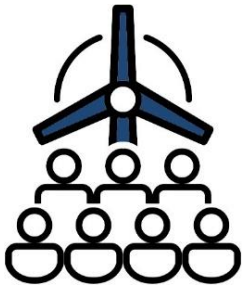
Community and locally owned energy in Scotland

2024 report

14 April 2025

Report produced on behalf of the Scottish Government

Executive summary



There were 42,990 community and locally owned renewable energy installations in Scotland at the end of December 2024, with a capacity of 1,109 MW.[1]

The Scottish Government has progressed 55% towards their 2030 target of having 2GW (2,000MW) of operational renewable energy capacity in community and local ownership.

These installations could produce an estimated 1,963GWh of renewable energy annually, out of which:[2]

- 961GWh is the equivalent of providing electricity for all households in Glasgow City and East Dunbartonshire for one year

- and, 803GWh is the equivalent of providing heating for all households using natural gas boiler in North Ayrshire for more than one year

At the end of December 2024, there was an estimated 13MWh of operational energy storage capacity in community and local ownership in Scotland from 1,190 installations with a further 2MWh in development from 150 installations.[3]

[1] Capacity is rounded to the nearest whole MW and the number of installations is rounded to the nearest ten throughout this report.
[2] There is also 195 GWh CHP, but it is omitted here for not being included in energy equivalents.
[3] MWh quantifies all energy storage potential from community and locally owned energy storage technologies and is rounded to the nearest whole number.

energy saving trust

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1. Introduction

Community and locally owned renewable energy places communities at the heart of the energy transition, supporting Scotland's pathway to net zero. By transitioning away from fossil fuels and toward renewable sources of energy, we can reduce our carbon emissions and mitigate the impacts of climate change. Moreover, locally owned renewable energy contributes to energy security by reducing dependence on imported fossil fuels, enhancing resilience to supply chain disruptions, and fostering self-sufficiency in energy production.

Scotland already has a positive legacy of community and local ownership of renewable energy which provides a firm foundation to build upon. The Scottish Government has committed to further grow this sector with the target of 2GW (2,000MW) by 2030.

This report presents the headline figures for community and locally owned renewable energy in Scotland. The report will review the progress made by the Scottish Government in delivering its target of 2GW of community and locally owned renewable energy by 2030. The report then explores community and locally owned renewable energy by ownership category, technology and local authority, to provide a broader picture of the sector in Scotland. Finally, the report identifies some of the factors that have been driving installation and development.

A high-level summary of what has been considered is presented in Chapter 2 and a full methodology can be found in the separate methodology document.

2. Reporting in 2024

Since 2011, Energy Saving Trust has maintained a database of all community and locally owned renewable energy installations in Scotland.

Community and locally owned renewable energy is defined as technologies producing heat and/or electricity from a renewable source[4], where the owner of the installation is in one of the following categories:

- A community group as Community
- A local Scottish business[5] as Local Business
- A farm or estate as Farm and Estate
- A local authority as Local Authority
- A housing association as Housing Association
- A public sector or other charitable organisation as Public Sector and Charity

Further information on each category is available in Appendix A.

There are 22 datasets that contribute to the community and locally owned renewable energy database. These datasets include, but are not limited to, voluntary surveys from public sector organisations, funding programmes administered by Energy Saving Trust, and government provided private datasets. In 2024, we received updates for seven datasets and added one new dataset (to give the current total of 22). The figures reported in this publication are correct as of 31 December 2024. Further information on the list of datasets is available in section 4.1 in the adjoining methodology document.

2.1. Limitations of the analysis

We examine all new data intended for inclusion in the database. This involves a thorough process of verifying ownership status and cross-referencing against the existing database to prevent instances of double counting. While we have robust data collection practices and take due care to minimise data and information gaps, it is important to highlight the below limitations and caveats.

Individual installations can change over time. They may be decommissioned or change ownership impacting the accuracy of the data. When we are aware of changes to data, including operating status or ownership, our database is updated. However, due to the substantial number of records, our process cannot practicably include a review of every historic installation. The related records are reviewed and rectified in response to new information from new or improved datasets, or research. Historical data gaps are often filled as new or improved data sources become available.

There may be gaps in the data, both in terms of location (due to voluntary reporting) and time (because operational installations may not be immediately known to us). We pursue access to new datasets and review and, where necessary, revise, the assumptions we use to fill data gaps. For example, this year we have completed Energy Performance Certificate (EPC) analysis for social housing, which helped fill in gaps in voluntary surveys

[4] A full description of each eligible technology is given in Appendix A.
[5] Note this excludes Scottish businesses whose purpose is to develop renewable energy projects when the installation is not for their own properties or where ownership and management of the installation is provided as an energy service company (ESCO).

from local authorities and housing associations on social-let domestic installations across 2023 and 2024.

We anticipate that a proportion of installations identified as in-development capacity have either already become operational or are no longer going ahead, but we are unable to confirm the proportion due to the voluntary reporting nature of some data sources.

Though there are limitations, we consider the results presented here to be the best currently available on community and locally owned renewable energy in Scotland. We endeavour to continually improve the methodology and access to data sources.

3. Headline results

This section reports the latest updates toward the target of 2GW (2,000MW) of community and locally owned renewable energy by 2030. Here we explore the headline numbers of what has been achieved to date.

In December 2024, 1,109MW of community and locally owned renewable energy capacity was operational in Scotland. This is 55% of the Scottish Government's target of having 2GW (2,000MW) of operational community and locally owned renewable energy capacity by 2030. The increase in capacity from 2010 to 2024 is shown in Figure 1. The capacity in operation comes from a total of 42,990 renewable energy installations.

In 2023 and 2024, community and locally owned energy installations in social-let properties is provided by EPC data. Prior to 2023, social-let installations were provided by Local Authority and Housing Association surveys. The EPC analysis provides a more complete data coverage compared to voluntary surveys because of the relatively low return rate of the latter. This methodological change is shown as a dotted line in the below chart. Detailed explanation of this change can be found in chapter 5.

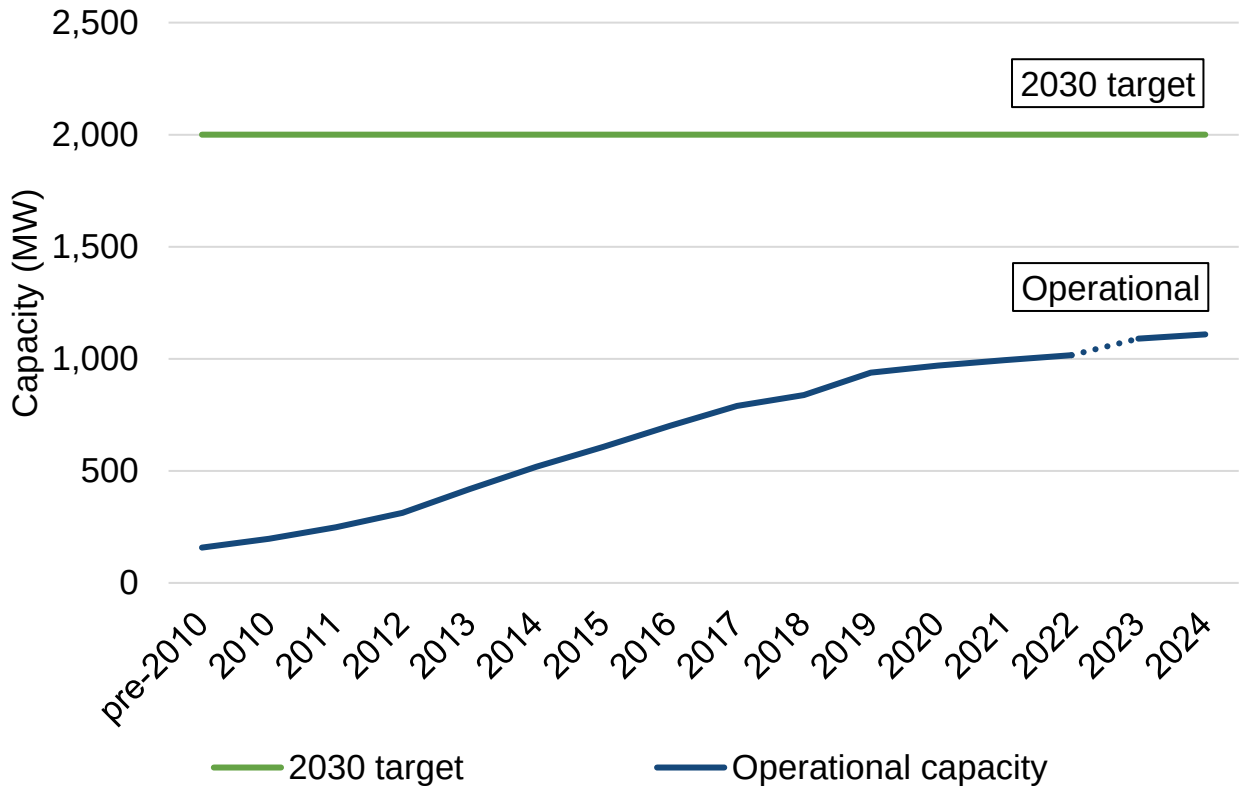


Figure 1. Total operational capacity and the 2030 2,000MW (2GW) target

Over a year, the 1,109 MW of operational community and locally owned renewable energy capacity is estimated to produce 1,963GWh of renewable energy. This consists of around 961GWh of electricity, 803GWh of heat and 195GWh of energy from CHP installations.

961GWh of electricity is the same as providing electricity for 343,000 homes for a year, which is close to the number of households in Glasgow City and East Dunbartonshire.

Moreover, 803GWh of heat energy equates to heating 66,000 homes using natural gas boilers for a year, which is close to the number of households in North Ayrshire. Please see the methodology document for more information on this.

At the end of December 2024, there was 13MWh of installed energy storage capacity in community or local ownership in Scotland. This total is from 1,190 installations.

Energy storage technologies support Scotland's progress towards providing flexible and reliable energy systems and they are key for the transition to net zero. While energy storage itself does not directly generate zero-carbon energy, it plays a crucial role in enabling renewable sources by balancing supply and demand, and this is why its capacity is included in this report. Explanation of this can be found in Section 4.3.

4. Landscape of community and locally owned energy

This section provides insight into the source of the 1,109MW operational capacity and the 42,990 installations. This is reported by ownership category, technology, and local authority area. From the available data we aim to identify the drivers of progress towards the 2GW (2000MW) target. In addition, this section provides additional information on energy storage systems and shared ownership.

4.1. Ownership & technology

Figure 2 shows that at the end of 2024, the largest proportion of operational capacity was on Scottish farms and estates (41%). This is despite making up a small proportion (2%) of the total number of installations. Whereas housing associations have one of the smallest shares of total capacity (10%) but represent the second largest share of the total number of installations (41%). Local authorities have the second largest share of the total capacity (18%) making up the largest share of total number of installations (51%). The total capacity is further complimented by Local Business category (13%), Community category (10%), and Public Sector and Charity category (9%). Moreover, they represent the smallest share of total number of installations at 2%, 2% and 1% respectively. A data table is available in Appendix B, Table 2. The composition of capacity attributed to community owned energy is explored in more detail in Table 1 and its commentary.

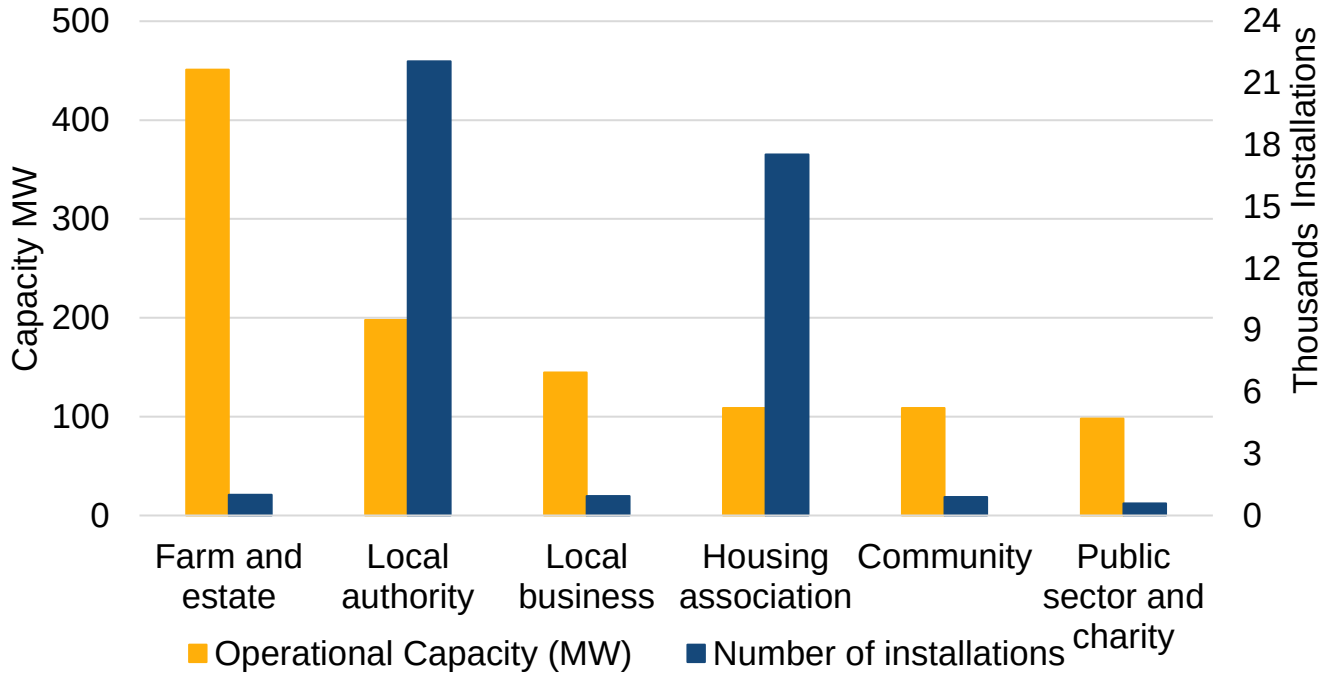


Figure 2. Operational capacity and installations by ownership, 2024

Figure 3 shows that the greatest share of operational capacity is from biomass at 32% followed by wind at 28%. However, both technologies account for a relatively small share of total operational installations at 4% and 2% respectively. In comparison, solar PV accounts for the largest share of operational installations at 57% followed by heat pumps at 30%. However, solar PV and heat pumps make up relatively small percentages of the

total capacity, at 11% and 14% respectively. A data table is available in Appendix B, Table 3.

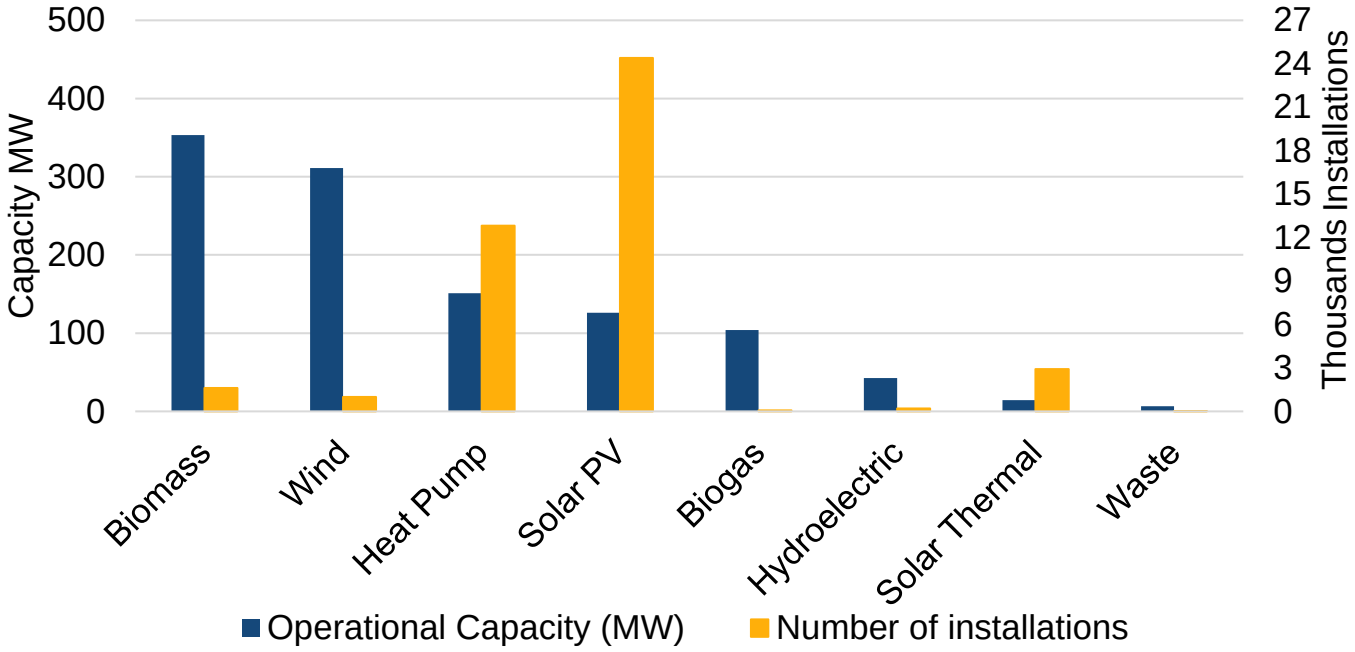
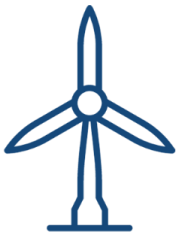


Figure 3. Operational capacity and installations by technology, 2024

Community and locally owned renewable energy ownership categories include a wide range of needs and use cases. For this reason, the mix of technologies adopted varies across ownership categories depending on the suitability, end user and available resources. Since we have illustrated ownership and technology individually, we will explore the relationship between ownership and technology to better understand what is driving community and locally owned energy. Table 1 outlines the operational capacity by technology and ownership category.

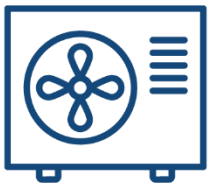
Table 1. Operational capacity (MW) by technology and ownership category, 2024

Technology/ Ownership category	Farm & estate	Local authority	Local business	Community	Public sector & charity	Housing association
Wind	188	3	33	71	3	13
Biomass	143	84	69	6	41	10
Heat Pump	29	47	3	5	5	62
Solar PV	7	52	6	8	33	19
Biogas	64	5	28	0	6	<1
Hydroelectric	19	<1	3	12	8	0
Solar Thermal	<1	7	<1	<1	1	5
Waste	0	<1	0	6	<1	0



Considering the increasing interest in community owned renewable energy, we will discuss the Community category first. The majority of community owned renewable capacity is from wind and hydroelectricity technologies. Community groups own 23% of all wind capacity, and 27% of hydroelectricity. Both can be attractive investments to local community groups, using natural resources within their local area. They can also be part of shared ownership offers from renewable developers.

Exploring the remaining installation and capacity by ownership we find that nearly a third of the total community and locally owned renewable energy capacity is sourced from wind and biomass on farms and estates. Farms and estates are more likely to have the available space and resources, like unobstructed wind or agricultural waste that make high-capacity technologies suitable and appealing. Farm and Estate category installations generally have much larger capacities than other ownership categories across all technologies.



Biomass and biogas installations are common replacements for large traditional fossil fuel plants. Biomass and biogas can be more affordable when there are local woodchip suppliers or on-site agricultural waste. While the majority of biomass installations on farms and estates are small or medium sized (<0.5MW), six single installations account for 13% of the total biomass capacity.

Housing associations tend to install a high number of low-capacity renewable energy installations for domestic use. Housing association installations were solar PV (46%), heat pump (45%) and solar thermal (8%), with less common technologies making up the remaining 1%. The average capacity of an installation in housing associations was 0.008MW for heat pump and 0.002MW for solar PV.

Similarly, local authorities had a large number of low-capacity renewable energy installations for social-let housing. They have similar trends for heat pumps, solar PV, and solar thermal. However, unlike housing associations, local authorities also own considerable biomass capacity. This contributes 24% of the total operational biomass. Most is used to meet the high and relatively steady heat demands of non-domestic properties, such as schools.

The public sector (excluding local authorities) and charity organisations use a wider mix of technologies compared to other ownership categories. This may be because of the wide variety of organisations included in this category, such as NHS facilities, further education institutions, and other public bodies. Some individual organisations operate a wide range

of technologies. They are tailored to meet or make use of site-specific demands and opportunities. For instance, Scottish Water, Scotland's publicly owned water company, has installed biogas combined heat and power (CHP) units. They incorporate an anaerobic digester and sewage produced gasses. They also installed heat pumps to extract heat from wastewater and solar PV to generate electricity at their wastewater treatment sites.[6]

The local business category also owns a wide variety of different technologies. This may be due to the variety of local businesses in Scotland. Of note, the local businesses ownership category has a relatively high share of capacity coming from biogas (27%). This can be attributed to waste management businesses having a readily available supply of waste from which to generate energy.

From a capacity per installation perspective, biogas has the highest median capacity (548KW) while 13% of biogas capacity comes from 5 installations. More than half of biogas capacity is from CHP installations. 14% of the biogas capacity comes from farms and estates and 20% from local businesses respectively. This may be because biogas is suitable to offset higher business-related energy consumption and to generate electricity for export to the grid. Anaerobic digestion biogas can also be fuelled from agricultural waste and other similar feedstocks which may be more available to farms and estates.

Waste has the third largest median capacity per installation (141KW). Although waste only contributes 1% of the total capacity, 98% of the waste technology capacity comes from communities. There is insufficient data to examine the reason behind this observation.

[6] https://www.scottishwater.co.uk/about-us/energy-and-sustainability/renewable-energy-technologies

Community Energy Case Study

Glasgow Community Energy (GCE)

Technology: Solar PV Panels
Location: Glasgow City
Community and Renewables Energy Scheme (CARES) funding:

£68,850 Community Energy Generation Grant Fund – September 2024

£59,225 Capital loan, £17,890 Enablement Grant – August 2020

Glasgow Community Energy (GCE) is a co-operative owned and controlled by its members and managed in accordance with its rules by a voluntary Board of Directors drawn from its membership.

In September 2024 GCE were awarded £68,850 from the CARES Community Energy Generation Growth Fund (CEG) to further develop an estimated 629 kW of rooftop solar PV on 9 buildings across Greater Glasgow. As before these were to be owned through community shares offer. CEG funding towards investment readiness, supported:

- Securing legal agreements from site owners, including leases and power purchase agreements (PPAs).
- Completing surveys and detailed designs for all sites.
- Obtaining building warrants, grid connection offers and, where necessary, planning permission.
- Developing a funding strategy.

Through this project GCE have completed site surveys, detailed designs and have memorandum of understanding (MoU) agreements with host sites. They have also developed draft lease and Power Purchase Documents through their legal support.

The full case study on the success of the previous community share owned project can be found here **Local Energy Scotland website**.

4.2. Distribution across local authorities

As shown in Figure 4[7], most community and locally owned renewable energy capacity is found in local authorities with a higher proportion of rural land.[8] Aberdeenshire (26%, 288MW) and Highland (12%,133MW) contribute the most capacity. 79% of total capacity in Aberdeenshire is owned by farms and estates. Aberdeenshire also had the highest capacity owned by local businesses across all local authorities. Moreover, 10% of the total 1,109MW capacity is from wind on farms and estates in Aberdeenshire. Like Aberdeenshire, the largest share of capacity in Highland is Farm and Estate (34%, 46MW) category. Furthermore, operational capacity in Highland is further complemented with Local Authority (29%) category, Local Business (12%) category and Community (11%) category.

While capacity is greatest in rural locations and, following analysis of EPC data, the top five largest installation figures are generally following the same trend. However,

Figure **5**[7] shows that Stirling, with a mix of urban and rural areas, also has a high number of installations.[9] Aberdeenshire, Stirling and Highland contribute the most installations with 15%, 12% and 8%, respectively. Unlike capacity, most installations are under housing association and local authority ownership. All three local authorities have more than 80% of their total number of installations coming from local authority and housing association ownership. This trend is consistent with the overall ownership category distribution.

The local authority distribution of total capacity and number of installations presented in Figure 4 and

Figure **5** is a good representation of reality, however the representation may be impacted by our data collection methodology. Non-domestic installations from local authority and housing associations are provided through voluntary survey responses annually. Non-domestic installations also tend to have larger capacity. The response rate to our survey from local authorities is on average 50% (16 out of 32) for the last 5 years, while from housing associations it is 8% (10 out of 128). Notably the response rate of housing association surveys is quite low for non-domestic installations, since housing associations own mostly domestic installations. Additionally local authority planning portal data is also collected in three-year cycles. For more information see the adjoining methodology document.

[7] Please refer to Table 4 in Appendix B for the data table associated with this figure .
[8] Please note that these maps show more than 99% of the reported total capacity and number of installations. A small percentage has been omitted because we cannot allocate it to specific local authority areas.
[9] Areas are analysed according to the Scottish Government's 8-fold urban rural classification in https://www.gov.scot/publications/scottish-government-urban-rural-classification-2020/

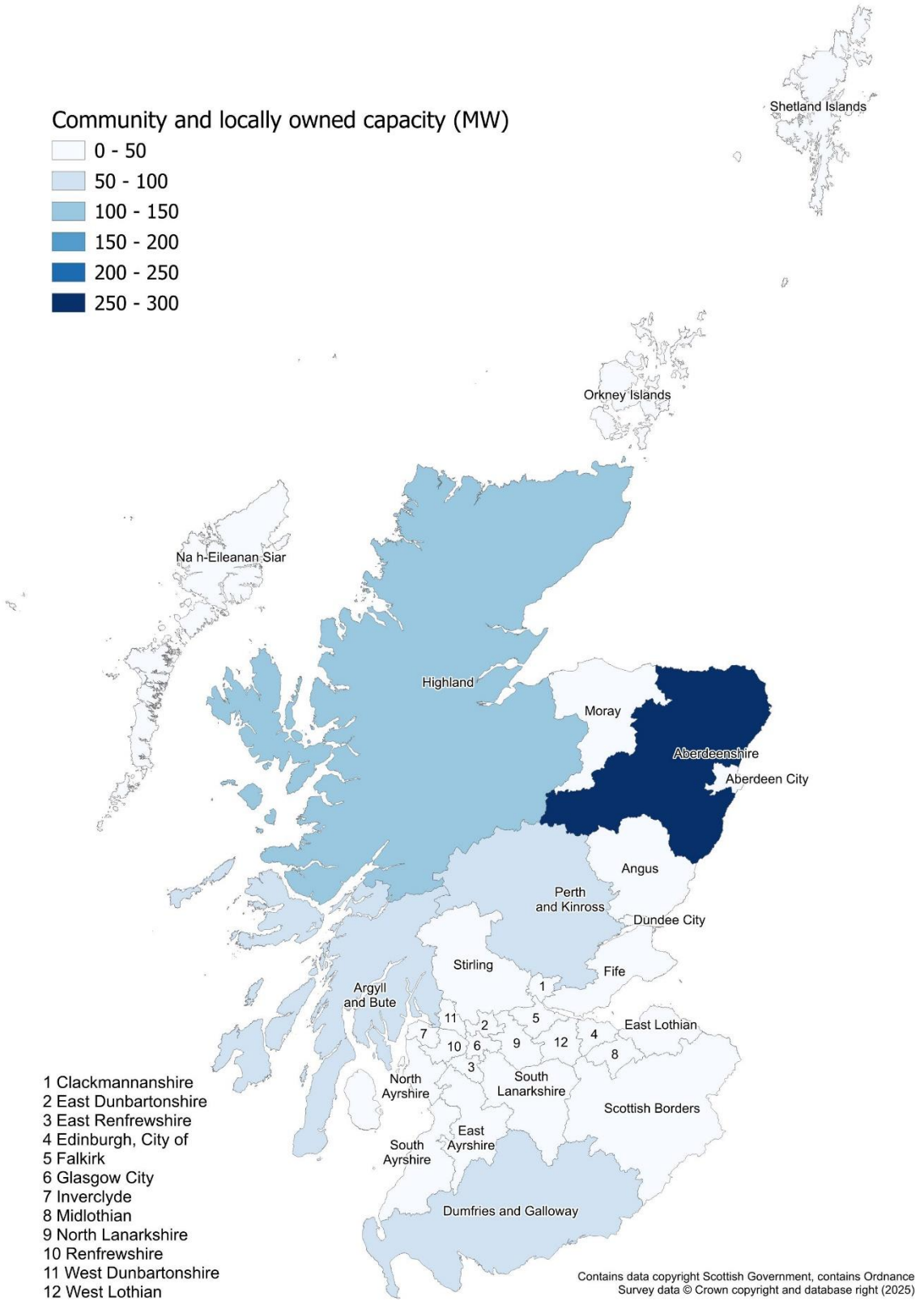


Figure 4. Total operational renewable energy capacity in community or local ownership, 2024[7]

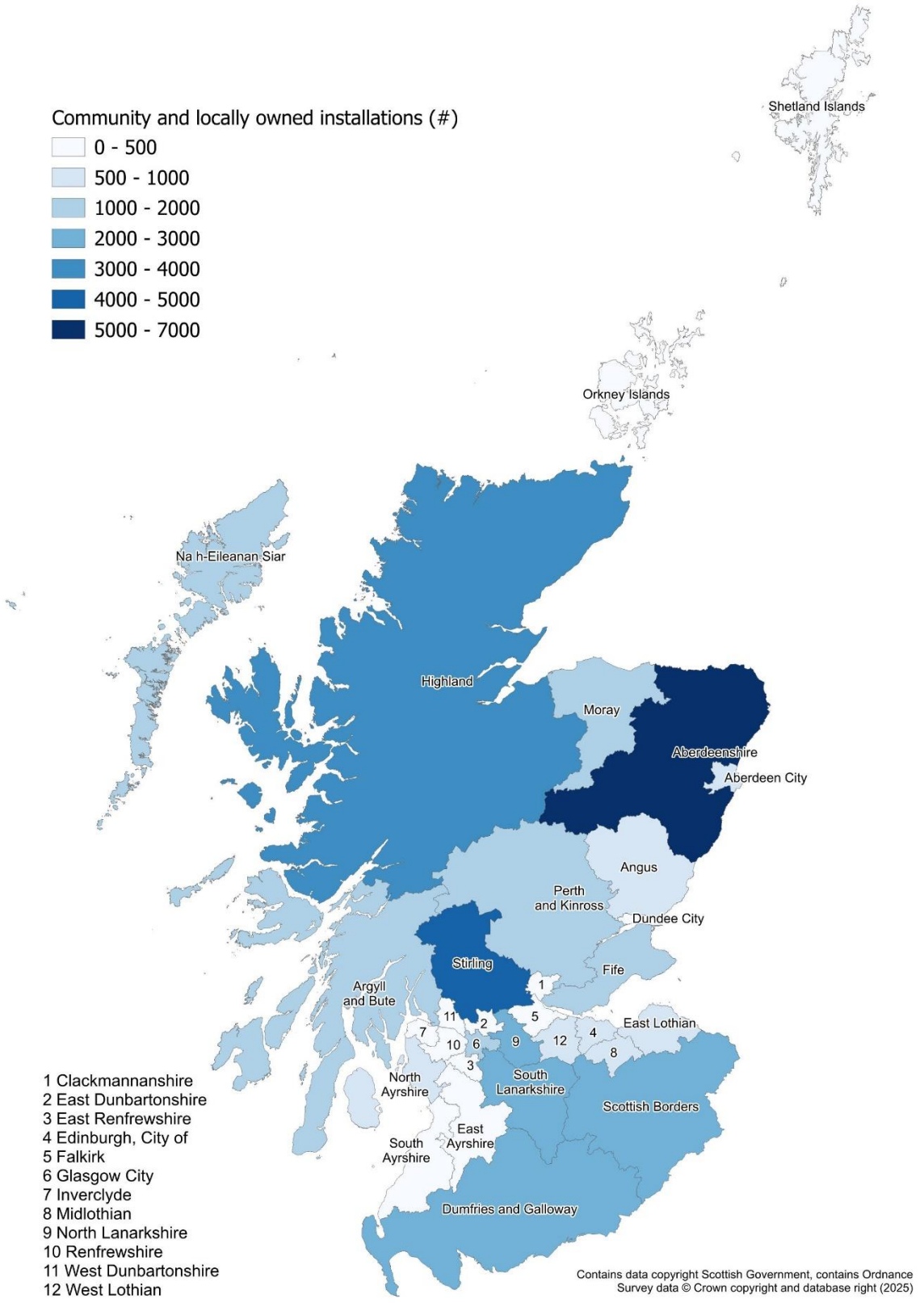


Figure 5. Total operational renewable energy number of installations in community or local ownership, 2024[7]

4.3. Energy storage in 2024

Energy storage technologies are important to provide flexible and reliable energy systems in the transition to net zero. Some renewable energy technologies, like solar photovoltaic (PV) and wind, generate energy intermittently and energy storage technologies may be in a position to help mitigate this issue. A robust storage system helps to de-couple costly fossil fuels from electricity generation, where fossil fuels are often the energy backup when renewable resource is low. For this reason, it is important to report on the development of energy storage in the community and locally owned energy sector. However, as energy storage does not generate energy it is not included in the community and locally owned renewable energy target.

At the end of December 2024, there was an estimated 13MWh of installed energy storage capacity in community or locally owned ownership in Scotland. This total is from 1,190 installations.

Of the 13MWh of energy storage capacity known to be installed there was an estimated:[10]

- 5MWh of electrical storage capacity
- 6MWh of heat storage capacity
- 1MWh of hydrogen storage capacity

The growth of 2MWh (60 installations) in energy storage capacity since January 2024 is mainly attributed to electrical storage.[11] The ownership of the new electrical storage installations is all from Community category. The installed battery storage systems could allow communities to better manage discrepancies between periods of renewable electricity supply and demand. For example, the power grid can demand wind farms to be turned off when wind farms are producing more than the power grid need. Whereas storage technology can help community owned wind farms by storing the excessive electricity generated.[12]

In addition to the 13MWh of community and locally owned energy storage capacity estimated to be installed in Scotland at the end of December 2024, a further 2MWh was estimated to be in development. Of this 2MWh of energy storage capacity in development:

- <1MWh was under construction. This is all electricity storage capacity.
- <1MWh was in planning. This is mostly heat storage capacity with a very small amount of electrical storage capacity.
- 1MWh was consented, not built. This is mostly electrical storage and some hydrogen storage.
- <1MWh was in scoping. This is all electricity storage capacity.

[10] The numerical sum of the following list of capacity does not equal to 13 MWh due to rounding.
[11] Due to data sensitivity reasons, all storage capacity less than 1MWh will be displayed as <1MWh.
[12] Techno-Economic Analysis of On-Site Energy Storage Units to Mitigate Wind Energy Curtailment: A Case Study in Scotland Energies 2021, 14(6), 1691; https://doi.org/10.3390/en14061691

4.4. Shared ownership installations

The Scottish Government encourages developers to offer shared ownership opportunities as standard on all new renewable energy projects. This includes the repowering of existing sites and extensions to existing projects.[13,14] Shared ownership is an operational status that describes installations that have community as one of the owners. Shared ownership installations can be owned by a community and a developer. Notably only the community proportion of the installation would be counted towards the target. They can also be owned by multi-community cooperatives, or multiple community and local owners which include a community. Also included in this report are installations that are 'under discussion' with a community through the Community and Renewable Energy Scheme (CARES). A full description of shared ownership is available in the methodology document.

At the end of December 2024, there were 140 installations with either shared ownership agreed status or where shared ownership is under discussion. Of these, 30 were reported as operational and accounted for 4% (43MW) of the total community and locally owned capacity. The remaining 110 installations were in various stages of development and account for 1,064MW of the in-development capacity.

Wind turbines make up most shared ownership capacity in operation (42MW) and under development (1,054MW). The average capacity of shared ownership installations under development (10MW) is much higher than that of non-shared ownership installations (0.1MW). The main reason is that wind turbines or wind farms are the most common technology that offer shared ownership opportunities. Moreover, wind turbines tend to have larger capacity than other technologies that offer shared ownership opportunities. However, it is expected that not all the projected 1,064MW of shared ownership capacity will be achieved. This is because some installations will not be consented or built. For projects that do proceed, it is important to note that prior to development, the percentage of ownership could decrease, or shared ownership may not be agreed.

The number of installations reported is the sum of the percentage of each installation owned by the shared ownership organisation. This methodology also applies to shares of individual installations, meaning we are often counting fractions of an installation within our database. Moreover, we have adopted the same rounding convention as the rest of the report for consistency. This also helps to better avoid identifying individual projects due to data protection and/or commercial sensitivities around developments.

[13] https://www.gov.scot/publications/draft-energy-strategy-transition-plan/pages/4/
[14] https://www.gov.scot/publications/onshore-wind-policy-statement-2022/pages/5/

5. Changes in community and locally owned energy over time

In this section we review the changes of community and locally owned renewable energy since 2010. The number of installations and capacity can change in the years following publication of each year's report as we review new or improved datasets. Changes could include new information on previously omitted installations, an updated date of operation or a new operational status. While changes can become known to us through survey or other data collection, we are unlikely to be able to fully confirm the total capacity for a particular reporting year.

A full list of data sources used in 2024, and previous years' reports, is available in the methodology document.

81MW[15,16] of operational capacity was newly reported to us this year. Approximately 19MW of this capacity became operational in the 2024 reporting year. Revisions to the more recent reporting years can be significant. It can take a year or more for us to learn about operational installations after their operating date. For instance, out of the 81MW that was newly reported to us this year, 62MW was contributed to historic years before 2024. Therefore, we should expect an increase in the capacity reported to be operational in the 2024 reporting year in subsequent reports in the series. Please refer to the methodology for further information.

The significant increase of 62MW in capacity from the previous reporting year is due to the inclusion of Energy Performance Certificate (EPC) data for social-let domestic installations owned by local authorities and housing associations. Historically, social-let domestic installations were collected through voluntary surveys to local authorities and housing associations. The response rate to our survey from local authorities is 50% (16 out of 32) on average for the last 5 years, while from housing associations is 8% (10 out of 128) on average for the last 5 years. To mitigate this data gap, we have acquired EPC register data and performed analysis on the number of renewable installations in social-let properties. This analysis required calculating the difference between social-let domestic installations from the existing database and EPC register to avoid double counting. This is then broken down by ownership type, technology and local authority. This is a complex analysis and has only been completed for 2023 and 2024. This means that we cannot compare statistics before 2023 to since 2023, due to the methodology change in 2023. We recognise the inconvenience this brings to the time series analysis. However, the time series is still the best representation of the change of the industry. We have interpreted and commented on the trend up until 2022 and the increase from 2023 to 2024 separately.

Based on long term planning presented in the methodology document, we are due to check twelve local authority planning portals every year. However, in response to the reduction in the number of local authority planning portals checked in last report, we have increased the number of local authority planning portals checked from two to sixteen for this report. This increase to sixteen is an effort to recover the data gap accumulated from the last report.

In addition, 0.38MW of operational capacity was decommissioned from the community and locally owned renewable energy database in this reporting cycle. This capacity was removed as installations are decommissioned. This means that such installations should

[15] Please note that summed figures may not precisely equal reported totals due to rounding.
[16] The 81MW is the net gain including operating records newly known minus records confirmed to be decommissioned and other records removed as a result of data improvement.

be present in our time series from the point of completion but be removed from the point of decommission when we become aware of it. For more detail, please refer to Section 4.3 and 4.4 of the methodology document. We acknowledge that any decommissioned community owned installations would not be counted towards the 2GW (2,000MW) target in 2030, as the target is to measure against the time point of 2030, but it is correct to include them in their corresponding years even if subsequently decommissioned.

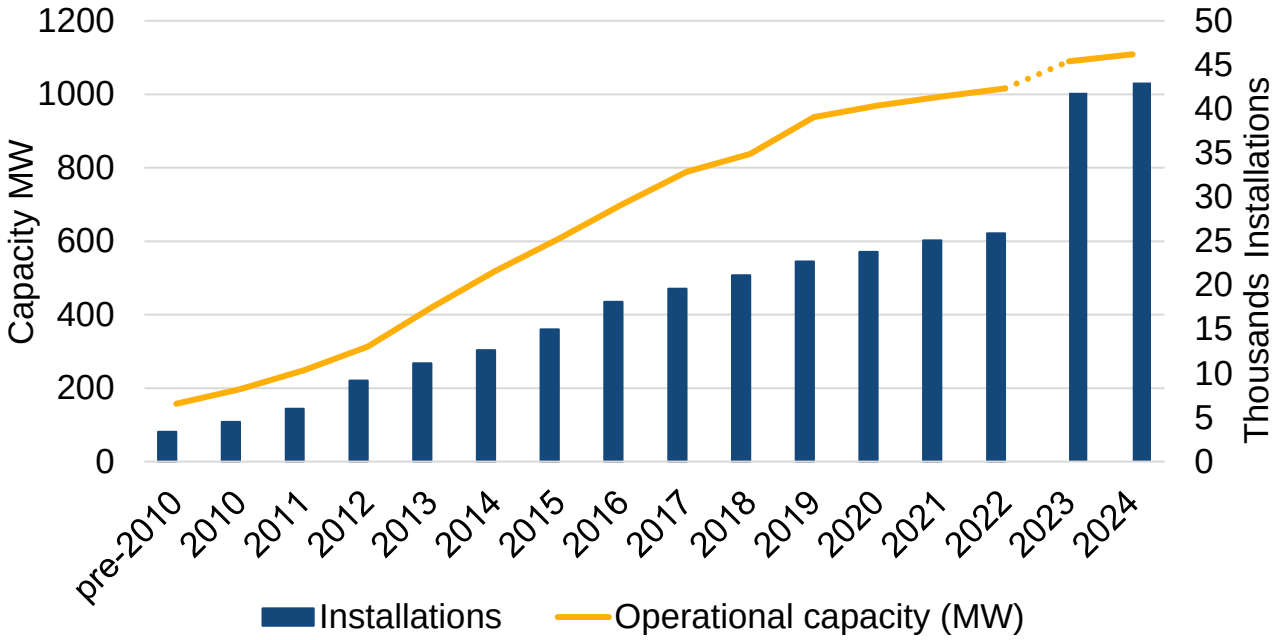


Figure 6. Total operational capacity and installations, pre-2010 to 2024

As the dotted line in Figure 6 between 2022 and 2023 indicates a methodology change, we will comment on the trend for 2011-2022 and 2023-2024 separately. Moreover, we will illustrate the trend observed based on data and only comment on potential reasons related to government subsidies.

For 2011-2022

Capacity grew steadily between 2011 and 2019 before slowing down in 2020 (Figure 6). The number of installations achieved similar steady growth, with growth slowing down from 2020.

From 2011 to 2019, the average annual growth in operating capacity was 82MW. This is higher compared to the average annual growth of 26MW from 2020 to 2022. The same trend is also true for biomass and wind technologies with relatively large capacity. The average annual growth rate for the number of installations of biomass and wind was 26% and 13% respectively before 2017, in contrast with an annual growth of just 3% from 2017 to 2022 for biomass and <1% for wind.

From 2010 to 2019 the likely key contributors to the rapid growth in capacity were the UK Government's Feed in Tariff (FiTs) scheme[17] and non-domestic Renewable Heat Incentive

[17] The Feed in Tariff (FiTs) scheme launched in 2010 and closed in 2019.

(RHI) scheme.[18] These schemes subsidised renewable electricity and renewable heat, respectively. Both schemes closed after 2019. The Smart Export Guarantee (SEG) scheme was launched in 2020 to provide small-scale generators payments from energy companies for exported electricity. However, it offers a lower support level than government-backed FiTs.

For 2023-2024

The annual growth in capacity from 2023 to 2024 is 19MW, with an increase in number of installations by 1,130. Solar PV and heat pumps represent 70% and 30% of those installations, respectively, each with an annual growth rate of 3%. Due to the lag in time for updates to the latest years, the figures may change in subsequent reporting years.

In addition to UK Government subsidies, we recognise that a range of factors influence the uptake of renewable energy installations. These factors include but are not limited to original equipment manufacturer (OEM) price, supply chain resilience, economic conditions, and Scottish policy and regulations. This report does not comment on all factors however we have provided information about the Scottish policy and support environment in Appendix C.

Community Energy Case Study

Monifieth Community Resource Group (MCRG).

Technologies:
64 kW Heat Pump
8.2kWp Solar PV
Location: Monifieth, Angus
CARES funding: £50,299 capital grant
Date operational: Sept 2024

Monifieth Community Resource Group (MCRG) is a community group that manages the Monifieth Activity Centre (MAC). This £2.3 million facility was completed in September 2024 and supports their mission to provide a community resource for the benefit of Monifieth's residents, aiming to build a stronger, more resilient community.

A CARES grant of £50,229 helped to install 64kW Air to Water Heat Pumps with underfloor heating and 8.2kWp Roof Mounted Solar PV array.

The MAC offers a variety of facilities and services, including a café, fitness suite and spaces for community events with the MCRG organising activities like pub quizzes, craft fairs, and bingo nights to foster community spirit. The facility also houses the new Angus Council Monifieth Library and includes a café, a fitness area, and a main hall with a 300-person capacity.

[18] The Renewable Heat Incentive (RHI) scheme launched for non-domestic in 2011 and domestic in 2014, closed in 2021 and 2022 respectively.

6. In-development capacity

At the end of December 2024, 1,109MW of community and locally owned renewable energy capacity is estimated to be operational. A further 1,496MW is estimated to be in various stages of development. Capacity (MW) measures the rate at which energy is generated or consumed at any given moment. This in-development capacity is the same as powering 600,000 kettles at the same time.

Of the renewable energy capacity estimated to be in development:

- 44MW was under construction.
- 193MW had been granted planning permission, but construction had not yet started ('consented, not built')[19]
- 133MW was waiting for a planning decision to be made ('in planning')[19]
- 1,064MW was under discussion for potential shared ownership between a community group and a renewable developer ('shared ownership under discussion')
- 60MW was in the scoping stage.
- 2MW was at an unknown stage of development.

The total capacity in each stage of development held within the community and locally owned renewable energy database is shown in Figure 7, and a breakdown by technology type is given in Appendix B Table 5.

Shared ownership under discussion holds the largest share of in-development capacity. Most capacity of this status is from community owned stakes in onshore wind installations. This is reasonable because wind farm developments have very large capacity, even with 5% ownership, the shared ownership capacity is still bigger than other technologies. Moreover, wind farm developments often have a development cycle of 5-8 years[20], whereas other technologies have a significantly shorter development cycle. Therefore, a community wind installation remains 'in-development' for years while other technologies would have commissioned and planned new installations in the same time frame.

The second largest ownership category in in-development capacity is Farm and Estate category. This roughly matches the operating capacity distribution where farms and estates are the largest driver.

[19] Applies only to installations that would require planning permission.
[20] The development cycle is commented by Shared Ownership Manager from Community and Renewable Energy Scheme (CARES).

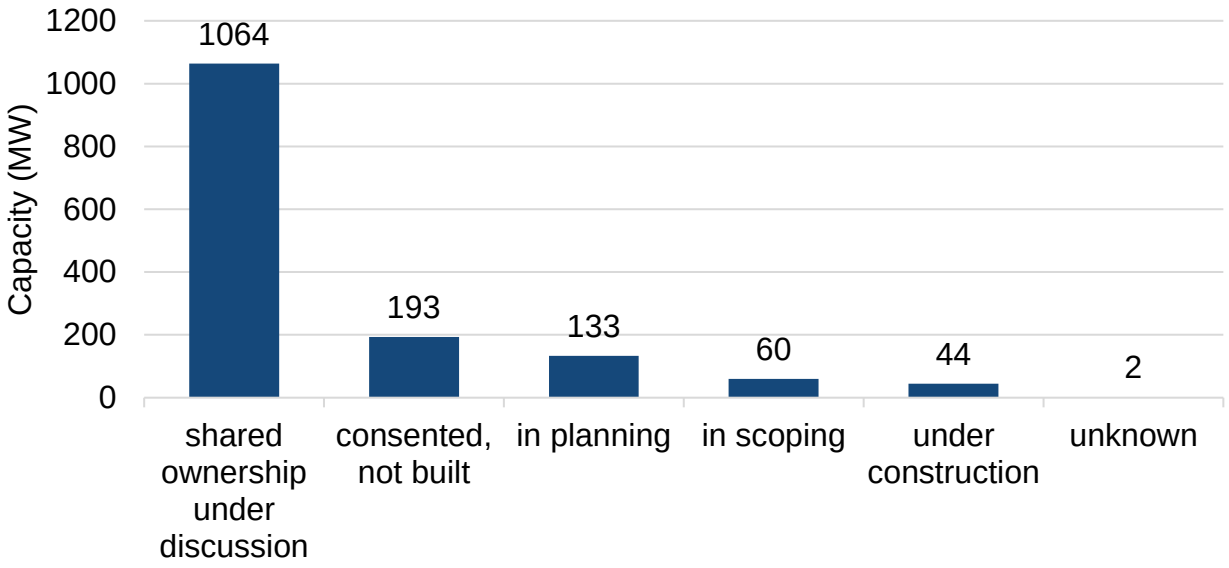


Figure 7. Capacity in each stage of project development, 2024

7. Future developments in reporting

We consider the results presented in this report to be the best currently available on community and locally owned renewable energy in Scotland, along with caveats stated throughout the report. We endeavour to continually improve the methodology and access to data sources. These are the areas that we seek to develop further in future reporting:

- We will continue manual checks on the non-domestic Renewable Heat Incentive dataset to identify community and locally owned renewable energy. Until 2024, we have assessed 35% of the capacity in dataset and we will seek to continue this check in the coming years.
- We temporarily increased the number of local authorities we collect planning portal data from, raising it from 12 to 16. This was a one-time effort to reduce gaps caused by using data from only two local authorities in the 2023 report. Moving forward, we will return to rotating data collection from 12 local authorities annually, covering 32 local authorities every three years.
- We are seeking new datasets to be added to the database, such as Distribution Network Operator (DNO) data and Feed-in Tariffs (FIT) data. The timing of processing these datasets would be subject to resource and the format of the data. We will always prioritise the datasets that address the largest data gaps in the database to ensure the reporting results reflect the most accurate and complete picture.

energy saving trust

With thanks to

The report draws on various sources of data from Energy Saving Trust and other organisations and has been compiled with thanks to:

- Local Energy Scotland, who deliver the Community and Renewable Energy Scheme (CARES)
- Business Energy Scotland
- The local authorities who responded to our survey
- Eunomia, who prepare the Renewable Energy Planning Database (REPD)
- Scottish Forestry (previous Forestry Commission Scotland)
- Scottish Water
- UK Department for Energy Security and Net Zero (DESNZ)[21]
- Community Energy Scotland, who with Community Energy England and Community Energy Wales publish the Community Energy: State of the Sector report[22]
- Scottish Government

We would also like to extend our thanks to the many other organisations and individuals who helped with time or information.

If you have any questions or comments about the Community and Locally Owned renewable energy database, analysis or report, please contact RenewableReporting@est.org.uk.

[21] Formerly the Department for Business, Energy and Industrial Strategy (BEIS)
[22] https://communityenergyscotland.org.uk/wp-content/uploads/2022/06/UK-State-of-the-Sector-Report-2022_Full_Version.pdf

Appendix A Community and locally owned energy definition

As with previous versions of the database, the Scottish Government has requested that 'community and locally owned renewable energy' be defined as technologies producing heat and/or electricity from a renewable source,[23] where the owner of the installation is in one of the following categories:

- A community group
- A local Scottish business[24]
- A farm or estate
- A local authority
- A housing association
- A 'Public sector or other charitable organisation', including:
    - Charities, including faith organisations and those found on the Scottish Charity Regulator (OSCR) website[25]
    - Public bodies or publicly owned companies
    - Further or higher education establishments such as universities and colleges

'Ownership' has not been restricted to cases where the organisation owns the entire renewable installation. It also includes cases where, for example, a community group or farmer has helped to meet part of the cost of developing and installing a renewable system in return for some benefit, such as a share in the income generated. In such cases, a percentage of the installation's capacity equal to the share owned by the community or local owner is counted towards the target.

'Ownership' does not include cases where the only benefit to the farmer or community group is a land rental payment from the owner or developer of the installation, or installations that generate community benefit payments but are owned by another organisation (for example a wind farm developer). The Scottish Government has established a register of community benefits from renewable energy installations[26] to help communities and renewable energy developers negotiate appropriate levels of community benefit payment.

There is some overlap between the categories of owners. For example, some community groups have charitable status, as do many housing associations; and farms and estates could also be considered local Scottish businesses. For the purposes of this report, the following definitions have been used to determine which category each installation belongs to:

- The **Community** category has been defined as communities of place, ie based around a sense of shared location. They often have charitable status. In some instances, the renewable technology and/or income from it may be owned by a trading subsidiary, which may be registered as a separate company; but in all such cases the installations have been treated as under community ownership.

[23] A full description of each eligible technology is given in the methodology document.
[24] Note this excludes Scottish businesses whose purpose is to develop renewable energy projects when the installation is not from their own properties or where ownership and management of the installation is provided as an energy service company (ESCO).
[25] https://www.oscr.org.uk/
[26] https://localenergy.scot/community-benefits-register/

- The **Farm and Estate** category includes organisations where the renewable technology is installed on land currently used for agricultural or other farming purposes, or on buildings that are part of a farm or estate layout; and (where the installation needs planning permission) where the person or organisation listed as the applicant in the planning application gives their address as being in Scotland. Estate ownership is often difficult to establish, but where possible, publicly available information has been used to establish whether estate owners are normally resident on the estate where the installation is to be built. Estate ownership is sometimes connected to or maintained through a charitable trust or a local business, but in such cases any related renewable energy installations have been included under farm and estate ownership.
- The **Public Sector and Charity** category cover public bodies and charities. Public bodies are those listed in the National Public Bodies Directory,[27] including health bodies such as NHS health boards and public corporations such as Scottish Water. Other publicly owned organisations such as the fire and rescue services and the police forces are also included in this category, although they are not strictly public bodies. This category also includes further or higher education establishments who are members of Association of Scotland's Colleges (ASC)[28] or Universities Scotland.[29] Charities have been defined as charitable organisations found on the Scottish Charity Regulator website, which are not also a community group, housing association or estate owned charitable trust. This category has also been taken to include leisure trusts,[30] and churches and other religious organisations.
- The **Local Authority** category includes all 32 unitary local authorities of Scotland.
- The **Local Business** category are small or medium-sized enterprises (SMEs) registered with Companies House[31] at an address in Scotland. The businesses must have fewer than 250 employees and not be a subsidiary of another business which has more than 250 employees or is registered outside of Scotland as per Companies House. Businesses receiving funding through CARES or through Resource Efficient Scotland (RES) SME (Small and Medium sized Enterprises) loans have been included. Note that this definition excludes Scottish SMEs whose purpose is to develop renewable energy installations at a location significantly removed from their registered office, and where the business does not own the land where the installation will be built.[32]
- The **Housing Association** category includes all registered providers of social housing within Scotland other than local authorities. Although some housing associations are registered charities and others are community groups, any renewable energy installations owned by a registered social landlord is recorded under the housing association ownership category.

Any source of renewable energy generation, such as electricity, heat, combined heat and power or other unspecified energy categories, ie, energy from waste installations, or types

[27] www.scotland.gov.uk/Topics/Government/public-bodies/about/Bodies
[28] www.scotlandscolleges.ac.uk/about-us/
[29] www.universities-scotland.ac.uk/
[30] Leisure trusts supply sports facilities to local communities, often on behalf of unitary authorities.
[31] www.companieshouse.gov.uk/
[32] For example, an SME established to build and operate a renewable energy project could count as a 'local Scottish business' for the purposes of the Scottish Government's target if it was registered with Companies House at an address in Scotland, and either a) owned all the land where the installation was to be built, or b) if it did not own all the land, if its registered address indicated that it was physically located close to the address of the proposed installation.

of energy storage, such as electricity, heat and hydrogen, which fell into the ownership categories listed above were included in the database.

Appendix B Data Tables

Table 2. Operational capacity and number of installations by community or local ownership category, 2024

Ownership category	Operational capacity (MW)	Percentage of operational capacity	Number of installations	Percentage of installations
Farm and estate	451	41%	1,000	2%
Local authority	198	18%	22,050	51%
Local business	145	13%	940	2%
Community	109	10%	890	2%
Public sector and charity	98	9%	580	1%
Housing association	109	10%	17,530	41%
Total	1,109	100%	42,990	100%

Table 3. Operational capacity and number of installations by technology, 2024

Technology	Operational capacity (MW)	Percentage of operational capacity	Number of installations	Percentage of installations
Biomass	353	32%	1,620	4%
Wind	311	28%	990	2%
Heat pump	151	14%	12,820	30%
Biogas	104	9%	60	<1%
Solar PV	126	11%	24,400	57%
Hydroelectric	43	4%	190	<1%
Solar thermal	14	1%	2,910	7%
Waste	6	1%	<10	<1%
Total	1,109	100%	42,990	100%

Table 4. Total operational renewable energy capacity and number of installations in community or local ownership, 2024

Local Authority	Total Capacity (MW)	Total number of installations
Aberdeen City	9	590
Aberdeenshire	288	6,250
Angus	22	540
Argyll & Bute	60	1,960
City of Edinburgh	2	350
Clackmannanshire	77	2,070
Dumfries & Galloway	8	380
Dundee City	12	400
East Ayrshire	10	210
East Dunbartonshire	14	940
East Lothian	2	340
East Renfrewshire	13	890
Falkirk	7	490
Fife	50	1,170
Glasgow City	22	1,670
Highland	133	3,420
Inverclyde	2	200
Midlothian	9	630
Moray	25	1,150
Na h-Eileanan Siar	44	1,630
North Ayrshire	13	720

North Lanarkshire	21	2,370
Orkney Islands	19	470
Perth & Kinross	59	1,470
Renfrewshire	12	490
Scottish Borders	36	2,750
Shetland Islands	13	270
South Ayrshire	12	230
South Lanarkshire	41	2,390
Stirling	28	4,970
Various	2	850
West Dunbartonshire	11	240
West Lothian	31	510
Total	**1,109**[33]	**42,990**[34]

[33] The numerical sum of all capacity in this table does not equal 1,109 due to rounding.
[34] The numerical sum of all number of installations in this table does not equal 42,990 due to rounding.

Table 5. Capacity (MW) in each stage of development by technology[35]

Technology	In scoping	In planning	Consented, not built	Under construction	Shared ownership under discussion	Total
Wind	21	99	129	8	1,054	**1,310**
Solar PV	27	5	24	5	7	**68**
Biogas	<1	<1	20	11	<1	**32**
Heat pump	<1	4	6	14	0	**25**
Tidal	<1	20	1	0	0	**21**
Hydroelectric	5	4	6	3	3	**21**
Biomass	2	2	7	3	0	**14**
Geothermal	4	0	0	<1	0	**4**
Solar thermal	<1	<1	<1	<1	0	**<1**
Grand total	**60**	**133**	**193**	**44**	**1,064**	**1,496**

[35] 2MW of capacity classed as being in an unknown stage of development has been omitted from this table.

Appendix C Scottish policy perspective

The Scottish Government has announced £3.5 million for a new Community Energy Generation Growth Fund through CARES in 2025/26, which will support communities to develop their own renewable energy generation projects, including wind and solar PV. This will build on the success of last year's pilot Growth Fund, which offered up to £1.5 million to community groups across Scotland. This funding is part of a £9 million CARES budget for 2025-26, which also includes £4.5 million to help communities decarbonise their buildings and £1 million to develop support to help communities develop early-stage project ideas.

On 21 March, the UK Government announced £4.85 million funding through GB Energy Local to be provided to the Scottish Government, primarily to support community energy projects in Scotland in 2025/26. This funding will be directed through CARES.

Previously, the uptake of renewable energy installations was encouraged in Scottish social housing through the Energy Efficiency Standard for Social Housing (EESSH), enacted by the Scottish Government in 2014. The first EESSH milestone required that, where feasible to do so, all social-let properties should reach an EPC band of D or C (average energy efficiency or above) by 2020. The post-2020 Energy Efficiency Standard for Social Housing (EESSH2) required properties to meet an EPC band B (high energy efficiency) by 2032. In addition, no social housing below EPC band D could be re-let from December 2025, subject to temporary specified exemptions.

Review of energy standards set by Scottish building regulations have continued to set challenging emissions and, more recently in 2024, energy performance targets for new buildings. These standards apply to all development regardless of tenure. Since the introduction of the 2015 energy standards, this level of challenge set means that on-site generation of power, to offset energy demand, is now more a common part of newbuild specifications. This increased uptake in solutions, primarily solar photovoltaic (PV) arrays, is also driven by the wider availability and lower cost of such technologies. Current standards, for 2023, emphasise the effective use of renewable generation at the building, where installed as part of a new development. Further review energy standards to improve both performance and compliance, is underway.[36]

Under EESSH2, it was possible to meet the 2020 standard in many properties without installing renewable technologies because an efficient fossil fuel heating system and good levels of insulation could be sufficient to meet the more immediate targets. For this reason, and to establish a standard that is in line with net zero, the Scottish Government convened a review of EESSH2 in 2022.

The work of this review group fed into the development of proposals which the Scottish Government published in a consultation for the new Social Housing Net Zero Standard which ran from November 2023 to March 2024. The Social Housing Net Zero Standard consultation sought views on a standard that will require social landlords to improve fabric efficiency and install clean heating, across their stock, where it is technically feasible and cost-effective to do so. The new standard is yet to be confirmed, however renewable technologies are highly likely to be needed to meet the net zero ambitions. We therefore expect to continue to see the steady uptake of renewable technologies in social housing.

[36] https://www.gov.scot/groups/energy-standards-review-scottish-passivhaus-equivalent-working-group/

In addition, the NBHS[37] prohibits direct emissions main heating systems in new buildings and some conversions with some exceptions. The Standard first came in force on 1 April 2024 and was subsequently amended following a review to accommodate the use of bioenergy and peat systems to tackle concerns expressed by rural and island communities, and industry. The prohibition on mains gas and oil boilers as main heating systems in new builds, as introduced in the original regulations, remains.

The financial viability of renewable energy installations and the available financial support are key drivers in the growth of renewable energy. We expected to see a slowdown in installations. This would be in line with significant changes to the availability and size of UK Government renewable energy subsidies.

The Scottish Government has supported community and locally owned renewable energy for the last decade. They have used various funding and support schemes, including:

- Community and Renewable Energy Scheme (CARES)
- District Heating Loan Fund (DHLF) – now closed to new applications
- Small and Medium Enterprise (SME) Loan and Cashback Scheme
- Low Carbon Infrastructure Transition Programme (LCITP) – now closed to new applications.
- Energy Investment Funding (EIF) / Renewable Energy Investment Funding (REIF)

Of the above schemes, CARES which was due to run until at least March 2025, has successfully completed a public procurement exercise, allowing the continuation of the scheme from 2025-2029.[38] As above, the Scottish Government has announced a total of £9 million in CARES funding for 2025-26.

The SME Loan and Cashback Scheme and other support for small businesses are also expected to continue. Scotland's Heat Network Fund,[23] the successor to the LCITP, opened to applications on 21 February 2022. It supports the development of new zero-emission heat networks and communal heating systems. It will also support the expansion and decarbonisation of existing heat networks across Scotland. The Scottish Government also supports the retrofit of social housing via the Social Housing Net Zero Heat Fund.[24] This fund provides grant support to Registered Social Landlords and Local Authorities to help decarbonise their existing housing stock. The fund supports both the installation of clean heating and 'fabric first' enhancements."

[37] New Build Heat Standard, https://www.gov.scot/publications/new-build-heat-standard-factsheet/
[38] Public Contracts Scotland Notice, 05 Feb 2025: View Notice - Public Contracts Scotland