South Wonston's Renewable Energy Conversation

Results of the 2024 survey on community energy in South Wonston

Introduction

This initiative was driven by a belief that as the world switches away from fossil fuels to renewable energy, the first step for a community such as South Wonston should be for the residents themselves to decide whether they wanted to set up (and profit from) their own renewable energy scheme and if so, what form it should take.

This process should provide a space for residents to voice their opinions, express their concerns and if they so wished, to learn more about their options. After all, residents know their village better than anyone else! Also that this should be a purely hypothetical exercise, carried out before any actual proposal appeared over the horizon.

The project was instigated by South Wonston Sustainability, which is a working group of the Parish Council and was kindly funded by the Parish Council and Winchester City Council.

It began with a 'Future Energy Landscapes' workshop in October 2023, which was designed and facilitated by the Centre for Sustainable Energy (a Bristol charity); you can see a summary of the workshop here or for printed versions of this report, at swsustainability.co.uk/energy-conversation.

The goal of the workshop was for participants to learn what the feasible options for renewable energy in the parish of South Wonston were, to consider which – if any - might be acceptable and to understand how this could meet the energy demands of the parish.

The 20-odd participants agreed on four options they felt would be acceptable:

1. A wind turbine (or two)
2. A solar array or 'farm'
3. The installation of solar panels on our larger buildings e.g. the Pavilion, the Village Hall etc.
4. A goal of 10% of homes in the parish to have heat pumps installed.

They discussed suitable locations for the first two options, the terms of any such projects and the idea of generating more energy than the parish uses.

The participants represented as broad a cross-section of the village as possible but nevertheless, their conclusions could only ever be the start of the conversation; the next step was to ask all residents whether or not they agreed.

Accordingly in early Spring of 2024, all homes in South Wonston received information on how to complete a follow-up survey, which was entirely anonymous and an impressive 209 people responded. As one would expect, the whole spectrum of attitudes was expressed with many ideas, opinions and points raised.

This final step of the project is a summary of the survey results, it gives the percentage of respondents who were happy, neutral or unhappy with each suggestion. It also gives as accurate a cross-section of the additional comments as possible, while keeping it a readable length.

Links to appendices of further information and fact-checking are given throughout, also links to a further breakdown of the statistics for those who would like to see them.
Read on for the conclusions and recommendations and page 7 onwards to find out just what was said about the four suggestions, followed by demographic information and the appendices.

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Conclusions

This project has shown that a decisive majority of the residents of South Wonston are in favour of a community renewable energy scheme, providing it meets certain conditions.
If potential biases are taken into account, see appendix 7, this majority is likely to be greater rather than lesser.

<u>And the winning technology is….</u>

1. NON-DOMESTIC SOLAR PANELS, for example for the pavilion or school, with a 73% approval rating and a further 18% being neutral.

2. A solar 'farm' was the second most popular with an overall approval rating of 68% and a further 14% neutral.

3. A wind turbine – or two – came third; it also had an overall approval rating of 68% but a lower neutral rating of 9%, leaving nearly a quarter unhappy with the suggestion.

4. Heat pumps were the least popular, though still had a majority of 62% approving and a further 21% neutral. There were actually two parts to this question, which asked how respondents felt about:
   a) The goal of 10% of homes to be fitted with heat pumps (including those already fitted) and
   b) The requirement that all *new* homes in South Wonston should be fitted with heat pumps.
   Many people had done their homework on heat pumps and concluded that it wasn't feasible to retrofit them to their own homes, so did not approve of the first part.

Making it a requirement that new builds be fitted with them was much more popular but this part of the question was sometimes mistaken to be about whether we should have any new development in the village *in the first place*, which is indeed a hot topic at the time of writing but is a very different question.

On the question of over-generation - or generating more electricity than South Wonston uses - for both financial and environmental reasons, a resounding 74% were happy and a further 18% neutral.

The 'ayes'

Comments in favour included:

- Those who very much liked the idea of clean energy and – if the Local Electricity Bill passes into law – a degree of independence from national/global energy supply issues and pricing.
- Many spoke of the urgent need for more renewable energy if today's children and grandchildren are to have a sustainable future.
- The idea of a solar farm was more popular with some because it can peacefully co-exist with wildlife and in some cases, farming.
- A number of respondents thought the suggested locations, see map here, were sensible.

'On the fence'

Many respondents were unsure or said they would like more information, perhaps because these were all highly hypothetical suggestions that were therefore short on detail. While it's not technically possible to connect a comment with a rating, it is reasonable to assume that many of these comments were associated with 'neutral' ratings.

The 'nays'

The 'dissatisfied' or 'very dissatisfied' ratings were more obviously associated with certain comments, which were sometimes vehement, such as *'the person who suggested this in the first place wants their ears boxed'*. These ratings also tended to be more extreme, with those who were 'very dissatisfied' outweighing those who were just 'dissatisfied' with nearly every question. Nearly 5% of respondents were opposed to all four suggestions. Some comments gave no reason but overall, the main objections were:

- The potential loss of agricultural land, which was perceived as increasing dependence on imports.
- The potential impact on biodiversity, especially birds, bats and trees.
- The aesthetic effects.
- The perceived reliability and efficacy of the technologies.

Recommendations

1. The most popular suggestion, that of non-domestic rooftop solar, is probably also the simplest to implement. There are a number of community buildings in South Wonston but the pavilion, with its car park and recreation grounds, have the advantage of being wholly owned by the Parish Council.

   Therefore, the first recommendation would be to consider installing solar panels on the pavilion building and if possible, over at least part of the car park, with battery storage. This could reduce the pavilion's electricity bill and/or, depending on the size of the installation, directly benefit residents with a small number of electric vehicle or bicycle charging points, which could conveniently be used while their drivers are using the pavilion or recreation facilities.
   It is a relatively small project with relatively smaller rewards but it *is* relatively easily achievable, whereas the subsequent recommendations would need a team to take them forwards.

   This option uses no agricultural land, has no impact on biodiversity and uses a well-established and reliable technology. The aesthetic effects are of course subjective but a raised canopy of solar panels over the car park would provide shade to vehicles in hot weather and – much more frequently in England – shelter from rain and the occasional snow.

   There is potentially funding already available, for example Winchester city council is able to support local energy generation projects through the Community Infrastructure Levy.
   The village hall, school and Church could also be considered but have more complicated ownership structures.

2. The next recommendation would be to consider the possibility of a solar farm in either of the locations suggested but the preference is for the eastern end of the parish. The first steps here would clearly be obtaining landowner permissions and a feasibility study.

If this option proved feasible, this survey would indicate that organisers should anticipate the following concerns from residents:

- Chief among these is likely to be the loss of farmland, however there are facts and figures available (see appendix 2) that are likely to reassure most on this point.

- Similarly, questions about the efficacy of solar panels (in a cold and often cloudy country) would need to be addressed in the same way.

- Another objection is likely to be the visual impact of a solar farm. A computer-generated image of how it would look from the main part of the village and from local roads and bye-ways may be helpful here.

- Many comments made it clear that this proposal would only be acceptable on condition that residents received some benefit, such as a reduction of their energy bills. This would obviously be linked to the business model chosen so clear communication and consultation on this would be vital.

A visual display of the amount of electricity used by South Wonston currently and the amount that could be generated with varying sizes of solar farm, would probably be helpful.
Likewise, sharing examples of other community solar farms, such as West Solent Solar near Lymington, also Meadow Blue Community Energy near Chichester.

3. The third recommendation would be to consider the possibility of a wind turbine in the location suggested. Landowner permission and feasibility would again need to be studied, in this case including the issue of local aircraft. Some of the concerns to be anticipated are the same as for a solar farm but:

- The chief objection raised here was the possible impact on birds, bats and other animals including horses. This could perhaps be compared to the impact on all life on earth if the worse predicted effects of climate change are not averted?

- There were more reservations about the aesthetics, both in terms of visual impact and of noise from wind turbines, than with a solar farm. It would be well worth considering smaller turbines and again, images and audio recordings of how much noise turbines make - for example compared to local roads - may be helpful.

- As with solar energy, another point frequently raised was efficiency; in the case of wind turbines, when there is too little or too much wind.

- The condition of benefit to residents also applies, as with a solar farm.

Again, an illustration of current use and how this would compare to the energy generated by different sizes of turbine would be useful, also examples such as Lawrence Weston near Bristol, whose mayor proudly said *'Renewable energy doesn't need to be owned by big companies – it can be owned and run by communities'*

The suggestion of aiming for a goal of 10% of homes to have heat pumps is not recommended for the reasons given under 'Conclusions (4)' above, however the goal that any new builds have heat pumps was popular. The difficulty with this is obviously finding a way of creating such a regulation; perhaps hard economics including the increasing demand for energy-efficient homes would be the best argument to use with developers.

South Wonston Sustainability does not currently have the capacity to take the larger recommendations forwards, however If you would like to volunteer to be part of a team to do so, please email sustainability@southwonston-pc.gov.uk.

Wind turbines 

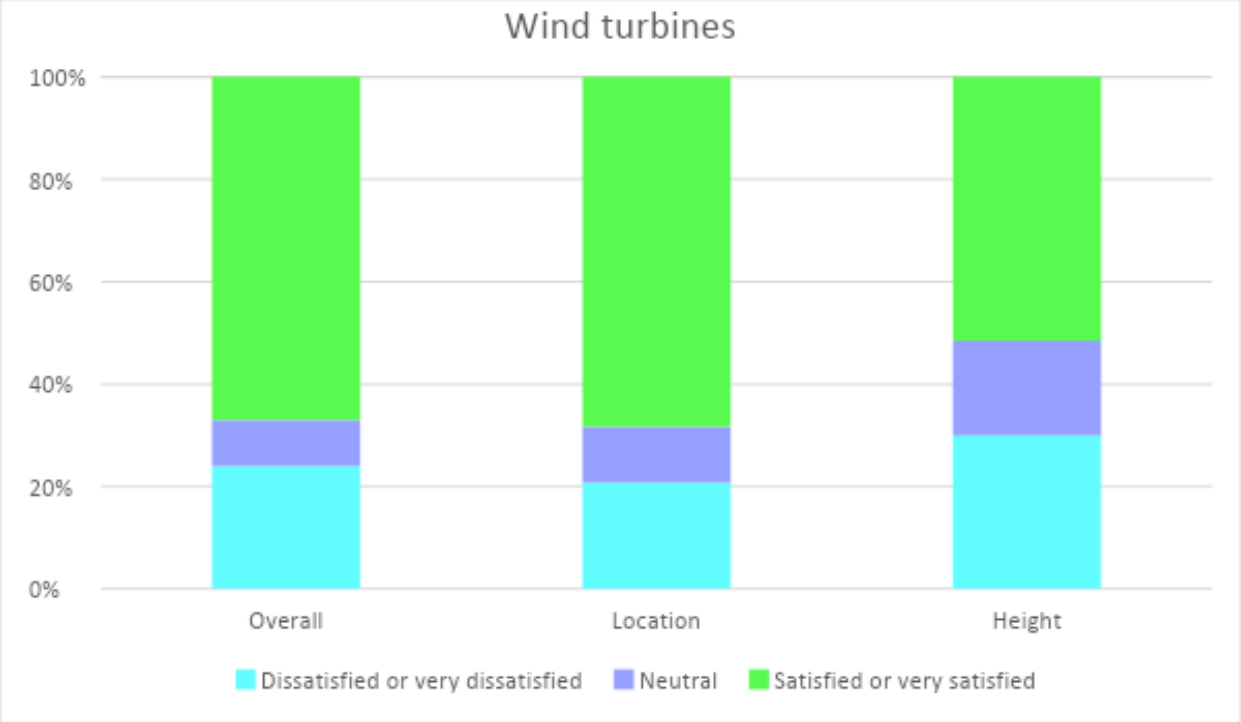
Wind turbines were suggested to take advantage of the elevated position of the village. Workshop participants suggested two medium to large turbines, with a maximum hub height of 100 metres (approximately three times the height of the water tower).

You can see the two suggested locations for the wind turbines here (for paper versions, see map attached); the suggestion of the western end of the village was tentative and made in the knowledge that there may be problems both because of the tall trees and the nearby airfields. However, the locations were considered otherwise acceptable because there is already continual road noise from the A34 and disturbance from the oil well at the western end, and the less attractive pig farm at the eastern end of the village.

Larger turbines were suggested because the efficiency of wind turbines increases disproportionately with height; doubling the wind speed gives eight times the wind power and of course, wind speed increases with height.
However, two large (2.5MW) turbines would provide at least double the amount of power that is currently used by South Wonston. The issue of over-generating was addressed later in the survey.

There were three different questions in this part of the survey:

1. How do you feel overall about the suggestion of wind turbines?
2. How do you feel about these locations for the suggested wind turbines?
3. How do you feel about the height of the suggested wind turbines?



Of the 208 who responded, nearly 68% were happy with the suggestion overall, 9% were neutral and 24% were unhappy.

With the suggested locations, 68% were happy, 11% neutral and 21% unhappy.

This fell to 53% being happy with the suggested height of the wind turbines, 18% neutral and 29% unhappy. This may be because workshop participants were given information on the advantage of extra height but this wasn't conveyed in the survey. See appendix 1 for more general information on wind turbines, including the advantage of extra height.

There is a further breakdown of the figures at appendix 9 .

1. How do you feel overall about the suggestion of wind turbines?

The 70 comments on this question broadly fell into 5 categories, showing many people had similar thoughts.

I. The impact on animals and nature, in particular birds and bats, was the number one concern. This is perhaps hardly surprising in a village that is surrounded by nature.

- *'Yes to turbines but not at the expense of trees. We need to preserve nature at all costs.'*
- *'They might be a bit harder than solar, given the red kites and other wildlife, not to mention Popham and all the Chinooks going over at low level. Also they are honestly just*

more complex and noisy. I'd prefer solar for speed and simplicity.'

II. The second category of comments was about the efficiency and reliability of wind turbines.

- *'I do not agree with wind turbines being used as they do not supply a constant power. No or little wind, they stop or too high wind speed and they need to turn off to prevent damage'.*

- *'I would be happy with either location but should be sited where they are most efficient.'*

III. A number of respondents raised the question of aesthetics in terms of both noise and appearance.

- *'Has noise been taken into account i.e. will those nearest …. be disturbed by the noise (whoosh) these turbines produce, especially at night?'*

- *'It would have significant visual impact, but so does the general built environment. Such visible constructions always become a feature of the landscape. Woodland, open fields, rural buildings come and go. All have had their use and met community needs.'*

- *'The look of Wind Turbines does not bother me. We need to rise above the looks to look at the impact humans are having on the planet.'*

IV. Several respondents pointed out possible problems due to aircraft locally.

- *'Don't forget that MoD has a dedicated "flight lane" running west to east along the whole southern edge of the village. This is used by helicopters, often flying at well under 500 ft. Siting of wind turbines might need to take this into account.'*

- *'Too tall for local flight paths, Popham, Eastleigh and Army Flying School at Middle Wallop'*

V. Last but not least was the question of money and whether the residents of South Wonston would benefit or suffer financially.

- *'ONLY if the monetary value of the electricity generated by these 2 proposed wind turbines, is used or offset, to reduce the energy bills of residents' houses in South Wonston.'*

- *'My property will lose significant value. 5% with these situated nearby. Are you willing to pay me the difference?'*

Other respondents made more individual points:

- *'I really like this idea. Well done for looking into this. One concern that it might make the village attractive to more house building, so would there be an agreement somehow that there wouldn't be a huge expansion of the village (mainly due to lack of other resources)'*

- *'A small modular reactor would produce power 24x7, remove the need for panels and wind turbines, work when there is no wind or sun, and be more aesthetic'*

- *'…The low frequency hum causes illness in people, there are huge technical difficulties in connecting them to the grid, the concrete bases go so deep they disturb the water table.'*

  For a response to these particular concerns, please also see appendix 1.

2. How do you feel about these locations for the suggested wind turbines?

Regarding the suggested locations, many people didn't mind either way and some objected to both locations but where respondents expressed a preference, the pig farm area to the east won over the western location by 8:5.
The comments on this question included the following:

- *'We need to look at sustainable power and given the suggested positioning it would appear no homes are directly affected.'*

- *'Personally Eastern End of village, but I imagine wind is the key decision'*

- *'The site west of the village near the A272 is a very bad idea as it's right next to a bridleway. I'm concerned about horses being spooked and serious accidents occurring. I'd prefer the site to the east of the village (pig farm).'*

- *'While either site may be suitable, I feel the western end would be a better option. With the existing water tower and solar farm that end, it would match with both the existing skyline land use. It would also have a clear visual impact from nearby major roads, marking South Wonston as a community looking towards a sustainable future.'*

3. How do you feel about the height of the suggested wind turbines?

As previously mentioned, fewer respondents were happy about this although the majority remained either supportive or neutral.
42 respondents commented in this section:

- *'The height should be based on maximising wind not on what I think is acceptable or not'*
- *'100m to the hub is very high....I think we should consider less height and less output. In my view the output only needs to match (not exceed) the village's current and future needs.'*
- *'Any height would be obtrusive.'*

Solar farms 

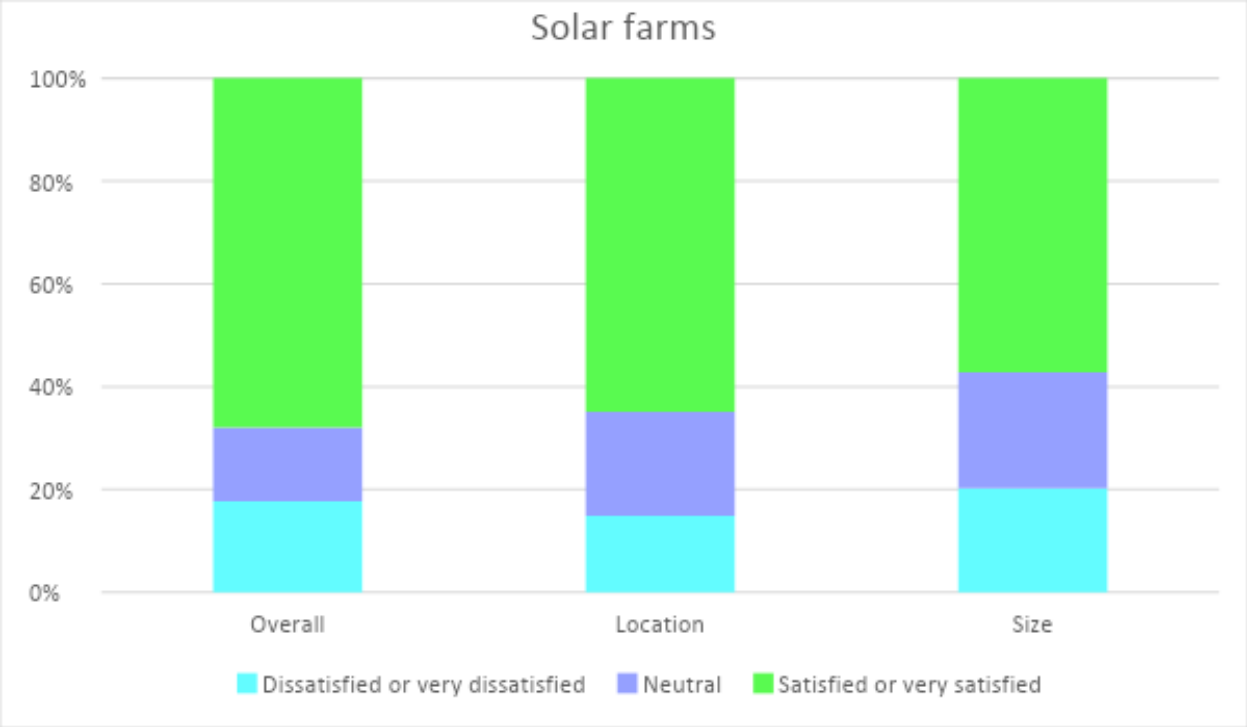
Workshop participants decided a 100 - 125 acre solar farm would be acceptable at the eastern end of the village in the area of the pig farm and be generally preferable to a wind turbine, though this would ultimately depend on the trade-offs and benefits of each.

This size would generate 20 – 25MW of electricity; well under the 50MW limit at which central government approval is required but still at least 4 or 5 times more than the needs of South Wonston. Again, the issue of over-generating was addressed later in the survey.

As before, there were three different questions:

1. How do you feel overall about the suggestion of a solar farm?
2. How do you feel about this location for the suggested solar farm?
3. How do you feel about the suggested size of the solar farm?

You can see the suggested location of the solar farm here or attached to printed versions.



209 respondents answered this question.
Overall, exactly the same proportion as for wind turbines - 68% - were happy, 14% were neutral and 18% were unhappy.
On the location, 65% were happy, 20% neutral and 15% unhappy.
Regarding size, 57% were happy, 23% neutral and 20% unhappy.
There is a further breakdown of the figures at appendix 9 and see appendix 2 for further information on solar farms.

1. How do you feel overall about the suggestion of a solar farm?

Again, there was a lot of agreement between residents on their thoughts and feelings, both for and against this suggestion with the 60 comments made falling into four main categories:

I. The use of agricultural land for solar energy; twelve people were doubtful or against this, which is perhaps to be expected in a community that is surrounded by farmland. Several people felt positive about it. Again, see appendix 2 for some relevant – and perhaps surprising - facts on land use for solar energy vs agriculture and 'agri-voltaics', which combine the two and are becoming popular with farmers as they maximise land use.

- *'We need the agricultural land to support our food requirements! We import far too much with the consequential environmental cost.'*

- *'Solar in fields is ok providing that they are created such that animals can graze beneath them. This is the approach in Portugal as you then get the best use of the land.'*

- *'The land there is poor agricultural land, thin clay over chalk. The Pig Farm is contributing to groundwater pollution and a solar farm a much better option for the environment and the wildlife'.*

II. The second-largest category of comments (7) revolved around the fact that there is already a large, privately-owned solar farm just outside the parish boundaries, with respondents questioning the need for a separate, community-owned solar farm. For an explanation of the differences between the Three Maids Hill solar farm and a community-owned one, see appendix 3.

- *'Is there not a huge solar farm alongside the A272? Does this bring any advantages to South Wonston?'*

- *'The solar farm which has been placed in the fields near the water tower are an utter disgrace - massive impact on environment/nature/wildlife locally and an absolute eyesore. Also being built on archaeological sites - not sure how this has been allowed to go through.'*

III. Another common concern was - as with wind turbines - the environmental impact in terms of visual impact and effect on biodiversity.

- *'Neutral at moment. They are quite a 'blot on the landscape' even if 'hidden'. But better than fossil power or power station!'*

- *'it is industrialising the landscape- local councils should be protecting the landscape- many people are walkers/dog walkers. Impact on local wildlife- not environmentally friendly and often have intrusive cctv. They are hugely inefficient and visually intrusive.'*

- *'Solar farms have less impact on the ground, ie there is still grass growing under the arrays and could at some point in the future, as other technologies are developed, be returned to farm land and no potential archaeology would be lost. They are also far less visible than turbines and do not produce noise and flickering shadows and are less likely to frighten horses and other animals.'*

IV. Lastly was a concern about efficiency and sustainability.
For fact-checking on this issue, see appendix 2.

- *'They are again costly on carbon footprint to ship in and install the technology is too new and they do not last for many years.'*

- *'Solar in UK only produces 10% of capability on average during November-February period. Very inefficient use of resources...'*

- *'Solar panel technology is advancing rapidly and even in England is a viable source of energy.'*

- *'We need an array of renewables which complement each other. Solar Farm needs to be in addition to wind turbines.'*

Individual comments and ideas:

- *It would inhibit housing development (positive) and would be unobtrusive.*

- *…'The MOD plans to build a wind farm adjacent to Worthy Down camp to support that camp. I would suggest working with the MOD to provide energy to both Worthy Down and the village.'*
  NB: Worthy Down say that the MOD are not going ahead with their project there at this time but have decided to do a trial in the north. However, apparently the idea has not been completely disregarded and may be proposed again in the future.

2. How do you feel about the location of the suggested solar farm?

There were 30 comments on this.

- *'I can't suggest anywhere else that would be more acceptable.'*

- *'Need to position Solar Farm where it has the least environmental impact on the village because this has to be a sustainable solution'*

3. How do you feel about the size of the suggested solar farm?

The comments included the following:

- *'The suggested size seems excessive for this village's needs. 125 acres is a huge plot.'*

- *'The bigger the better.'*

Individual comments and ideas:

- *Has anyone thought this through or is someone just accepting a payoff?*
  For a response to this point, see appendix 4.

- *In my opinion this is the wrong allocation of land usage…. there should be solar panels on existing public buildings such as car parks, railway stations, civic offices, police*

stations, hospitals etc.

- *This is undoubtedly another necessity to effectively produce renewable energy and eradicate fossil fuels - which we are well behind achieving already ☹*

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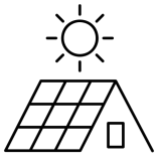
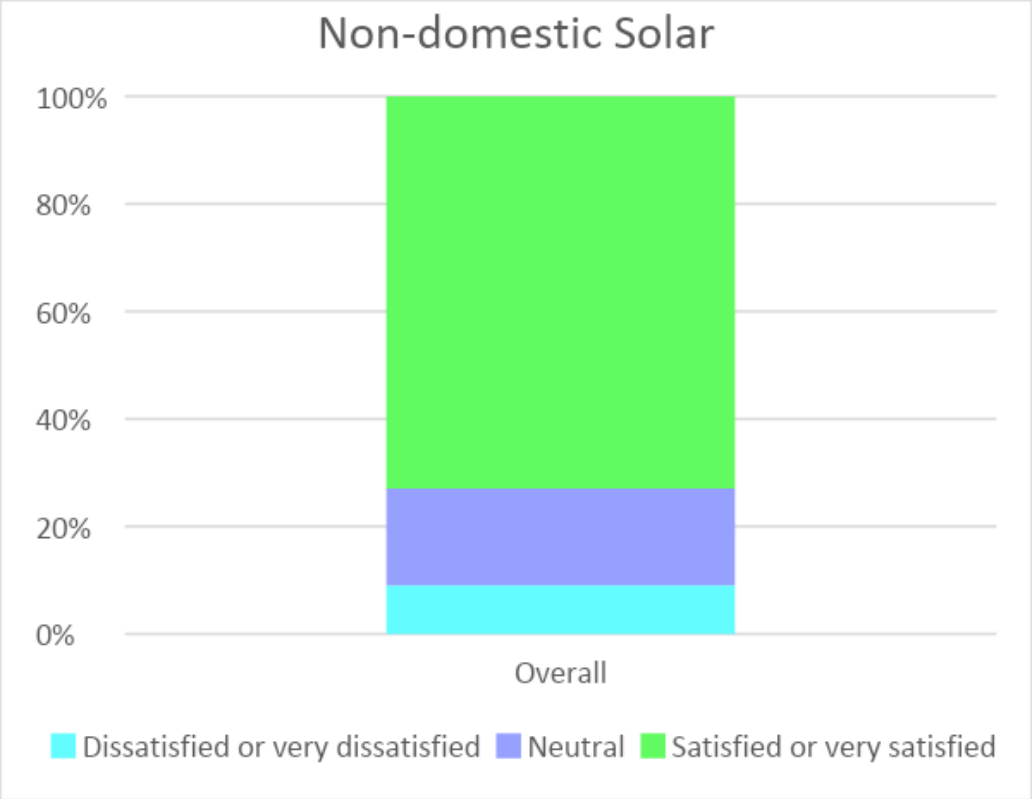
Non-domestic rooftop solar 

Domestic rooftop solar (PV panels, providing electricity) is clearly a decision for individual homeowners, however, there are several possible locations for *non*-domestic rooftop solar on the community buildings in the parish. None were specifically proposed in the workshop but would include the pavilion, St Margaret's Church, the school and the village hall.

Grants are available or energy co-operatives such as Energise South Downs, Energy4All or The Greater South East Net Zero Hub can help fund such projects if necessary, guaranteeing cheaper energy for the 'landlord' of the panels.
If installed on parish or County Council facilities, these lower bills could indirectly benefit the community by making more money available for other purposes or perhaps directly benefit them with, for example, vehicle charging points.
Rooftop solar panels on a larger building will usually pay for themselves within five years or so, after which all the electricity generated is essentially free of charge.



Survey respondents were asked only one question, as size and location were undefined:

How do you feel overall about this suggestion?

Of the 208 responses, an even larger majority than previously (73%) were happy with this idea overall, 18% were neutral and 9% were unsatisfied or very unsatisfied; see here for a further breakdown.

The 44 respondents who added comments did so on three main topics:

I. Finance and ownership

- *'The initial expense is large and how would this financially operate?'*
- *Still the most inefficient means of generating energy and "profit" would be taken by the landlord, not the community.*

See appendix 3 for a brief response to these points.

II. Wider policy decisions

The next largest group was of respondents, who were keen to see this idea adopted as a matter of policy.

- *'I have solar panels and I think all new properties that have a suitable roof should have solar panels (Kingsworthy/Barton Farm!!) Existing commercial properties should also have solar panels.'*

- *'All new builds should have solar and zero gas connections as part of the planning permission.'*

- *'It might be interesting to note that in France, public and private car parks with a capacity of 80 or more spaces will be required to install solar panels above parking spaces. The French government is introducing this in a phased way. The parking area at the Pavilion could be looked at as an additional "solar collection space" and hooked into solar panels on the Pavilion roof.'*

III. Personal experience

Some respondents were enthusiastic about their own experience:

- *'I already own PV panels and a Tesla battery array, best thing I've ever done!'*

- *'I have roof top solar panels and I am very happy with them'*

- *'I have seen them on agricultural buildings abroad. Excellent idea; the more the merrier!'*

Other comments and ideas

- *'I should like to increase our carbon footprint which would make the earth greener and have zero effect on temperature.'*
  See appendix 5 for some - perhaps frightening - information on that.

- *'You shouldn't put solar panels on a Church roof, other public buildings are arguably ok.'*

In addition, three people suggested the school as a potential site.

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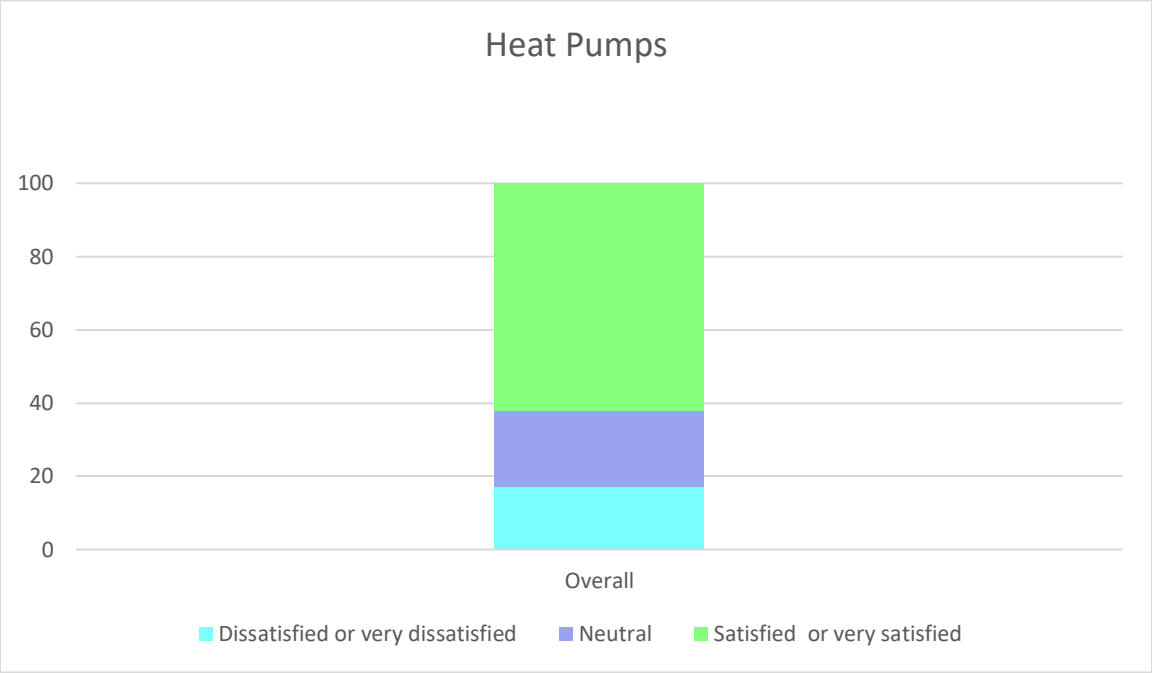
Heat Pumps

As with domestic rooftop PV panels for electricity, domestic air or ground source heat pumps are a decision for individual home-owners. However, this group of workshop participants felt it was reasonable to aim for at least 10% of homes to be fitted with air source heat pumps, especially as some residents already have them.

They also felt that where possible, the electricity that is required to run a heat pump should come from renewable energy technology. Although it is currently not feasible to retrofit heat pumps on a community scale, they felt that they should be considered for any new housing developments in the village and that in any case, any such developments should certainly be carbon neutral.



As for non-domestic solar, no size or locations were proposed so there was only one question in the survey:

How do you feel overall about this suggestion?'

Of the 207 people who responded to this question, 62% were in favour, 21% were neutral and 17% were unhappy with the idea.

The reason for this slightly lower approval rating is perhaps evident from the 54 comments made; it was apparent that many people had already looked into heat pumps for themselves and concluded it was not cost-effective for them.
See appendix 9 for a further breakdown of the figures and see appendix 6 for further information on heat pumps.

This question engaged many respondents, with 54 comments that fell into 5 main themes; many respondents covering several of these at once.

I. Efficiency

This was the single biggest concern, often combined with cost-effectiveness. Most were in reference to retrofitting existing properties though a few people did not think heat pumps were an effective technology anyway.

- *'Retrofitting existing systems can prove costly and very disruptive.'*
- *'… More expensive than traditional heating systems and don't react as quickly when you want to turn up or down the temperature. '*
- *'PV solar fed heat pumps are a good approach but buildings need the insulation to be really good in order to be effective… existing radiators and insulation could not really support the heat pump.'*

II. New builds and wider policy decisions

The second largest type of comments were from those who strongly agreed that heat pumps should be fitted to all new homes, with most adding that this should be a matter of policy.

- *'I feel strongly that all new housing developments should have community heating. It's outrageous that this didn't happen with the Barton Farm development'*
- *'Definitely new builds should have them and the government be encouraged to continue not only the current installation grant but also to help with the cost of adapting old heating systems to work from such pumps.'*

III. Cost

Cost has been treated as a separate category as a number of people mentioned cost alone but, in many cases, it could have meant cost-effectiveness; see 'Efficiency' above.
Several respondents felt that financial help should be available, again as a matter of policy.

- *'It would be beneficial to propose a discount for existing home-owners or a scheme to encourage them'*

The Boiler Upgrade Scheme grant of £7,500 is available for any heat pump that replaces a fossil fuel boiler. This grant is not means tested, so it is open to households on any income level. The

government is currently consulting on whether to make heat pumps compulsory in all new homes from 2025.

- *'Air Source systems are expensive to purchase, more expensive to run than an efficient gas boiler, and expected operating lifetime no better than a cheap gas boiler.'*

  Again, see appendix 6 for a reply to these points.

IV. Noise

Several people were concerned about the reputation of heat pumps for being noisy.

- *'Is it still the case that externally sited heat pumps generate a noise that can be disturbing for both occupants and neighbours?'*

Modern heat pumps are quiet, producing around the same level of noise as a domestic fridge.

V. Housing development in South Wonston

The original suggestion from workshop participants was that any new housing development in the village should have a community-scale heat pump. It was not a question about whether we should have any new housing development in the first place but was sometimes taken as such.

- *'… We should STOP putting things in place for when there are new developments, it's like we are agreeing in principle to this…Stop making it easy for developers!'*

NB The suggested stipulation was that *developers themselves* must install community scale heat pumps for any new development. If this makes it easier for them, they will surely do it anyway…

Other comments and ideas:

- *'Consideration of a larger ground source heat pump, possibly in the playing field, with turf recut and replaced. (This suggestion may not be practical).'*

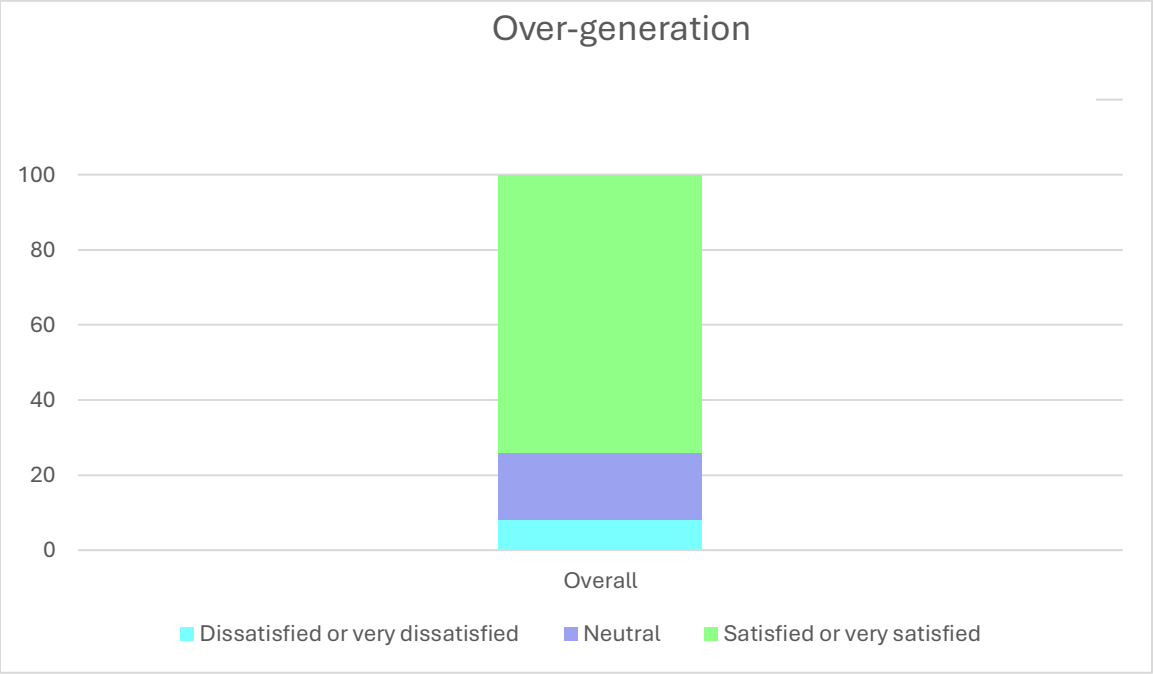
Over-generation

The suggested wind turbine and solar farm would each generate more energy than the village uses and a combination of technologies would generate considerably more.
Depending on the funding model chosen, this could provide a good return on investment.
Community energy schemes can provide a return for individual investors or could benefit the community, for example by:

- Setting up an electric car loan scheme.
- Providing electric vehicle recharging
- Providing a bike and/or electric bike scheme
- Providing grants towards insulation and/or solar rooftop panels

Overgeneration would also help to offset the higher carbon emissions from urban areas that have no space for solar farms or wind turbines and from the industries and services on which rural communities such as ours depend.

Residents were asked 'How would you feel about South Wonston generating more renewable electricity than it uses?'



Those who remained unhappy often did so because of confusion about the financial benefits of over-generating to community investors, showing that possible models were not adequately explained in the survey.

There were 55 comments, which largely fell into 3 categories.

I. Approval

Over two-thirds of this happy group specified that their approval was conditional on over-generation being of benefit to South Wonston (the remainder may have felt the same but didn't specify it) or that it didn't affect biodiversity or aesthetics.

- *'As long as we as residents benefit.'*
- *'Only if the generation of renewable electricity directly benefits residents of South Wonston. If it were to be used for the new EV charging site at Three Maids Hill, I would be against it.'*

- *'Providing this is not done with wind turbines, as they are detrimental to birds, noise and to our rural setting.'*

The other third gave unconditional approval; for example as a way of 'future-proofing' against increased demand and energy insecurity.

- *'It's our contribution to communities that live in more densely populated areas. Think of it as agriculture'*

- *'It would be far better to exceed expected demand rather than end up with a system that is underpowered in ten years - something governments tend to be good at.'*

II. Finance and management

The second largest category of comments was those that were *primarily* about finance and management.

- *'Communities should provide what it needs not look to profit and expand this has been the problem with the world chasing a fast buck'*

- *'I would like to know who will manage these installations, including selling the energy but specifically on-going maintenance.'*

- *'I am in complete opposition to a commercially-owned or a combination as over the years and historically these sort of partnerships tend to always be in favour of the commercial side except where funds are needed for maintenance or investments. Commercial involvement would move a green project for the community towards a profit-making project for salaries and bonuses.'*

III. Disapproval

- *'There are many other things needed first.'*

- *'When India and China reduce their emissions I will support UK reducing its 1% contribution to global emissions.'*
  See appendix 5 for a response to this.

'Is there anything that would make you feel better about overgeneration?'

Closely linked to the previous question, there were 62 responses in this section. Some were simply questions or comments but of the clear answers, the categories were very similar to the previous question.

I. Approval

Over half of respondents reiterated their approval of over-generation with nearly two-thirds *of these* making it conditional on there being benefits – particularly financial - to South Wonston and that it be properly managed.

- *'If it could be used for charging electric cars at a central point in the village'*

- *'If part of any excess generation could also be reinvested in the community through a fund to support local community projects and supplement but not replace city/parish funding for such things.'*

The remaining third gave unconditional approval:

- *'… we think it is a very good idea.'*

II. Disapproval

Seven people expressed doubts or disapproval and five more gave a simple 'no' answer to the question, with no reason given.

- *'Just create enough for our demands'*

- *'I would like to know who sits on this group and what there current salary or wealth is so that we all understand who we are dealing with. Are there any companies involved who would financially gain?'*
  See appendix 4.

This survey is for you to have your say in South Wonston's renewable energy conversation. Do you have any other comments, new suggestions or anything else you would like to add?

55 respondents added comments in this section of which 7 emphasised their disapproval of any of the suggested community renewable energy schemes and 35 emphasised their approval, clearly concerned about climate change.
The remainder fell into neither group, sometimes offering alternative approaches, sometimes being unsure or neutral and some simply had nothing to add.

- *'Don't waste the money repair the roads and put more money into the School. Hydrogen will take over soon.'*

- *'All of these ideas are great and should be pursued. There will be a lot of belly aching from some people I would think, but we live in an area that has so much space and so many options. It's very selfish to be a lucky/privileged as we are and not be able to see*

the bigger picture.'

- *'I like the idea of all of these things and the locations suggested seem appropriate as they would not adversely affect any villagers or property values.'*

- *'The climate crisis is the biggest threat to our current way of life that we are experiencing. If we don't roll out renewable energy now, across the UK and across the world, life will be much worse for our children and grandchildren'*

Many respondents wanted to go further:

- *'Please also consider grid scale storage which is rapidly becoming much cheaper'*

- *'I would like to know if there are any suggestions/plans surrounding water sourcing/usage/conservation…. Whilst we have many conscious gardeners who are already using water butts to collect rainwater, are there any plans to collect this precious resource from public buildings?'*

- *'Alongside this initiative I would like to see a concerted effort to improve biodiversity. We need to understand why we are doing this….Trees, hedgerows, habitat, wildlife, beauty, calm, walking, peace, tranquillity, health ...**Breathe**.'*

Demographics

To check that the survey had included all parts of our community, respondents were asked about their age group, employment status and ethnicity.

The questions were optional but fortunately, 90% of respondents still answered all three, allowing a useful comparison between the profile of South Wonston as a whole and that of respondents. It shows that the survey *had* included all parts of our community in relation to these questions, if not in quite the same proportions regarding age; the under 40's were under-represented and the over 40's were over-represented, particularly the baby boomers.
The representation of the ethnic groups was quite accurate.

For a fuller picture of the demographic comparisons, see appendix 8.

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Appendices

Appendix 1 - wind turbines

a) Impact on birds, bats and others including horses & humans (eg causing illness).

While wind turbines do kill some birds, other sources of electricity are more lethal for birds than wind energy. This study found that wind projects kill 0.27 birds per gigawatt-hour of electricity produced, compared to 5.18 birds killed per gigawatt-hour of electricity from fossil fuel projects. That's partly due to collisions with equipment, but mostly because of the environmental impact of fossil fuels. And for comparison, this article from BBC Science Focus gives an estimate of 10,000 - 100,000 birds killed annually in the UK by wind turbines, against 55 million birds killed by domestic cats.

The British Horse Society gives this advice:
People with experience of horses will agree that anything from a leaf to a double decker bus can evidently appear terrifying to them at any time for no obvious reason. Equally, horses over the centuries have proved immensely adaptable as they have learned to accept gunshots, drums, trains, motorbikes, umbrellas and many other inventions that occur in daily life. The BHS has received more reports of horses being undisturbed by turbines than of adverse reactions, and few where the horse's response has not eased with familiarity and sensitive handling, so do not assume that wind energy projects will have a negative effect on your horse or your access opportunities or business.

A meta study published in 2014 reported that no clear or consistent association is seen between wind turbine noise and any reported disease or other indicator of harm to human health. Twenty-five peer-reviewed studies have found that living near wind turbines does not pose a risk to human health. The studies looked at a range of health effects from hearing loss, nausea, and sleep disorders to dizziness, blood pressure, tinnitus, and more. Recently, a new study using retrospective data reported that stress, as measured by hair cortisol levels, was not associated with proximity to wind turbines.

b) The advantage of increased height.

At higher heights above the ground, wind can flow more freely, with less friction from obstacles such as trees and buildings. At some sites, every ten metres up the wind speed can increase by 20% and the power output by 34%.

The potential power generation of a wind turbine is a square function of its blade length - e.g. doubling the blade length from 50 meters to 100 meters might increase the potential power output by a factor of four.

c) Efficiency/value if no wind, carbon cost of manufacture and maintenance difficulties

A modern wind turbine produces electricity up to 85% of the time, generating different outputs dependent on wind speed. In a study done by Oxford University, it was found that in the UK, the windiest country in Europe, the wind is always blowing somewhere and a diversified portfolio of wind power developments would deliver electricity during all hours. The more wind farms that are built over a wider geographical location, the more reliable wind energy is. One of the main advantages of wind power is that the available wind resource is much greater during the colder months of the year, when energy demand is at its highest.

The carbon payback period for a wind turbine is 6 - 12 months; this is how long it will take to offset the greenhouse gases emitted as a result of its construction. It takes into account the carbon emitted by the extraction and manufacturing of raw materials, production of the turbines,

their transport, erection, operation, maintenance, dismantling and disposal, and the same for their foundation and the transmission grid.

Although every wind turbine requires scheduled maintenance, improvements to sensors mean that operators can more easily predict major faults and failures. While previous turbines relied on condition monitoring to detect failures in generators and bearings, modern turbines have fluid and vibration sensors that can detect gearbox failures before they happen.

d) Noise - decibels compared to nearby A34? How far does their noise typically travel?

This study found no detectable effect of simulated wind turbine infrasound on sleep quality parameters. A survey of all known published measurement results of infrasound from wind turbines concluded that upwind infrasound levels are very low, while downwind levels drop below assessment criteria after several hundred metres. This review of several studies found that the risk of annoyance or disturbed sleep from wind turbine noise has a tolerable limit of around 35dB, while this recent study found that wind farm noise is not more disruptive to established sleep than road traffic noise.

On average, land-based, utility-scale (large) wind turbines produce sounds that fall in the range of 35–45 dB when heard from 300 metres away, meaning they are no louder than a typical refrigerator (50 dB).

e) Concrete bases impacting the water table... seems it can happen but how about in the proposed locations?

As part of the planning process, an Environmental Impact Assessment would include identification and mitigation of any potential impact of a wind turbine on groundwater. This guidance from the Northern Ireland Environment Agency illustrates how this would be carried out.

For more information, see https://home.uni-leipzig.de/energy/energy-fundamentals/15.htm

For national wind speed data: https://www.rensmart.com/Maps

Appendix 2 Solar farms

a) Agriculture vs solar farms

To meet the government's net-zero 2050 target we need less than 1% of the UK's agricultural land for solar farms. That's even less land than used by all of the golf courses in the UK.

Agrivoltaics, also known as agro-photovoltaics, agrisolar, or dual-use solar, is becoming popular with farmers as it maximises land use; solar farms can still be used for grazing and in fact, sheep can help to keep solar farms maintained.

As solar farms generate income, they also provide UK farmers with a revenue stream to continue food production on their land and support other aspects of their agricultural business. Plus, solar farms can actually help to give intensively farmed land an opportunity to recover, while still providing income for the farming business.

However, planning consent is usually only granted for solar farms on low grade agricultural land (ie 3b or below).

b) Efficiency when there's no sun…

Solar works well everywhere in the UK. Solar panels don't need direct sunlight to operate, and they produce power all year round. Solar can already produce as much as 30% of UK electricity at different points in the year. By utilising smart grid technology and incorporating backup plans, such as energy storage and smart inverters, solar power systems can provide a stable and predictable source of electricity.

c) Does solar panel manufacturing produce more carbon emissions than the panels save over their lifetime?

No. In fact, solar projects save thousands of tonnes of carbon emissions over their lifetime. While some carbon is emitted in the manufacture of solar panels – as with all manufactured products – claims that solar panels produce more carbon than they save are false. Research has shown that the carbon payback period for solar panels is on average 1-4 years.[9]
This means that over a solar panel's lifetime – typically 30 years[10] – it will generate zero-carbon and zero-pollution electricity for decades after any carbon emitted during its production has been paid back.
Many solar projects also include other elements that actively remove carbon from the atmosphere, such as planting trees or hedgerows, which can offset any carbon emitted during the manufacturing of the panels.
The UK's first transmission-connected solar farm, which went live in 2023, is expected to generate enough to power the equivalent of over 17,300 homes annually and displace 20,500 tons of CO2 each year compared to traditional energy production.
As manufacturing processes advance, it's likely that the carbon payback period will decrease further.

d) Are solar panels recyclable?

Yes. There are well established industrial processes for this and, in most cases, up to 99% of the materials in a solar panel are recyclable.

See https://www.nationalgrid.com/stories/energy-explained/solar-power-questions-answered for these and more questions answers.

Appendix 3 Community-owned renewable energy schemes

a) How do these work?

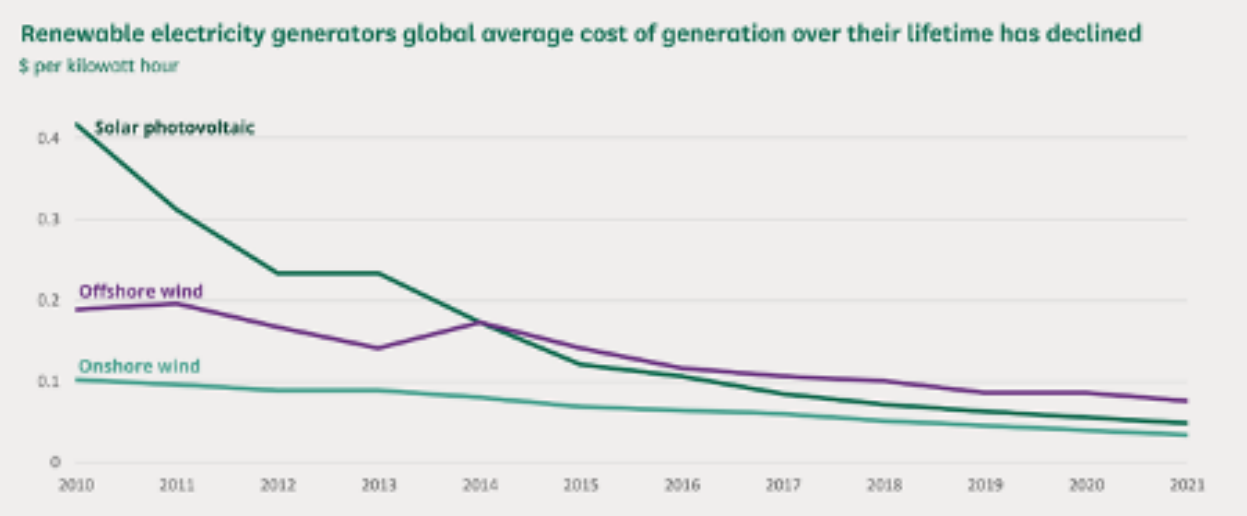
All renewable energy production will help reduce carbon emissions - the more solar farms and wind turbines that are built, the less energy will need to be produced by burning fossil fuels, such as coal and natural gas. All electricity is fed into the national electricity grid, but if communities have some ownership of renewable energy production, then some of the financial benefits can stay in those communities. This can be interest payments on community shares or profits being used for funding community projects.

Not-for-profit community energy organisations (locally Energise South Downs, or nationally Possible, Big Solar Co-op, Younity etc) raise money for installing renewable energy by selling community shares. Energy Local sets up local energy clubs that enable households to club together and use local renewable energy at a cheaper price (when it is generated).

These are in contrast to schemes like the Three Maids Hill solar array, which is owned by a private investment company, with no benefits to any of the surrounding communities.

b. How is energy priced?

The cost of renewable electricity generation has significantly decreased in the past decade - in 2021 (before gas prices soared) the global average lifetime cost of electricity generation for new solar panels was 11% lower than the cheapest new fossil fuel generator, while onshore wind was 39% lower. Despite this, the price paid for wholesale electricity on the 'spot market' (where around two fifths of electricity is thought to be sold) is largely determined by the price of natural gas, as much of this type of electricity is produced by gas-fired power stations. Wholesale gas prices are determined by how much it costs energy suppliers to buy gas from domestic and international producers. Which means that natural gas prices rise and fall in line with global demand and affect electricity prices in the same way.



https://powerforpeople.org.uk/the-local-electricity-bill/

Appendix 4 – Project integrity

This project has been run solely by *volunteer* residents, for residents. No pay-offs, no other personal gains - quite the opposite.
And although Winchester City Council and South Wonston Parish Council funded this project, neither they or any other organisation or company had any influence over the suggestions made by workshop participants or indeed, any other input or financial interest.

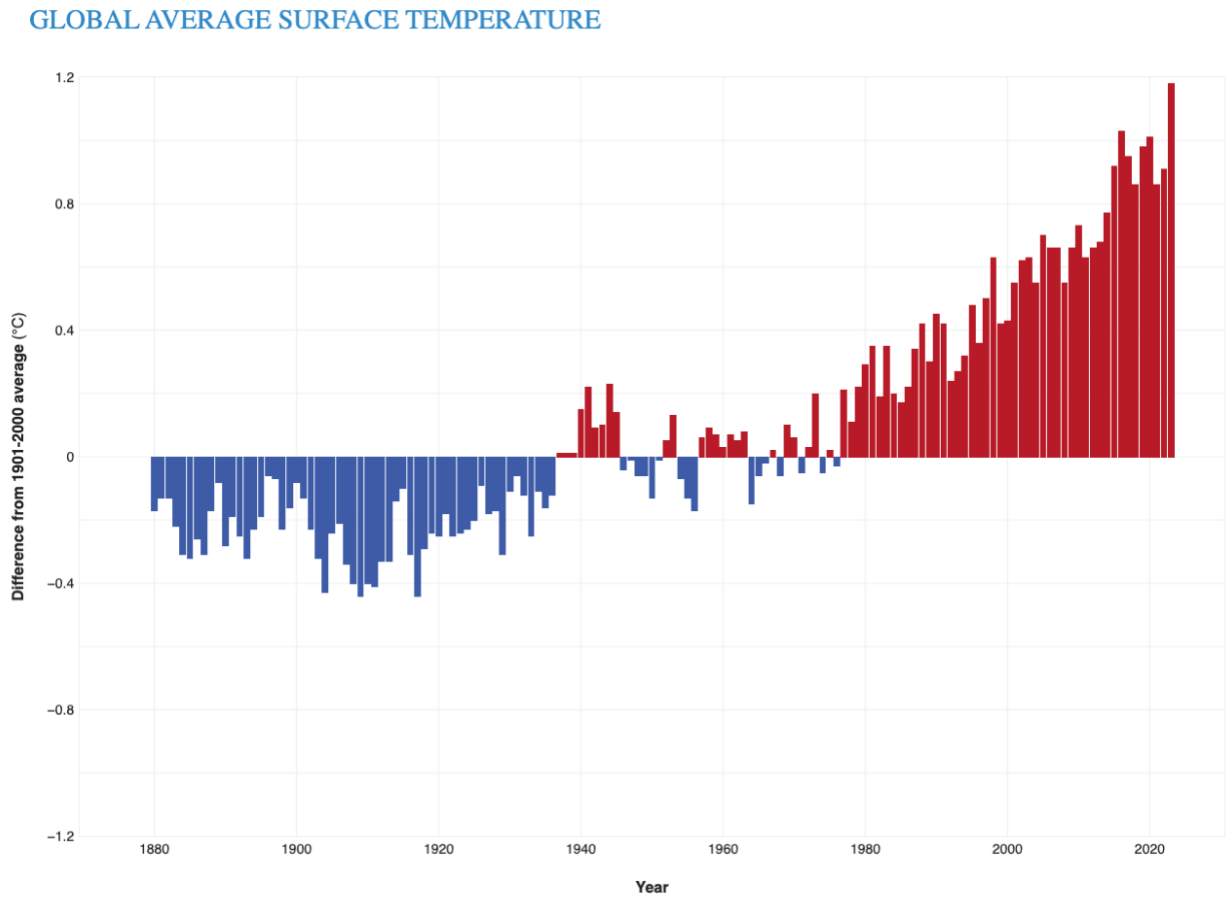
Appendix 5 - What about the climate science?

a. Do we really need to change?

In 2023, the United Nations' Intergovernmental Panel on Climate Change finalised its sixth assessment report on the climate crisis. It was described as the biggest peer review process ever carried out in the scientific community - 234 scientists from 66 countries contributed to just one of the three working groups and the final report drew on more than 14,000 scientific papers and was approved by 195 governments (which means it was almost inevitably watered down from early drafts). The report's main conclusion was that the evidence is clear that carbon dioxide is the main driver of climate change and that it will only be possible to avoid warming of 1.5 °C or 2 °C if massive and immediate cuts in greenhouse gas emissions are made.

Over the last 400,000 years (longer than homo sapiens has existed) the concentration of carbon dioxide in the atmosphere has fluctuated between 180 and 280 parts per million - it is now at 419ppm. Looking at the cumulative carbon emissions per person since 1800, the UK is now the 8th highest country in the world. Currently, the UK government is aiming for net zero carbon by 2050, China by 2060 and India by 2070.

From https://www.climate.gov/graph-dashboard-global-average-surface-temperature:



b. 'I'll reduce my carbon emissions when India and China reduce theirs.'

When India surpassed the European Union in total annual greenhouse gas (GHG) emissions in 2019 becoming the third largest emitting country after China and the United States, that statistic only told part of the story. India's population is nearly three times larger than that of the EU, so based on emissions per person, India ranks much lower among the world's national emitters.

China is often referred to as the "world's factory," manufacturing a large percentage of the world's goods. Many of these goods are exported to other countries, meaning a substantial share of China's GHG emissions are linked to products consumed elsewhere.

A 2018 study estimated that about 25% of China's carbon dioxide emissions are linked to goods produced for export (Reference: *Zheng, B. et al., 2018, Nature Geoscience).*

https://www.weforum.org/agenda/2023/05/global-per-capita-emissions-explained-charts

https://www.globalcarbonproject.org

https://www.iea.org

c. Will plants die if carbon dioxide levels drop?

As noted above, the carbon dioxide levels in the atmosphere are now at least 50% higher than pre-industrial levels, when plant life evidently did just fine.

Moreover, while higher CO_2 levels might initially boost yields for some crops, the combined negative effects of nutrient decline, increased heat stress, more intense droughts, and competition with weeds are likely to outweigh the short-term gains in the long term. These factors complicate food security, particularly in regions already vulnerable to climate change.

https://www.noaa.gov/news-release/carbon-dioxide-now-more-than-50-higher-than-pre-industrial-levels

https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/

https://www.fao.org/policy-support/tools-and-publications/resources-details/en/c/427091/

Also USDA reports, for example The USDA's *Climate Change and Agriculture in the United States* report.

For those who remain unconvinced, there is an old African proverb:

'It is better to mistake a bush for a lion than a lion for a bush'.

Appendix 6 - Heat pumps

Heat pumps are suitable for all building types. They will work more efficiently in a well-insulated building, but if they are sized and installed correctly, and radiators are sized sufficiently, they will keep any building warm. Air source heat pumps are around four times more efficient than gas and oil boilers, which means they need around a quarter of the amount of energy to produce the same amount of heat - hugely reducing the associated carbon emissions. As electricity is currently around four times more expensive than gas, they cost about the same to run.

For a smaller property, an air source heat pump is not much more expensive than a gas boiler. On average, these systems last for around 15 years. However, with proper maintenance and repairs, they can have an operating life of up to 25 years.

Appendix 7 - Possible biases

Non-response bias

All homes in South Wonston, with nearly 3,000 occupants, were notified of the survey. Of those, 209 people completed it. Even allowing for a proportion of children, this leaves a lot of room for a 'non-response' bias in the results, where more motivated individuals ie those with stronger views - both for and against - are more likely to participate. If those who were less

motivated did not participate or finish the survey, the 'neutral' ratings in particular may have been artificially low.

Demographic bias

As noted in Appendix 8 below, there was an under-representation of under-40's among respondents and a corresponding over-representation of 40-79 year olds.
While recent studies show that all age groups now report some level of worry about climate change, the younger age groups are more likely to be very worried, therefore their under-representation in the survey may have led to artificially lower approval ratings.

Other

It was clear from the comments that several questions should have included better information ie the nature of community energy schemes and energy pricing, also the disproportionate advantage of added height in wind turbines.
The question about heat pumps should have been two separate questions and the wording of the second part was not clear enough.

It is only possible to take a best guess at the influence of biases but it is much more likely that these biases kept the approval and neutral ratings artificially low, rather than inflating them.

Appendix 8 - Demographics

Age group

The South Wonston figures here are actually for the Wonston and Micheldever ward as a whole, which is the closest available.
The number of total residents in each 20-year age group up to the age of 79 are reasonably evenly spread with the total only dropping to 4% for the 80+ age group.

However, the profile of survey respondents had a distinct bulge of middle-aged and older residents, with 33% in the 40-59 age group and 50% in the 60-79 group (only .5% were 19 or younger and 6% were 80+.)

Employment status

Again, the comparison figures here are for the Wonston and Micheldever ward and exclude the under 16's, who are not included in the economic data of the Census.

The total number of residents (over 16) in full or part-time education is 6%, those who are working ('economically active') is 63% and those who are retired ('economically inactive') is 35%.

This compares to the profile of survey respondents, which follows logically from the above data on age groups:

4.5% of respondents were in full or part-time education, the lower proportion of 47% were economically active and the higher proportion of 43% were retired or 'economically inactive'.

Ethnicity

2021 Census figures here are for the parish of South Wonston itself. The total number of residents define themselves as follows:

- White: 91%
- Black/African/Caribbean/Black British: 1.5%
- Asian/British Asian: 3.5%
- Mixed/multiple: 3%

10% of survey respondents preferred not to answer this question so the figures in all groups were slightly lower but the proportions remained comparable.

- White: 86%
- Black/African/Caribbean/Black British: .5%
- Asian/British Asian: 1.5%
- Mixed/multiple: 2%

Figures are taken from the 2021 Census and the Office for National Statistics using the following websites:
https://south-wonston.parish.uk/census/
https://cuf.org.uk/parish/410370
https://www.citypopulation.de/en/uk/southeastengland/admin/winchester/E04004685__south_wonston/
https://www.postcodearea.co.uk/postaltowns/southampton/so213he/demographics/
Total population of the parish of South Wonston in the 2021 Census was 2,962. Figures have been rounded up.

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Appendix 9 – Further figures

Wind turbines overall

Answer Choices			Response Percent	Response Total
1	Very satisfied		40.87%	85
2	Satisfied		25.96%	54
3	Neutral		9.13%	19
4	Dissatisfied		6.25%	13

5	Very dissatisfied		17.79%	37
			answered	208
			skipped	1

Wind turbine locations

Answer Choices			Response Percent	Response Total
1	Very satisfied		31.88%	66
2	Satisfied		35.75%	74
3	Neutral		11.11%	23
4	Dissatisfied		4.83%	10
5	Very dissatisfied		16.43%	34
			answered	207
			skipped	2

Wind turbine hub height

Answer Choices		Response Percent	Response Total
Very satisfied		23.08%	48
Satisfied		29.81%	62
Neutral		17.79%	37
Dissatisfied		10.10%	21
Very dissatisfied		19.23%	40
		answered	208
		skipped	1

Solar farm overall

Answer Choices		Response Percent	Response Total
Very satisfied		41.15%	86
Satisfied		26.79%	56
Neutral		14.35%	30
Dissatisfied		6.22%	13

Very dissatisfied		11.48%	24
		answered	209
		skipped	0

Solar farm locations

Answer Choices		Response Percent	Response Total
Very satisfied		37.02%	77
Satisfied		27.88%	58
Neutral		20.19%	42
Dissatisfied		4.33%	9
Very dissatisfied		10.58%	22
		answered	208
		skipped	1

Solar farm size

Answer Choices		Response Percent	Response Total
Very satisfied		28.85%	60
Satisfied		28.37%	59
Neutral		22.60%	47
Dissatisfied		7.69%	16
Very dissatisfied		12.50%	26
		answered	208
		skipped	1

Non-domestic solar

Answer Choices			Response Percent	Response Total
1	Very satisfied		46.15%	96
2	Satisfied		27.40%	57
3	Neutral		17.79%	37
4	Dissatisfied		2.88%	6

5	Very dissatisfied		5.77%	12
			answered	208
			skipped	1

Heat pumps

Answer Choices			Response Percent	Response Total
1	Very satisfied		35.75%	74
2	Satisfied		26.57%	55
3	Neutral		20.77%	43
4	Dissatisfied		8.70%	18
5	Very dissatisfied		8.21%	17
			answered	207
			skipped	2