Future Energy Landscapes Workshop

Shoreham-by-Sea: Friday 21st November 2025

This write up summarises what happened and what residents of Shoreham-by-Sea said during the Future Energy Landscapes workshop in November 2025. It cannot be assumed to be representative of the full range of opinions in the local community but is an accurate record of this important conversation with Shoreham-by-Sea residents.

Please read through this report and provide your views via our short survey HAVE YOUR SAY About Shoreham-by-Sea's Future Energy Landscapes Workshop – Fill in form

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 funded by the South Downs National Park Authority (SDNPA). 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.

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

- Community energy should be recognised as an essential component of our energy transition so local communities benefit from renewable energy generation.

Workshop summary

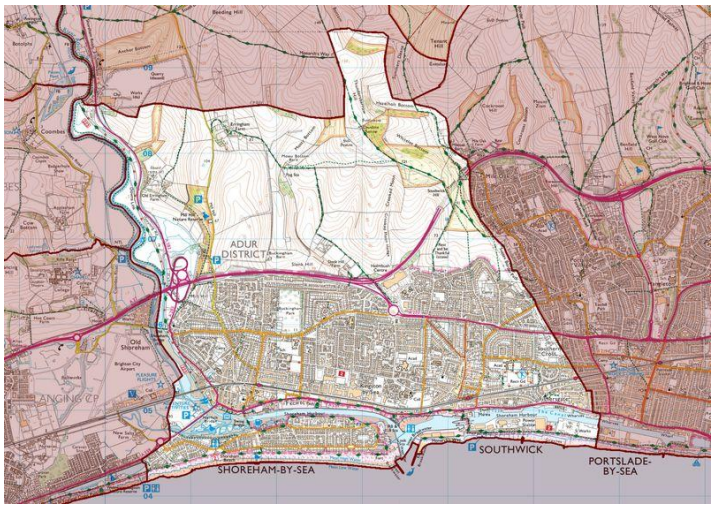
Workshop purpose: To explore the question '***How might Shoreham-by-Sea power its community using locally generated renewable energy?'***

Workshop boundary: These workshops usually 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. In this case, we included all the Adur District wards that are in Shoreham-by-Sea.

Shoreham-by-Sea: is a historic coastal town and port in West Sussex located where the River Adur meets the sea, nessled at the foot of the South Downs Hills. It has a blend of of historic arhitecture & modern seaside life alongside natural coastal beauty. It is known for its working harbor, shingle beach and thriving market town.

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 we then started a detailed discussion about the following technologies:

a) 2 x Wind Power groups
b) 2 x Large Solar Rooftop (500 meters squared) groups
c) 2 x Domestic solar groups
d) 2 x Domestic heat pumps groups

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 the parish.

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

Shoreham-by-Sea in numbers:

- 36,250 residents
- 15,500 homes
- 78,000 MWh electricity pa
- 62,500 tonnes CO_2 pa

[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.

energy is used by the local community, how much carbon that generation produces and how this might change 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.

Wind Power

The first two tables, that looked at wind power were enthusiastic about the technology giving it a four to five average score (out of five) for acceptability.

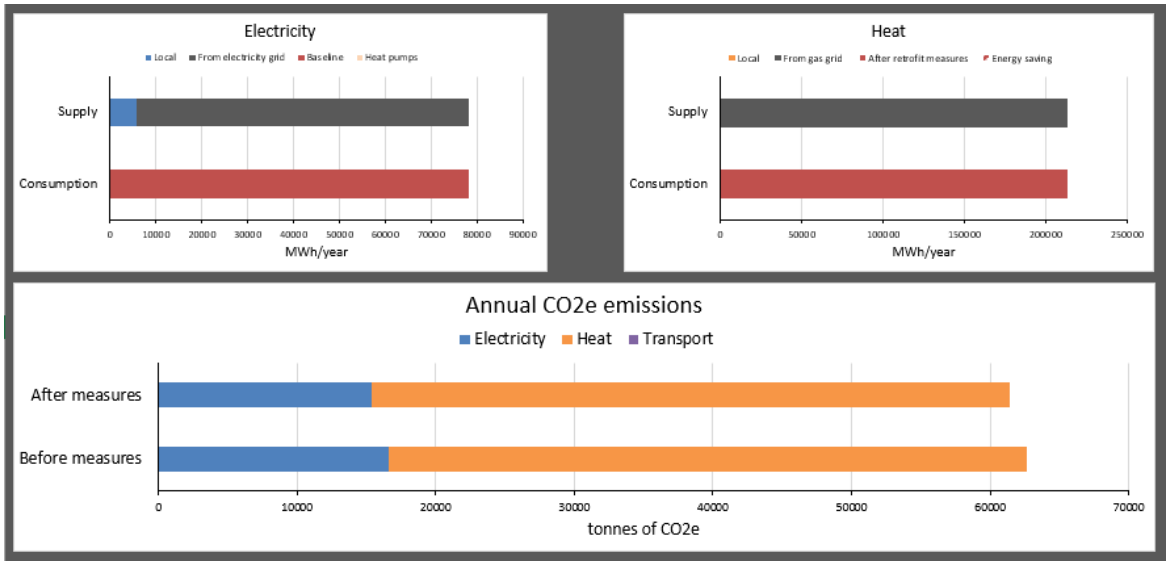
3 sizes of wind turbines were looked at. Large (150 meters high to tip of blade), medium (100 meters hight to tip of blade) and the small wind turbine (65 meters high to tip of blade). To give some context, it was mentioned that the gas fired power station in Shoreham Port is 106 meters high.

The nominal maximum number of wind turbines the groups considered for Shoreham-by-Sea were 10 large, 20 medium and 30 small. The first group suggested 10% of the maximum was feasible and the second group ambitiously went for 100% of the maximum.

Proposed locations for wind turbines included along the coast (small turbines), on the Downs (large turbines), at the Port and along the A27 (medium turbines).

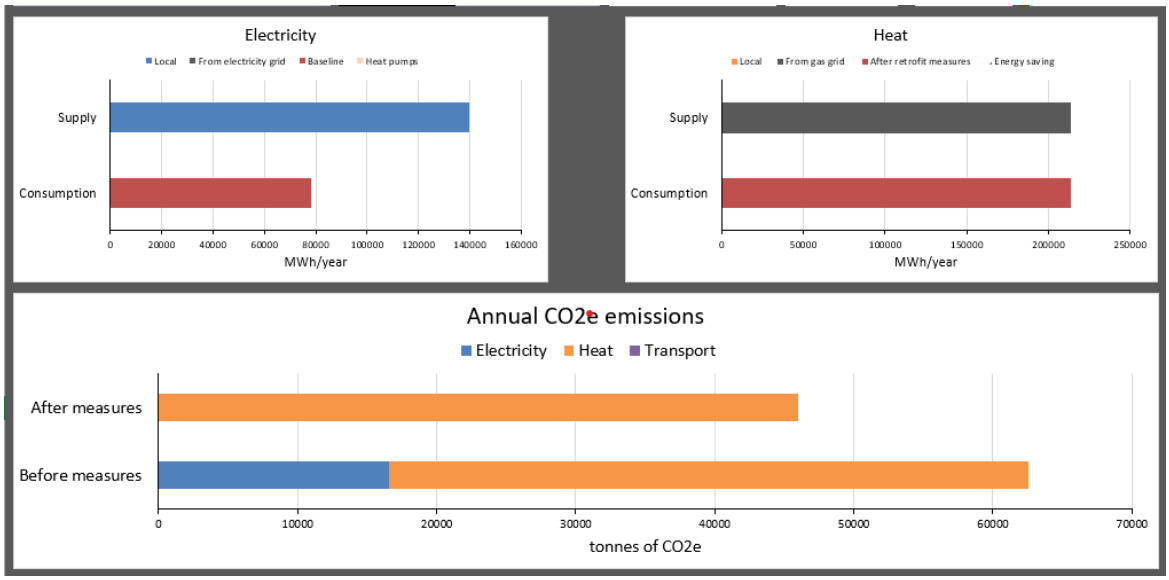
There was discussion about the choice of size for the different locations and the trade-offs. There is a logarithmic relationship between height and energy generation meaning twice the height is 4 x the electricity generation and large turbines therefore are generally more commercially viable.

However, in this context the group said that due to the visual impact only small turbines would be suitable along the coast.



Impact of 1 x Large (150m height to blade tip) Wind Turbine on local electricity supply

We experimented with the numbers of wind turbines using the CESAR tool and the above chart shows that 1 large wind turbine would generate approximately 8% of Shoreham's annual electricity requirements. We noted that 2 medium or 3 small turbines generate similar amounts.



Impact of 10 x Large (150m height to blade tip), 20 x Medium (100m height to blade tip) & 30 x Small (65 m height to blade tip) Wind Turbines on the local electricity supply

The chart above shows the potential of the full proposal, that is 10 large, 20 medium and 30 small wind turbines. Together these generates almost double the amount of electricity used of Shoreham-by-Sea each year, reducing the carbon emissions by approximately one quarter.

10 large turbines on their own produced half this amount –supplying about three quarters of the Shoreham's annual electricity requirements.

The group thought people might be surprised at the large number of turbines required to meet the electricity requirement. They considered that that in general people may have an emotional reaction against wind turbines but that this may change at certain tipping points and when people realise how amazing and graceful they are. Then we might be more optimistic.

The wider group shared their responses to this table's suggestion and discussed the following points:

- There was experience in the group of the noise of wind turbines and it was noted that they can't be sited within 500 meters of housing.
- Some interesting data regarding wildlife protection and energy generation - in the UK, the existing wind turbines kill roughly between 100,000 and 200,000 birds a year. Domestic cats however kill 40 million birds a year.

- Fossil fuel generation have an impact on wildlife. For example, Fawley gas fired power station near Southampton drew in water for cooling – 100,000 fish per year died on the grilles.
- The challenge of the safety of this large technology and the potential for catastrophic failure was commented on.
- Recycling of wind turbines. Older ones are decommissioned sooner into recycling programmes, because newer ones are more efficient.
- There were questions about ownership and energy distribution. Turbines need to be sited near the site where the electricity will be used otherwise it goes directly to the grid, increasing the wider availability of all renewable energy. The Campaign for the Local Electricity Bill is aiming to change this so communities can benefit more directly.
- The carbon emitted from the production of a wind turbine is saved in about a year of it generating electricity. Wind power generation has good return on investment and there is no shortage of investors in wind power.

Large Solar Rooftop

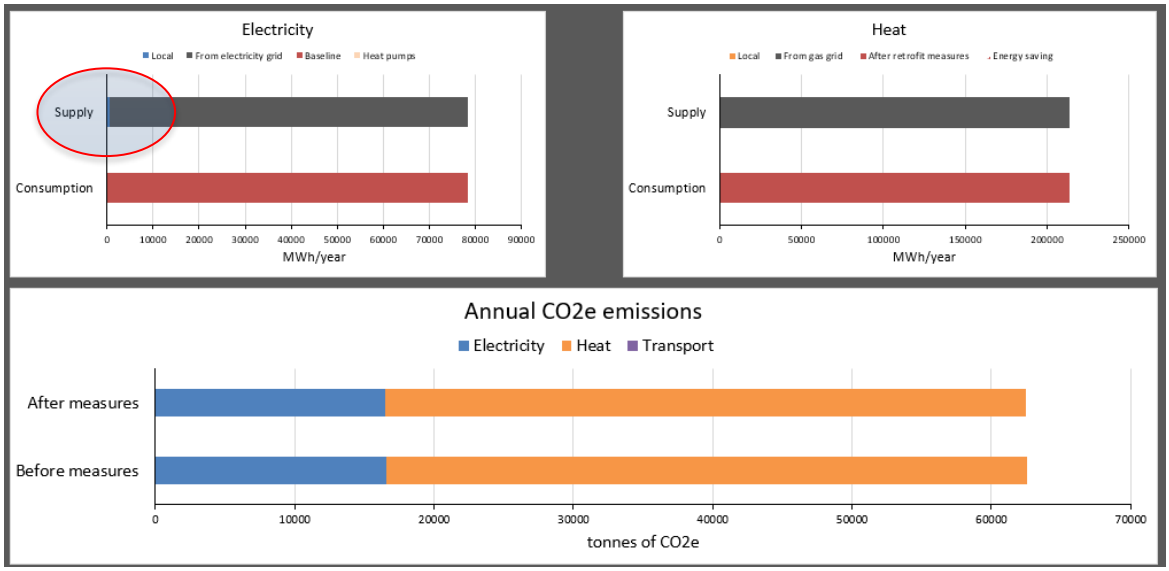
The next two tables were looking at Large Solar Rooftops instead of ground-mounted Solar Farms because of lack of available open space in Shoreham-by-Sea.

Large roofs are a good opportunity for solar, and the groups were allocated a nominal maximum of 100 rooftops each able to support 220 panels (100 kW of power) covering 500 square meters. Annual generation being 200MWh. To get an idea of the size of the space it was estimated that the church has about 300 square meters of south or west facing space that could be used for mounting solar panels.

The two tables considered the rooftops in Shoreham and how many multiples of 220 panels could be fitted. The first table rated the technology as five out of five for acceptability and quoted 'love it', 'no brainer' and 'stop hanging about'. The story being that there's no landscape impact and no one cares because it's going to be on industrial units! The second table were also strongly in favour, stating 'it's not rocket science'. It was discussed that there still may be people that would object.

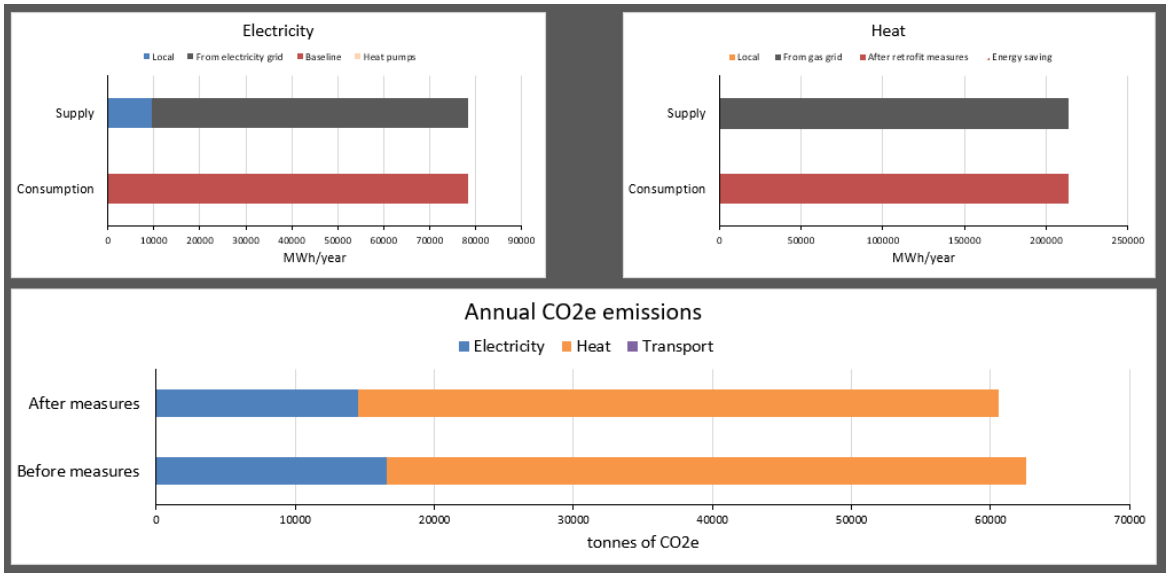
Industrial units on Dolphin Road, Shoreham Airport, Southlands, the school, housing within housing associations, Shoreham Academy, supermarkets and the station were proposed as potentials for large rooftop solar in Shoreham-by-Sea.

The first table thought they could find 20 of the nominal 100 maximums, however considered that 5 was a more realistic number. The second table had very different thoughts that about what might be possible suggesting 206 buildings could be considered for rooftop solar. We used the CESAR tool to show the impact of both these proposals.



Impact of 5 x 220 Solar Panel Rooftop on the local electricity supply

The above Electricity Chart shows the impact of five solar roof tops in Shoreham-by-Sea each with 220 solar panels (500 square meters) each. The very narrow band of blue at the front of the black band (with circle around) shows that there is a small impact and that as part of wider renewable energy plan including wind etc these 5 roof tops would not be insignificant.



Impact of 100 x 220 Solar Panel Rooftop on the local electricity supply

The second Electricity Chart shows the impact of 100 solar roof tops in Shoreham-by-Sea each with 220 solar panels (500 square meters) (this is the maximum the tool was set up for). Based on this the 206 roof tops proposed by the group could potentially generate about an eighth of Shoreham-by-Sea's electricity each year.

The wider group shared their responses to this table's suggestion and discussed the following discussion points:

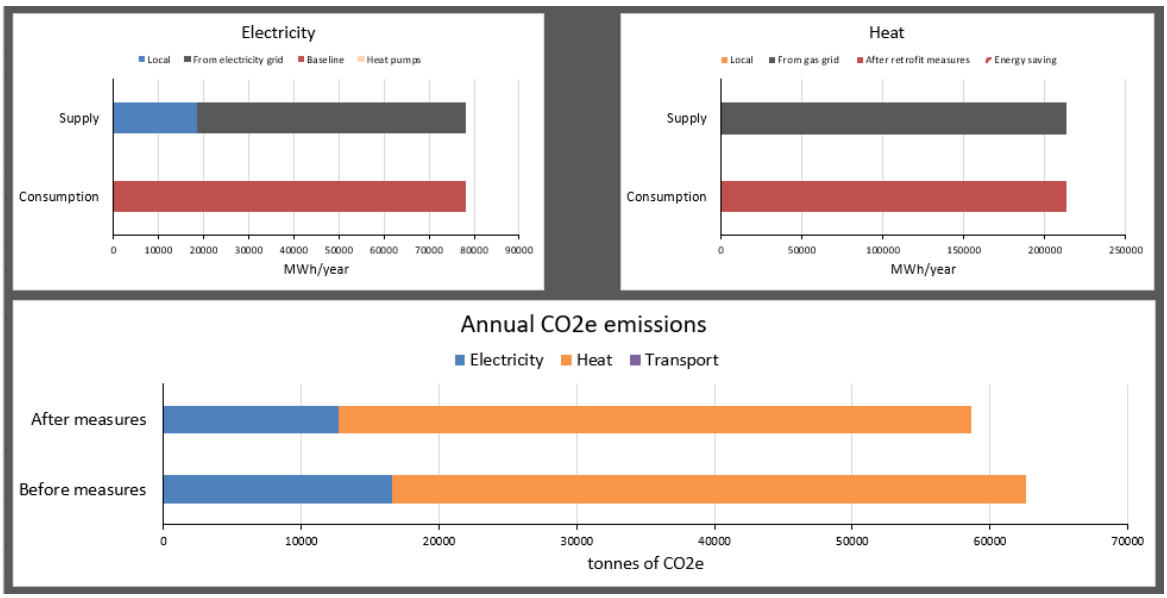
- There are different trade-offs with each of the technologies. Rooftop solar panels are harder to implement & less significant in their impact than ground mounted solar farms however solar farms are often controversial in terms of land use. Wind turbines have a big visual impact.
- As well as reducing carbon there is social value in community owned energy, e.g. commercial developers can pay into a community benefit fund. Local schemes that bring benefits directly to the community and take the pressure off people's pockets will help win hearts and minds. It was considered that once people see examples and invest acceptability of the technology will increase.
- The perception is that the cost of solar installation is high. However, once installed you see the return more quickly.
- Infinity Foods warehouse is an example of a Large Solar Rooftop of about 90 kilowatts. There are also schools like Marlow Primary and Peter Gladwin Primary (in Portslade) with 50–70 kilowatt systems.
- Someone suggested a hybrid approach—solar panels on roofs combined with carports. Carports could work, but they're expensive because you need to build a structure. In France, there's a mandate that car parks of a certain size must have solar canopies. In the UK, we haven't really done this yet, so there's untapped potential. It feels like we're only scratching the surface of infrastructure opportunities.
- Energy planning is happening at local, regional, and national levels. There's a lot of work going on to identify which parts of the grid need reinforcement. There's a National Energy System Operator set up by the government to coordinate this.

Domestic Solar

The next two groups looked at solar panels on homes. A nominal 75% of homes in Shoreham was set as suitable for solar panels, i.e. having south, southwest or southeast facing roofs. West and east facing also works with a reduction in efficiency of about 15%.

The first group found solar on roofs totally acceptable except maybe on some historical buildings. However, domestic solar panels are not part of a community energy funding model - individuals would have to pay for them & navigate any available grants.

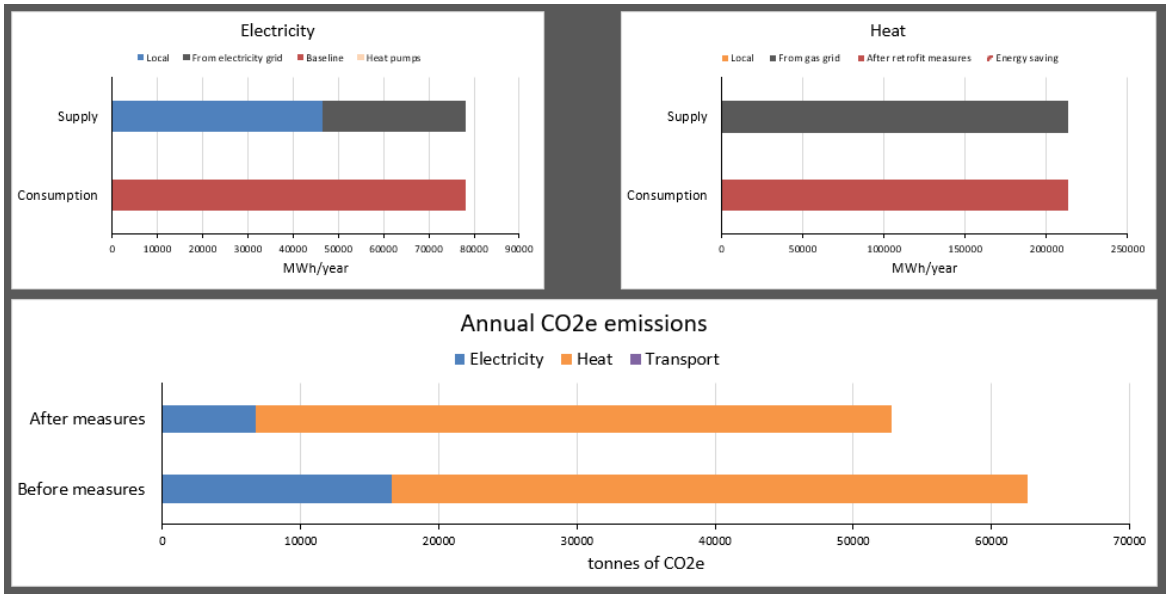
The second group agreed, adding that the people who want the technology, can't afford it. Both groups thought there is mistrust in the industry - people are already not investing so why would they change their minds. The groups concluded that to get a significant uptake a coordinated effort through trusted non-for-profit schemes is needed that educates, advises and guides people to find the right products, finance, etc for their specific needs.



Impact of 30% of local homes having 10-12 solar panels

The blue line of the electricity graph above, shows that if 30% of Shoreham's homes (about 5,000 homes) each had 10-12 solar panels this would generate about a quarter of Shoreham's annual electricity requirement and reduce the carbon emitted by between 5-10%.

If this were increased to 75% of homes (12,000 houses), more than half the annual electric requirement would be generated with carbon emissions reduced by about one sixth. See graph below.



Impact of 75% of local homes having 10-12 solar panels

The wider group shared their responses and discussed the following points:

- There are recycling schemes to extract the main components of solar panels, silica and aluminium, when they reach their end of life. The challenges are creating the conditions and markets for this to happen, and more is needed in

this area. To note – solar panels often have a guarantee for 20-25 years, however they are likely to be productive for far longer than this, 20-40 years.

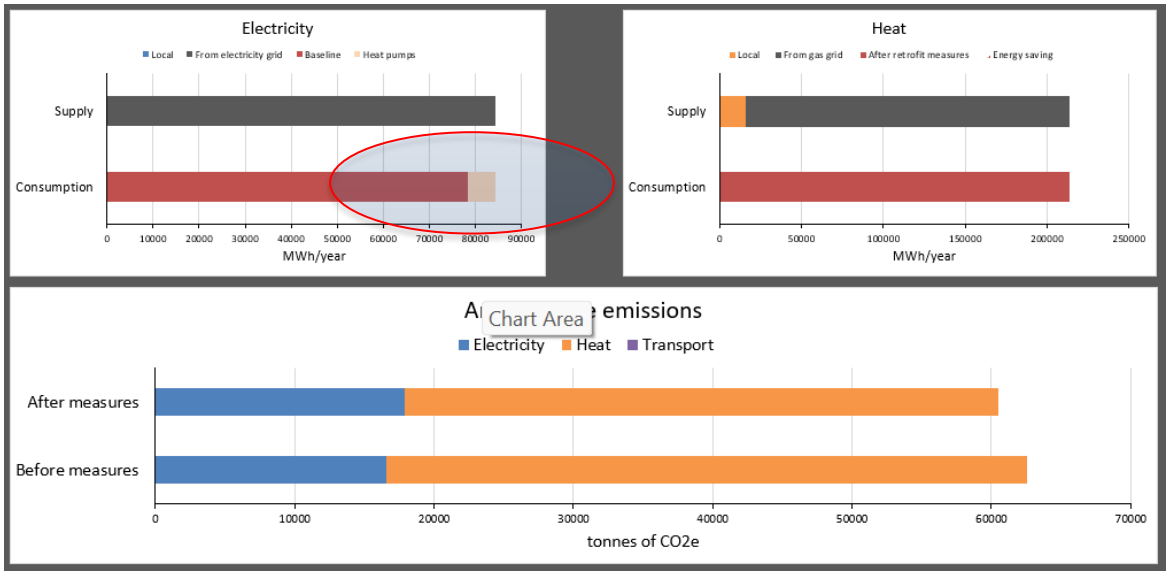
- There is a perceived requirement that a return on investment is what motivates people to invest in solar panels. It was concluded that we need to develop the value in our planet & the emotional investment in a similar way to how we currently invest in and value our family, a new car or kitchen where there is no expectation of a financial return.

Heat pumps

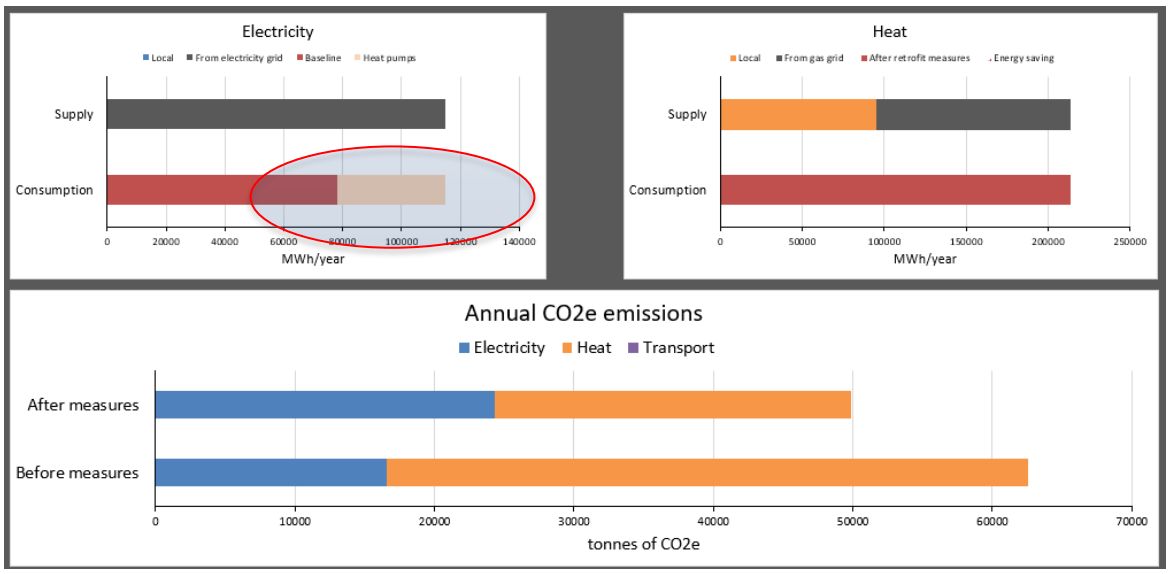
The final two tables looked at air source heat pumps as a low carbon heating system to replace gas boilers. We suggested that, notionally, around 75% of homes in Shoreham could be suitable for a heat pump, although the real figure is likely to be higher.

The first table felt 'lukewarm' about heat pumps however considered them acceptable because they are unobtrusive in the right place and suitable particularly for new buildings, rating them between three & five out of five. The perception was that they don't heat well and may be unsuitable for the elderly and better suited to workplaces and industrial areas. Other areas of concern included buildings needing to be well insulated for heat pumps to work effectively, retrofitting older buildings, availability of qualified engineers, particularly as demand grows, the cost of installation, even with government grants and concerns about noise. The table estimated around 60% suitability overall.

The second table was more positive about heat pumps as renewable, low carbon energy, but noted they are not always the most attractive units and can be quite bulky. Despite liking the technology, participants were cautious and estimated only 10% uptake initially. Heat pumps were considered suitable for car parks, community centres and for larger buildings and blocks of flats, where a single system could serve multiple homes, improve efficiency and reduce per unit costs.



Impact of 10% of local homes having a heat pump



Impact of 60% of local homes having a heat pump

The above two graphs show the impact of 10% and 60% uptake of heat pumps respectively. The second graph demonstrating that 60% uptake of heat pumps could reduced the amount of gas used in Shoreham-by-Sea by almost 50% with a quarter reduction in overall carbon emissions.

Although heat pumps increase the electricity use (see the pale pink area, circled in red on the electricity graphs), they are highly efficient generating around three units of heat per unit of electricity used. This significantly reduces the overall energy consumption and cuts carbon emissions from heating. Heat pumps are central to the shift away from gas heating. The second table suggested using solar panels on large buildings to fuel air source heat pumps would be suitable for large builds.

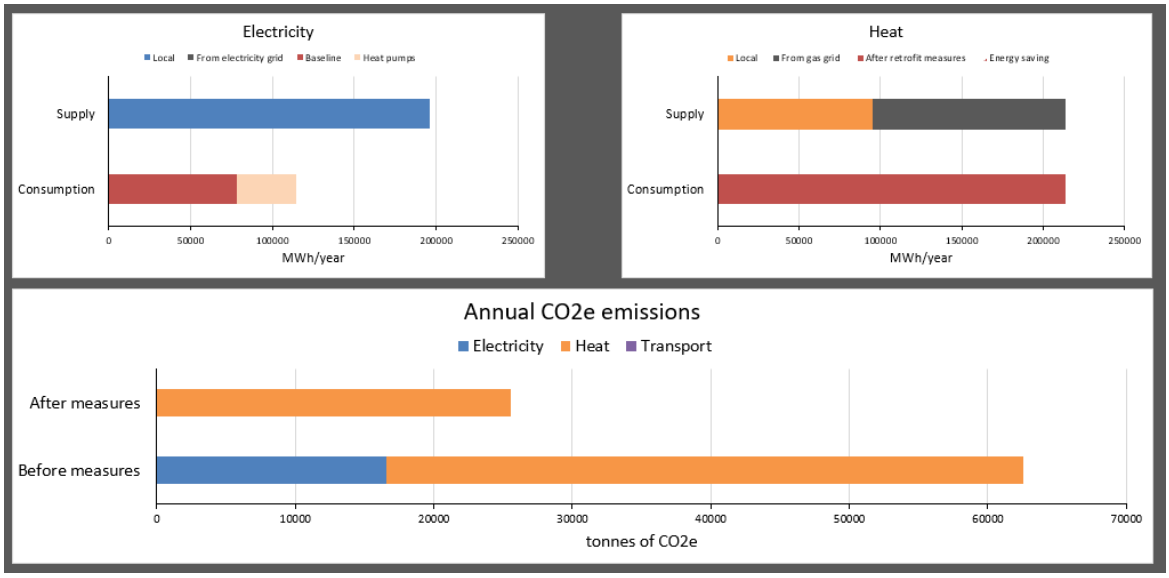
The wider group shared their responses and discussed the following points:

- One attendee described their own experience of installing a heat pump. Initially they worried about the visual impact and noise, but once installed, they found it completely silent and no longer wanted to hide it. Proper system sizing was emphasised as essential for good performance.
- We noted the Eco Open House events in April, where some local homes with heat pumps will be open to visit. There are also national schemes allowing people to visit heat pump installations.
- Heat pumps use more electricity, so insulation quality remains essential — just as with a gas heating system.
- Electricity currently costs 3–4 times more per unit than gas, making running costs a concern until the grid is further decarbonised and electricity prices fall.
- Heat pumps work well with radiators, not only underfloor heating; larger radiators can compensate for lower water temperatures.
- There was interest in heat pumps for social housing, with housing associations and councils already beginning to roll them out.

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 the technologies.

For this we input into the CESAR tool the number of technologies suggested that were acceptable in the local area to see what the impact would be on supply and demand.



Shoreham-by-Sea's Future Energy Landscape

The above chart represents the combination of the maximum technologies discussed (though we ran out of time so not demonstrated) at the workshop.

- 30 x small, 20 x medium & 10 x large wind turbines
- 100 large rooftops – each 220 panels (500 meters square)
- 75% of homes with 10-12 solar panels
- 60% of homes with an air source heat pumps

Retrofitting

If we can make our homes more energy efficient, they will need less energy to heat.

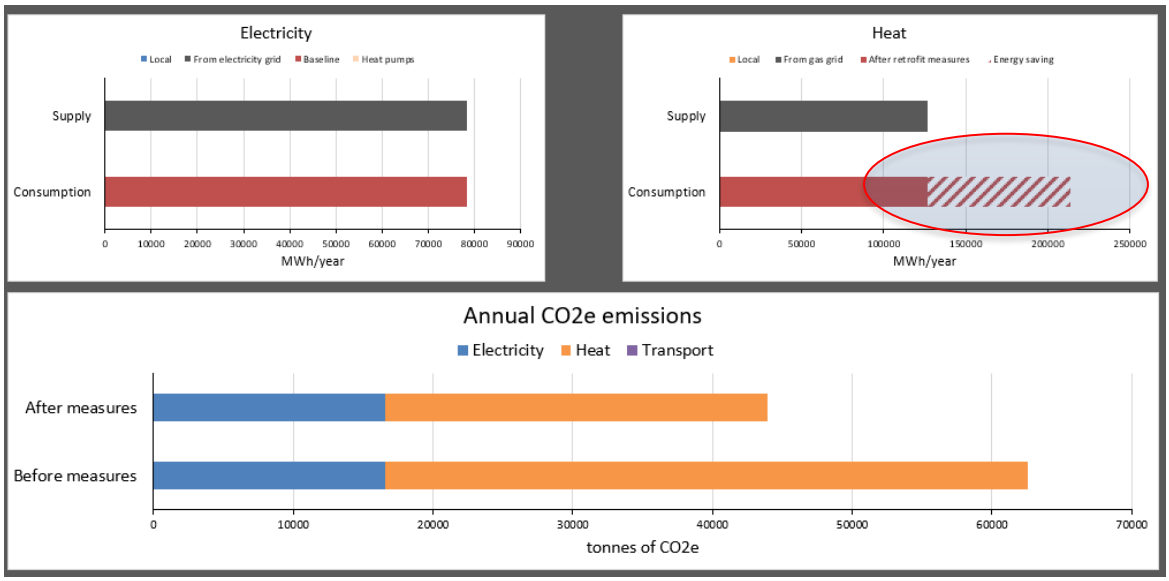
The CESAR tool allows us to look at how making homes more thermally efficient could reduce the heat demand, and therefore the energy required by Shoreham-by-Sea, based on some broad assumptions made about the local housing.

We suggested that 30% of local homes were built pre-1930 and 50% were built between 1930-1990 with 20% of homes built after 1990.

The below heat graph, with the dashed red bar (highlighted with a circle), 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 almost halve the local heat demand. This demand reduction is the important

starting point, but it must be carried out by the individual household and so it is hard to influence.

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.



Impact on the heat demand following a local retrofit programme

Conclusion and recommendations:

It was a great to have the local people of Shoreham-by-Sea come together 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 acceptable where they live.

This was a hypothetical conversation where we put to one side constraints such as planning, cost and grid capacity. These are very real practicalities, particularly in the South Downs National Park and would have to be considered to initiate a future community energy project.

The idea is to provoke local awareness and spark ideas about how we can all play our part in the energy transition. Here are a few suggestions from the workshop that the local community might take forward:

- Share this report and Shoreham-by-Sea community survey more widely so that as many people in the local community can share their thoughts.
- Map out potential sites for large rooftop solar and explore conversations with local owners about the potential for community owned projects.
- Introduce local trusted installers to the school and support a project to get solar on the school roof.
- Support local farmers with identify feasible roof space for solar generation.
- Ensure the local community is kept informed of changes to funding around domestic solar and heat pumps.
- Identify opportunities to support local homeowners with how they might better insulate their homes, signposting to advice or using a thermal imaging camera to show the leaks.
- Support and champion the Local Electricity Bill by following Power for People.
- Mobilise local people to put pressure on the local authority to demand and enforce higher standards from developers building the new affordable housing in Compton.

There is no simple solution but this workshop format demonstrates how people learning together in their local context can shape local action. Sometimes these community conversations open local possibilities about generation projects but they also highlight what is critical and needs to be done at a national level through policy to help us all transition away from fossil fuels.

Appendix 1 - Tools, assumptions and research

Tools

Future Energy Landscapes: toolkit here

CESAR (Community Energy Saving Renewables) 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

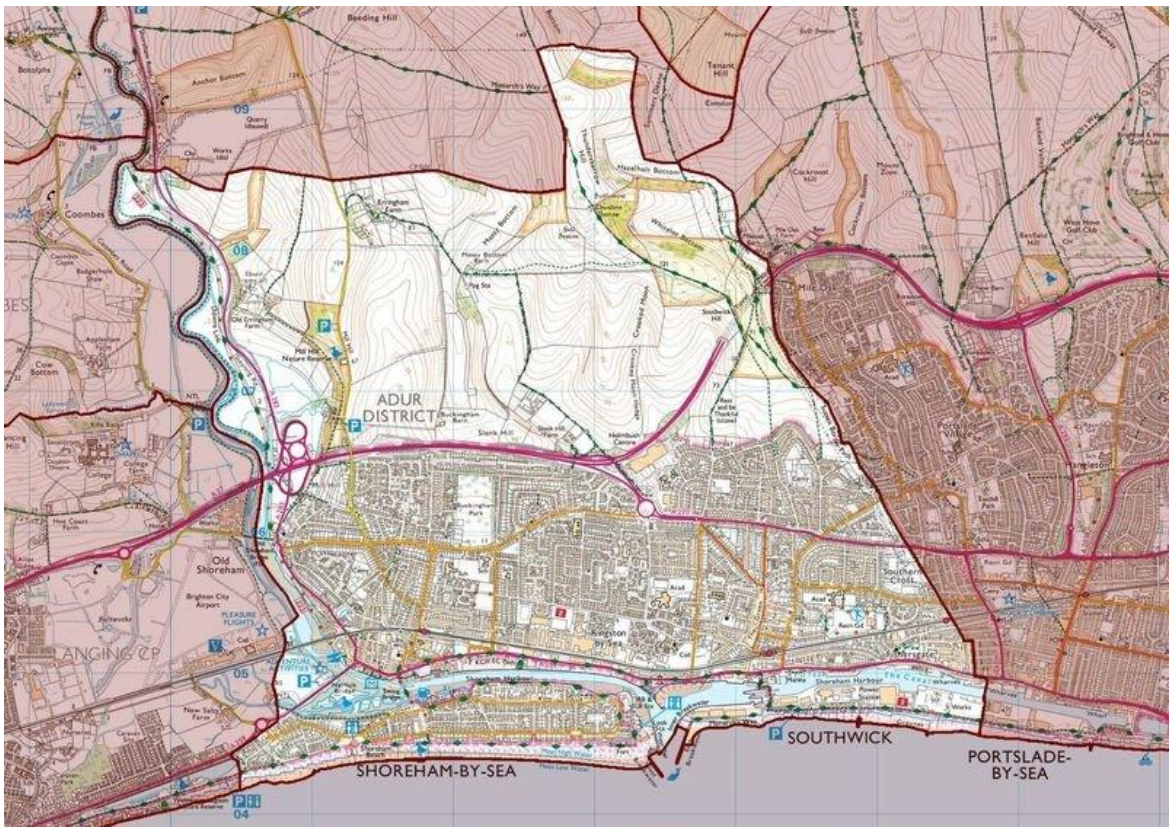
West Sussex County Council (2024) Energy Strategy 2024

Energy South2East – towards a low carbon economy LOCAL ENERGY STRATEGY

Adur & Worthing Councils Carbon Neutral Plan – Working towards the 20230 target AECOM

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

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