*. Each group worked through the following questions:

- 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?

*Anaerobic digestion was also touched upon as a potential renewable technology for the local area. The process for this is to use grown crops to ferment in a digester to create a gas to be burnt to make electricity and heat. The heat from the digester could be used to heat homes via a district heating scheme.

Impact of different renewable energy technologies

Each table 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 boundary of both parishes.

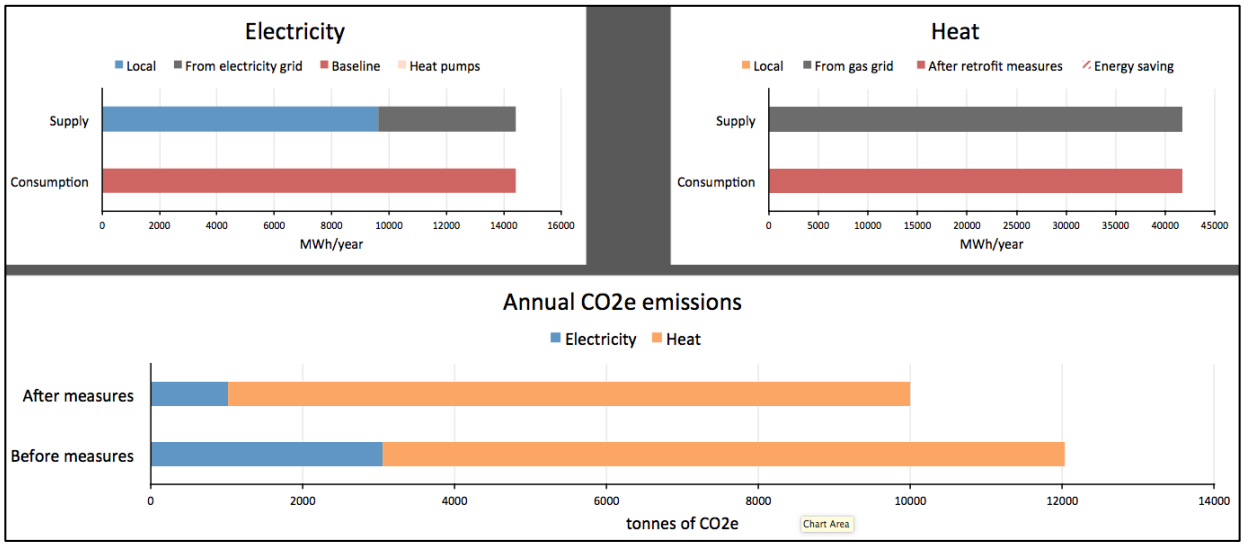
The group's suggestions on the amount of each technology were inputted into the CESAR tool [1]. The CESAR tool, with simple graphs, shows how much energy is used by Denmead, how much carbon that generation produces and how this could be changed

[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.

by using renewable energy technologies to generate local power. The ideas of the different groups and what the CESAR tool illustrated were then offered for further comment and discussion to the wider group.

Solar Farms

The first group started their discussion looking at the level of acceptability of ground mounted solar farms in 12 acre (2.5MW) plots. It was acknowledged that there are solar farms in the local area already, one soon to be developed, which makes any conversation sensitive. However in any area with solar the group would like to see dual agricultural use ie crops grown or sheep grazing around the panels. There was also concern about trees being cut down to make space for more solar farms. They did feel that the area had quite a lot of solar farms already but concluded that there could hypothetically be scope and space for four, 12 acre solar farms. We looked at what this scale of solar might generate for the community.



Impact of having 4, 12 acre solar farms on the current electricity demand of Denmead

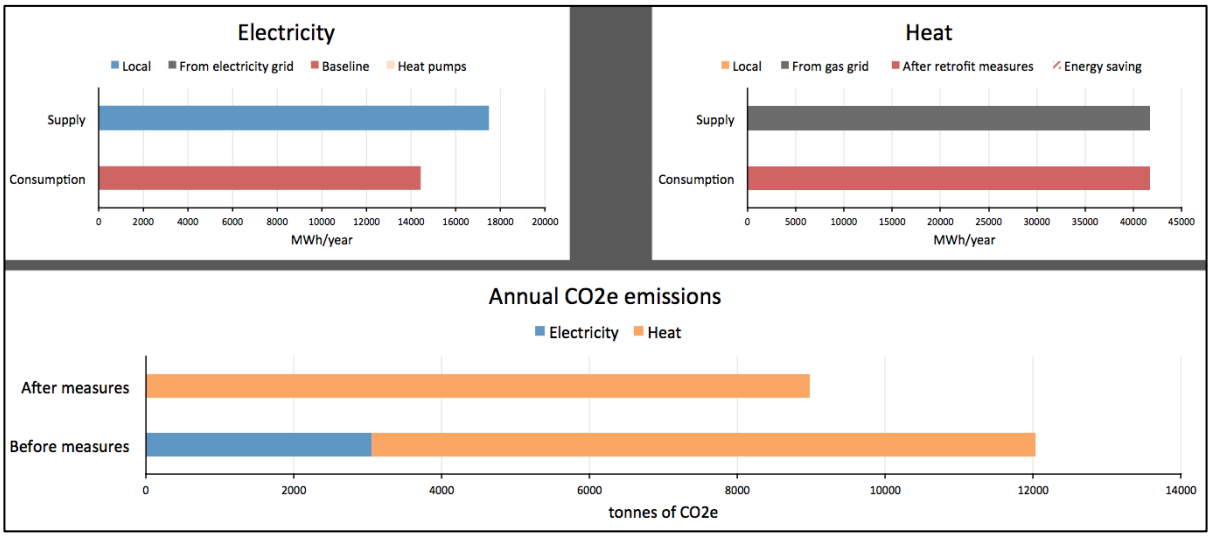
The graph shows that the idea of a further 48 acres of solar would generate two thirds of the current demand for electricity and therefore make a significant contribution as well as reduce the emissions related to burning fossil fuels to create electricity. It is important to note that the above graph does not include the impact against local demand of the planned 50 MW development on the eastern edge of Denmead but illustrates how 10MW of solar power could meet a large proportion of local energy usage and significantly reduce the associated carbon emissions.

The wider group discussed the sensitive context with the large proposed commercial 50MW site. They admitted not knowing enough about the landscape available to the east of the parish but (jokingly) considered using the golf course. Solar also produces

less electricity during the winter and therefore has to work in combination with other technologies.

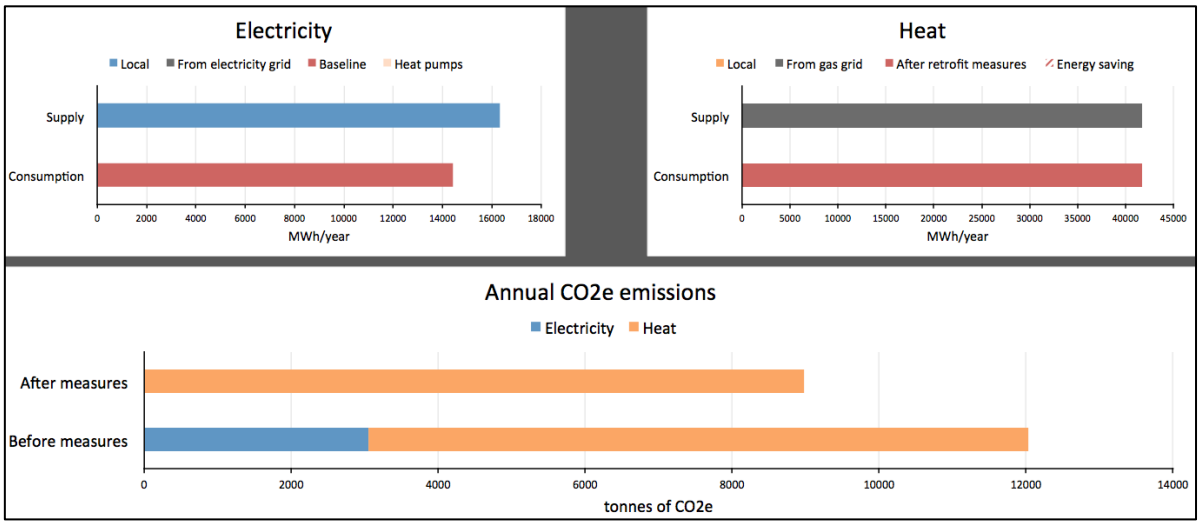
Wind Power

The next group took on the discussion about wind power and broadly felt happy with the technology and felt the benefits of wind power outweighed the arguments against it. They tried to imagine where a turbine might fit in the local landscape and identified the high ground above where the new solar farm is being developed. The group was split regarding whether three large turbines were preferable to a larger number of medium sized turbines.



Impact of 3 large turbines on the current electricity demand of Denmead

Three large turbines (100m hub height + 40m blade radius) would produce 25% more electricity than is needed to supply all of Denmead parish, removing all the carbon emissions from current grid electricity generation.



Impact of 7 medium turbines on the current electricity demand of Denmead

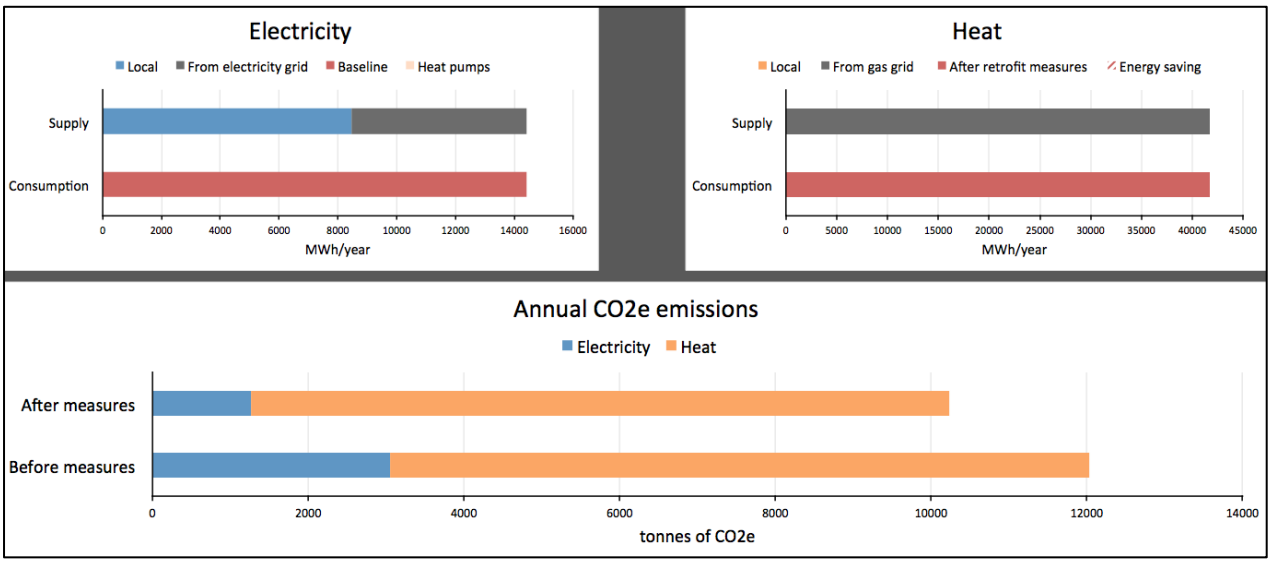
Three large turbines were compared with seven medium turbines (70m hub height) and what they might generate to meet the needs of Denmead Parish. The contribution in terms of electricity generation is very similar but would be a different visual impact, maybe more acceptable, with more turbines albeit smaller.

The table and wider group discussed the following points:

- Wind turbines generate a lot of power but have a very high visual impact. They use less land than solar but with solar farms you can use the land for other things – different trade offs.
- The area of high ground proposed in Denmead is near the South Downs National Park. At the moment wind turbines are not likely to obtain planning permission in the National Park but that might change.
- Although the group thought turbines were quite attractive there was a discussion about suspected noise. Wind turbines have to be sited 500 metres from the nearest home to safeguard against this.
- Affects on local wildlife – cats kill an estimated 400 times more birds than current wind turbines in a year in the UK but all these things would have to be considered if a formal proposal was put together.

Domestic Solar

Half of the group discussing solar had panels on their homes so were big supporters of the technology and would love to see more homeowners having them installed and could not see many homes where they were not at least feasible. They imagined a future where 75% of local homes would have solar panels.



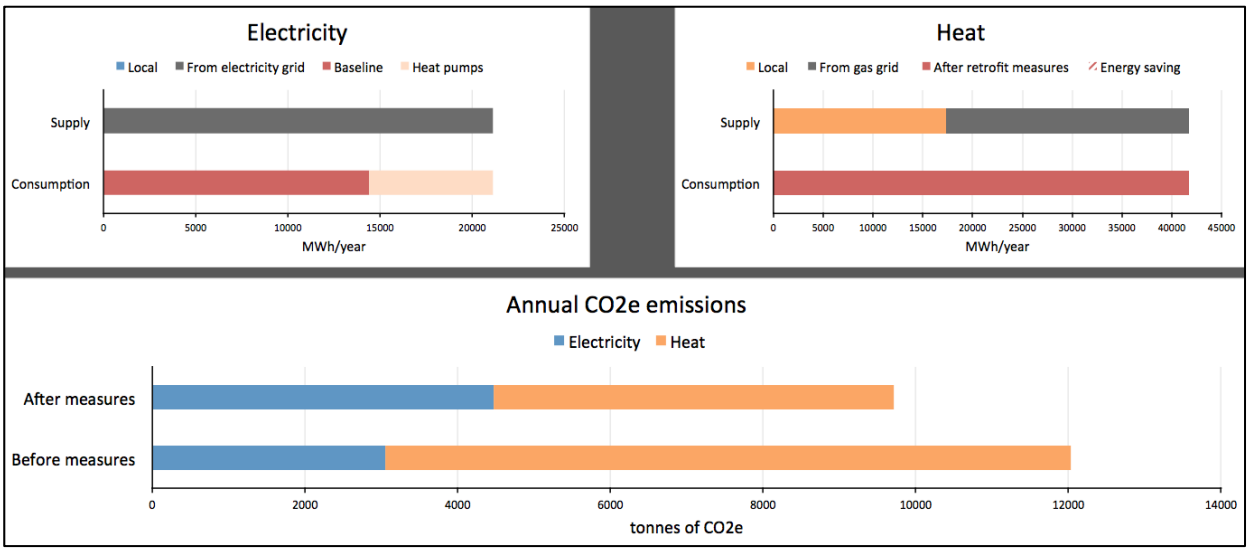
If the majority of homes in Denmead were to have 10-12 panels on their homes this simple, domestic, renewable technology would meet over 50% of the electricity supply for the community making a significant impact on carbon emissions.

The table and wider group discussed the following points:

- All new builds should have the technology installed while they are being built.
- Future Homes Standard that should be coming into force this year is expected to mandate that all new homes will have a heat pump and it is yet to be confirmed if they will also require solar.
- Housing developers want to keep prices down and often install just a couple of solar panels but that is not an efficient system. Developers should be making the very most of all south facing roofs but south west and east orientations are also useful for solar.
- The cost of installing solar is a barrier for homeowners but there is speculation that in future there will be low interest or 0% interest loans for this technology.
- It is much cheaper to install a large scale ground mounted solar system than install the same number of panels on many individual homes but homeowners benefit directly from the electricity with a domestic set up.
- Community owned solar farms mean that local people can benefit from better tariffs.

Heat pumps

With this group there was general consensus that they liked heat pumps but that the cost of the installation could be prohibitive and the lack of trust of the technology and installers was a concern. If money was no object the group said they would like to imagine a future with 50% of local homes having an air source heat pump.



Impact of 50% of Denmead homes having an air source heat pump

The CESAR tool graph shows that with approx. 1,500 homes having an air source heat pump they would meet over a third of the heating needs for the community. The heat pumps would increase the demand for electricity but reduce the overall energy

demand as heat pumps are a very efficient way of generating heat - they produce three to four times as much heat energy as they use in electrical energy.

The table and wider group discussed the following points:

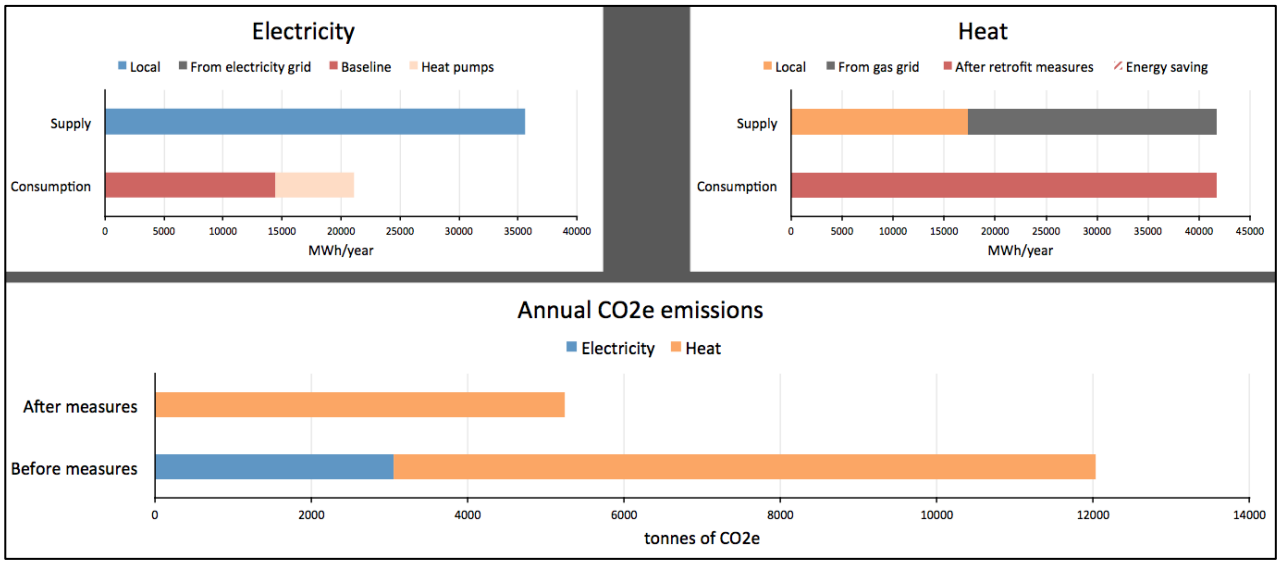
- more funding needs to be made available so that when you replace your gas boiler a heat pump costs the same.
- Heat pumps have a huge impact on decarbonising how we heat our homes and until we remove fossil fuels (gas and oil) from heating our homes then carbon will continue to be produced.
- The pricing of gas vs electricity does mean that heat pumps are currently not cheaper to run so should be ideally combined with some solar.
- France last year installed 10 times as many heat pumps as we did in this country. The UK government is investing in a campaign to better educate people about how heat pumps work.
- A useful activity is to invite homeowners with heat pumps to share with local people how they work and what they are like to run.

Technologies in combination

With more time we would have looked at the impact of combining the different technologies as no one technology holds the complete answer and they will work in combination with one another.

The graph below illustrates what the impact would be if you were to deploy each technology at the scale each group were imagining might be acceptable to their groups. For this we input:

- 3 large wind turbines
- 4 x 12 acre solar farms;
- 75% of homes with 10-12 solar panels
- 50% of homes with an air source heat pump



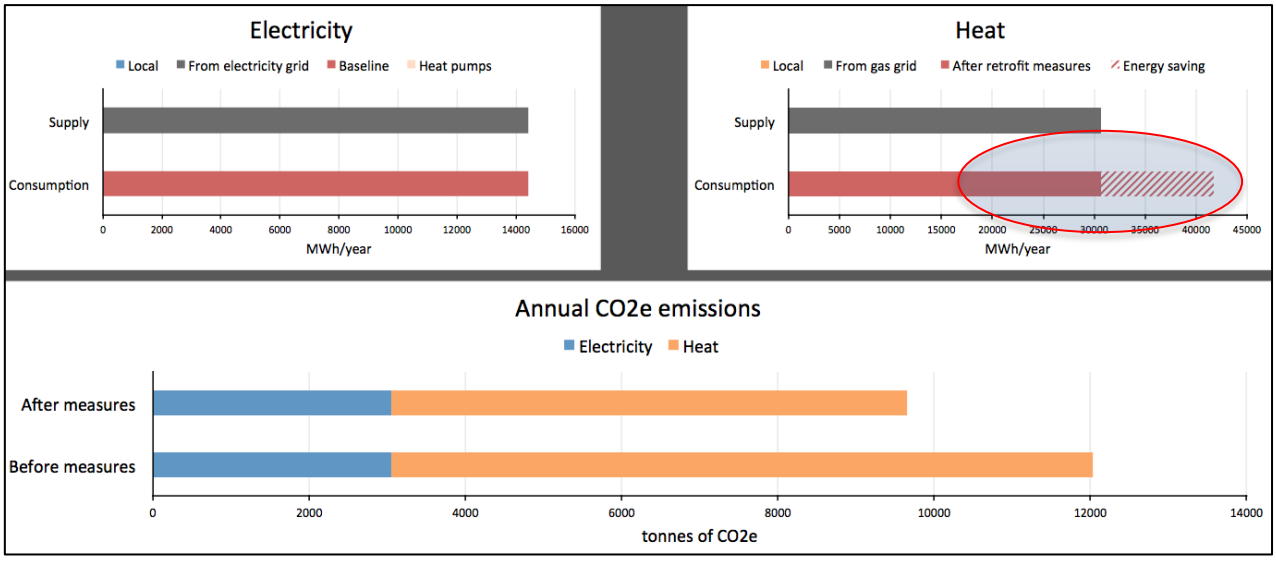
Impact of a combination for all the renewable technologies on Denmead's energy demand

By reimagining the local energy system in this way, local carbon emissions from heat and electricity would be halved, double the amount of electricity needed locally would be produced (despite the increase of demand from the heat pumps) and almost half of the heat needed would be generated from low carbon sources.

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 making homes more thermally efficient could reduce the heat demand, and therefore the energy required by Denmead, based on some broad assumptions made about the local housing. We suggested that 5% of local homes were built pre-1930, 75% were built between 1930-1990 and the remaining 20% of homes were built after 1990.



Impact on the heat demand following a local retrofit programme

This graph demonstrates 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 demand by almost 25%, as indicated by the highlighted area on the graph. This reasonable retrofitting would reduce the amount of energy needed to heat these homes and therefore we see an important reduction in the carbon emissions from heating before changing the supply of heat and electricity to low carbon technologies.

Conclusion and recommendations:

It was great to run this workshop in Denmead and start a conversation about renewable energy and what feels acceptable to local people.

The workshop enabled people to raise their concerns about different renewable energy technologies and also learn from each other about how the different technologies work and what could be possible where they live.

From the conversation that was had these are a few ideas about next steps:

- Identify further opportunities for rooftop solar with the school and parish council.
- Identify local trusted installers and contractors to sign post people to.
- Ensure local community is kept informed of changes to funding around domestic solar and heat pumps.
- Contact the local council or solar developers to see if there might feasibly be a wind turbine alongside the proposed solar development – there is evidence that co-locating solar and wind is beneficial.
- Share this report and associated survey more widely, to as many people in the local community as possible, so they can share their thoughts.
- Promote the benefits of community owned energy (community energy) as a way of securing lower tariff for the local community.

The workshop participants spent two hours imagining how renewables might meet their local community's 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 put to one side constraints such as planning, expense and grid capacity. The discussion format aimed 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 - Tools, assumptions and research

Tools

Future Energy Landscapes: toolkit here

CESAR (Community Energy Saving Renwables) 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

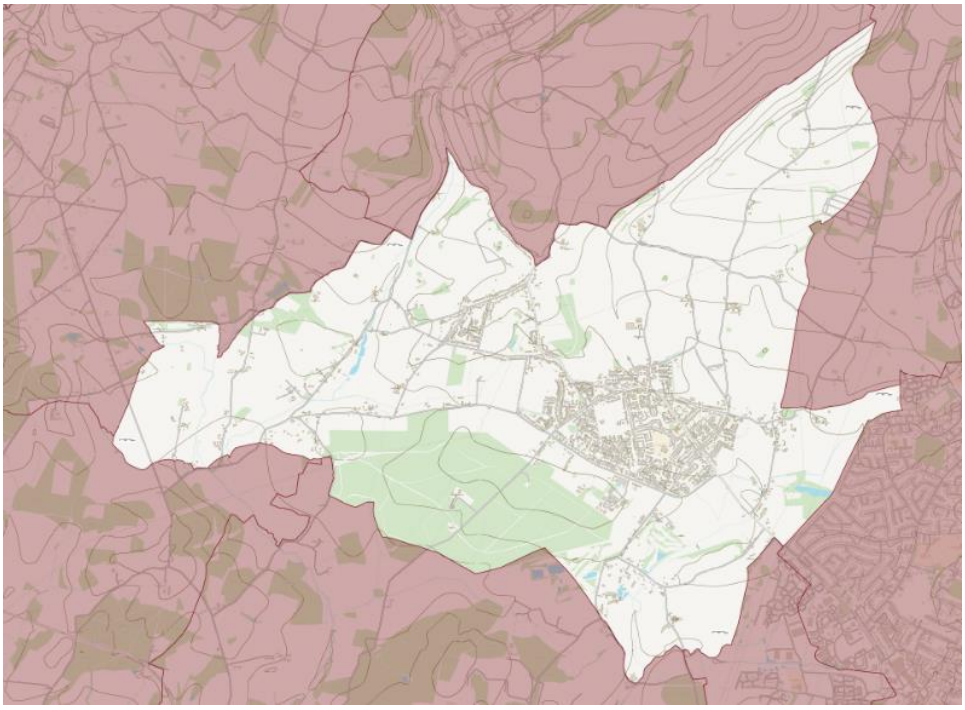
Gagg P (2023) Winchester District: the DESNZ data on greenhouse gas emissions from 2005 to 2021

Winchester City Council: Renewables Consultation (2023)
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.

Map of Denmead Parish