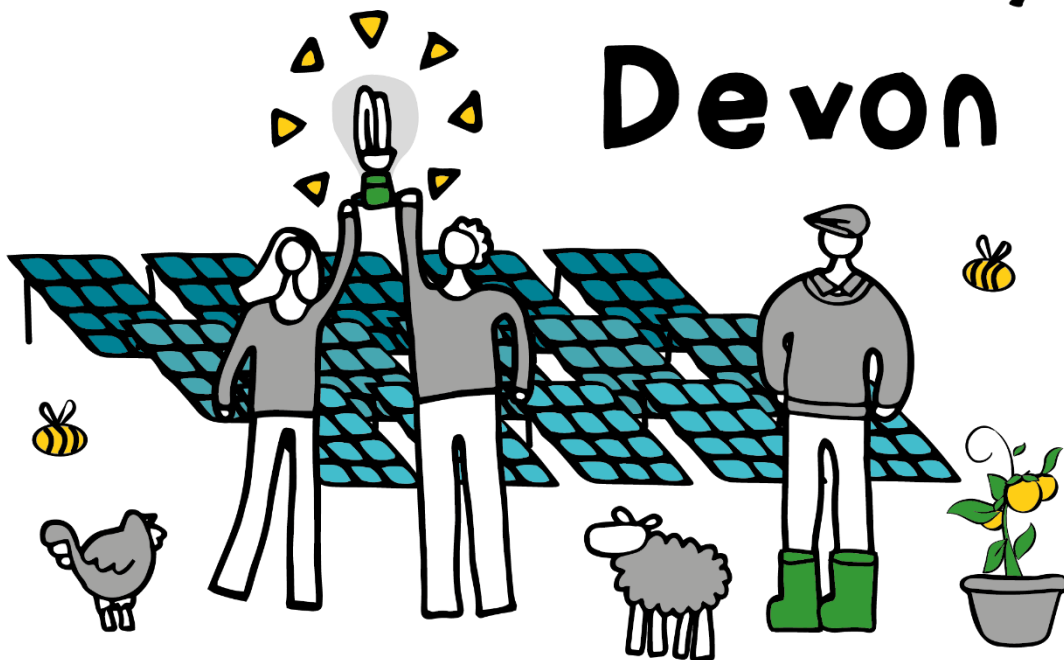




Power Allotments, Devon



**A local site finding project to locate community
owned power stations for Devon.**

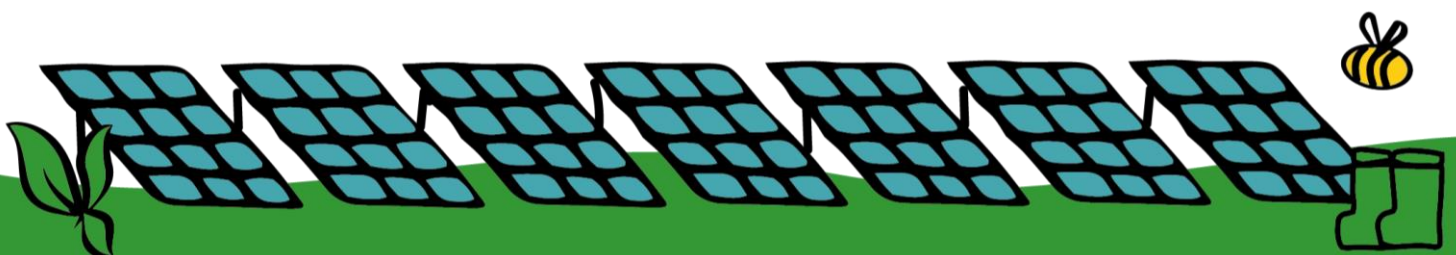
Project report

May 2023



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Summary

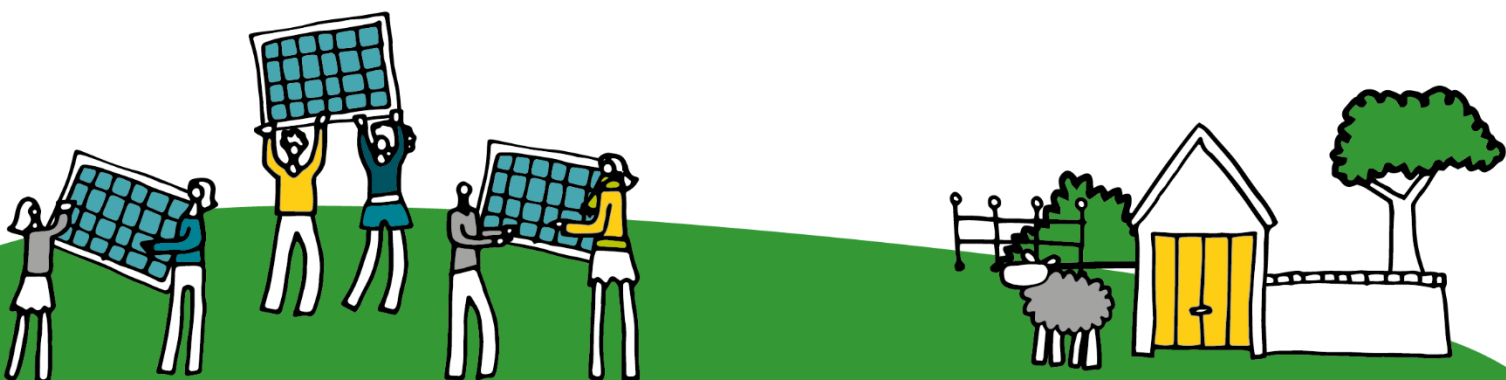
The Power Allotments, Devon project was set up to engage and encourage communities and individuals across Devon to identify a 5 acre space in their local area for a biodiverse community-owned renewable power project. Over the course of 12 months to April 2023, community-minded people concerned about climate change came together and, using the mapping tools and guidance provided by the Power Allotments project, put forward potential generation projects.

In total, 73 sites were submitted and examined for a variety of factors such as site orientation, road access, network connection and environmental and heritage impacts. Part of this process also involved engaging key stakeholders for information and advice. The outcome was a top list of 15 sites that were visited in person and of these, seven that were selected as high priority development opportunities.

The project concluded that although many local people have both the enthusiasm and the knowledge needed to find suitable power generation sites, there are significant hurdles to overcome before new community owned energy projects at this scale can be built. Current market conditions mean that project installation and finance costs heavily outweigh the expected long-term income

from power sales, making the standard business model unviable. Difficulties with network connections also block project development. This is because of a highly constrained network in the region, costly export limitations and long delays and high costs due to planned infrastructure upgrades. More work is required to find an alternative route to market which may require legislative changes to government policy, changes to the way these types of projects are treated by the network operator or innovation around local supply models, virtual power sales or corporate partnerships.

Ultimately, community energy needs more support to help get projects off the ground and into the hands of local people.



Introduction

The Power Allotments, Devon project was set up to encourage local people across Devon to identify suitable sites for community-owned renewable energy projects in their neighbourhood.

Regen, an independent centre of energy expertise, and Devon Energy CIC, a community energy company, set up Power Allotments, Devon, using funding provided by Devon County Council. We employed a master's graduate to run the project and Communities for Renewables were engaged to support the project and provide the economic and business analysis.

Through the project, we provided the tools to help people choose a location for a community scale solar farm or a single large wind turbine. Local people were tasked with identifying appropriate areas of land approximately 5 acres in size to host a 1MW sized power generation project. This size was chosen to avoid the high network connection

costs and long delays that larger projects face.

The project aimed to encourage communities to generate their own clean energy to aid their transition to net zero. We engaged with organisations and individuals across Devon to create a pipeline of projects that could be owned by local communities and run for the benefit of local people. The aim was for surplus income from power generation to be used in other local projects that respond to climate change and tackle fuel poverty. As part of the vision, biodiversity enhancements such as wild-flower meadows, orchards, ponds, bird, bug & bee hotels and the planting of native shrubs would also benefit nature.

Calculations show that if every single parish in Devon had their own 1 MW solar site this could generate enough power for 40% of Devon's homes.

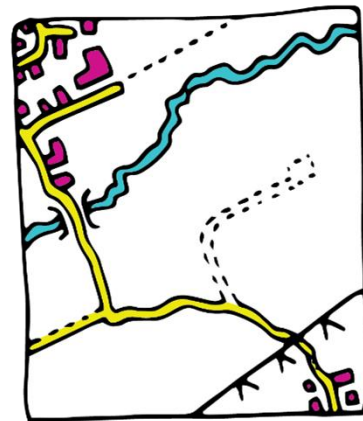


Tools for the project

To help communities choose and submit local sites, we designed a Devon-wide interactive map using QGIS and Google My Maps software. This provided a basic screening map with blanketed exclusion zones where building a solar farm would be more difficult.

After consultation with key stakeholders, the final constraints included:

- Built up urban areas.
- Higher value Grade 1 & 2 agricultural land.
- Areas more than 500m from an overhead 11kV power line.
- Areas more than 2km from a primary substation.



Areas of Outstanding Natural Beauty (AONBs) were included and later, National Parks added to allow local people to explore options in these more sensitive areas. The map was designed to stimulate discussions and enable dialogue amongst key consultees.

The map was published on the Power Allotments webpage along with a handbook and an online site submission form. The aim was to encourage as many site submissions as possible from across Devon and from a wide range of representatives including individuals, parishes and community energy groups.

[Click here for webpage](https://devonenergycic.co.uk/our-projects/power-allotments-devon/)

<https://devonenergycic.co.uk/our-projects/power-allotments-devon/>

As the project progressed and we engaged with a range of stakeholders, we adapted the map and republished it with updated exclusion zones. New criteria were added to the site analysis list to aid with site selection.





Promoting the project

Ensuring that information about the Power Allotments project was accessible to as many people as possible, including communities and key stakeholders, required a range of actions both in-person and online.

Engaging with communities

Engaging with as many communities as possible across Devon was integral to the success of this project. To reach as many people as possible, a stakeholder map was produced to incorporate a diverse group of people across Devon's regions. A variety of different communication methods were used to spread the word about the site finding task. These included attending in person events, hosting information webinars, emailing community energy organisations, writing to parish and town councils, distributing posters and leaflets, posting on social media and publishing articles in the press. [See appendix for more detail.](#)

Engaging with National Grid Electricity Distribution (NGED)

With NGED's support, specialist regional network planners across Devon were engaged through a series of video calls to understand the level of network connectivity available for Power Allotments. This provided information about network constraints within the region and also built up a picture of network availability and a budget estimate for connections on a case-by-case basis for each locality of interest.

Discussions with the regional network planners enabled the identification of parishes deemed more likely to have network availability. These parishes were targeted with Parish Packs that included an introductory letter, information about the project and materials for distribution in their communities such as leaflets and posters.

Engaging with statutory & non statutory consultees

As part of the project, statutory consultees within the Districts and County Council were contacted and the project was presented to other important decision makers. This included a presentation to the Devon Landscape Policy Group, correspondence with the AONBs, Devon Wildlife Trust and Dartmoor National Park Officers and communication with Campaign to Protect Rural England (CPRE).

The next step for sites ready to move forward would include scoping & screening activities to determine what should be covered by an Environmental Impact Assessment, as well as consultation with all affected stakeholders.





The response

73 sites were submitted to the Power Allotments project for analysis between November 2022 and March 2023 through the online submission form. Submissions came from local community groups, largely climate action or sustainability focused; parish and town councils from across Devon's eight district authorities; Devon County Council, and individuals inspired to act after hearing or seeing information about the project.

What did we do with the responses?

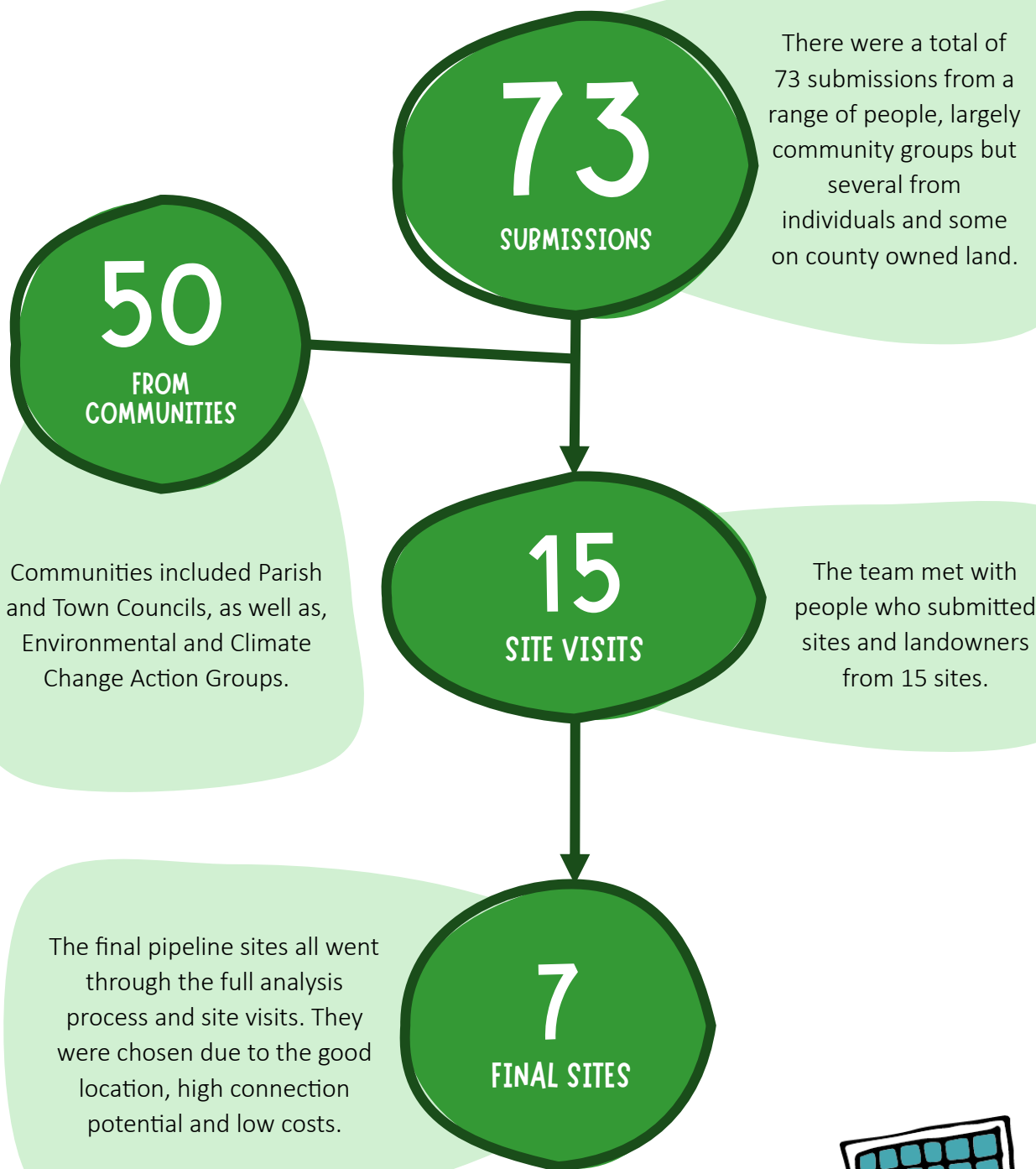
1. We conducted a desktop analysis exercise of the sites using the analysis criteria below.
2. The best sites were taken forward firstly to the network operator (NGED) for a budget estimate for the network connection and for information on the potential allowance for export generation.
3. Land ownership for the final 15 sites was then investigated and we contacted landowners before undertaking a site visit.
4. Of these, a pipeline of the **top seven sites were chosen**, of which four are in the South Hams, one is in Dartmoor National Park and two are in East Devon. All of these seven sites are proposals to host solar farms. Three wind turbine projects were also submitted and should be referred to again should the planning environment for onshore wind in England open up.

Analysis criteria

- Size of site
- Proposal type
- Land ownership
- Network connection
- Community input
- History of site
- Land classification (ALC)
- Current land use
- Site orientation & aspect
- Shading/ trees
- Road access
- Infrastructure on site
- Flood risk
- Nearby public rights of way
- Wider landscape & visual impact
- Environment, ecology and heritage



Results



Case Study: Stokenham

This section explores one of the seven final pipeline sites. This site was submitted by Stokenham Parish Council in the South Hams and went through the full analysis process and had a proposal written.

What makes it a good site?

- South facing field with a gentle slope.
- No current active land use (left empty).
- No public footpaths alongside or viewpoints from the village.
- Located next to a primary substation with capacity.
- Also has overhead 11kV lines, so multiple options for connection.
- Small section of land that lends itself to a community or biodiversity net gain project.
- Community are already involved and are keen to incorporate some allotments into the site.

What would some next steps be?

- Further conversations with landowners.
- Visual impact assessment for the wider area.
- Ecological and environmental surveys.
- An Agricultural Land Classification (ALC) survey to confirm the land grade.



Community hear about the project through a 'Parish Pack'.

Community seek advice by contacting the team and use their local knowledge to submit a site.

Desktop analysis of the site deems it to have potential.

A discussion with NGED about connection possibilities suggests the site is connectable.

Land owners and site submitters are contacted for a site visit.

A proposal document is assembled for submitters and landowners with the assessment and next steps.

Lessons learnt and recommendations

Over the course of the Power Allotments, Devon project we learnt valuable new information about the network and engaging with communities. This helped us to continually shape the project. Our most valuable learnings are shared below.

The network

Learning new information about the network in Devon enabled us to update the site constraints to reflect the current situation and provide guidance for interested communities.

- 1. Look for generation sites next to a primary substation.**

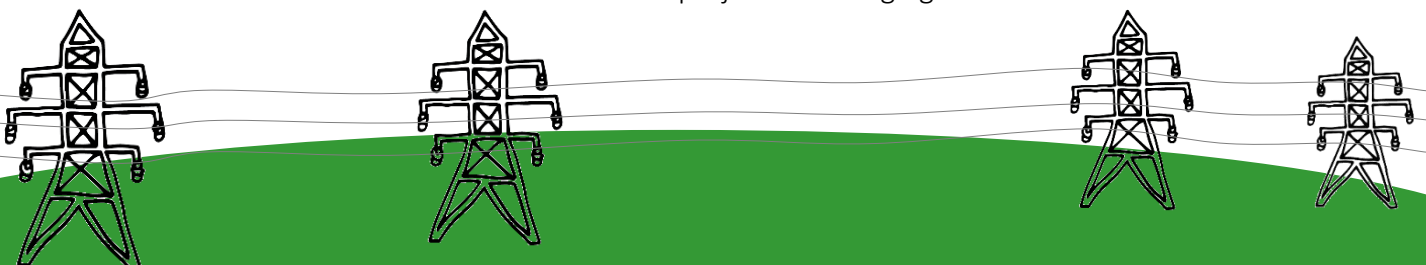
A primary substation is where the 11kV network steps up to the 33kV network. Connection costs are likely to be lower for sites next to a primary substation or for those very close by with overhead 11kV lines on site.
- 2. The primary substation needs to have “Generation Headroom”.**

NGED’s online [capacity map](#) will help identify the nearest substation to a site and tell you whether it has the capacity to export additional generation.
- 3. Generation sites are less likely to be limited in how much they can export if they are distanced from other generation.**

Generation export may be limited where there is lots of generation that comes online at the same time. For example, in areas with lots of existing solar generation, new solar generators will have their export curtailed at peak times such as midday in the summer. However, some technologies may work well together such as wind and solar.
- 4. Sites under 500kW in size are currently more likely to get a viable connection in Devon.**

This is because transmission restrictions now apply to all electricity generation projects over 500kW. This means that until future upgrades are made to the transmission system, projects larger than 500kW may suffer both significant connection delays and 40-80% curtailment.

Distribution Active Network Management (ANM) is also in place across the whole of the southwest region and may affect all sites over 250kW in size. This means that there may be restrictions on the amount of electricity that can be exported to keep the distribution network in balance. However, reducing the scale of the Power Allotment projects to less than 500kW makes the economics of the projects challenging.



Community engagement

Engaging with communities was integral to the success of this project and we learnt a lot about the most effective ways of reaching people and where the most interest and submissions were coming from.

1. Active community leaders were invaluable to the site finding process.

Of the seven final pipeline sites, five of them had an active community leader who helped by proactively finding sites. The enthusiasm and dedication of these individuals helped the communities they live in to identify the best possible sites for their area. More time and resources to target those in underrepresented regions, like North Devon with only 3% of submissions, might have encouraged more active leaders. The spread of submissions by location can be seen on the graph below.

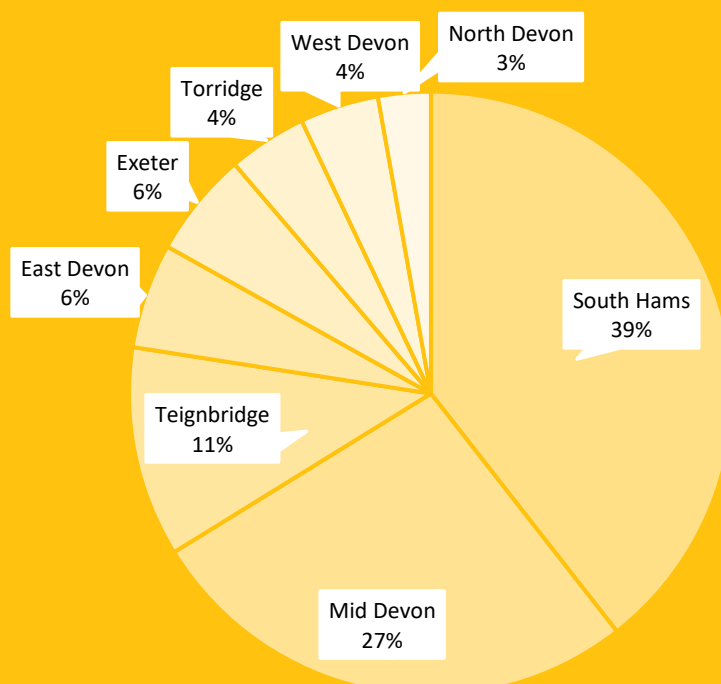
2. The most successful community engagement method was the 'Parish Pack' resulting in 29% of submissions.

Of Devon's 426 parishes, 102 were highlighted as more likely to have a network connection and were directly contacted by letter with a 'Parish Pack.' These mailings went out in late November 2022 and were on the agendas of parish council meetings in early January 2022 causing a spike in site submissions.

3. The Power Allotments concept was popular on social media.

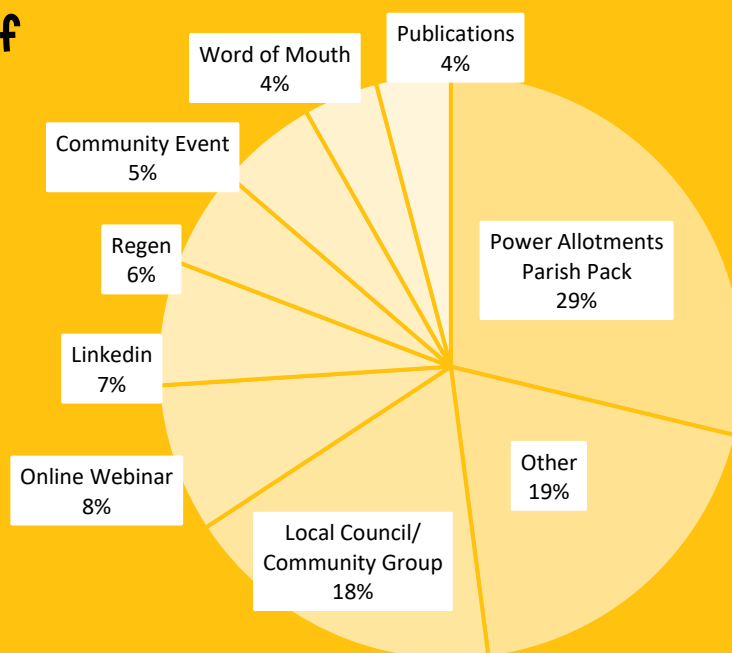
A single LinkedIn post received 894 likes, 134 supportive comments and interest from officers representing other English counties ([see Appendix](#)).

Most submissions were for the South Hams area.



4. **Devon’s community networks were keen to help promote the project.** This helped to spread the message far and wide. Many community groups and Parish councils advertised the project on their websites.
5. **Press officers and journalists were keen to publish coverage of the project.** Two articles were published in online and physical magazines. This suggests that people are interested in community energy and routes to net zero.
6. **The majority of sites submitted were of a high quality, suggesting that local people do know where the best sites are.**

Over a quarter of site submissions heard about the project through the 'Parish Pack'.



*Other includes respondents that didn't answer the question in the submission form and Devon county land.



Project viability

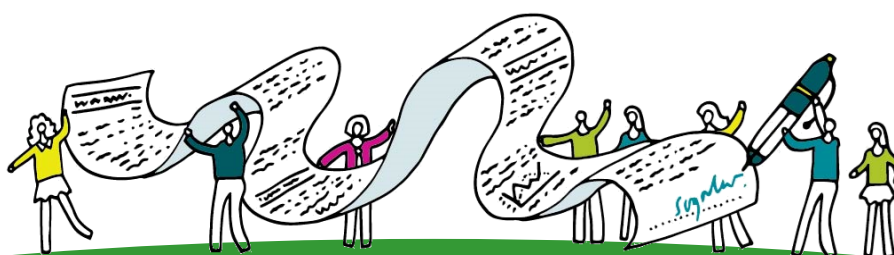
The Power Allotments project has resulted in a pipeline of good quality projects that are ready to take forward to the development stage. This means taking the projects to the planners and other key stakeholders, looking into land ownership and options to lease the land, as well as more detailed community engagement.

However, there were major issues with project viability that developed over the life of the project. The next phase of site development would typically require “at risk” development finance, which is difficult to source. In particular, current market conditions have made the economic viability of a Power Allotment project increasingly challenging. This is largely due to an increase in installation costs, an increase in the cost of finance and a change to network export capability.

Power Prices

Although wholesale electricity prices increased to ten times the long-term average at the height of the energy crisis, they are now coming down again, albeit remaining over two times the long-term average. Long term power prices are expected to fall back to slightly above 2021 levels by the end of the decade. In the longer term, they may decline below 2021 levels. However, the power market remains volatile and hard to predict. Market prices could decline faster and further or remain high.

A number of organisations, many with net zero carbon targets, have shown an interest in becoming an electricity off-taker for the Power Allotments projects to achieve a long-term power price hedge and secure green power. However, in the current economic environment the Power Allotments would need a long-term power price at a significant uplift on projected market prices. Future market reform could bring in a support mechanism to enable the viability of small-scale projects.



Installation costs

From a low in 2020, installation costs for solar PV have been increasing due to a combination of factors, including:

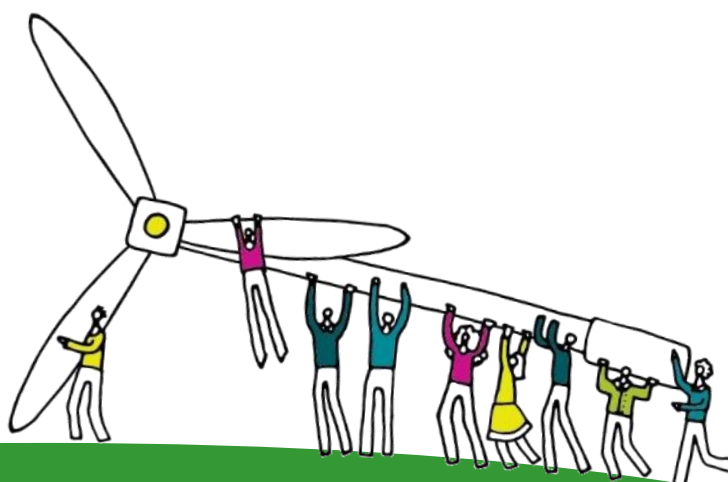
- Increasing component prices due to supply chain shortages and commodity price increases.
- The pound dropping in value against the Euro and US dollar.
- A shift in the UK solar construction market with larger firms focusing on large scale projects (50MW plus) or operating outside of the UK since Brexit. Smaller regional firms have full order books installing rooftop PV.

Finance

Base rates have increased over the last 12 months to 4.25% in March 2023 leading to higher costs of finance. Target returns for new community energy share and bond offers have increased from 3-4% to 5-6%.

Network

Significant network curtailment, delays to transmission system upgrades and reinforcement costs are creating barriers for new generation projects. In 2022, projects down to 500kW became liable for transmission system delays and curtailment regimes. Reducing the project size causes economic challenges at such a small scale.



Possible routes to market

Future market reform could bring in a support mechanism to enable small scale projects to be viable again. In the absence of improved market conditions, the financing of Power Allotments projects could be enabled by a supportive change in policy or by the introduction of an alternative business model that provides a route to market by valuing community energy generation. This depends on the government recognising a role for local generation connected at distribution level. Potential options are explored below:

Opening up the network

National Grid is currently implementing policies to help free up the constraints on the electricity network and enable new renewable generation to connect. These include an ‘amnesty’ allowing developers who have paid for connection capacity they can’t use to return it and a change in the treatment of batteries. If these measures free up distribution level connection capacity in Devon, they could improve project economics by reducing curtailment and allowing larger community projects to connect, which would then benefit from economies of scale.

Fiscal support for community energy

Introducing a Feed In Tariff for Community Energy or a Community Energy Contract for Difference could provide long-term support for Power Allotments projects, ensuring that they are bankable and providing a route to market.

Valuing community energy generation

The long-term power purchase agreement (PPA) rates required for a Power Allotment to be viable are high. As organisations and localities look to reduce their climate impact, the value of community energy generation could increase, providing an enabling income stream:

- Renewable Energy Guarantee of Origin certificates (REGOs) are issued for every MWh of renewable energy generated and currently trade at between £4-8 each. These could become more valuable in the future and attract a higher price.
- Carbon offsets could support UK projects that would otherwise be unviable and provide a carbon price that enables community energy of this scale.
- Trading additional biodiversity credits could be a significant income stream in the near future.



Local supply models

Local supply models that enable communities to generate their own electricity and supply it to local consumers could help with the economic viability of projects, if they recognised the benefit of balancing generation and consumption at a local level thereby reducing non-commodity costs (e.g. grid system charges and balancing costs).

For example, Energy Local has developed 'clubs' that are local energy markets. These allow consumers to pay a lower price via licensed exempt supply for power used when it is generated. It provides an attractive long term offer for local households and a higher price is passed to the generator.

However, it is complicated by the fact that customers are currently required to be under the same primary substation as the generator and that, for MW sized projects, large numbers of local consumers will need to sign-up to increase the income to the generator significantly. Energy Local has raised a modification to the Balancing Settlement Code to strengthen the current wording to make it clearer when this arrangement can be used, to increase confidence.

Friendly finance

This could include finance from the Local Authority or other relevant sources that could provide cheaper debt finance.

Private wire projects

There may be some instances where a large user of power is adjacent to a suitable site for a community energy generation project.

These projects are more likely to be economically viable as no non-commodity costs are incurred on power supplied directly to an energy user via a private wire.

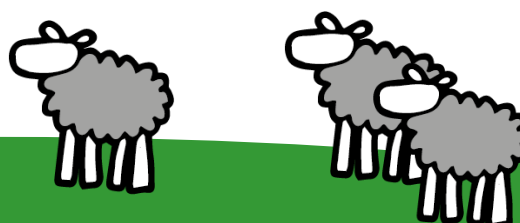
Virtual Power Purchase

Agreements

One possible partnership is with Devon County Council (DCC) to help achieve their net zero 2030 target. A financial agreement between the Power Allotments generators and DCC in the form of a Virtual Power Purchase Agreement (VPPA) would allow for power to be bought and sold between community groups and the council. [This is explored in more detail in the appendix.](#)

Other models

Such as virtual private wire schemes and new tech smart solutions that bring value to the model.



Call to action

The Power Allotments projects has demonstrated Devon communities want to generate their own power. Some key policy and market changes that are needed to unlock a rural energy revolution include:



Access to development finance would enable communities to take forward the projects that they want to see in their neighbourhoods.



A **local supply model** that enables communities to generate their own power, and recognises the benefit of balancing generation and demand at a local level through significantly reduced system charges.



A **community 'right to connect' to their local electricity network** with support for connection costs at distribution level and a queue management system that enables smaller ready to connect projects to move ahead of large-scale projects stuck in development.



A **long-term (20 year) minimum price guarantee for the power produced** via a community Contracts for Difference (CfDs) or smart export price guarantee.



Appendix 1:

Community Engagement Methods

To ensure that information about the project reached as many people within Devon we decided on a variety of different methods for community engagement.

This included:

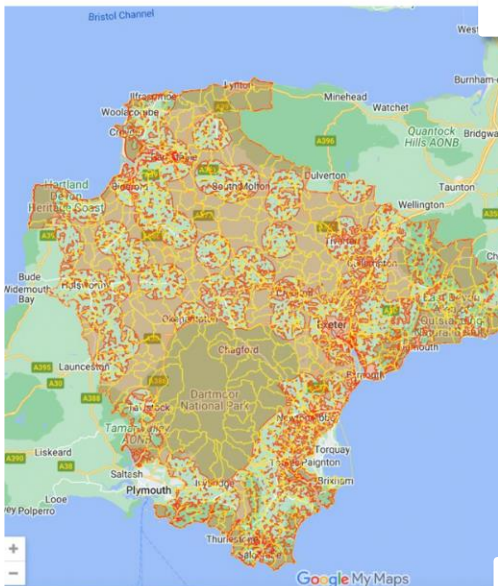
- Two articles published: One in [Reconnect Magazine](#) and the other in [Wicked Leeks](#). The Wicked Leeks article was also [published online](#) and advertised through their social media channels.
- Presented the project at community events including the National Grid Net Zero Communities Forum, the Devon Association of Local Councils Conference, the Totnes Energy Wise Event and the Sustainable South Hams Assembly. The project was also presented on our behalf by several community groups.
- Created a dedicated webpage on the Devon Energy Collective and Regen websites to direct communities to as the central hub of information and location of the toolkit (handbook, interactive map and submission form). [The interactive map has been viewed online over 11,000 times since it was published.](#)
- Distributed 'Parish Packs' to 102 Parish councils across Devon that we had identified as having the most choice of suitable land areas for potential sites. The parish packs contained an introduction letter to the project, a summary sheet of information, 2 posters and 30 leaflets.
- The Devon Association of Local Councils (DALC) weekly e-bulletin was important in spreading the message to Parish and Town Councils to update them on the project.
- Two webinar events: A [pre-launch event](#) that invited key stakeholders and a [launch event](#) open to anyone in Devon to introduce the project.
- Social Media: Twitter, Facebook and LinkedIn were all used to spread information about the project and advertise events. LinkedIn was the most successful and helped spread the project idea outside of Devon. Twitter and Facebook needed more time invested in them to achieve a real impact.
- Utilised existing network connections with local community energy groups and the Devon Community Energy Network (DCEN) to further advertise the project through their own websites and contacts.

Marketing and engagement

Seen below are a range of engagement materials such as social media, events and marketing as mentioned on the previous section.

Als Parker • You
 Director at Devon Energy Collective
 5mo • Edited •

Our mapping work has identified 102 parishes in Devon that could host a Power Allotment. These are the parishes that are close to the National Grid...



894 134 comments · 66 repost

Like Comment Repost Send

83,241 impressions View analytics

Regen Communities @RegenCommunity · 21 Sep 2022
 Is there somewhere in your local area in #Devon that you think would be a great place to have a #RenewableEnergy project, owned and run by the #localcommunity?
 Sign up to our webinar on 27 September to learn about the #PowerAllotmentsDevon Project: us06web.zoom.us/j/83919452941

Net Zero Communities Forum
 South West - Exeter - 29 Sept

Sign up for our Community Information Webinar
 27 September

Today's Agenda
 14:00 Welcome and aims of the session
 14:10 Explaining Power Allotments, Devon
 14:20 Community Energy in Devon, Chelton Meadows and Renewable
 14:30 Opportunities for Biodiverse Energy Projects
 14:40 Q&A Session
 14:50 Meet the...

our website:
 ...co.uk/our-
 ...nts-devon/

We want every parish in Devon to submit a 5 (or more) acre site that they think could become a community owned solar farm.
 More than 5 acres allows us to add biodiversity projects as well.
 Our team will analyse potential sites to find the very best opportunities and support your community to develop your very own renewable energy "Power Allotment!"
Power Allotments, Devon
 Energy Site Finding Project
 DEVON Devon Energy Collective

reconnect
 Harvest Time!
 Devon Energy Collective

Parish and town council minutes

We also utilised the active community and parish council network within Devon and asked communities to advertise the project further. Images below show some examples from Parish and Town council meeting minutes.

15. Power allotments – Funded by Devon CC the project is looking for renewable sites identified by the community. +5 acre sites needed which will provide 1 mega watt of energy (from solar).

8. POWER ALLOTMENTS

The information provided with regard to Power Allotments was circulated. Following discussion it was suggested that the area behind the properties and [REDACTED] could support allotments. On consideration of the electricity grid possibilities it was AGREED to ask Regen to attend a meeting to discuss low grade site availability, rates of pay/rent and other parish matters with the Chairman agreeing to write outlining the invite to them.

8.11.22

Small scale solar power farm proposal.

[REDACTED] outlined an opportunity in the Parish for 5-7 acre site to be used as a solar farm which would create enough power for around 400 homes and bring in annual revenue for both the landowner and the local community. This opportunity comes from a new campaign called Power Allotments Devon who have identified our parish as one of the most suited to this project and is a project set up by Devon Energy Collective CIC, a not-for-profit community interest company, whose purpose is to develop community owned renewables projects across Devon to address climate change.

The best sites need to be roughly south facing and be tucked away and shielded from homes, either by trees, hedgerows or hills, and reasonably accessible by road and within 2Km from a local grid connection. The Parish Councillors were unanimous in their support for the venture. Parishioners are welcome to put forward potential sites by contacting the clerk at [REDACTED] or [REDACTED] if a site is found then the development would follow normal planning application procedures.

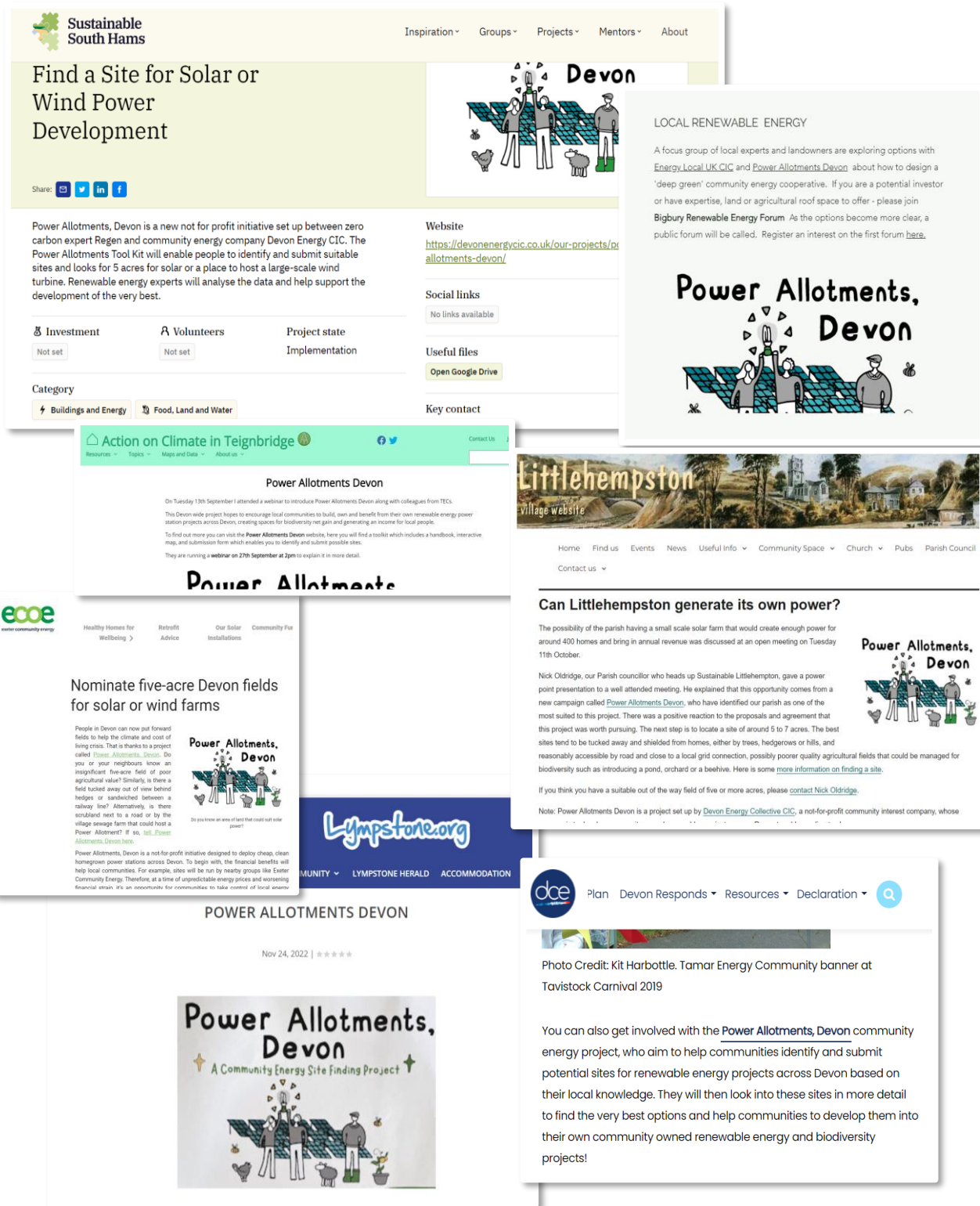
8. REPORTS

- [REDACTED] had a Zoom call with Power Allotments who advised they wanted parish councils to suggest possible sites as they had local knowledge and if they were on board it made planning smoother. They needed a minimum of 5 acres. They would pay any landowner a commercial rent for a field if it satisfied their test criteria for suitability of land grade, nuisance, south facing etc. They would rent the field out and firstly ask the community if they wanted a CIC to own the field and invite people, if they wanted, to subscribe to invest in the site. Current investments returned 5 and 6% interest on the invested sum. If local people did not want to be involved they had other investors but preferred locals for buy in. It was a 25 years length with £5000, surplus per site per annum, given to a community to spend for what they deemed appropriate. Ideas were community projects, alleviation of energy poverty etc.

[REDACTED] following earlier parish council discussion, put forward the field behind the old [REDACTED] for consideration. The site distance from a sub station needed to be less than 1km and this field was adjacent to one. There was not much else land suitable in the parish that had come to light.

Community groups and parish council websites

The below images demonstrate the range and number of community groups advertising the Power Allotments, Devon project on our behalf.



Appendix 2:

Devon County Council: a possible partnership

Devon County Council (DCC) has a target to become net zero by 2030, including emissions from its purchasing of goods and services. This includes a target to source 30% of its total corporate energy requirement from renewable sources by 2030/31, as well as, facilitating the deployment of 23MW of new solar PV in Devon.

DCC has committed to carbon offsetting as a last resort for this goal, emphasising Devon where possible. Chosen offset projects would focus on enhancing the natural environment and addressing the ecological emergency. Partnering up with Power Allotments projects could sit well with DCC's aims if a viable mechanism can be found.

One of the most promising routes to market is via a Virtual Power Purchase Agreement (VPPA) with DCC. A VPPA is a financial agreement between a consumer and a generator which can operate independently of both parties' suppliers. The parties agree a wholesale strike price. The consumer and generator then compensate each other for variations between the strike price and the market price via a contract for difference.

The difficulty is that the long term VPPA rates required for a viable Power Allotment project are likely to be higher than DCC would usually look to pay. Project modelling gives a likely price needed for the power at approximately £150-200/MWh. When non-commodity

costs are added the total power price required rises to £315-365/MWh inflated for 20 years. These prices are below energy crisis market rates. However, a price fall to around £110/MWh over the next few years means significant benefits must be found elsewhere for DCC to agree to a higher long term price.

Discussions are ongoing with added value options including:

- The flow of REGOs (Renewable Energy Guarantee of Origin) to validate the supply of green generation.
- The local nature of the Power Allotments and the significant benefits of community energy such as boosting Devon's green economy, community cohesion and new jobs.
- New funds for powering down Devon through energy saving measures paid for by surplus income from the Power Allotments.
- The vision for biodiversity net gain from each solar field and the benefits this brings to Devon's natural environment.



Supported by Team Devon's COVID-19 Economic Recovery and Business Prospectus Funding.