Future Energy Landscapes Workshop

Hythe & Dibden and Fawley Parishes

Wednesday 26th March

This report summarises what happened and what residents of Hythe & Dibden and Fawley Parishes 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.

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. Using data[1] and research into what technologies might be applicable to the area the workshop supports a hypothetical conversation about what scale and types of projects might be acceptable to local people and what impact would those technologies have on their local energy needs.

The workshop was supported by WaterCAN (Climate Action Network) and Community Energy New Forest and was funded by Community Energy Pathways and New Forest District Council. The objective was to ensure communities are part of creating a local vision for sustainable energy enabling them to play a part in shaping ambitious plans as we transition away from fossil fuels.

Why the Future Energy Landscapes 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.

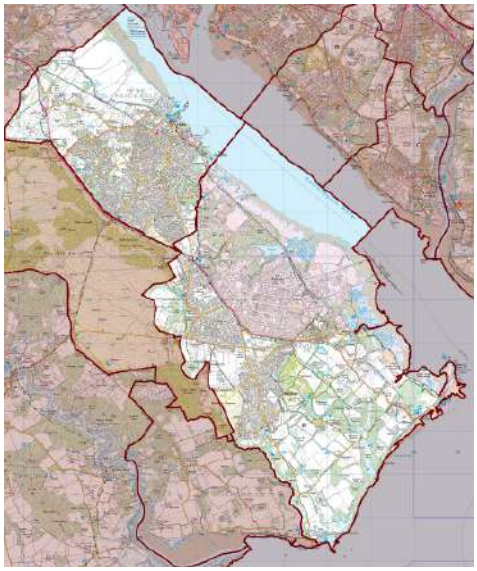
[1] See **Appendix 1** for details of the data, research and assumptions that have been used to build this workshop.

Workshop summary

Workshop purpose: To explore the question *'**How might Hythe & Dibden and Fawley 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.

Hythe & Dibden and Fawley Parishes are neighbouring parishes made up of 34,000 people living between the shore of Southampton Water and the edge of the New Forest National Park. The area is the home of the Exxon Mobil oil refinery, the largest in the UK, providing 20% of the UK's refinery capacity.



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 groups the tables then opened a detailed discussion about the following 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?

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 [2]. The CESAR tool, with simple graphs, shows how much energy is used by the local community, how much carbon that generation produces and how this could be changed by using renewable energy technologies to generate local power.

Parish area in numbers:

- 34,000 residents
- 15,000 homes
- 58,000 tonnes CO_2 pa
- 70,000 MWh electricity pa

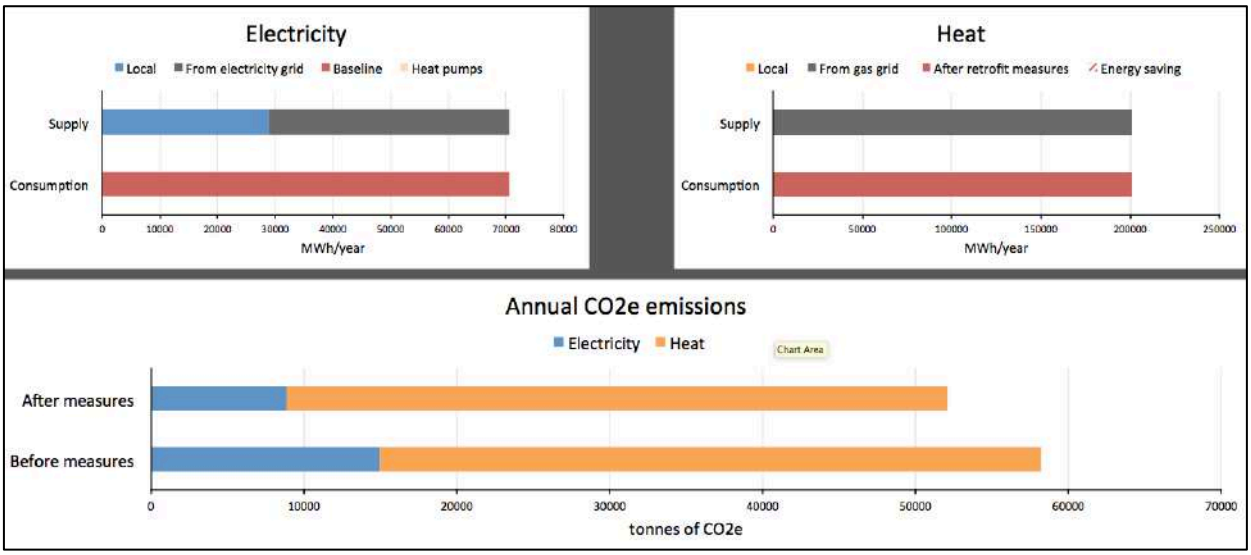
The ideas of the different groups and what the CESAR tool illustrated were then offered for further comment and discussion to the wider group.

[2] 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.

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. They had no objections to solar farms in the area as the landscape is relatively flat so the solar panels would not be that visible. They noted that there was already a 6MW, 30 acre solar farm in the area but many people did not know about it. They acknowledged that what they felt was acceptable might not be indicative of wider local opinion but with Southampton and the local area being highly industrialised they wondered whether there might be less local objection to solar farms.

The group confidently suggested a future where the local area might feasibly have twelve x 12 acre areas with solar. The table benefited from three people who had extensively walked or worked in the area and were able to identify either brownfield sites or areas of land that were disused industrial areas / non-productive land that might house small discrete areas of solar.



Impact of having twelve, 12 acre solar farms on the current electricity demand of the area

The graph illustrates that these 12 plots, 144 acres of local ground mounted solar would generate between half and a third of the electricity currently needed by the local community (30,000 MWh/year) and therefore reduce the carbon emissions from the fossil fuel burning element of grid electricity generation.

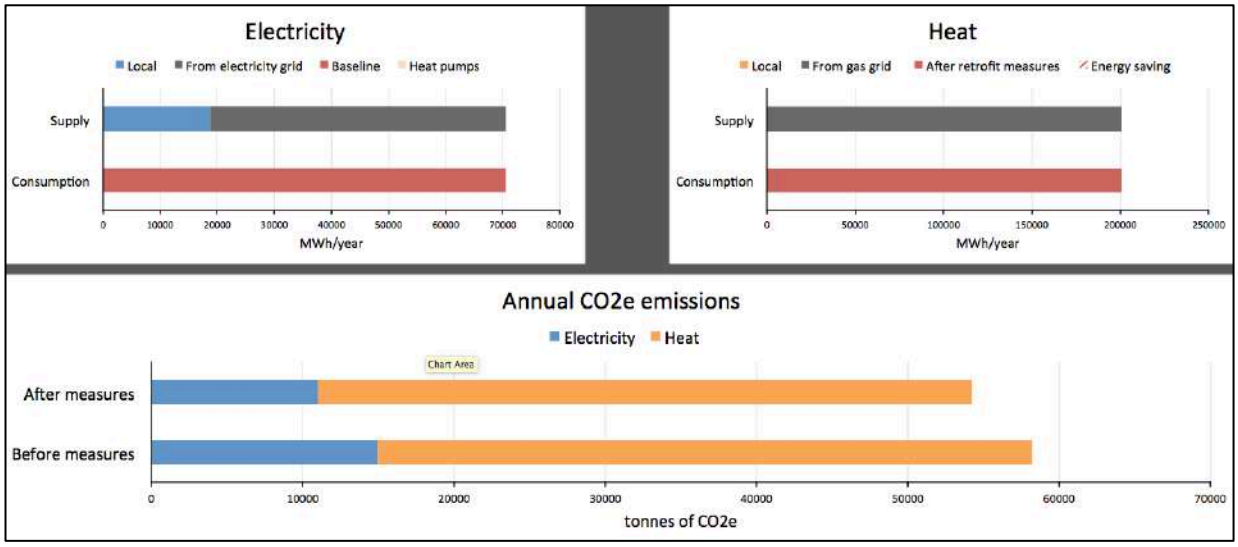
The table and wider group discussed the following points:

- Concerns with using agricultural 'growing' land: Planning permission is usually only granted for a solar farm on moderate to poor grade agricultural land (3b – 5 with the Agricultural Land Classification)
- Agrovoltaics – used extensively in French vineyards and Japan, growing crops or grazing livestock alongside solar – this is with raised panels which can increase the visibility of the scheme which could then impact on acceptability.

- There is the potential to improve biodiversity around solar farms as there is no longer a monoculture but an opportunity to plant grasslands and wild flowers.
- Rooftop solar is important but there are not enough roofs to meet the total electricity demand so ground mounted solar will always be needed as we move to replace fossil fuels. It is also more cost effective to install ground mounted compared to roof mounted solar.

Wind Power

The next group took on the discussion about wind power and saw it as a tried and tested technology that works well in other places. They felt comfortable in identifying a couple of areas that might be appropriate for a wind turbine but appreciated that visual impact is deeply subjective. There was also a question about the practicality of a turbine in the low lying area and whether there would be sufficient wind speeds. They offered the idea of locating two large turbines in the area around the oil refinery and one large turbine at the old power station site. The group also wondered if a smaller turbine might be placed at Calshot Spit benefiting from the wind coming off the sea.



Impact of 3 large turbines plus 1 small one on the current electricity demand of area

This deployment of 3 large turbines (100m hub height) and 1 small wind turbine (40m hub height) would meet a quarter of the electricity needs of the 34,000 residents in the neighbouring parishes and so reduce the carbon emissions as shown by the lower graph.

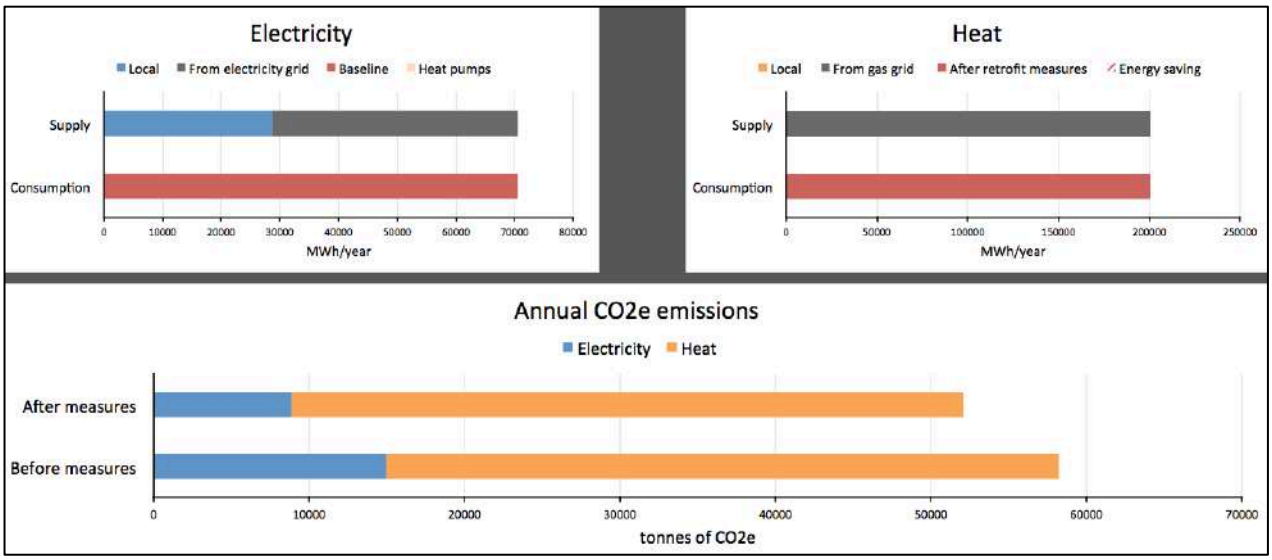
The table and wider group discussed the following points:

- There was a personal view that previously other communities have had to house coal fired power stations and accept their visual impact and pollution for us to benefit from the electricity produced - now perhaps it is other communities turn.

- The sites considered were all in Fawley as Hythe & Dibden has much less open space.
- Questions about the validity of stories about wind turbines being turned off. The comment was that all technologies, including gas fired power stations sometimes have to be turned off at times of low demand.
- We discussed the feasibility of putting a turbine in conjunction with existing pylons and with a solar farm. Pylons would not be strong enough and there would be issues about the clearance for the blades. There are benefits of putting solar farms and wind turbines together however you could not have panels packed around the base of the turbines as turbines have to be around 5 x their hub height away from the next turbine (and 500m away from houses).
- There were concerns regarding the Solent and salt marshes as they are an area for migrating birds. As a comparison we talked about the old oil-fired Fawley power station killing 200,000 of fish a year as a result of the filters across the water pipes drawing water from the sea into the power station. There was also the note that across the UK, 50,000 to 100,000 birds are killed by wind turbines every year but 40 million birds are killed by cats. There are difficult trade offs for all technologies that need to be considered.

Domestic Solar

The group were in support of the use of solar panels on homes but were aware of the limitations and the financial implications for homeowners that can create a barrier. They agreed that 50% of homes in the future might have a solar array on their home.



Impact of 50% of homes having an 10-12 solar panels

The graph above shows that if 7,500 homes in these parishes had solar panels on the roofs they would meet almost half of the electricity needs of both parishes, reducing the need for large scale generation that used wind turbines and solar farms. There would also be potential for solar on larger roofs on schools, industrial/commercial

buildings, churches etc that should be explored however the users of those buildings are not always big energy users so the business case for solar does not always work.

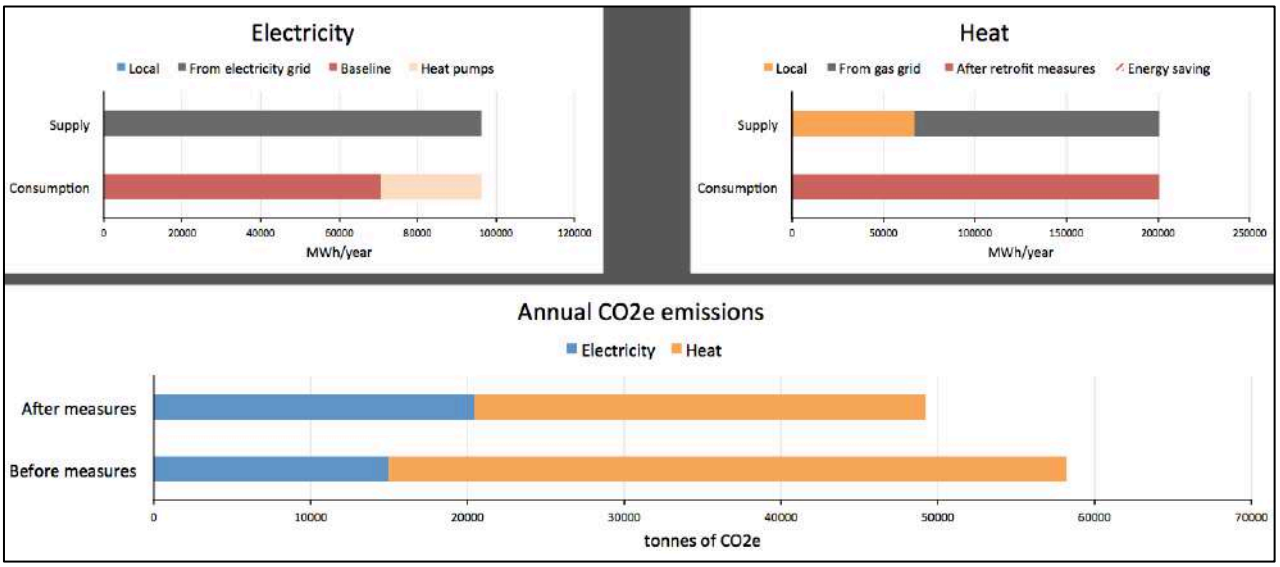
The table and wider group also discussed the following points:

- There is a current export limit (without additional permission) of 4kW for a domestic scheme (approx. 10 panels) so can limit what large homes can accommodate and there can be inconsistency with local grid capacity.
- All new builds should have solar panels. 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.
- Potential for Cornerstone, Hythe Reformed Church (workshop venue) to have panels on their large roof and to come to an arrangement with their business neighbour to benefit from the cheaper electricity for their business operations.
- Domestic solar is not an insignificant technology and at scale could have a real impact on meeting our electricity demand.
- National Grid infrastructure will need significant upgrades to provide more power as we electrify our homes and transport.
- Smart technology is being developed to limit consumption at peak times and so reduce the need for generation.
- In France it is a legal requirement to have solar on car parks – government could change policy to copy this in the UK.

Heat pumps

On the final table that were discussing heat pumps there were mixed views with a couple of people who had the technology in their homes and and others who had researched the technology but had decided not to install them. This was the result of the grant not covering the full cost of the install, the relative cost of electricity compared to gas that meant running a heat pump is often not cheaper than a fossil fuel boiler and the potential risk of the pump not being installed properly. These issues combined could mean that some home owners might not see an adequate return on their investment.

With others having had a positive experience with heat pumps the group recognised the potential of the technology. They hoped for all of the planned 3,500 new homes in the area to have a heat pump fitted and so imagined a future where 40% of local homes might have an air source or ground source heat pump but made the point that this would depend on government policy.



Impact of 40% of local homes having an air source heat pump

The above graph illustrates that if just under half of local homes were to have an air source heat pump that would meet over a third of the heat demand of the local community and remove a significant amount of the carbon emitted from burning fossil fuels to heat our homes. The electricity demand would increase as heat pumps use electricity but they are 3-4 time more efficient than a fossil fuel boiler. Heat pumps are very efficient in decarbonising our heating system however there are some trade offs that need to be balanced.

The table and wider group also picked up on the following points:

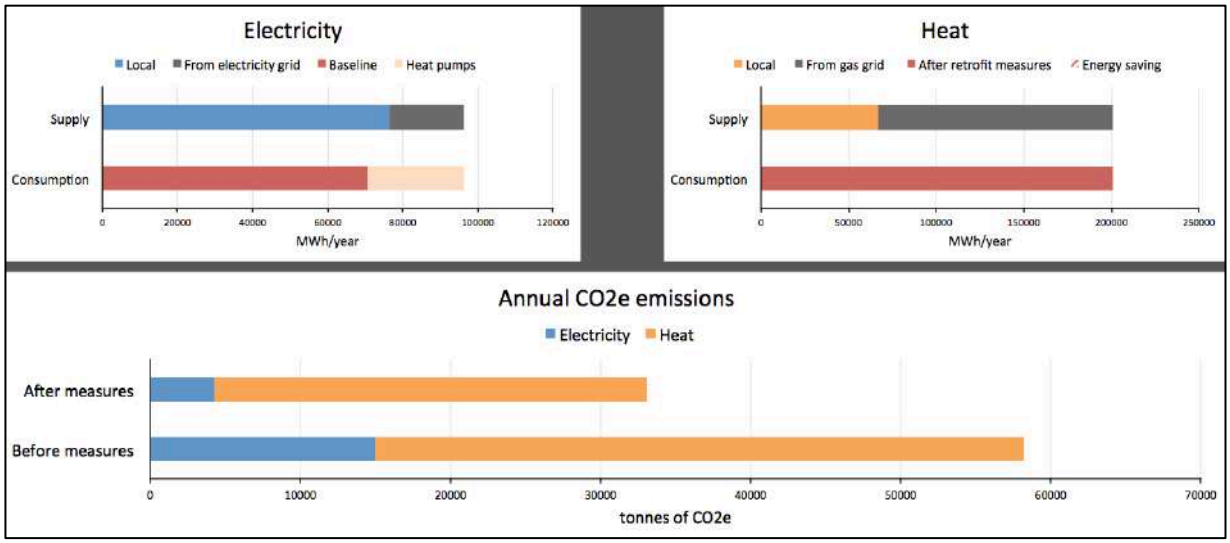
- France installed ten times more heat pumps last year than the UK because they have different policies.
- Much of the cost of a heat pump installation is the system conversion cost but the £7.5k grant isn't quite enough to cover that.
- New houses that are built from next year will need to have heat pumps but there is yet to be firm commitment about phasing out all gas boilers in the future.
- Heating homes with hydrogen that's produced from renewable electricity would require six to seven times as much electricity (to produce the hydrogen) compared to powering heat pumps.

Technologies in combination

As was discussed by the different groups, none of the technologies hold the complete answer so the CESAR tool was used to see what might be generated if we were to combine some of the technologies as they were discussed.
For this we input all the technologies along with how much each group had suggested was acceptable to see what the impact was.

As a reminder this was:

- 3 large wind turbines and 1 small wind turbine
- 12 x 12 acre solar farms
- 50% of homes with 10-12 solar panels
- 40% of homes with a ground source heat pump



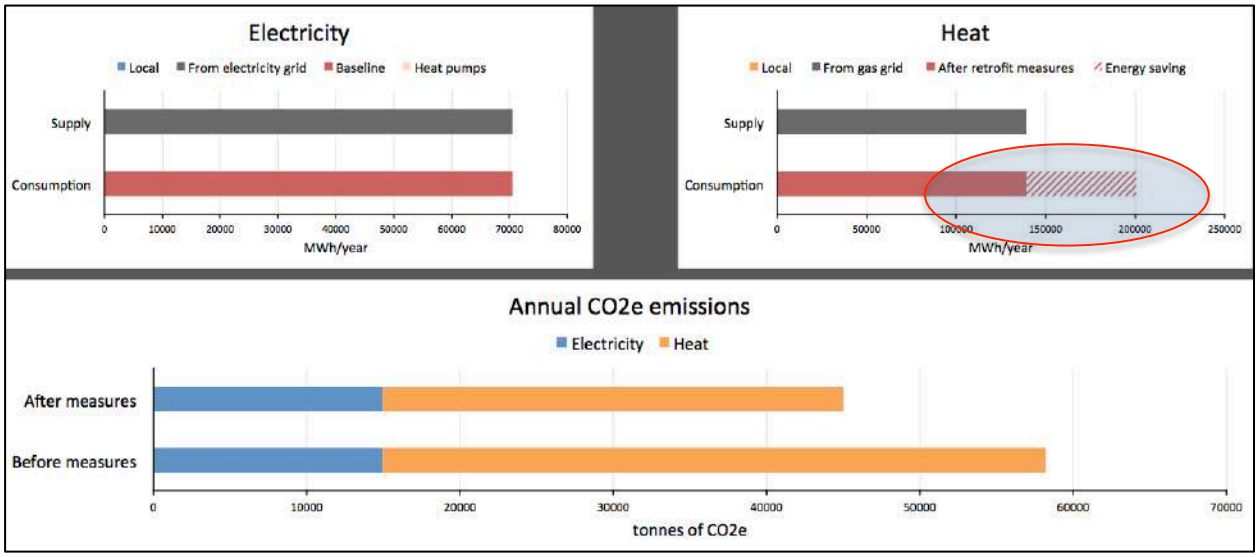
By reimagining the local energy system in this way, local carbon emissions from heat and electricity could be almost halved, 75% of the amount of electricity needed locally would be produced (despite the increase of demand from the heat pumps) and a third of the heat needed would be generated from low 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 allows us to look at how making homes more thermally efficient could reduce the heat demand, and therefore the energy required by Hythe & Dibden and Fawley, based on some broad assumptions made about the local housing.

We suggested that 10% of local homes were built pre-1930, 70% 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

The above 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 over 30%, 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 even looking into domestic level or larger renewable infrastructure generation.

Local people coming together at Cornerstone, Hythe United Reformed Church for the workshop

Conclusion and recommendations:

It was a great gathering of people from Hythe & Dibden and Fawley Parishes and an important opportunity for them to share their thoughts 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 of the things that the local community might take forward:

- Walk the area and explore further the feasibility of some of the ground mounted solar sites discussed by the table in and around old industrial sites.
- Share local stories and case studies about local energy infrastructure ie the geothermal scheme in Southampton as well as the local care home.
- Build local trust in solar / heat pump technology by collating a list of trusted installers and sharing local case studies of homes that have had the technologies installed.
- Explore wind speeds in the area to see if wind power might be feasible in some of the areas identified.
- Continue identifying large roofs for potential solar installations with local high electricity users.
- Ensure the local community is kept informed of changes to funding around domestic solar and heat pumps.
- Share this report and associated survey more widely, to as many people in the local community as possible, so they can give their feed back their views.

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

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.