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charity

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The future of renewable energy in Debenham A Community Vision



A Community Vision

Reducing carbon emissions will require a huge number of new renewable energy developments, many of which will be situated in rural areas. This raises the prospect of potentially significant landscape impacts, as well as new income streams, arising from the energy transition.

But for new renewables in the countryside to be done well, local people must be better involved in the decision-making process to minimise the impacts of new developments on landscapes and allow for a just transition to net-zero.

The Suffolk Preservation Society

SPS is a charity that campaigns to promote, enhance and protect Suffolk's countryside and historic environment for everyone's benefit, wherever they live. We work with communities, businesses and government to find positive and lasting ways to help Suffolk's landscape and heritage thrive – today and for generations to come.

We work to connect people with the countryside so that everyone can value it and benefit from it. We empower communities to improve, protect and celebrate their local environment. Through all our work we look at the role of our countryside in tackling the climate emergency, including seeking ways to increase resilience and reduce impacts.

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The Community Energy Visioning Project

SPS is proud to support CPRE's innovative Community Energy Visioning Project in Suffolk. The CEV Project is designed to empower communities to set out their own agenda for renewable energy, to explore the needs and priorities of where they live and to identify potential solutions.

Too often renewable energy development proposals are imposed upon local communities. Those most affected often have little influence over schemes which are well advanced before their views are sought. The local community knows its own landscape, and it is important that potentially conflicting pressures can be brought together in a way which is acceptable to local people. The CEV Project is intended to address this need by drawing a consensus and highlighting ways forward which reflect the needs and wishes of local people.

About Debenham

Debenham is a village and civil parish, consisting of 3,271 acres, located 11 miles (18 km) north of Ipswich in the Mid Suffolk district of Suffolk, England. It is one of the five parishes that also include Ashfield, Framsdon, Pettaugh and Winston, which together comprise the Thredling Hundred.

Debenham is located within the Plateau, Rolling Hills and Ancient Estate clay-lands landscape typologies. The Suffolk Landscape Character Assessment highlights the key characteristics as: gently rolling valley clay lands which is typically undulating or flat, an ancient organic pattern of fields, a rich stock of medieval and later vernacular buildings, limited woodland but with small copses around farmsteads and where large modern agricultural buildings are a recurrent feature. It is a working agricultural landscape where suburbanisation is only beginning to make an impact compared with other parts of the county.

The surrounding soil, apart from near the streams, is a heavy moisture retaining marl-clay overlying chalk. Arable farming forms the backbone of the region's industry with crops consisting of barley, flax, rape seed, wheat and root vegetables including sugar beet.

At the 2011 census the parish population was recorded as 2,210, including the parishes of Aspoll and Winston, in about 878 households. It is currently estimated to be 2,274. It is estimated that there are currently around 1019 homes and 91 commercial buildings in Debenham.

During the workshops that informed this document, we spoke to Debenham residents with a wide range of backgrounds, including parish councillors, business and landowners, members of the local walking group, local farmers, members of the Debenham Green Team and other residents, all who attended in a personal capacity.

The climate emergency and the countryside

As councils and countries declare a climate emergency, the impact is already clear in our daily lives. The seasons are on the move, crops grown for generations fail and some species hover on the brink of extinction. Our countryside is changing - and we need to make sure it does so in a way that helps mitigate the impacts of the climate emergency and creates a countryside that we can all cherish.

In recent years, floods from heavy rainfall have brought to life the devastation a changing climate has on our daily lives. Summer 2022 was one of the driest and hottest on record, impacting upon crops, livelihoods and the general wellbeing of many.

Farmers will increasingly struggle to grow our food and maintain their livelihoods in the face of such extreme weather, pushing the resilience of the countryside and its communities to the limit. And some of our most cherished natural icons, such as English oak trees and beloved wildlife like hedgehogs and bumblebees, face challenges to adapt to changing weather patterns. Ecosystems are facing collapse and the biodiversity of our countryside is declining unabated. All of this threatens the look, feel and health of the landscapes we know and love.

The decisions that we make now, and the approaches that we take, will shape our countryside and its communities for years to come. It's essential that we get it right from the start.

That is why SPS is working closely with our sister charity CPRE, the creators of the Community Energy Visioning process - to empower the people of parishes like Debenham to set out where and under what circumstances they believe that new renewable energy could be sited within their local landscape.

The Community Visioning process

The process used to create this vision was developed by CPRE, The Countryside Charity, building upon previous work with the Centre for Sustainable Energy.

It involved a series of three workshops in which residents of Debenham came together to discuss how they felt renewable energy could be appropriately integrated within their local landscape.

In the first workshop attendees discussed their connection to Debenham and the countryside around it. Residents identified areas in the local landscape that they cherished, as well as those places that they felt less positively about and the features of their countryside that were important to them but had been lost due to landscape change. This discussion set the context for how residents would react to potential changes to their landscape as a result of new renewable energy developments.



The second workshop focused on issues to do with energy infrastructure and how much electricity Debenham residents need. Using a tool (the CESAR spreadsheet) developed by the Centre for Sustainable Energy we were able to explore how much renewable electricity would need to be generated in the Debenham landscape in order to meet the current and possibly future needs of local residents, and how much different types of technology, like solar panels or wind turbines, could contribute towards this.

In the third and final workshop attendees identified general locations for where renewables could be sited. Issues around who would own and profit from new renewable energy schemes in the Debenham countryside were also discussed, as were ways that the impact on the landscape of these schemes could be minimised.

Workshop findings

How Debenham views itself:

In the workshops it was clear that the residents of Debenham have a strong sense of pride in their village and their ability to make things happen:

‘A place that gets things done’

referring to the early adoption of its Neighbourhood Plan; the Ukrainian Project hosting refugee families; and the Debenham Dementia Project which supports families affected by dementia.

When asked why the village was so pro-active at addressing social and environmental challenges the responses were:

‘It’s the right thing to do’

‘There is value in looking after people’

‘It’s a living village and we really value our physical assets’

‘Small acts of kindness matter – they are self-perpetuating’

The discussion revealed a village at ease with itself with a strong ethic to make life better for its people.

The dislikes were limited to systemic issues of poor street lighting, dog fouling and insufficient parking in the village. Generally, people valued and appreciated the quality of the natural and built environment in which they lived.



Debenham's relationship with its local landscape:

The participants also demonstrated a very strong connection to their local landscape and its variety of habitats and heritage. The beauty of the surrounding countryside is a clear source of pride for local residents. Attendees particularly valued the local network of footpaths. They mourned the closure of certain footpaths during the Covid pandemic which have not be re-opened, and appreciated the countryside, community woodland and lakes as a location for walking in and recreation.

‘You don't have to go far to get out into the countryside, woodland, lakes and footpaths’



‘The physical assets set us apart’

referring to countryside and landscape setting as well as facilities and services

While Debenham people enjoy and value the easy access to nature and countryside for leisure and recreation, they also clearly identified a sense of loss of the fundamental connection between the village and those farming the land. Some raised concerns that the countryside had become a mono-culture with extensive loss of hedgerows in some areas. They were also particularly concerned by the state of nature locally with a loss of Swifts, Skylarks, wildlife habitats and biodiversity.

‘Monoculture impacts on biodiversity with a 75% loss of insects, impacting upon Swifts and other native birds’



They also identified a disconnection between the surrounding farmland and the village and expressed a need to reinvigorate the local food culture. By focusing upon local food in local shops it was felt that there would be a stronger link between the village and countryside. Efforts were already underway to establish an Upper Deben Farmer Cluster which could help to improve biodiversity through hedgerow planting and other landscape scale improvements to improve biodiversity and habitats.

‘The hinterland no longer serves its population’

‘People in the village don't understand the pressures of farming, there is no dialogue between them’

Turning to renewable energy:

Throughout the discussions Debenham residents showed pragmatism in balancing enjoyment of the local countryside with the needs of generating renewable energy. In particular, people were open minded as long as the energy generated would directly benefit those in the village. Throughout the visioning process, Debenham residents were supportive of producing their electricity close to home and open to exploring a range of options for renewable energy in the local landscape.

While residents did not object to local energy infrastructure in principle, the strong appreciation for the surrounding landscape meant that there was a feeling by some that large areas of commercial solar, regardless of hedgerow mitigation, would be an unwelcome loss of food growing land. However, others felt that in the right place large scale solar could be acceptable.

‘Some land surrounding Debenham is not BMV land – lower quality land could be used for solar arrays without impacting food production’

Others called for the prioritisation of rooftops to be used for solar energy generation, especially in the industrial estates, as well as the schools, telephone exchange, leisure centre and Coopersfield. However, they were generally more open to the idea of wind turbines, while acknowledging that as Debenham sat in a valley bottom, the ridges where turbines would most likely be located would be visually sensitive. Some residents felt that wind turbines could be aesthetically pleasing but that they should be sited in a way that avoids impacting cherished views of the countryside.

‘Turbines are part of the historic landscape – Debenham historically had 3 windmills’

There is already a strong enthusiasm for the village to embrace a more sustainable future by focusing on energy saving. They felt it was very important to actively pursue retrofitting projects with a particular focus on domestic solar. While 10% of the village is listed, and the centre of the village is designated as a Conservation Area, there are still many opportunities to introduce domestic solar on a large proportion of homes, which was seen as being preferable to the loss of greenfield sites. It was understood that with the increased use of electric heating and electric cars in coming years, the village’s electricity consumption would materially increase. Therefore, it was necessary to have a bold vision to generate significantly more renewable energy to meet that anticipated increase in demand.

‘Debenham should aim to be in top 10% of villages producing renewable energy nationally’

‘The community should be ambitious’



Emerging themes:

While solar and wind were seen as mutually reinforcing providing greater resilience, other options such as geothermal and anaerobic digestion were also considered. However, after careful debate it was agreed that Debenham's geology of sand, silt and chalk mitigates against the use of bore holes for geothermal. Also, the principle of anaerobic digestion and the creation of gas was considered by some to be ethically dubious, despite the industry rhetoric that the gas generated is renewable. There was also concern about the number of HGV movements required to feed an anaerobic digestion plant, with the consensus of the group dismissing this as an option.

It emerged from the workshops that the easy and most affordable ways to save energy should be prioritised whilst working towards renewable generation at a longer scale. The workshops also revealed a need to learn more about what would give the quickest return and how the whole community could benefit financially, not just landowner.

There was also a clear expectation that any community benefit from a renewable scheme should include improvements to public transport which would reduce car use. It was very clear that people felt strongly that solar panels on local businesses should be a priority and a recognition that some land surrounding Debenham is not Best and Most Versatile (BMV) land which means that lower quality land could be used for solar arrays without impacting food production. It would also provide opportunities for hedge laying and increased biodiversity and habitat creation.

Wind turbines were understood to have the greatest potential to meet the village's future energy needs, while acknowledging that they would also potentially have the greatest landscape impact. This was a conundrum that would need further consideration and public debate.

Overall, there was a clear feeling that new renewable energy schemes could be installed locally without causing serious harm to the landscape subject to careful siting and mitigation, and there was a genuine enthusiasm to take the debate forward.

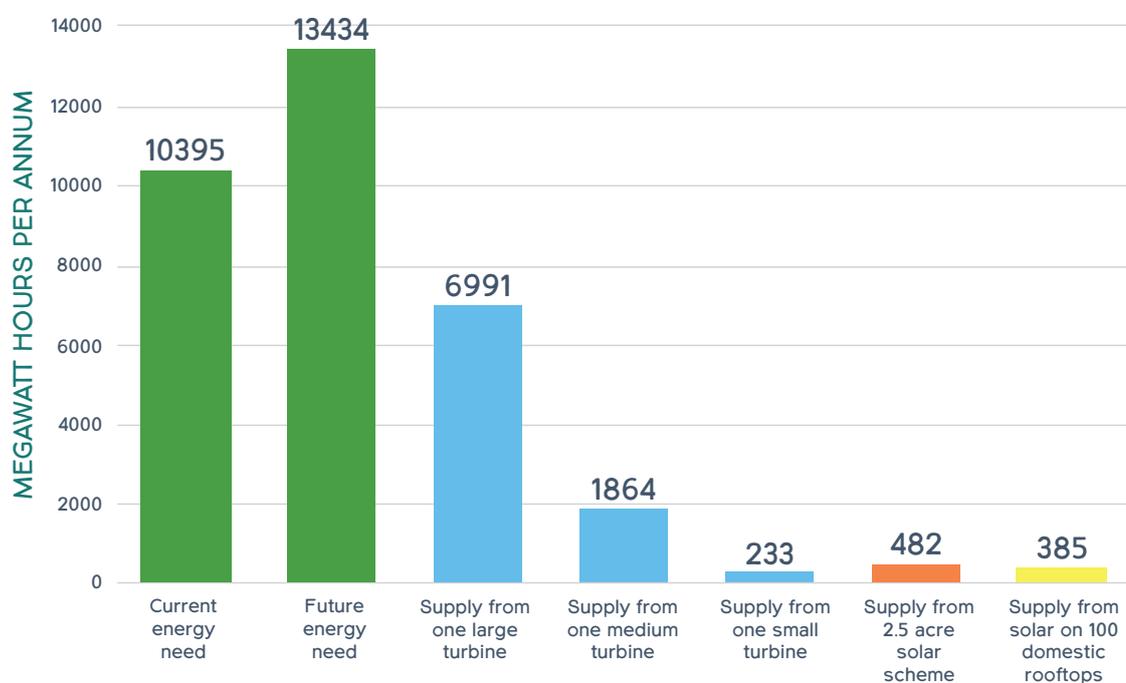


Debenham's current and future energy needs

Debenham's current energy needs are around 10,395 MWh per annum (based on average annual electricity consumption per building). Apart from roof mounted solar panels on 10% of dwellings, this comes from the national grid.

As the way we use energy changes we expect Debenham's energy need to increase. To illustrate this, we have calculated the energy need for the village at a point when half the households have transitioned to using electric vehicles and half the residential properties are heated by electricity, for example by air source heat pumps. The increased energy need at this point will be 13,434 MWh per annum.

Debenham's energy need vs renewable energy sources



The figure above shows how these energy need figures compare with the potential outputs per annum from solar and wind installations.

A small wind turbine is around 26m in height to the hub, the medium turbine is around 60m to hub height and a large one 100m.



Selection of sites

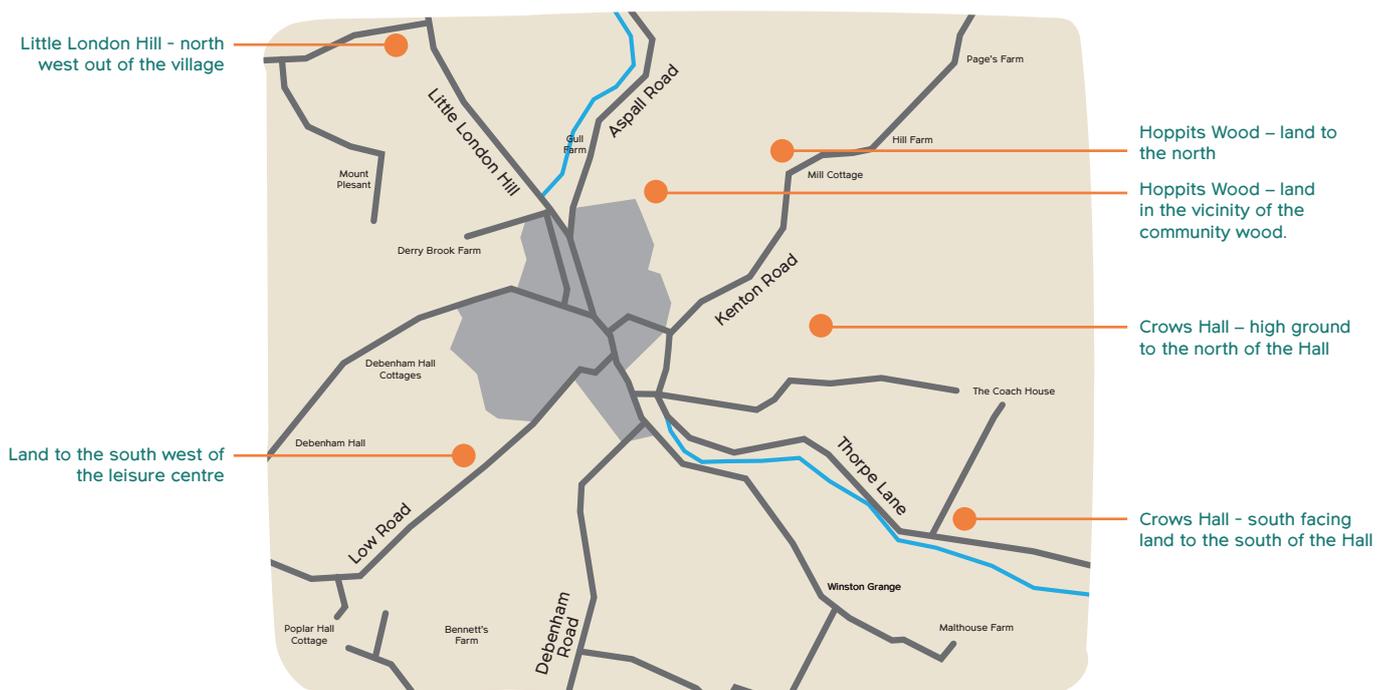
The participants of the workshops were reluctant to specify exact locations for wind and solar installations, and it should be stressed that there was no clear preference or consensus on what should go where.

However, it was strongly felt that a sequential site selection process should be agreed to fully inform any preferred options coming forward. The sequential test included 3 stages:

- 1 The land should be in public ownership
– to allow income from the scheme to feed back to the community
- 2 The site should be informed by the ease of connection to the grid
- 3 The site should allow for working with a partner to benefit the village
– either an energy provider or landowner

However, the workshop did not strictly follow this process and this document seeks to capture the general thrust of the discussion without being prescriptive. Options discussed also included sites outside of the village envelope, with Mickfield to the west, Winston to the south and Kenton to the east identified as possible areas of search.

The sites discussed by the workshop which are within the village envelope are set out below. These should be seen as illustrative only at this stage and any sites taken forward must be carefully assessed via the sequential site selection test as set out above, as well as against other criteria including technical feasibility, engagement with landowners, landscape, heritage and residential impacts.



● Approximate locations of potential Sites

Wind power

For the purposes of the scenarios in this document, a small wind turbine is around 26m in height to the hub, the medium turbine is around 60m to hub height and a large one 100m.

It was felt by some at the workshops that larger turbines could be intrusive in the wider Debenham countryside, however the following locations were identified as topographically favourable for a degree of wind power generation as the high points around the village. The suitability and availability of the following could be explored further:

Crows Hall – high ground to the north of the Hall. Crows Hall is a highly graded heritage asset and the impact upon its wider setting and approach will be a matter for careful consideration.

Aspal Road Ridge – high ground between Gull Farm and Blood Hall. This area is high and prominent in views especially from the lakes, orchard and Hoppits Wood, all of which enjoy a high level of receptors using this valued amenity space.

Little London Hill – north west out of the village on steeply rising land and turbines would be quite prominent in the landscape including from Gracechurch Street and the leisure centre.

Land to the south west of the leisure centre - this is high ground and close to the original site of a windmill.

Photomontages of potential sites - for illustrative purposes only



Little London Hill

Looking south



Crows Hall

High ground to the north of the Hall



Leisure Centre

Land to the south west of the leisure centre

Ground mounted solar

Quite large areas of potentially suitable land were identified for ground mounted solar installations. It was suggested that a target could be set of c.20 fields, each of 2.5 acres (equivalent to 1.5 football pitches). This is considerably above the amount included in the two scenarios included in this document.

The main areas identified were on south-facing slopes on land outside of the village:

Crows Hall – south facing land to the south of the Hall. Crows Hall is a highly graded heritage asset and the impact upon its wider setting and approach will be a matter for careful consideration.

Hoppits Wood – land in the vicinity of the community wood. Land east of Hoppits Wood is high and quite prominent in views from the footpath which runs along the west boundary of the site and therefore enjoys a high level of receptors. Land to the north is also high and quite prominent in views especially from the lakes, orchard and Hoppits Wood which enjoys a high level of receptors using this valued amenity space. Mitigation in the form of hedge planting would reduce some of the visual impacts. Landscape to the west of the wood is more contained and screened on three sides but closest to the lake.

Little London Hill - runs north west out of the village and is on steeply rising land. While mitigation in the form of hedge planting would reduce some of the visual impacts it would still be quite prominent in the landscape including from Gracechurch Street and the leisure centre.

Photomontages of potential sites - for illustrative purposes only



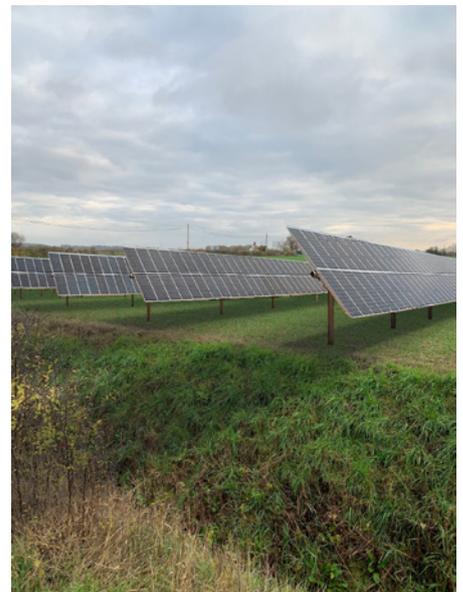
Crows Hall

South facing land to the south of the Hall



Hoppits Wood

Land in the vicinity of the community wood



Little London Hill

Runs north west out of the village and is on steeply rising land

Roof-mounted solar

Research reveals that the village already has approximately 100 homes that have retrofitted roof mounted solar PV – this is twice the national average.

It was suggested that further low carbon solar energy could be boosted by an aim to retrofit roof mounted panels onto more of the existing housing stock in the parish, subject to the degree of financial incentives available to encourage uptake. It was also noted that a more consistent and pro-active approach would be required by the local planning authority when responding to applications relating to buildings within the village's Conservation Area.



Other industrial and commercial buildings such as Seers Medical and the units on Bloomfield and Camp Green industrial estates could also be assessed as possible locations for either roof or ground mounted solar. Other non-residential buildings such as the primary and secondary school, as well as the Leisure Centre, Children's Centre and Telephone Exchange could also be targeted and encouraged to participate in retrofitting. Other buildings such as Coopersfield retirement housing complex could also benefit from solar arrays.

Retrofitting

The workshops concluded that as well as pursuing energy generation through renewable energy sources, priority must be given to retrofitting existing properties to reduce the amount of energy required to heat our homes and to further reduce CO2 emissions.

The CESAR tool identifies two categories or levels of retrofitting projects:

- The first is low low-cost option which would be spending on average £200 per property to improve draught proofing.
- The second, high-cost option includes measures such as loft insulation, triple glazing, floor insulation, cavity wall insulation, external wall insulation as appropriate. The costs of this are estimated to be up to £10,805 per dwelling depending on the type and age of the dwelling.

The CESAR tool divides the housing stock into three categories depending on their age: pre-1930; 1930 – 1990; and post 1990. If 100 dwellings in each of these three categories received low-cost upgrades and a further 100 in each category received high-cost retrofit upgrades then the tool estimates that around 7.5% of heat energy would be saved.

Example scenarios

The workshop attendees proposed a vision for the future of renewable energy in the Debenham landscape which was bold and ambitious in terms of the amount of energy generation that they wished to achieve.

This vision document therefore proposes two scenarios. The first shows how the village could meet 100% of its current energy needs and the second aims to cover future needs as well as set out on page 9.

Scenario 1 to meet existing consumption needs:

1 Large wind turbine

17.5 Acres of ground mounted solar panels

Supplemented by solar panels installed on 100 of the houses across the parish



- Current energy need
- One large wind turbine
- 17.5 Acres solar arrays
- Solar on 100 domestic rooftops

Scenario 2 to meet existing and future consumption needs:

1 Medium wind turbine

1 Large wind turbine

20 Acres of ground mounted solar panels

Supplemented by solar panels installed on 200 houses across the parish

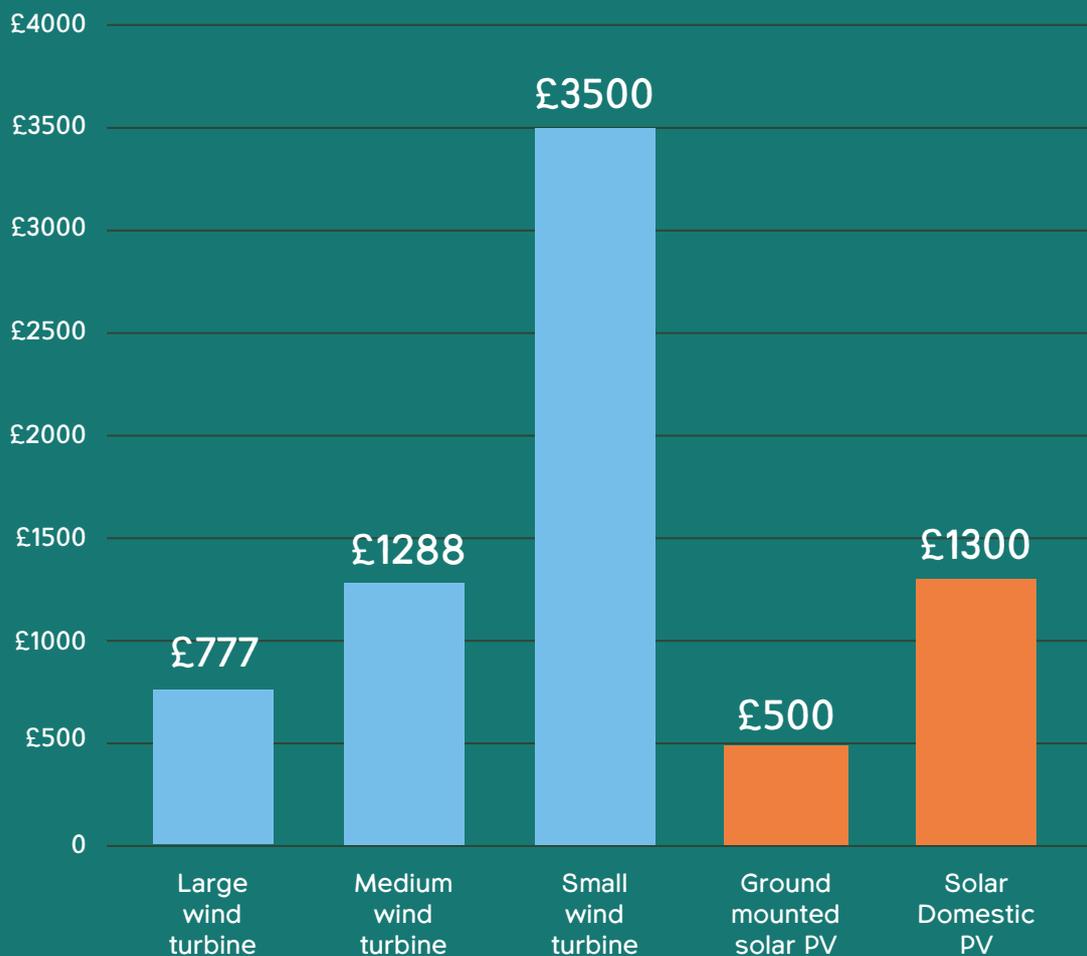


- Future energy need
- One large wind turbine
- One medium wind turbine
- 20 Acres solar arrays
- Solar on 200 domestic rooftops

How much will it cost? Things to consider:

The scenarios given are ambitious as they aim to cover the full as well as future energy requirements of the village. Going forward, the village may wish to have short and long term aims to build up to this point over time.

The visual impact of the varying renewable energy schemes will have to be assessed on a site-by-site basis and weighed against other factors. This will include the initial installation costs per kWh of energy generated of the various technologies as well as the availability of funding through grant schemes and loans. Installation costs will vary widely between the different types and scale of schemes. However, as the outputs also vary it is useful to show how the cost per kWh varies.



This figure demonstrates the relative cost per kWh of different types of renewable energy infrastructure.

It can be seen that a large wind turbine and ground mounted solar arrays are the most cost-efficient types of renewable energy scheme. However, the installation cost for a large turbine is the most expensive at around £2.5M. On the other hand, the land required for a single turbine may be considerably less than an extensive solar array.

Next steps

This document marks the beginning of a conversation. The vision for the future of renewable energy in Debenham's landscape will no doubt develop and adapt over time and as more residents engage with the project. Nevertheless, by setting out where, how and on what conditions more renewable energy could be generated in their local area, the document gives the residents of Debenham a powerful tool to take the future of their countryside into their own hands.

Too often the shift to low carbon energy across England has become divisive and confrontational when rural communities have been presented with a proposed scheme in their landscape in which they have had little involvement on and must either accept or reject.

Debenham residents have shown that they are in favour of renewable energy not just in principle, but would also support hosting new installations in their countryside as long as these developments are sited sensitively to protect the views across their landscape.

There are many steps the residents of Debenham can now take to make their community vision for the future of renewable energy in their landscape a reality. There are discussions to be had with the local council to see their vision incorporated into local or neighbourhood plans. UK Power Networks (the local distribution network operator) will also be an important partner, to ensure that Debenham has the right infrastructure to support the renewable energy residents want to see. This document could be used to pro-actively seek out landowners and renewable energy developers who would be interested in working with the community to bring forward one or more of the schemes residents have shown support for.

Or, perhaps most excitingly, this document could be used as a plan for establishing a community owned energy scheme in Debenham, with residents coming together to design and implement their own renewable energy development, with the profits flowing back to the local community.

In conclusion, this Community Energy Vision shows that the residents of Debenham are prepared to play a significant role in the effort to avert the climate emergency. By developing this pro-active vision for the future, they have sent a clear message about the importance of their landscape and what renewables done well would look like in their local context.

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This document has been prepared by the Suffolk Preservation Society in association with and for the use of the community. It has been issued to the Clerk of the Parish Council and if you would like to be involved in the project please contact Debenham Parish Council for further information.

If you would like explore the opportunities for running the community visioning process in your local area please contact us at sps@suffolksociety.org

Key stakeholders:

Debenham Parish Council
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MCS Charitable Foundation
www.mcscharitablefoundation.org

Suffolk Preservation Society
www.suffolksociety.org

Useful links and sources:

Centre for Sustainable Energy
www.cse.org.uk/

Community Energy England
communityenergyengland.org

Department for Business Energy and Industrial Strategy
assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/656866/BEIS_Update_of_Domestic_Cost_Assumptions_031017.pdf

assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/911817/electricity-generation-cost-report-2020.pdf

Energy Saving Trust
energysavingtrust.org.uk/energy-at-home/reducing-home-heat-loss/

Nomis – Official census and labour market reports
www.nomisweb.co.uk/reports/localarea?compare=E04009192

Renewables first
www.renewablesfirst.co.uk/windpower/

UK Power networks
www.ukpowernetworks.co.uk/

Disclaimer: The figures used in this document are included for guidance only and were correct at the time of drafting using the sources listed above. They are illustrative, subject to change and should not be relied upon. The photomontages reproduced in this vision document are illustrative montages showing technologies and locations which have been suggested by local residents attending the community workshops. They do not imply any intention to develop those sites by the relevant landowner or indicate the feasibility of doing so, either in engineering or planning terms. They have been created to indicate the likely change in the local landscape and to foster further discussion of the need for and acceptability of such changes.