Scottish Government
Community Energy Policy Statement
Final Version published September 2015

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Ministerial Foreword

I am delighted to publish our first national Community Energy Policy Statement. It builds on our record of more than a decade of support to set a clear statement of ambition, including the benefits which we want to see accrue to communities from commercially-owned schemes.

To date, we have prioritised community renewables. We now need to bring community energy in from the margins of energy policy to make it the central tenet of our future energy systems, where it has the potential to transform local economies. Our ambition is to develop a localised, robust, more distributed energy system – a hallmark of Scotland’s unique approach to its own energy needs. By building close links with energy consumers through community-based organisations, we have the potential to maximise the value of energy generated and to create socio-economic benefits, as well as contributing to our climate change targets.

We are on the brink of a new surge in community energy and opportunities for community benefits and community investment in commercial schemes as part of a local energy imperative.

However Community energy faces a number of barriers to growth: energy projects often have higher capital costs, require longer lead times, and can be subject to delayed grid connection. This is further compounded by the UK government’s proposed changes to the Feed-in Tariff Scheme. I am dismayed at the scale of the cuts and disappointed that there is no real commitment to support community energy. I have a real concern that the community groups we are supporting under our Community and Renewables Energy Scheme (CARES) face a very uncertain future.

The Scottish Government remains ambitious for the renewable energy industry and aims to maximise the vital contribution which the sector makes towards tackling climate change. However the UK government must provide clarity to enable ongoing investment, particularly for community energy projects where the impact will be greater.

I am grateful to all those who responded to our consultation. The result is a document that reflects our ambition for community energy and its transformative potential.

Fergus Ewing, Minister for Business, Energy and Tourism
Note on Text

Context
This national Community Energy Policy Statement should be viewed alongside the Scottish Government’s existing Electricity Generation Policy Statement\(^1\) and our Heat Policy Statement\(^2\). A useful links annex has been compiled to related guidance and material.

Scope
This document uses terms such as “community energy” and “locally-owned energy” throughout:

- **Community energy\(^3\)** refers to projects led by constituted non-profit-distributing community groups established and operating across a geographically defined community, including “Bencoms”.

- **Locally-owned energy** refers to projects led by regional organisations which are not profit-distributing and have charitable aims such as housing associations and educational institutions or local authorities, as well as commercial businesses including farmers, land managers, rural small and medium-sized enterprises and profit-distributing co-operatives.

We have a 2020 target for 500MW installed capacity of community and locally-owned renewable energy generation. The first sections of this statement focus, for the most part, on the support made available to communities, while later sections deal with the interaction between local and community energy. We recognise that each presents different challenges, and that success in one area does not automatically lead to success in the other. However, both are linked, and a local economies approach will require them to become more so, which will be explored as this statement progresses.]

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\(^1\) Electricity Generation Policy Statement – 2013 www.scotland.gov.uk/Publications/2013/06/5757


\(^3\) While non-renewable resources may be included in the term “community energy”, Scottish Government support for community energy schemes to date has been restricted to those based on renewable resources. However, as will be seen later in this Statement, there may be an opportunity to promote community energy within a broader low carbon approach involving a wide range of local partners. Hence the distinction between “community energy” and “locally-owned energy” above may become more blurred in the future.
Executive Summary

Community Energy
This national policy statement demonstrates our ambition to see community energy mainstreamed within a whole systems approach, with opportunity for community ownership and control across the full range of components in the system: generating low carbon energy, improving energy efficiency, distributing energy and storing energy. The community can have a stake in the full range of heat and electricity generating technologies, from onshore wind, to solar PV and solar thermal, hydro, biomass and heat pumps.

However, community energy faces a number of barriers to its growth: energy projects are often high capital cost and can be subject to delayed grid connection. The UK subsidy regime is currently under reform, creating uncertainty and new risks, particularly for smaller scale projects, and the impact of the recently announced changes to the Renewables Obligation for onshore wind projects and the Feed-in tariff Scheme have yet to be fully realised.

In these circumstances, the challenge is to encourage Scotland’s communities to grasp the opportunities of a whole systems approach to community energy and create local energy economies.

Community Benefits and ownership, including shared ownership
Community benefits payments are already a valuable opportunity to spread the benefits of our energy resource. The Scottish Government’s ambition in this area has transformed practice across the UK, gaining industry commitment to national good practice principles and a new baseline for community benefit of £5,000 per MW from commercial projects. As a result, in the last year, over £9 million has been provided to Scottish communities from onshore renewable schemes.

However, there are potentially much greater returns to be gained from community ownership, even if the financial and legal risk may be greater. Some of these risks can be offset if communities enter into shared ownership arrangements with commercial developers. A number of developers are already offering a stake to communities and we want to see this as a standard offering for all new developments.

Our ambition is to see 500MW of energy in community or local ownership by 2020. As of June 2014, we are 72% of the way there, with 361 MW of energy in community or local ownership; 27 MW of this comes from 17 operational shared ownership projects. We expect shortly to be able to update this figure to show very significant progress towards the target.

No one model will suit all communities or projects, and communities and developers must be supported flexibly in whatever way best suits them to work together. Our aim is the creation of a new paradigm of “mutual benefit” between communities and developers in commercial schemes – one in which communities will benefit from a revenue stream to regenerate their local area and invest in local priorities, and developers will benefit from a more collaborative and co-operative relationship with communities. Achieving this requires recognition of the additional risks communities
undertake through either direct or shared ownership, as well as the potentially major barriers to bringing together communities to invest and own.

Scottish Government support
The Scottish Government's community energy policy aims to overcome some of these barriers. Our flagship schemes for community energy are:

- the **Community and Renewable Energy Scheme** (CARES), delivered by Local Energy Scotland, which aims to provide end to end support – both through finance and mentoring – to community groups from their initial engagement in the renewable journey through to installing technologies themselves or benefitting from commercial schemes;
- the **Renewable Energy Investment Fund** (REIF), delivered by Scottish Investment Bank, which is a capital support mechanism, offering loans, guarantees and equity to commercial renewables developers and community groups at market rates to address market failure in priority areas, such as marine energy and community renewables;
- The **Local Energy Investment Fund**, also delivered by REIF, which we are running as a pilot in 2015-16, to buy stakes in commercial projects on behalf of communities, which might otherwise struggle to invest in short timescales. Communities can then buy the stake back from LEIF.

These form the backbone of our Community Energy Empowerment Programme, which aims to empower communities to take decisions about their own energy, enabling both shared and direct ownership.

Local energy economies
At its most simple, a local energy economy means using low carbon technologies to generate and use energy locally. More specifically, it refers to integrating low carbon energy sources in local energy systems and supply chains in a way that maximises system efficiency and adds value for local stakeholders – for example, by retailing heat or electricity directly to local consumers, overcoming grid constraints, increasing local skills or employment, or increasing the resilience of the local energy supply chain.

These systems can involve the integration of a range of technologies: renewable energy generation – coupled with energy storage, the use of waste heat and community heat systems, smart grids and demand reduction measures, and improvements to energy efficiency. Together, these can lower fuel bills for consumers and even create new revenue schemes for further community investment.

We require a wider approach to community energy, built on existing experience of community engagement, but focusing on new forms of collaboration with local authorities and local businesses, using ‘smart’ technologies, and new business models that capture and retain more value at the local level. These opportunities will be more difficult to conceive, but the benefits are potentially transformational – especially where we can find projects that combine heat, electricity, waste and transport solutions. The Scottish Government is providing funding through our Local
Energy Challenge Fund to support demonstrator projects, and a range of support mechanisms including project development and expert advice is available through the Low Carbon Infrastructure Transition Programme (LCITP) to support the development of substantive community as well as private and public low-carbon projects across Scotland.
Introduction and Overview

Ambition

Community energy provides an opportunity to spread the benefits of the rich energy resource we have in Scotland. Our support for community projects reflects their importance in empowering communities to take control of their own local resources.

Community energy covers a spectrum of activity – from direct ownership of energy assets, to community benefits payments. This national policy statement demonstrates our ambition to see community energy mainstreamed within a whole systems approach, with opportunity for community ownership and control across the full range of components in the system: generating low carbon energy, improving energy efficiency, distributing energy and even storing energy. The community can have a stake in the full range of heat and electricity generating technologies, from onshore wind, to solar PV and solar thermal, hydro, biomass and heat pumps.

Central to our task is the challenge to address climate change and reduce the carbon impact of energy in Scotland. Our main ambition is to see 500 MW of renewables in community and local ownership by 2020. This target is unique in the UK, recognising the huge economic return to Scottish communities which come together to make use of the natural resource around them.

The total value of the target for 500 MW of community and locally-owned energy by 2020 has been independently estimated at up to £2.2 billion over the operational lifetime of those projects. For individual communities, these projects offer the potential for economic renewal and regeneration, led and shaped by local people.

The different forms of community energy

![Diagram showing the 3 main models of community energy: 100% Community Owned, Shared Ownership, and Community Benefit from Externally Owned Projects.]

Figure 1: the 3 main models of community energy

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4 The economic scale of community and locally owned renewable energy in Scotland and projections to 2020, Fraser of Allander Institute, University of Strathclyde, for ClimateXChange, July 2014.
Direct ownership of schemes, and community investment in commercial schemes are the main prizes for community energy, but they carry with them the need to bear risks, financial and legal, and there can be major barriers to bringing together communities to make the bold decision to invest and own. This is where the Scottish Government can play a crucial role: providing improved information and advice, and reducing financial risk. The scale of social and economic return where there is ownership of commercial projects can be transformational for local communities, supporting regeneration and a stronger sense of community cohesion.

Community benefits from commercial schemes offer a smaller, but still valuable, opportunity to spread the benefits of our renewable energy resource. The Scottish Government’s ambition in this area has transformed practice across the UK in terms of gaining industry commitment to national good practice principles and a new baseline for community benefit from commercial projects.

**Direct Community Ownership of Renewables**

The Scottish Government’s community energy policy aims to mitigate and reduce risks of direct ownership.

Our flagship schemes for community energy are currently the Community and Renewable Energy Scheme (CARES) delivered by Local Energy Scotland, and the Renewable Energy Investment Fund (REIF) delivered by Scottish Investment Bank. Moreover, in 2015-16, we are running a pilot of our Local Energy Investment Fund, also delivered by REIF as part of the Scottish Investment Bank.

CARES offers end to end local support to community groups to encourage and support them to consider renewables projects, and has been recognised by the Organisation for Economic Co-operation and Development (OECD) as a leading example of good practice (see above).

The programme is already helping us to make progress towards our 500 MW community and locally-owned renewables target - with 361 MW operating by the end of June 2014, including 46 MW of community energy. **We expect shortly to be able to update this figure to show very significant progress towards the target.**
Scottish community experience of renewables is underpinned by a wider local engagement with the low carbon economy assisted by national initiatives such as the Climate Challenge Fund, and enhanced by a range of more general support to communities designed to increase community capacity and engagement.

Shared Ownership and Investment in Renewables

The Scottish Government is now encouraging new models of local investment in commercial renewables to reflect our ambition to spread the benefits of our renewable energy resource.

In Scotland a new relationship is emerging between energy developers and communities. On the national forest estate - land managed by Forestry Commission Scotland - communities have the opportunity to invest up to 49% equity in forthcoming wind and hydro schemes.

Further tailored intervention will be required to make the most of the opportunity for communities to invest in commercial renewable energy schemes so that Scotland can continue to lead the way in this area. This policy statement sets out the Scottish Government’s future plans to support community investment.

Community Benefits

Community benefits payments from commercial schemes also offer a financial return to communities, but commensurate with a much lower financial and legal risk than under the direct ownership model.

In the absence of clear powers over developers, the Scottish Government has focused on driving new standards of good practice. Industry practice has been transformed in recent years, setting a new baseline for community benefits across the UK – equivalent to at least £5,000 per MW, index-linked for the lifetime of projects – more than double the rate typically paid to communities until recently.

The Scottish Government has published Good Practice Principles for developers designed to maximise community benefit from onshore renewable energy developments and on 7 September 2015 this was complemented by the publication of our new Good Practice Principles for Community Benefits from Offshore Renewable Energy Developments. Both are available at: www.localenergyscotland.org/goodpractice

Our public Register of community benefits shows that, in the past 12 months, over £9 million has been provided to Scottish communities. Public faith will only be maintained if the industry commitment to voluntary good practice, including the national recommended baseline rate, is demonstrated in as many new schemes as possible commissioned from now on.

5 http://www.localenergyscotland.org/goodpractice
Local Energy Economies and the Future

During 2014, the Scottish Government working in partnership with Highlands and Islands Enterprise and with advice from Community Energy Scotland, scoped out what might be achievable through a ‘local energy economies’ approach.

The challenge is to encourage Scotland’s communities to grasp the opportunities of a whole systems approach to community energy. Low carbon energy systems can involve the integrations of a range of technologies: renewable energy generation coupled with energy storage where appropriate, the use of waste heat and community heat systems, smart grids and demand reduction measures, and improvements to energy efficiency. Together, these can lower fuel bills for consumers and even create new revenue schemes for community investment. By moving towards a more decentralised energy system, with local systems of energy production, distribution and use, Scottish communities have opportunities to attract new investment, reduce their carbon impact and to take ownership and control of new assets with revenue streams.

Local Energy Economy approach could be transformational for Scottish communities

“The development of Local Energy Economies could transform the multiple challenges facing communities into opportunities for new collaborative business models that are capable of better integrating new renewable energy sources with existing infrastructure, and providing additional economic benefits to local consumers and businesses.”


To provide early impetus, the Scottish Government launched our Local Energy Challenge Fund which invited demonstrator projects for new low carbon energy systems, encouraging innovation and partnership working at a local level. In 2015/16, up to £20 million has been offered to five projects across Scotland.

Community energy faces a number of barriers to growth: energy projects often have higher capital costs, require longer lead times, and can be subject to delayed grid connection. This is being further compounded by the UK Government’s subsidy regime which is currently under reform, creating uncertainty and new risks, particularly for smaller scale developments.

The Scottish Government remains ambitious for the renewable energy industry and aims to maximise the vital contribution it makes towards tackling climate change. However the UK government must provide clarity to enable on-going investment, particularly for community energy projects where the impact will be greater.
2. Direct community ownership

We have over a decade of experience of supporting communities in Scotland to develop their own renewables schemes, resulting in over 400 operating installations across Scotland, with active projects ranging from small scale hydro schemes of under 100 kW to wind farms of up to 9 MW.

This has built up a wealth of experience in local communities in terms of “green” aspirations, as well as, increasing local understanding of the role that renewables can play in generating revenue as part of a low carbon economy.

While our transition to a low carbon society will be enabled by infrastructure and technology, the pace of the transition will be determined by how we, as individuals, households and communities, change our behaviours.

Wider support for community development in a low carbon economy

Community experience in renewables is underpinned by a wider local engagement with the low carbon economy assisted by national initiatives such as the Climate Challenge Fund⁶, which has supported 548 local communities across Scotland with 756 awards since the scheme opened in 2008, to a value of £66.3 million. Whether through refurbishments of community-owned buildings, energy efficiency advice, waste recycling, active travel projects or local food growing, community action is making an impact.

The Climate Challenge Fund is helping to build an understanding across the country of the nature of climate change, and what drives it, and how it can be arrested by a change in our own behaviours. Harmful greenhouse gas emissions are being steadily reduced and we are building more resilient communities. In addition, hard-pressed households are learning that energy efficiency in the home leads to reduced fuel bills.

This community experience has also been enhanced by a range of more general support to communities designed to increase community capacity and engagement. The Scottish Government has a range of funding programmes to support community-led regeneration and community empowerment, and the primary fund to support community-led regeneration is the People and Communities Fund⁷. This main grant element of the Fund supports community anchor organisations to grow and strengthen by delivering outcomes to meet and respond to the aspirations of their communities. The Fund is currently £15 million.

⁶ http://www.keepscotlandbeautiful.org/sustainability-climate-change/climate-change-fund
⁷ http://www.gov.scot/Topics/Built-Environment/regeneration/community/pcf
Known operational renewable energy installations owned by Scottish community groups, as at June 2014

Figure 2a: Known operational renewable energy installations owned by Scottish community groups as at June 2014

http://www.energysavingtrust.org.uk/community-energy-reports

Note that Local Energy Scotland, in association with Scene Consulting and the Energy Saving Trust, are developing a live map of all operational projects over 50kW which contribute to the 500 MW target. This interactive tool will show details on project stage and ownership, and where appropriate, background details on projects and further information on Scottish Government financial support received. Users will be able to filter the information by technology, local authority region, project name, funding source, and ownership type. The map will be live by the end of October.

Maps may not show location of all operational renewable energy installations, due to absence of addresses or grid references for some installations.

Capacity figures may refer to total capacity owned by one organization, rather than the capacity of one individual installation.
Figure 2b: Community and locally owned onshore wind sites in Scotland, as at June 2014 (see note 8 above)
The Scottish Government is taking an ‘assets-based’ approach to support for communities and has introduced the **Community Empowerment (Scotland) Act**\(^9\). The Act will encourage enterprising community development. The Act will extend the existing community right to buy to cover all parts of Scotland, and will streamline and improve the procedures. It will introduce a right for community bodies to purchase abandoned or neglected land, even where the owner is not willing to sell, where the use or management of the land is such that it results in or causes harm, directly or indirectly, to the environmental wellbeing of a relevant community. It will also make it easier for community bodies to take over public sector land and buildings where they can show they can deliver greater public benefit with those assets.

The main Scottish Government fund for awarding grants to assist rural communities in acquiring land and land assets is the **Scottish Land Fund**\(^10\). The Scottish Land Fund was set up as a £6 million, 3-year commitment (£1M in 2012-13; £2M in 2013-14, £3M in 2014-15 and was extended to add an additional £3M in 2015-16). In June 2014, it was announced that the Scottish Land Fund will be extended to at least 2020, and would be increased to £10 million per year.

The Scottish Land Fund supports rural communities to become more resilient and sustainable through the ownership and management of land and land assets. The Fund focuses primarily on the acquisition of land, from whole estates to small strategically important areas of land, and land assets including development sites for renewable energy opportunities.

### New impetus and increased scale of ambition

The assets-based approach that the Scottish Government has applied to community development policy has helped communities to set their sights higher in terms of scale of build and potential financial return and, bolstered by the introduction of the Feed in Tariff scheme (FITS) and the Renewable Heat Incentive (RHI), the opportunity to generate revenue for local benefit has gained a new impetus.

### But threat to future progress

Recent announcements by the UK Government on subsidies for onshore wind and the current consultation on FITS is creating uncertainty. The majority of projects supported under our CARES scheme are small-scale and, as it stands, would face reduced FITS support in the future.

### Progress to 500 MW target

\(^9\) [http://www.scottish.parliament.uk/parliamentarybusiness/Bills/77926.aspx](http://www.scottish.parliament.uk/parliamentarybusiness/Bills/77926.aspx)

\(^10\) [https://www.biglotteryfund.org.uk/scottishlandfund](https://www.biglotteryfund.org.uk/scottishlandfund)
As already highlighted, we are making good progress towards our 500 MW community and locally-owned target. While we expect to announce up-to-date figures shortly, showing significant further progress, as at the end of June 2014 there was 361 MW in operation (an increase of 27% from the year before), and significant capacity in the scoping and planning “pipeline” as Figure 3 below illustrates. Community groups make up 46 MW of the 361 MW operating capacity.

It is important to highlight that the vast majority of community energy schemes operating in Scotland are in rural and remote areas, reflecting the availability of the resource, and capacity and demand to date.

Figure 3: Progress towards the 2020 target of 500 MW, as at June 2014

The last Energy Saving Trust report monitoring progress towards our 500 MW target, shows that by the end of June 2014, an additional 634 MW of community or locally owned renewable energy capacity was estimated to be in different stages of development.

History of support for community energy in Scotland
The progress that has been made to date in terms of community ownership of renewable energy and community investment in commercial schemes has been for the most part directly owing to support provided at a Scottish national and regional level from as early as 2002.

In its 2013 performance report on Renewable Energy, Audit Scotland records that, of the £209.5 million that the Scottish Government, Scottish Enterprise and HIE spent

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in the 11 years to 2012/13 on supporting renewable energy, almost a fifth (£40 million) was spent on supporting community and household projects (£38.4 million by Scottish Government and £1.4 million by HIE).\(^{13}\)

**Scottish Community and Householder Renewables Initiative**

The first national community energy support scheme was provided under the Scottish Community and Householder Renewables Initiative (SCHRI) which opened in 2002. The community stream of SCHRI provided grants of up to £100,000 for communities and had a network of development officers who provided advice and support throughout the installation process. One of the objectives of the SCHRI programme was to support the development of community-scale renewable projects. This supported many communities across Scotland to start out on their journey with renewable technologies. **By May 2005, 146 community renewable energy projects had received capital funding worth £3.6 million**\(^{14}\). Several of these community projects have successfully moved from feasibility studies to installation of schemes and are now generating their own power and realising the benefits.

The vast majority of installations supported under SCHRI were at the microgeneration-scale (that is under 50 kW electricity or under 45 kW heat), a typical project being solar thermal panels installed onto a village hall. However, some larger-scale projects were also supported, with notable successes including the following island-based schemes:

- The pioneering project on Gigha where three turbines were installed in 2003, becoming Scotland’s first community owned, grid connected, windfarm. Finance was raised through commercial loans, public grants and the sale of preference shares. They have now fully paid for their capital costs, meaning that any income generated by the turbines can be passed straight on to the Isle of Gigha Heritage Trust. To date, income has been used primarily to support refurbishment and energy efficiency measures in community-owned properties on the island.

- Tiree where the community has installed a 900kw wind turbine at Ruaig Sliabh in the east of the island in March 2010. The single turbine, owned by Tiree Renewable Energy Ltd, generates revenues for the island’s community. All surplus revenue is donated to Tiree Trust to finance community projects through the Windfall Fund. Over £80,000 was donated to community projects in 2013 alone.

- The islanders of Eigg started generating their own energy from renewable sources in 2008. This now integrates hydro, wind and solar sources of renewable energy to households and business via a community-owned island-wide high voltage grid.

\(^{13}\) **Renewable Energy - Audit Scotland**

\(^{14}\) Evaluation of the Scottish Community and Householder Renewables Initiative, Scottish Executive Social Research, 2006
Community and Renewable Energy Scheme

The Scottish Government’s flagship schemes for community energy are currently the Community and Renewable Energy Scheme (CARES), linked to capital support from the Renewable Energy Investment Fund (REIF).

The Community and Renewables Energy Scheme has been established by the Scottish Government to encourage local and community ownership of renewable energy across Scotland. CARES is designed to accelerate progress towards the Scottish Government’s target of generating 500MW from community or locally-owned renewables by 2020, and to maximise the benefits to communities from commercially-owned energy. The scheme has been designed to ensure that support is not based on the individual’s ability to invest but to distribute benefits across the community. CARES launched in 2009 as a grants scheme and the CARES loan fund was announced in 2011 with support not only for community groups but also for rural businesses willing to commit to a high level of community benefit (at least £10,000 per installed MW).

Community Energy Scotland held the initial CARES contract to July 2013.

Community Energy Scotland (CES) is a charity and social enterprise which began as HIE’s Community Energy Unit established in 2002, which itself became the Highlands and Islands Community Energy Company in 2004. CES held the first CARES contract from April 2009 to July 2013. It has also delivered community renewables programmes for HIE and The Big Lottery Fund. Since 2008, CES has operated across the whole of Scotland and built up a membership of 333 community groups who vote to elect voluntary directors and 80 associate members – mostly from businesses associated with the energy sector.

15 Hence Bencoms (all of which build in local community benefit) are treated under CARES as community applicants, while co-operatives which do not include integral local community benefit can apply for finance under CARES as rural businesses, whereby they will be required to offer local community benefit of at least £10,000 per MW of installed capacity.
Local Energy Scotland took over the running of the CARES contract in August 2013.

Local Energy Scotland is a consortium made up of 5 social enterprises led by Energy Saving Trust (EST), and including Changeworks, The Energy Agency, SCARF and The Wise Group. Local Energy Scotland administers and manages the Community and Renewable Energy Scheme (CARES) with support for delivery from Ricardo-AEA.

Current CARES support available
A full specification of the support available under CARES has been published separately and an updated version is on the Local Energy Scotland website. In summary, through CARES, the Scottish Government aims to provide end to end support to community groups from their initial engagement in the renewable journey through to installing technologies themselves or benefitting from commercial schemes.

CARES end to end support

Figure 4: Overview of support offered under CARES

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16 [www.localenergyscotland.org/caresoverview](http://www.localenergyscotland.org/caresoverview)
The main financial instrument available under CARES - a pre-planning loan to help enable early investment - is designed to mitigate the high risk at the pre-planning stage of development, and subject to State Aid, may be written off if the proposal is unable to proceed to operation.

A pre-planning loan of up to £150,000 is available to support renewable energy generation schemes on land that communities or rural businesses own or could lease from a land owner. A total of 158 loans have been offered to date, worth over £14 million.

Within the portfolio of current projects currently receiving CARES loan funding Local Energy Scotland, using an estimated success factor, consider that 65 of these might progress to live projects which could generate around £35 million over 20 years in community or rural business income from local ownership.\(^{17}\)

![Figure 5: Analysis of pre-planning loans offered under CARES from inception (September 2011) to date (July 2015)](image)

While the main pre-planning support available under CARES changed in 2011 from grants to loans, in order to maintain eligibility with the Feed in Tariff Scheme, communities can still benefit from specific grant support under CARES – without compromising their eligibility for FITS.

\(^{17}\) Local Energy Scotland’s estimate is based on a number of assumptions about the status of the pipeline projects including their installed capacity, cost of finance, Feed-in Tariff rates, debt/equity ratios and the costs of development, construction and operation.
Current CARES grant support ranges from feasibility and start-up aid, right at the beginning of the process, to grants for innovative infrastructure investment (see Chapter 5). The Scottish Government recognises how important it is for local communities to receive on-the-ground advice and support in order to help them understand the risks and rewards of direct ownership of renewable energy schemes.

Hence local support was a feature of the original SCHRI scheme, and continues as a central feature of CARES today, through a network of Local Development Officers which provides dedicated regional advice and support to projects across Scotland.

As well as providing advice, the Development Officers are on hand to help communities (as well as rural businesses) to tap into the suite of financial support mechanisms available through CARES and facilitate and guide them throughout the process.

**Keeping support up to date**

The Scottish Government is aware that for our community energy policy to continue to promote growth in ownership, the support available needs to be responsive to changing circumstances. Hence CARES (and REIF) are designed to be capable of being adapted to suit.  

CARES is regularly reviewed and updated to ensure that it is providing communities (as well as rural businesses) with the support they need to get projects off the ground.

ClimateXChange published a report on the success factors of community energy at the end of 2013 and Local Energy Scotland has undertaken an internal review to show specifically how CARES has been adapted to address the challenges that were identified.

A number of supporting mechanisms have been developed in the light of these reviews including updated toolkits, models and contractor frameworks, all designed to make the process of accessing funding and implementing projects more straightforward for communities and rural businesses.

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18 As set out above, the most fundamental change to date has been the redesign of CARES from grants to loans which was made to ensure continuing eligibility with the Feed in Tariff Scheme (FITS) and the Renewable Heat Incentive (RHI), introduced by the UK Government. This change has ensured that communities can continue to benefit from the extra financial returns available from FITS and RHI-eligible generation.

While CARES was introduced in 2009 principally to sustain national support for community renewables, it has been adapted to meet the needs of rural businesses which, as locally-owned energy, make up an important component of the 500 MW target. Farmers and land managers have access to their local natural resources and are ideally placed to contribute towards growing Scotland’s low carbon economy. Rural businesses are already making up 187 MW of the 361 MW deployed under our 500 MW community and locally-owned target\(^\text{20}\). Among farms and estates, the largest number of renewable technologies owned are wind turbines and biomass (wood) boilers, accounting for 78% of installations.

**CARES Supporting Rural Businesses**

CARES is providing support to rural businesses to cover the pre-planning consent (high risk) stage of project development. Rural businesses who benefit from the scheme must commit to provide a wider community benefit of £10,000 per MW per annum to the local communities. From autumn 2015, rural businesses must also offer communities the opportunity to invest in renewables projects. An estimate of the community benefit value to local communities from the CARES rural business applications approved to date is some £8.8 million over the next 20 years.

Rural businesses and landowners have a huge opportunity to be able to develop renewable schemes on their own land and contribute to local energy generation. Andrew Stewart, a farmer at Marshill Farm, South Lanarkshire, is doing just this. He secured a CARES loan to cover the pre-planning costs for a 2.3 MW turbine. The project reached financial close in March 2015, as a joint venture between Stewart Energy Ltd, and the local community through Lesmahagow Development Trust Ltd. CARES also provided an enhanced start-up grant and Developer Officer support to

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**Andrew Stewart, Marshill Farm**

The CARES loan I received has been the difference between pursuing a wind turbine project on our farm ourselves or renting the ground out to a developer 500 miles away to take forward the project, which would have meant 95% of any profit from the wind farm would have left our area. Before I received the CARES loan I was nearly signed up with a developer to build wind turbines on our farm as we felt the financial risk was too great to try and develop the project ourselves. The security of the CARES loan and the help from the officers has been instrumental in getting our project through the planning and grid process and now on to financial close. Through CARES we have also had a lot of contact with our local development trust – making it the beneficiary of the £10,000 per MW payment through CARES and leading to them taking a large stake in the development by getting funds through REIF. We only found out about REIF through CARES so the whole process has married to the point now where we have a project that is going ahead where 100% of any money made will stay in our local area and without the initial loan and subsequent advice from CARES this would not have happened.

the Lesmahagow Development Trust to investigate options to invest in the turbine. The wind farm was opened on 14 September 2015.

Construction at Marshill Farm


This programme complemented CARES during the above period as it focused on providing additional support to groups wished to develop income-generating grid-connected projects of over 1 MW. More than 30 communities received support with 15 receiving financial assistance. The support ranged from scoping and feasibility studies, legal fees and writing up agreements to specific technical studies. These were mainly onshore wind and hydro projects.
REIF

As well as offering commercial loans at the vital pre-planning stage, CARES also provides a link to the financial support available under the Renewable Energy Investment Fund, delivered on behalf of the Scottish Government and its enterprise agencies by the Scottish Investment Bank, the investment arm of Scottish Enterprise.

The Renewable Energy Investment Fund is a £103 million fund, established in 2012 with funds from the Fossil Fuel Levy (FFL) account and operational until 2016. It is designed as a capital support mechanism, offering loans, guarantees and equity to commercial renewables developers and community groups at market rates to address market failure in priority areas.

The initial priority areas for REIF were announced as marine energy, renewable district heating, and community renewables – as all these face difficulties accessing finance directly from the market.

Since it opened for business at the end of 2012, REIF has invested nearly £7.5 million in community energy projects ranging from direct community-owned projects to financing community investment in commercial schemes. As well as providing finance to Stewart Energy, it has supported one of the largest wholly-owned community wind farms in the UK – the Point and Sandwick scheme in the Isle of Lewis at 9MW, and is helping well established community energy schemes, from Gigha to Fintry, to make the most of their resource and of investment opportunities.

While the Scottish Investment Bank has made good progress with developing a pipeline of projects for REIF, particularly in community energy, as can be seen above, wider market uncertainty, largely caused by UK Electricity Market Reform, has delayed overall demand, and this was factored into the REIF profile of spend by Scottish Ministers in extending the Fund for a further year to 2015-16.
3. Shared ownership and investment

The Scottish Government wishes to encourage new models of investment in commercial renewables to reflect our ambition to spread the benefits of our renewable energy resource we have in Scotland.

In 2015, we consulted on our Good Practice Principles for Shared Ownership of Onshore Renewable Energy Developments, as an annex to Community Benefit Principles published in 2014. This document is to be published in September 2015, as community investment in commercial projects is a key component of our community energy vision.

As our guidance sets out, we are keen to see communities get the opportunity to invest in local developments so that they have a direct stake in the energy being generated locally. In Scotland, there are currently at least 17 operational commercial renewable energy projects (onshore wind and biomass), that have seen some form of community or individual investment. Seven of these involve local development organisations, and the remaining five involve co-operatives. Taken together, these projects account for just over 21 MW of current operational Scottish community renewables capacity.

After long negotiations, the village of Fintry became the first village in the UK to enter a joint-venture agreement with a wind farm developer that secured a wind turbine for the community. From the income stream the turbine generates, Fintry has given free insulation to more than half of all households in the village and is now embarking on new ambitious projects to eventually make the village carbon-neutral.

We want to encourage further projects so that we start to see the creation of a new paradigm of “mutual benefit” between communities and developers in commercial schemes – one in which communities will benefit from a revenue stream to regenerate their local area and invest in local priorities, and developers will benefit from a more collaborative and co-operative relationship with communities.

21 Scene Connect Database, May 2014.
Repowering
An important area of policy development over the next 12-18 months will be around repowering of onshore wind farms.
The first tranche of 25-year planning permissions for onshore wind in Scotland is reaching expiry at a time of increasing pressure on land use, including cumulative pressures through onshore wind development. The potential to repower such sites represents an opportunity for Scotland to continue to work towards our renewable energy targets through maximising site availability and enhancing cost competitiveness and thereby to maintain investment levels at a time of decreasing subsidies. Repowering also offers an opportunity to pursue further Scottish Government policy aims in the context of energy policy development, in particular, shared ownership with communities and the encouragement of local content.

The scale of the shared ownership challenge
We should not underestimate the scale of the challenge. In particular, we note that the decision by the UK Government to close the Renewables Obligation in 2016, a year earlier than planned, and continued lack of clarity over available subsidies for renewable technologies going forward, may have an impact on the numbers of projects developed in coming years. However, by continuing to provide support to both communities and developers, the Scottish Government believes the prospects for shared ownership should not be disproportionately reduced.

Making sure the right support is in place will be even more important. A research report, ‘Supporting Community Investment in Commercial Renewable Energy Schemes’ (May 2014)\textsuperscript{22}, led by the University of Edinburgh for ClimateXChange explores the factors which support and limit the ability of communities to invest in commercial renewable energy schemes. It includes analysis of a stakeholder survey to identify a range of factors which could potentially inhibit progress. These are illustrated in the graph below, and show the need to provide access to finance, information and advice, and to co-ordinate the timings of various parts of the project, as well as fostering trust on both sides to achieve “mutual benefit”.

Figure 8: The main hurdles in progressing shared ownership projects, ‘Supporting Community Investment in Commercial Renewable Energy Schemes’, University of Edinburgh, December 2014.

This research reported in December 2014\textsuperscript{23}, and concludes that there is significant potential for increased community investment in commercial energy schemes, given the appropriate support, funding and advice.

\textsuperscript{23}http://www.climatexchange.org.uk/reducing-emissions/supporting-community-investment-commercial-energy-schemes/
Scotland is leading the way as a testing ground for the new relationship between developer and community, particularly on the national forest estate (land managed by Forestry Commission Scotland) where communities have the opportunity to invest up to 49% equity in forthcoming wind and hydro schemes.

The most recent set of agreements which Forestry Commission Scotland (FCS) has with windfarm and hydro scheme developers on the national forest estate require the developers to provide the opportunity for communities or FCS to purchase up to 49% ownership of the scheme. This option is in addition to the £5k per MW (installed capacity) community benefit payment which all developers on FCS land are required to make. The scale of this opportunity is difficult to estimate but FCS considers that around 700 MW of installed capacity may be developed under these arrangements.

The participating developers are (wind): Partnerships for Renewables, Scottish Power Renewables, PNE Wind UK, E.ON Climate & Renewables UK, Fred. Olsen Renewables; and (hydro): Green Highland Renewables, Broadland Renewable Construction and Gilkes Energy.

For more information see www.forestry.gov.uk/windhydro

Experience to date on the national forest estate suggests that there is much to be done at a practical level to facilitate the process and turn the opportunity into reality. Local Energy Scotland CARES officers, the REIF team, and Forestry Commission Scotland are all working together to remove barriers and provide support to both community groups and renewable energy developers.

A tailored package of support has been developed to support the community investment opportunity on the national forest estate and beyond:

- A free one stop shop advice service can be accessed through the Local Energy Scotland network providing support and advice to communities looking to share ownership of a commercial development.

- Funding can be sourced through the CARES scheme to investigate the opportunity, buy in specialised professional services and also purchase pre-consent ownership stakes in a development.

- To make the process of locating professional services easier, CARES has developed a framework of legal and financial contractors, allowing community groups to identify and select contractors quickly and with confidence.

- In cooperation with stakeholders from the sector, a community investment toolkit has been developed to provide useful guidance to both communities and developers on legal structures and financial models, along with case studies to show what has already been achieved in Scotland.
Local Energy Scotland coordinates support with the REIF team who offer a source of flexible finance for communities to buy in to a commercial development at financial close or beyond.

A ground-breaking new online partnership portal allows communities and developers to post and browse investment opportunities in renewable energy projects. The Portal is available at [www.localenergyscotland.org/partnershipportal](http://www.localenergyscotland.org/partnershipportal).

Moreover, in 2015-16, the Scottish Government introduced a one year pilot of the Local Energy Investment Fund, which can purchase stakes in renewables projects on behalf of communities when imminent financial close means communities have very limited time to make an investment themselves. Communities will then be able to buy the stake back, ensuring the opportunity for shared ownership isn’t lost. This pilot was launched, both in response to the draft of this CEPS statement that indicated more tailored support was required for communities, and the need for projects on the National Forest Estate to reach early financial close (which is being driven largely by the aggressive, imminent depression of support tariffs). Learning from the pilot will be used to ensure that, where required, the option of purchasing for communities continues beyond 2015-16.

Lastly, the Scottish Government convened an industry working group in 2014 to consider what more needs to be done. The group contributed to the development of the Shared Ownership Good Practice Principles and the CARES Partnership Portal above.
4. Supporting Community Benefit

The Scottish Government wants to ensure that the benefits of renewable energy are spread to the people of Scotland. As well as promoting direct ownership of renewables by communities and local businesses, which brings the highest financial return, and our new impetus to see shared ownership of and community investment in commercial schemes, the Scottish Government has played a major role in leveraging in community benefits payments from commercial schemes.

In the absence of clear powers over developers, our policy in this area has been founded on driving new standards of good practice, and in so doing, we have transformed industry practice across the UK:

- Our public Register of community benefits from renewables was the first of its kind in the UK and has been followed by a similar mechanism in Wales, and England.
- We have committed to see exemplary rates of community benefit on the Scottish public estate and thus our national recommended baseline rate of at least £5,000 per MW has been built into contracts which Forestry Commission Scotland has with developers of new wind and hydro schemes on the national forest estate.
- The legacy wind energy schemes already operating on the national forest estate (i.e. not under the new contracts) are themselves making a significant contribution to community benefit provision in Scotland, making up about a third of all community benefits payments made across Scotland in the past 12 months.
- Our commitment has driven up rates of community benefit in the sector more widely, leading to the adoption of industry protocols in line with the Scottish Government recommended baseline rate both at a UK as well as at a Scottish level. Given that the average community benefit rate in wind farm applications under s36 was under £2,000 per MW a few years ago, this has been a significant achievement.
- We have led the way in the development of Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments, and have developed similar guidance for the offshore sector.
- Scotland is also unique in the UK in offering free local support and advice to communities, under CARES, to engage with developers on community benefits.

Scottish Government Register of Community Benefits from Renewables

The 2010 Scottish Government public consultation – “Securing the benefits of Scotland’s next energy revolution” set out the proposal to create an open, transparent and publicly accessible register of community benefits from renewables. This would promote best practice commercially among developers of all renewables technologies and provide significant leverage to help communities negotiate on an equal footing. From this engagement, the Register of Community Benefits from Renewables, as well as the associated Good Practice Principles, has been developed.

These have made a real difference to both community groups and developers. Previously the process was disjointed and not transparent; now there is industry practice and national guidance that all parties can see and expectations are clear.

The Register shows renewable energy projects in Scotland, and allows developers and communities to upload community benefit details attached to these projects. The Register details fund spend, and provides ideas and advice for communities looking to ensure their funds are spent wisely.

The Register has enabled us to track the benefits that communities are receiving and that developers are willing to offer. Over the past year, over £9 million has been paid to communities, with an average of approximately £3,500 per MW installed capacity per year from recent projects.

The case studies included in the Register have been helping other community groups to plan what they will do with the funds generated.

The Register also encourages groups to get in touch with Local Energy Scotland for further information, advice and support.
By plotting known community benefits over time, it is clear that these have been increasing.

Figure 9: Screenshot from the Community Benefits Register held on behalf of the Scottish Government at [www.localenergyscotland.org](http://www.localenergyscotland.org)

Figure 10: Community benefits payments analysis from Community Benefits Register
Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments

The Scottish Government has published Good Practice Principles for developers designed to maximise community benefit from onshore renewable energy developments.25

The Principles have drawn mainly on experience from the onshore wind sector, but the Scottish Government would like to see community benefits promoted across all onshore renewables technologies.

The key principle is the promotion of a national community benefits package rate equivalent to at least £5,000 per Megawatt per year, index linked to inflation.

“Home to the widest spread of SSE community funds, the Highlands and Islands region hosts seven developments that provide community benefit, including two hydro schemes, comprising a total capacity of 265 MW. Approximately £23 million will be invested through these funds in their lifetime.”

Community benefit funding awarded by SSE in this region will support projects ranging from an apprenticeship scheme co-ordinator in Lairg, a youth work placement in Brora, taking over and repairing the village hall in Muir of Ord, to larger-scale regional projects including science and technology activities in schools delivered via the University of the Highlands and Islands, redeveloping the Scottish Canals visitor centre in Fort Augustus, and installing solar panels on community buildings in the Highlands.

SSE Community Investment Review 2013/14

25 http://www.localenergyscotland.org/goodpractice
26 http://www.hie.co.uk/community-support/managing-community-funding/default.html
Advice and support to communities is available through a dedicated CARES Community Benefits Officer and through the local CARES Development Officers. Groups are encouraged to link up and learn from each other. For example, in Dumfries and Galloway a group received support from Local Energy Scotland who helped them to engage with the developer. They successfully renegotiated a deal from £3,000 per megawatt per year to £5,000 per megawatt per year based on the good practice principles.

Industry support for the new guidelines
“AES Wind Generation welcomes the clarity and positive direction provided by Scottish Government’s guidelines on community benefits from onshore wind. CARES understanding of the needs and opportunities facing Scotland’s communities and renewable energy sector was an invaluable element of support in the development of the guidelines. As a developer, CARES engaged with us to ensure that the guidelines were workable and ambitious, creating a meaningful two way process. We are pleased to support the key principles of the promotion of a community benefits package rate equivalent to £5,000 per MW per year, index linked, and have increased our funds for development projects accordingly.”
Claire Addison, AES Wind Generation

Maintaining public faith in industry good practice
Much progress has thus been made in driving up community benefits on a voluntary basis, and communities all across Scotland are benefitting from this revenue. However it is arguable that public faith will only be maintained if the industry commitment to good practice, including the national recommended baseline rate, is demonstrated in as many schemes commissioned from now on as possible.

There is approximately 4 GW of onshore wind capacity consented but not yet built, so these will be in the spotlight as far as community benefits are concerned over the next couple of years (as stated in DECC Renewable Energy Planning Database June 2015).

If all consented projects were to pay the recommended £5,000/MW, the total annual income to local communities would be £21 million.

Recent changes to subsidy at a UK level will put pressure on renewables developers to reduce costs as they work to deliver schemes and will probably mean that only the most viable schemes will go ahead. In this context, we would expect them nevertheless to maintain their commitment to follow good practice on provision of community benefits. An early affirmation to that effect would be welcomed.
Good Practice Principles for Community Benefits from Offshore Renewables

Scotland is estimated to have around a quarter of Europe's potential offshore wind resource. The Scottish Government has produced Good Practice Principles to guide community benefits from offshore renewables. The document looks at good practice in shaping and delivering community benefits from offshore renewable energy projects, complementary to supply chain and other socio-economic benefits to Scotland.

When providing community benefits from offshore renewables, there are a number of factors to be considered such as identifying the community, working with a diverse set of stakeholders, considering onshore infrastructure and the critical stage of development in which the industry finds itself. The community benefit principles are intended to reflect and accommodate the sensitive and early-stage nature of the industry. As with the Scottish Government’s Onshore Renewables Good Practice Principles for both community benefit and shared ownership, it is anticipated that the document will be refined and reviewed over the coming years to incorporate guidance and good practice for other offshore technologies.

Policy for community energy on the Scottish Government Crofting Estate

The Scottish Ministers own 58 crofting estates (around 95,000 hectares of predominantly common grazing land) across the Highlands and Islands of Scotland. The estates are managed at a local level by the Rural Payments and Inspections Division (RPID). RPID believe that there is real potential for wind energy and hydropower development across the entire estate.

RPID are keen for their crofting tenants and crofting communities to explore the potential to develop renewable energy projects on the estates and maximise the benefits of renewable energy for the local communities. These may be small scale community projects or involve a joint venture with a commercial developer.

To encourage the development of locally-owned renewable energy projects on the Scottish Ministers’ Estates, under CARES Local Energy Scotland will help promote the benefits this opportunity can deliver on RPID’s behalf. This means crofting tenants and the wider crofting communities will be able to receive free independent expert advice and support in developing their renewable energy schemes from knowledgeable and experienced local Development Officers. This will include advice on available funding including support to access the Community and Renewable Energy Scheme (CARES).

Where developments are to be carried out on croft land, before the Scottish Ministers can offer to lease land for development an application must be made to the Scottish Land Court to resume the area from crofting tenure under section 21 of the Crofters (Scotland) Act 1993. If the proposed site of development is located on

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27 www.localenergyscotland.org/goodpractice
common grazing land the consent of the majority of the shareholders will also be required, therefore shareholders should be consulted early.

RPID are looking to invite crofting communities to explore the potential for renewable energy projects in their area and approach the Scottish Government with proposals.
5. Supporting Local Energy Economies

Potential for community energy within local energy economies

While support for community energy in Scotland is recognised internationally as a leading example of good practice, and CARES and REIF are working together to maximise opportunities, nevertheless the community energy sector is facing a number of challenges, primarily resulting from high cost and significantly delayed grid connections in grid-constrained areas, as well as the UK government’s proposed changes to the Feed-in Tariff Scheme. The scale of the cuts is substantial and are likely to have an adverse impact on the community groups we are supporting under our Community and Renewables Energy Scheme (CARES) resulting in slower or smaller scale development of electricity generating projects by the community sector.

Beyond the community sector, there is a wider interest in innovation to create decentralised energy systems, and this could help expand community energy and give it a new role, with opportunities for community ownership and control across the full range of components in the system: generating low carbon energy, improving energy efficiency, and distributing and storing energy.

‘Local energy economies’ refers to the concept of integrating low carbon energy sources in local energy systems and supply chains in a way that maximises system efficiency and adds value for local stakeholders. At its most simple, it means using low carbon technologies to generate energy locally, which can then be used locally. Examples of adding value include retailing heat or electricity directly to local consumers, overcoming grid constraints, increasing local skills or employment, or increasing the resilience of the local energy supply chain.

Our ambition is the development of a localised, robust, more distributed energy system to meet Scotland’s energy needs.

Challenges

While many of the challenges facing community energy, as highlighted below, are rural, a new local energy economies approach may also help to extend Scottish community energy from its traditional stronghold in rural and remote communities to urban areas.

Grid constraints

According to Community Energy Scotland, long lead times (over 18 months) to grid access may be faced by up to two thirds of the total number of community energy projects looking to get CARES support.28

Of course there is much effort currently being expended to mitigate the impacts of constrained grid capacity in rural and remote parts of Scotland. As well as building the new connections for the customers which have contracted for them, the

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Distribution Network Operators (SSE Power Distribution in North Scotland and SP Energy Networks in Central and Southern Scotland) have recently trialled Active Network Management technology which has the potential to connect more generation to the distribution network than otherwise would have been possible.

The Distribution Network Operators (DNOs) publish work plans regularly, showing areas where they are introducing improvements to their systems and processes. For example, both are developing enhancements to the provision of information for those considering connection to their networks. Online network heat maps and data showing the capacity of existing substations and lines are now available.

Both DNOs have also taken steps to help those with long-standing connection offers that are not being progressed – in some cases this has enabled capacity to be reallocated to newer projects much closer to deployment which were previously behind them in the queue. This is in addition to other changes which have been proposed and are being trialled that may improve the feasibility and quote processes for customers.

In their business plans for the next distribution price control period (2015 – 2023) both DNOs set out proposals for improvements for connection customers, many of which have come about through feedback from customers and other stakeholders. This includes the adoption of Active Network Management as “business as usual” in areas where it is appropriate.

Active Network Management has its pros and cons and may not be an option in some places, nevertheless a more general focus on matching local generation to local demand, supplemented by innovative storage solutions, could potentially bypass grid constraints while creating additional local value.

Fuel Poverty
Community energy projects are under increasing pressure to deliver their social and economic objectives in the face of rising retail energy costs, often associated with food, fuel and transport poverty. The additional income from community and local ownership of renewables may not have the potential to rise as fast as households’ and businesses’ expenditure on electricity, oil and petrol bills. However, in deprived areas, these assets may provide the opportunity to help fund measures to alleviate fuel poverty and this is a key point, noted by the [Scottish Fuel Poverty Forum](http://www.scotland.gov.uk/Topics/Built-Environment/Housing/warmhomes/fuelpoverty/ScottishFuelPovertyForum/final-report) in its recent report of its review of the Scottish Government’s fuel poverty strategy. The Forum recommended that greater links should be made between Scottish Government programmes and initiatives so that funding can be maximised and there can be greater coherence across housing, energy and skills policies in tackling fuel poverty.

Off gas grid and rural areas have a higher proportion of homes likely to be fuel poor, particularly those where electricity or heating oil is their main source of heating. It is important that support continues to be directed to areas which are off the gas grid and where households are more likely to find it difficult to heat their home but we recognise that there are challenges associated with that.

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The Minister for Housing and Welfare announced recently that a Scottish rural fuel Poverty Task Force is being established. The Task Force will be a one year short life group with a remit to produce a report highlighting the issues around Fuel Poverty in rural areas and to propose solutions. The report will feed into the development of fuel poverty policy and inform new energy efficiency programmes that will make use of devolved powers.

In the meantime, the Scottish Government is taking action to mitigate where we can. Our funding programmes are designed to support Local Authorities in these areas to ensure they receive an enhanced HEEPS:ABS allocation due to their rural and/or off gas grid location.

In order to focus and drive pace of change, we published our Heat Policy Statement (HPS) “Towards decarbonising Heat: Maximising the Opportunities for Scotland” in June 2015. The HPS sets out our approach to decarbonising our heat system and a framework for investment in a low carbon heat sector. The Policy Statement retains our ambition to extend the number of households benefiting from affordable low carbon heat from district and communal heating networks from around 10,000 currently to 40,000 households by 2020. This is part of an overarching ambition 1.5 TWh of heat delivered from district heating for both business and domestic users by 2020. This is underpinned by an increase in the funding for the District Heating Loan Fund – since 2011, the Fund has committed over £7 million to 33 projects, with a further £5 million available in 2015/16.

While many of the opportunities for large scale district heating networks are in our towns and cities, the Heat Policy Statement recognises the significant contribution smaller rural schemes, mainly renewable, are making to reduce carbon emissions and fuel poverty. Renewable district heating is delivering substantial fuel bill savings to farms, estates and communities in off-gas rural areas. Towns such as Lerwick, Wick and Oban now have significant numbers of homes and public buildings on district heating.

The Scottish Government established the Heat Network Partnership to provide Scotland-wide coordinated support to businesses and the public sector, to accelerate the development of district heating in Scotland. We also funded Heat and the City to set up the Heat Network Partnership Practitioners Group to promote sharing of best practice and knowledge sharing by project developers in Scotland, with the first workshop held in November 2014.

Clearly, if a local energy economies approach has potential to mitigate fuel poverty, then this is worth testing, including through drawing on the measures above.

Market constraints

For many communities, their aspirations to directly participate in the retail of energy (whether electricity, heat, or transport) to local customers, supported by a suitably trained local workforce, have not been realised to date. While there are a growing number of small, independent suppliers of gas and electricity in the GB retail energy market, there remains a range of barriers to entry into the retail market that may limit the opportunities for improving the balance between supply and demand on a community scale, enhancing local supply-chain and employment opportunities.

Capacity challenge

If a local energy economies approach is to be based on community energy, then the limited capacity of local community volunteers will need to be addressed. Research
led by the University of Edinburgh for ClimateXChange (Haggett et al, 201330) on the social factors which influence the success of community energy projects emphasised the importance of community capacity in developing a community energy project. Community groups need people with the confidence, enthusiasm, and leadership skills to be able to take a project forward. Projects can often be largely reliant on volunteers, but it can be difficult to find people with sufficient skills and time - this involvement can put significant strain on individuals, and it makes projects vulnerable to sudden departures of key skilled members. Some very active community groups have dedicated, paid, project officers with the time and expertise to navigate the range of funding, planning and political hurdles. This vital resource may be time-limited though, and dependent on fixed-term appointments associated with grant awards.

The research also found that community cohesion and identity is a critical factor in the conception and success of a project, but that a shared community identity underpins (rather than results from) group action. Pre-existing community groups were more likely to be able to realise a project, rather than groups specifically set up to run one. Community identity helps to foster action on renewables projects, and can help overcome problems of collective action which might otherwise stymie community energy efforts.

**Systemic challenge**

The various challenges facing the community energy sector are mirrored at a UK level in terms of debates around the contribution of renewable energy to the national economy, the rising retail cost of electricity despite an increasing proportion from indigenous sources, and the investment required to create resilient energy infrastructure capable of accommodating a wide range of generation sources and scales.

The scale of the challenge and the opportunity is particularly acute in Scotland, owing to the size of the renewable energy generation potential, the limitations of existing energy distribution and transmission infrastructure, and the number of households either off the gas grid or unable to connect to it, which is far higher than the UK average.

**Opportunities**

**Local innovation**

One of the most effective ways of tackling these macro challenges is through creative experimentation and collaboration at a local level, through the identification of niches where different technical or economic considerations currently apply, compared to the mainstream energy market.

In 2014 the Scottish Government worked in partnership with Highlands and Islands Enterprise, and with advice from Community Energy Scotland, to scope out what might be achievable through a local low carbon energy economies approach.

Orkney is an example of the kind of opportunity which might be created. On the one hand, the ambition of the Orkney community and the deployment by Scottish Hydro Electric Power Distribution (SHEPD) of a ‘world first’ smart grid has led to renewable electricity generation exceeding 100% of local electricity demand on an annual basis. On the other, the full potential of Orkney’s renewable resources remains limited by a lack of available grid capacity, and fuel poverty levels remain among the highest in the Scotland.

Large-scale storage is already being trialled here (see “Where we are starting from” below). Another solution being considered locally is to use wind energy that would otherwise be constrained off, to provide affordable heating to households currently heated by oil or night storage heaters or in areas where heat demand is high enough to use thermal stores and district heating to provide low cost heat. However such local solutions may only be delivered by effective collaboration between a wide range of stakeholders, combined with the application of cutting edge new technologies.

New public sector entrants to the market
Remote and rural communities often have fewer choices when it comes to their energy supplier, so the formation of Local Authority Energy Supply Companies (ESCOs) may be an opportunity to improve competition and offer a wider range of tariffs. CARES support was awarded to Comhairle nan Eilean Siar to explore the potential to establish an Outer Hebrides Energy Supply Company (ESCO), which could enter the UK electricity market in 2016-2017 retailing clean, green Hebridean electricity to local and export markets.

New municipal entrants to the energy market may also benefit urban economies through engaging in local energy supply and investing in low carbon infrastructure.

In partnership with Social Investment Scotland, the Scottish Government has provided support for a new energy supply company, Our Power. Our Power is a new fully licensed independent energy supply company, the first in the UK operating as a Community Benefit Society. Founded by 35 member organisations including some of Scotland’s largest housing associations and local authorities. The company will enter the market at the end of 2015 as an Ofgem licenced supplier of gas and electricity to provide lower cost energy to the tenants and communities of its member organisations. It expects to save its members up to 10 per cent on their household utility bills compared to standard commercial tariffs. Our Power is backed by £2.5 million from the Scottish Government and another £1 million from Social Investment Scotland, both in the form of repayable loan. In future, Our Power hopes to develop renewable energy projects as part of its business for the benefits of local communities.

Cities should consider engaging in the energy supply market where this can support efforts to tackle energy affordability and promote local generation.

Institute for Public Policy Research: City Energy, A new Powerhouse for Britain, July 2014
The Scottish Government and its partners believe that we require a wider approach to community energy, built on existing experience of community engagement, but focusing on new forms of collaboration with local authorities and local businesses, new ‘smart’ technologies for heat and electricity, and new business models that capture and retain more value at the local level.

What we need is a pipeline of pilot local and community energy innovative projects across Scotland, which simultaneously addresses immediate, practical challenges for communities, while creating a body of experience and knowledge that can be transferred to other sectors and regions, and scaled up. It is clear that there is already a lot happening at all scales - from local authorities, communities, businesses and housing associations to individual domestic householders. We need to tap into this. We can make a bigger impact if we look at how these activities and programmes can be joined together.

Where we are starting from

We already have some of the building blocks in place through CARES and wider national regulatory structures and support, as set out below.

CARES Infrastructure and Innovation Fund (IIF)

The main building block on which we have begun to construct new local energy economies is CARES. The support already available from the CARES Infrastructure and Innovation fund has been instrumental in enabling a number of innovative demonstration projects to explore a range of technical and commercial solutions, particularly in areas suffering grid constraints.

The overall aim of the CARES Infrastructure and Innovation Fund is to stimulate innovative approaches to unlock potential for local renewable energy generation.

The following areas are priorities for the fund and are integral to any future wider development into local energy economies:

- overcoming barriers relating to grid capacity issues;
- energy storage and active network management;
- linking local energy demand with local renewable energy generation;
- delivering renewable heat and electricity to local consumers;
- Addressing barriers that communities face in areas of constrained electricity networks.

The CARES IIF selection panel includes District Network Operators and Strathclyde University which adds real expertise and insight to the deliverability of projects.

The Fund is already making a difference in more remote areas.
The Abernethy Trust have been supported through both SCHRI and CARES IIF to provide a renewable source of energy for their outdoor centre at Ardgour. The project involved the installation of a 89kW run of river hydro electrification scheme. Through IIF, Abernethy Trust have installed technology which allows them to utilise the electricity generate by the hydro onsite to heat a large hot water tank which is then used for heating and hot water at the Outdoor Centre. When there is no demand from the Centre, a switching system allows this generation to be diverted for the grid. The previous oil boiler is reserved as a back-up but thanks to Lochaber weather the hydro is the primary provider.

Abernethy Trust have also, without support of CARES, built another 100kW hydro in Ardgour and installed a woodfuel system in one of their centres.

Ardgour Outdoor Centre
As we are attempting to do something new, something that has not been done in the UK before, our major hurdles have been finding new and innovative solutions to the issues we encountered as the projects developed. Throughout this the Development Officer has provided invaluable support specific to our project. They were able to provide contacts to other projects, as well as bringing their own experience to our project. The funding from CARES has made the whole thing possible, without this our projects would not have gone ahead.

Barry Edmondson, Abernethy Trust
The CARES Infrastructure and Innovation Fund has already awarded nearly £1.4 million in grants to 39 projects. Full details of projects can be found at www.localenergyscotland.org/ii

As well as CARES, the Scottish Government also provides funding to other areas of renewable energy generation and energy efficiency. To maximise the opportunities to reduce Scotland’s carbon emissions these programmes need to be strategically integrated to ensure that fossil fuels can be substituted with renewable sources while overall energy demand is reduced.

Demand reduction sits at the top of both the Scottish Government Energy and Heat Hierarchies. As well as being a significant contributor in terms of reducing greenhouse gas emissions from heat, it also helps to minimise energy bills and realise wider economic benefits. An improvement in the efficiency of housing helps to reduce fuel poverty and nationwide heat demand reduction reduces our reliance on fossil fuels.

Hence the second building block for a new local energy economies approach is the existing framework to promote energy efficiency:

Scotland’s **Sustainable Housing Strategy**\(^{31}\) was published on 21 June 2013 by the Minister of Housing and Welfare. The Strategy sets out an ambitious programme and route map to 2030 to meet our vision for warm, high quality, affordable, low carbon homes and a housing sector that helps to establish a successful low carbon economy across Scotland.

**Scottish building regulations**\(^{32}\) set minimum requirements for energy performance for building fabric and fixed building services where building work, to construct, alter, extend or convert a building is undertaken. Standards were most recently improved in 2007 and 2010 and will be further improved in 2015.

**Section 63 of the Climate Change (Scotland) Act 2009**\(^{33}\) places a duty on Ministers to provide by regulations for the assessment of the energy performance of non-domestic buildings and the emissions of greenhouse gases produced; and require owners of existing non-domestic buildings to improve the energy performance of such buildings and reduce such emissions. Regulations under development will initially apply to buildings over 1,000 m\(^2\) which are subject to sale or to a new lease. Following assessment, owners would either have to implement building improvements or annually report their operational ratings.

Section 63 has the scope ultimately to mandate energy performance improvements to all existing non-domestic buildings.

Through **Home Energy Efficiency Programmes for Scotland**: Area Based Schemes, local authorities are providing areas of fuel poverty with energy efficiency measures. This can help individual households to reduce their energy consumption. There is an opportunity to link this area based approach to locally-owned renewables projects. With behaviour change linked to this type of integrated programme significant benefits could be realised for local communities.

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\(^{31}\) [http://www.gov.scot/Publications/2013/06/6324](http://www.gov.scot/Publications/2013/06/6324)

\(^{32}\) [www.scotland.gov.uk/bsd](http://www.scotland.gov.uk/bsd)

The Scottish Government also supports householders, communities, housing associations, local authorities and businesses to reduce their energy consumption and to think about renewable energy generation through **Home Energy Scotland** and **Resource Efficient Scotland**. Resource Efficient Scotland covers energy, water and material resource efficiency.

In 2015, the Minister for Environment, Climate Change and Land Reform announced that the Scottish Government would be assigning energy efficiency the status of National Infrastructure Priority. The cornerstone of this will be Scottish Energy Efficiency Programme (SEEP) which will provide an offer of support to all buildings in Scotland- domestic and non-domestic- to improve their energy rating over a 15-20 year period.

The detail of the programme still needs to be developed but we will work with stakeholders over the next few years to develop the programme before it is launched in 2017/18, once the powers recommended by the Smith Commission are in place.

Thirdly, we can also learn from existing UK-wide programmes which support local energy systems, innovation and storage, such as the Technology Strategy Board's Local Energy Systems Fund, the Energy Storage Technology Demonstration Programme, and Ofgem's Low Carbon Networks Fund. Indeed the Low Carbon Networks Fund is already supporting the trial of the UK's first large scale grid-connected battery (2 MW lithium ion) which was connected to the electricity distribution network on Orkney in 2013. (The innovative trial will investigate how large scale batteries can help get more renewable generation connected to the grid as well as how it can effectively store excess renewable energy to help keep the lights on.) Other storage projects are being supported.

### Next Steps

To deliver the kind of proposals being made under the CARES Infrastructure and Innovation Fund, we will need to see sustained partnerships between community groups and a wide range of stakeholders, particularly network operators and local authorities. The technical, commercial and regulatory complexity of projects, and the limited number of specialist suppliers and contractors, makes the delivery of innovation projects more challenging than conventional community energy, and this requires a high level of community capacity and commitment.

The number of communities and local businesses fully aware of the potential opportunities for an energy systems approach to local energy and economic challenges needs to grow; and the regulatory context and technology supply chains need to shift towards the encouragement and facilitation of local low carbon energy.
We also need to transfer the model for local energy economies which CARES IIF is helping to develop in remoter areas to communities elsewhere in Scotland with different needs which, nevertheless, may benefit from a holistic local low carbon energy approach. There is potential for strong synergies with existing urban projects, such as Aberdeen Heat and Power which operates a local authority-owned gas combined heat and power district heating scheme, and STEP UP in Glasgow which focuses on local energy planning.

STEP UP is a European energy and sustainable city planning project that aims to help cities improve their sustainable energy plans. The project is a partnership of twelve organisations consisting of municipal, research and commercial partners in the cities of Ghent, Glasgow, Gothenburg and Riga. Glasgow City Council’s partners are University of Strathclyde and Scottish Power. The project brings together excellence and shared knowledge of energy planning and low carbon energy projects to create a coherent model for sustainable city energy plans that help to deliver greater impact on Europe’s 2020 energy efficiency, renewable energy and carbon emission reduction targets.

**STEP UP - Glasgow City Council**

The Energy Infrastructure Framework is a piece of work being led by Scottish Enterprise focused on decentralised energy production and distribution technologies and projects. The Framework will cover:

- a stocktake of current and proposed decentralised energy generation infrastructure which will feature a map by area and technology

- the identification of good practice approaches to planning and developing decentralised energy infrastructure projects (i.e. energy master-planning approaches)

- through engagement with partners, the development of proposals for action to support further adoption of good practice approaches

To avoid duplication with other areas of on-going work, the scope currently excludes grid transmission, sustainable transport, construction and energy efficiency.

The way heat is provided and used in different places already varies significantly, depending on the types and density of the buildings, the different temperatures of heat required and the types of fuel available in the area. How heat is supplied also offers opportunities for greater community ownership, a recent example of which is the Balgair District Heating Network supplying 26 homes in Fintry officially opened on 14 August 2015, supported by the District Heating Loan Fund.
We are building up resources for identification of opportunities for low carbon heat use, including, through the Heat Network Partnership, on district heating: www.districtheatingscotland.com. In addition, Resource Efficient Scotland has set up a framework for decentralised energy and district heating consultants, which can be accessed by all Heat Network Partnership partners.

The **Scotland Heat Map** is an important resource that can be used to identify the opportunities for energy efficiency, efficient supply and renewable energy projects and support their development. The map provides geographical information on heat demand and existing and potential sources of renewable heat and electricity projects. Developed with data provided by public and private sector organisations including all local authorities, a version of the heat map is publically available at www.scotland.gov.uk/heatmap. The Scotland heat map dataset has been supplied to every Scottish local authority to create a local heat map for their area along with training on how to access and use the data. The development of local heat or energy maps will allow local authorities to ensure that their development plans identify opportunities where heat networks would be appropriate and ensure an area's full potential for electricity and heat from renewable sources, along with identification of unused excess heat, is achieved as expected by the Scottish Planning Policy published in June 2014.

![Scotland Heat Map Screenshot](www.scotland.gov.uk/heatmap)

**Figure 12:** Screenshot from the Scotland heatmap, [www.scotland.gov.uk/heatmap](http://www.scotland.gov.uk/heatmap)

**Local Energy Challenge Fund**

**What we need first is to showcase what can be done.** A programme of major innovation demonstrators will have this purpose. The Scottish Government has put
in place a new **Local Energy Challenge Fund (LECF)** which will help aggregate community-led projects, such as those being supported under CARES IIF, with other local initiatives, including those led by local authorities, housing associations, universities and private businesses. The projects will demonstrate a holistic local low carbon energy approach.

In 2015/16, five projects have been offered funding. They will each show collaborative working, innovation, and value for the local community. They cover a range of technologies, including hydrogen and storage, and are designed to offer a number of benefits, for example providing renewable heat/electricity to local consumers; linking local energy demand with local renewable energy generation; and overcoming grid capacity issues. The successful projects are:

- **ACCESS** – lead by Community energy Scotland, ACCESS (Assisting Communities to Connect to Electric Sustainable Sources) will heat homes and businesses on Mull with electricity from a local hydro project, freeing grid in a constrained area. In year 1 100 households and at least 2 small businesses will directly benefit from lower cost, highly efficient heating systems.
- **Orkney Surf ‘n’ Turf** – the project uses electricity from 2 tidal turbines and a wind turbine, which often can’t be used due to grid constraints. Excess electricity will produce compressed hydrogen, which will be transported to Kirkwall harbour to be converted to electrical power for buildings and ferries. It will bring employment and training to the community, as well as reduced harbour electricity costs and increased revenues.
- **Reducing Fuel Poverty: Heat Storage Innovation** – innovative heat batteries pared with renewable production will reduce fuel poverty for those in sheltered/social rent housing. It is estimated it will reduce fuel bills for around 1000 tenants of up to £300 per year.
- **Levenmouth Community Energy Project** – lead by Bright Green Hydrogen, the project will provide low carbon transport, heating, and energy storage in Fife. Solar electricity will increase production of hydrogen to fuel the UK’s largest hydrogen-powered vehicles fleet. It will also partially heat the local swimming pool, and potentially produce fertiliser. Additionally, proceeds from the sale of green hydrogen and electricity will alleviate fuel poverty in the community and improve local transport services.
- **Energyzing Insch** – lead by Insch Renewable Energy Consortium and based in Aberdeenshire, the project will develop an integrated local energy system to link local energy (heat and electricity) demand with local renewable energy generation. A locally-owned and controlled energy grid will be constructed to deliver locally generated renewable heat and electricity, integrating a battery system for flexibility and storage, and a fibre-optic network for active network management and superfast broadband connections. It is estimated the project will reduce electricity costs by 20% for those on the network.

A second round of the Challenge Fund is currently underway. Phase one of the application process has been completed, and 23 projects have successfully progressed to the second phase. Further information is on the Local Energy Scotland website: [www.localenergyscotland.org/challenge](http://www.localenergyscotland.org/challenge)
6. The Future of Community Energy

The Scottish Government has a clear ambition to see community energy flourish within an assets-based approach to community empowerment, and at the heart of new local low carbon energy economies, based on local energy systems.

A local energy economies approach may be transformative in terms of creating value at a local level. This is still to be fully tested and all projects developed under the CARES Local Energy Challenge Fund will be monitored for socio and economic benefits by ClimateXChange over the next few years.

In the meantime, the James Hutton Institute with Gilmorton Rural Development has done some preliminary work to look at the additional value that might be created at a local level, taking one example – a 900 kW community wind turbine, and found that there may be an opportunity to increase community income by 35% through using local finance or by 52% by selling electricity generated locally.

![Figure 13: Lifetime NPV of income to local community under three alternative business models: The Tiree Case study (900kW wind turbine) (£m)](image)


Explanation of legend:

**Construction and operation income**: NPV of income to local community from the construction, operation and maintenance of the turbine

**Community income**: NPV of income arising from community projects funded through the operational income from electricity generation plus associated leveraged-in funding.

**Additional local resident income**: NPV of income generated from increased spend of local residents arising from increased income for local investors (Access to local finance model) or reduced electricity costs (Local electricity sales model).
To test this, we can build on the decade of community energy experience in Scotland and be inspired by the success of the local low carbon energy economies approach demonstrated by a number of pioneer projects around the world.

**International examples of local energy economies**

Three leading examples show the technical feasibility and potential financial savings of a local energy economy:

**Feldheim, Germany**

Feldheim is a small agricultural village with around 130 inhabitants located 80 km southwest of Berlin. It owns and manages its own heat and electricity networks through an independent local utility company established in partnership with a local private developer (Energiequelle ltd.), local agricultural cooperatives, the local government and the citizens of Feldheim. Feldheim hosts a number of wind turbines (74.1 MW) which were developed by Energiequelle, some of which feed into Feldheim’s community-owned electricity network. The community owns a biogas plant (500 kW) which runs on the by-products of pig and cattle farming and feed into Feldheim’s community-owned district heating network. The output of the plant is in turn used as agricultural fertilizer. The town has a woodchip boiler and an electric battery in planning stage for back-up of heating and electricity respectively.

Among the many benefits of Feldheim’s approach is the considerable lower cost of energy compared to normal private utility rates (17€ct/kWh vs. 28€ct/kWh - a 40% saving) increasing local value to the region in the form of local tax revenue, job creation, and long-term security of energy supply.
Summerside, Prince Edward Island, Canada

Summerside is the second largest city in Prince Edward Island off the south east of Canada. The city operates a municipally owned Electric Utility (Summerside Electric) serving around seven thousand customers (approximately one third of the population of Orkney). The utility owns 12 MW of wind capacity and has an additional 9 MW of wind from a private developer. Using diesel generation as a back-up, the utility claims to be able to run fully on wind for up to 40% of the time during the year. To maximise wind utilisation, the utility has put in place an innovative Smart Grid Pilot programme, using remotely controlled domestic hot water and space heating systems. The smart grid communications system uses optic fibre and the utility is therefore also able to offer high-speed broadband services to their customers. Summerside Electric provides low cost electricity services (c. 5p/kWh for heat and 9p/kWh for electricity) which are guaranteed for 5 years, and claims to have reduced local greenhouse gas emissions by 50%. As a municipally-owned organisation, a proportion of profits from the utility are reinvested in local community projects through a grants scheme. Summerside is widely regarded as the greenest community in North America and Canada.
Vestenskov, Denmark

Vestenskov is a small village of 200 inhabitants in the island of Lolland, Denmark. The surplus of local wind generation is more than double local electricity demand, providing the resource for a hydrogen electrolyser to capture the surplus generation and store it as hydrogen, to be used for providing heat or electricity. The project has been sponsored by the Danish government and involves private developers such as SEAS-NVE (the wind and electrolyser developer) and IRD Fuel Cells (the Fuel cell provider). The project uses a centralised electrolysis plant to produce the hydrogen from the excess wind and then feeds it through an underground hydrogen pipe network to local consumers. Each household is fitted with a hydrogen micro-CHP unit to produce electricity or heat according to demand, the operation of which is coordinated centrally but subject to individual household preferences. Overall efficiency of the system producing electricity is 37% and 85% for heat, with claimed cost savings of 30-40% per household.

![Diagram of Vestenskov's hydrogen system](source: architexting.wordpress.com)

We can learn from these international examples to identify key elements required in the development of local low carbon energy economies including:

- strong partnership models for collaborative working between communities and third parties;
- local authority involvement, for instance in development of local energy services companies (ESCOs);
- commercial models for grid “capacity sharing“ between generators;
- technical and financial models for linking renewable generation and local demand
- technical evaluation of the role of energy storage in facilitating the connection of new generation

We are already seeing the seeds of this new growth, largely nurtured through the CARES Infrastructure and Innovation Fund, the CARES Local Energy Challenge Fund and the Low Carbon Infrastructure Transition Programme (see below). The common themes are the combination of innovative technologies and multi-stakeholder collaboration, whether that is the aggregation of individual community projects or area-based programmes involving a range of local partners.
A local energy economies vision for Scotland

A local low carbon energy economies approach in Scotland could be demonstrated in a number of ways, ranging from a focus on demand-side management at the domestic level to transport solutions and large-scale storage. A number of possible scenarios are set out below, together with examples of Scottish projects which are starting to realise these opportunities.

Domestic demand-side management

Large numbers of high rises in Scotland are heated electrically by convection or night storage systems, owing to the safety risk of using gas in ‘system built’ tower blocks. A number of district heating projects are currently being developed in order to provide a lower cost alternative to electric heating. However from an energy system perspective, this means that a valuable grid balancing asset is being lost - the cumulative capacity of night storage heating far exceeds the UK’s total pumped storage capacity.

Housing associations could consider how electric heating could be retained in parallel to district heating (as in Germany), or incorporated into district heating systems that have large thermal stores with the water heated by large electric boilers (as in Denmark). If the constrained energy is from rural wind projects, this approach has the potential to create new relationships between rural and urban communities, for mutual benefit.

Additionally, thermal storage could utilise intermittent energy sources such as wind and (in the future) wave generation, potentially bringing down the cost of decarbonisation through greater efficiency. Thermal storage can enable combined heat and power (CHP) or biomass boilers to run at maximum capacity, reducing the number of hours run at part load which enhances overall efficiency.

A combination of both a large thermal store as part of a district heating scheme heated with a combined heat and power engine (CHP) can provide ‘grid balancing services’ by enabling electricity generation equipment to be switched on and off at short notice without negatively affecting the heat supply that users need.

Energy storage

With the increased deployment of renewables and increased demand for electricity for heat and transport, energy storage technologies could play a greater role in renewables integration balancing supply and demand and enhancing energy security. A wide range of electrical and thermal energy storage technologies, at varying stages of development and applicable at various scales, offer options for storage.

Pumped storage hydroelectricity – the most mature and extensively deployed large-scale energy storage technology- presents the opportunity to store energy generated at times of excess supply for when it is needed most. Increasing pumped storage hydroelectricity can complement our ambitions for more renewable energy capacity which will strengthen Scotland’s balanced energy mix and can also enhance security of supply right across GB.
The National Planning Framework 3 (NPF3) Proposed Framework identified new and expanded **pumped storage** facilities, including Cruachan, as a national Development, recognising its nationally significant potential for enhanced capacity.

The NPF3 also highlighted that we are currently exploring the potential role of other storage technologies within the future energy mix.

The Scottish Government’s Routemap for Renewable Energy identifies the potential for hydrogen to play a significant role in Scotland’s energy future. A wide range of potential application some of which are currently being supported by the Scottish Government- includes storing excess power as hydrogen for use as a transport fuel, or enabling integrated energy systems in grid-constrained locations such as islands or other remote communities, as demonstrated in the world’s first community owned renewable hydrogen scheme, the PURE Energy Project in Unst.

The Scottish Government and its agencies see energy storage as a major strategic factor in the evolving energy mix, and are participating in a number of pieces of work which will increase our understanding of the range of technologies that are being developed, the system benefits of the energy storage, and the key opportunities, barriers, and policy and regulatory considerations.

**Using electric vehicles for grid balancing**

A key advantage of plug-in electric vehicles (PIEVs), is that much of the infrastructure to support their operation is already in place in the form of the national electricity grid. This can work in both directions, with PIEVs themselves potentially providing a support infrastructure to the grid. Smart and controlled recharging of an increasing number of PIEVs in the Scottish fleet could potentially be matched to the fluctuating levels of generation from renewable sources, helping to balance energy systems and use excess green electricity.

The “Switched on Scotland” PIEV Roadmap, published in 2013, contains a specific ambition that ‘Scotland’s electricity grid supports increased adoption of PIEVs, and is made smarter by managed recharging and distributed energy storage’. To that end, Transport Scotland and the Scottish Government held a stakeholder workshop in April 2015, to consider opportunities to align transport and energy policies on PIEVs. Initiatives to fully realise the potential of plug-in vehicles to support the development of a cleaner and smarter energy system were also explored. The outcomes of this workshop are informing ongoing policy development in this area.

**Using hydrogen for sustainable transport**

The growth of renewable energy in Scotland presents new opportunities to help decarbonise the transport sector, while at the same time helping to utilise renewably

At a local level, with funding from CARES IIF, a consortium of operational community generators facing greater than predicted levels of grid constraint have leased 4 electric vehicles and are currently installing new ‘smart’ charging points. Charging times for the electric vehicles will be linked to the availability of the wind generation. The vehicles are available for any member of the community to use for free to encourage local confidence in the technology.

The growth of renewable energy in Scotland presents new opportunities to help decarbonise the transport sector, while at the same time helping to utilise renewably
generated electricity which may not otherwise be used. Where possible linking hydrogen powered transport applications to storage of intermittent renewable energy has benefits for both sectors.

The Aberdeen Hydrogen Bus Project has seen the establishment of Europe’s largest fleet of hydrogen-fuelled buses in the Granite City, supported by a state-of-the-art green hydrogen production and refuelling facility. Modelling using this station and data from local renewable generation patterns is helping to explore the potential role hydrogen could play in the wider energy system, such as managing electrical grid constraints. Hydrogen from renewables could also contribute to decarbonising the gas grid in future.

The project in Aberdeen is evolving and 2016 will see the opening of a second production and refueling station in the south of the city, creating the first “hydrogen hub” in the UK outside London. The H2 bus fleet is being joined by a range of 3 other vehicles types to be fuelled by the stations, as a practical demonstration of hydrogen in use as a low emission fuel. As well as large and small vans for use by Aberdeen City Council on a range of duties, two hydrogen fuel cell cars will be used by the city’s car club – another first in the UK.

In addition, the Levenmouth Community Energy Project in Fife, supported by the Local Energy Challenge Fund in 2015/16 will see a production and refueling facility connected directly to renewable wind power generation, and fuelling a fleet of low emission hydrogen/diesel hybrid vehicles. Hydrogen production at that site will also be used for heating and to provide power when the wind turbine is not generating.

Led by Scottish Enterprise, partnerships in Scotland are looking at the potential for hydrogen projects in novel areas, including the potential for fuel cell/battery hybrid ferries and mobile refueling systems. These could create new commercial opportunities for our companies and universities, as well as their environmental benefits.

**Developing generator consortia for sharing grid costs**

The way that grid connections are priced by DNOs can lead to individual connection offers cumulatively costing more for the same capacity than a single offer. However in general a single offer can only be made to a single applicant, meaning that multiple generators need to form a consortium and establish a SPV. In the absence of publicly available information on connection applications or contracted capacity it is very difficult to identify prospective partners, and the risk of the consortium not being successful deters individual parties from investing time or money, leading to market failure.

There may be potential for a consortium approach where several prospective community energy projects that are facing high-cost connections could potentially join a consortium if there were cost savings. The challenge is to develop a methodology for facilitating data sharing by the DNO and the Local Authority planning department with a third party, that is scalable and could be reproduced in other parts of Scotland.
Local finance for new energy infrastructure

From a local energy economy perspective, the next step for some communities will be to invest in their own energy distribution, supply and storage infrastructure. As this is an emerging area it is not clear what the risk profile and cost of these assets will be, or finance sources. One potential route is an extension of the type of model used by Balerno.

Balerno Village Trust established a ‘community benefit society’ (a form of cooperative) in order to finance their small scale hydro scheme on the water of Leith through a ‘crowd financed’ community share offer. This was the first time this model had been used in Scotland for a community energy project, and the combination of ring fenced community benefit, lower cost finance, and a stable return to investors, has ignited considerable interest in the use of local finance models for community energy. With the rapidly changing risk profile of small scale projects in light of planning risk, grid costs and FITS degression, local finance can provide an alternative to traditional lenders who may consider a project to be too small or high risk for their commercial criteria.

Local finance could potentially increase the level of local economic benefit from generation projects and create a strong relationship between the community generator and local residents.

Energy Master-planning

The Energy Infrastructure Framework described above shows how Scotland is taking action to scope the potential for decentralised energy production and distribution technologies and projects. Some local authorities are already taking this approach.

Comhairle nan Eilean Siar (Western Isles Council) have recently undertaken a comprehensive energy audit and are considering how to include this alongside the local generation pipeline and potential opportunities for local energy supply in forthcoming updates to their Local Development Plan. This holistic approach to LDP development could be described as energy master-planning, and in the context of trying to foster local energy economies it is seen as a key tool in creating the right environment for the identification of opportunities and collaborative working.

Glasgow City Council have included in their Proposed City Development Plan\(^{35}\) (Policy CDP5 – Resource Management) areas where district heating has been installed, where it is proposed and where there is greatest potential for district heating alongside policy to support the delivery of district heating from low carbon and renewable sources.

\(^{35}\) [http://www.glasgow.gov.uk/CHandler.ashx?id=19258&p=0]
Achieving the vision

One of the main principles of this Community Energy Policy Statement is to build future policy on our long experience of supporting the community energy sector in Scotland. Hence the first steps towards local energy economies will be through adapting and improving existing mechanisms.

CARES and REIF are constantly being reviewed for effectiveness and adapted to improve performance.

For CARES, additional support has been delivered through the Local Energy Challenge Fund, complementing original CARES streams with a focus on heat, innovation and collaborative projects. CARES continues to develop, streamlining early stage support to facilitate delivery of projects, such as the creation of framework contractors for legal, financial and project management services. Knowledge-sharing mechanisms to support and coach communities through the development process are being developed, and links continue to be strengthened with local authorities to promote the opportunities available through CARES.

For REIF, Scottish Investment Bank are working on market solutions to help fund smaller projects under £1 million through partnership working or through grouping projects into portfolios for investment, as well as considering strategic interventions to help communities invest in commercial projects and to reduce the barriers to grid access.
New local energy economies support
But reshaping existing support may not be enough to achieve the paradigm shift we need to grasp the local energy economy opportunity. We need to direct partnership working towards visionary project design to show what can be achieved.

The technologies and commercial models required to deliver innovative local energy systems need to be demonstrated in practice in order to de-risk this approach and unlock further commercial investment.

The Local Energy Challenge Fund supports demonstrator projects to show the potential of such approaches.

The Low Carbon Infrastructure Transition Programme (LCITP) is the first strategic intervention to be supported by the 2014-2020 new European Regional Development Fund (ERDF). The Programme is designed to support the development and acceleration of low carbon projects to develop investment grade business cases and driving investment in Low Carbon Infrastructure. Launched in March 2015, with £76 million during the first 3 years, the programme provides tailored project development support for established and start-up low carbon infrastructure projects, including heat, across the private, public and community sectors.

It builds on:

- mainstream project support delivered through Scottish Enterprise, and Highlands & Islands Enterprise (HIE);
- pilot programmes, funded by Scottish Government which have been delivered in the past 2 years (Scottish Green Investment Portfolio and Scottish futures Trust Low Carbon Workstream; and
- Work between Scottish Government and HIE in relation to local energy economies based on community-led pilots.
- Round 2 of the Local Energy Challenge Fund, launched in March 2015, is developed in partnership with the Low Carbon Infrastructure Transition Programme. 23 projects are being supported with development and feasibility support. LCITP works closely with the Local Energy Challenge Fund to

ResPublica’s 2013 publication The Community Renewables Economy: Starting up, scaling up and spinning out argues that a key to achieving scale is joint ownership, where communities are able to partner with private developers, local authorities or businesses, with greater capacity, resource and financial capability. But it stresses that there are a number of barriers to be addressed, including funding, financial know-how and legal advice. Local and national Government must work together to understand the financial benefits and help catalyse growth.

http://www.respublica.org.uk/item/The-Community-Renewables-Economy-Starting-up-scaling-up-and-spinning-out-zlbz#sthash.xqYWWywN.dpuf
ensure that low carbon projects with a community focus receive the correct support to develop and achieve their visions.

The programme operates via a Scotland-wide low carbon project development unit active across the public, private and community sectors where there exists significant potential for de-carbonisation and enterprise growth. The focus is on infrastructure projects including low carbon, community or local-scale renewable electricity and heat generation, energy efficiency, resource efficiency and materials recycling and re-use.

The Geothermal Energy Challenge Fund is the first project being delivered as part of the Low Carbon Infrastructure Transition Programme. The Challenge Fund was launched in March 2015 to support feasibility studies into the degree to which Scotland's geothermal resource can meet the energy needs of local communities. A total of £185,325 has been awarded to 4 projects:

- Aberdeen Exhibition and Conference Centre – to explore the feasibility of the installation of a deep geothermal single well system to provide heat to the new Centre and associated buildings.
- Guardbridge, Fife – to explore the geothermal potential under a brownfield site to provide heat to on-site industries and the local community.
- Hartwood, North Lanarkshire – to design a fully operational minewater geothermal district heating system which could act as an exemplar of how to transform farm economics and transfer benefits to local communities.
- Hill of Banchory, Aberdeenshire – to explore the viability of adding geothermal energy to the existing renewable heat network that is already serving the local communities.

Aligned with existing schemes, including CARES and REIF, community energy proposals will be able to join-up with interest in the private and public sector to accelerate delivery and maximise impact.
Conclusion

Scotland has led the way in the UK in our policy development and support for community energy. Our community and locally-owned renewables target is unique and is helping us to monitor progress. We have put in place a comprehensive support framework based on our experience of the sector and, where we do not currently have powers to intervene directly – as in obliging community benefits – we have used all the levers we can access, including exemplary commitments on the public estate, to encourage good practice. The result is over 400 community energy schemes operating across Scotland, at least 634 MW of local and community-owned projects in the pipeline, and a new industry baseline for community benefits that is bringing additional benefits to communities across the UK.

The immediate future will be very challenging given the uncertainty brought about at a UK level. Ultimately this may require a paradigm shift away from revenue subsidy and towards new ways to help local communities realise their energy ambitions. Perhaps not the end but a new beginning.

To continue to lead the way, we need to take what we have learned and apply it to transform the way we use energy locally.

As the environmental activist Bill McKibben argues in his book, Deep Economy, we can generate local power more efficiently, more reliably, and we can tap into the power of community.\textsuperscript{36} By matching local low carbon power generation to local demand and forging collaborative partnerships between local agencies in the private as well as the public sector, we can create a new energy systems model. Scotland is well-placed to test this new model and our communities are well-placed to benefit from it.

\textsuperscript{36} \textit{Deep Economy: The Wealth of Communities and The Durable Future} by Bill McKibben. Copyright © 2007 by Bill McKibben.
Note on consideration under the Environmental Assessment Act (Scotland) 2005

The draft Community Energy Policy Statement has been considered under the terms of the Environmental Assessment Act (Scotland) 2005. We have concluded that the draft policy statement can be pre-screened in terms of Strategic Environmental Assessment (SEA), as the policies and the likely environmental effects stem from the Scotland’s Renewable Energy Routemap and Electricity Generation Policy Statement which has already been subjected to SEA and public consultation. The draft Policy Statement has been pre-screened out of requiring a SEA. A copy of the pre-screening report can be found on the Scottish Governments SEA Database (http://www.scotland.gov.uk/Topics/Environment/environmental-assessment/sea/SEAG).

Note on Equalities

The Scottish Government commissioned Close the Gap to undertake an equalities impact assessment (EQIA) of the Renewables Routemap and the full report will be published alongside the next Renewables Routemap update, due to be published shortly.

Analysis focused on 3 areas where the Scottish Government and/or its enterprise agencies actively provide support under the aims of the Renewables Routemap: skills development; supply chain development; and community energy.

In terms of community energy, the EQIA suggests that women are less likely to participate in community energy projects than men and the implementation of CARES and REIF risks entrenching community and national understanding of renewable energy as “male” and creating a cadre of experts in renewable energy who are men. It is claimed that, without guidance on monitoring gender impact of the allocation of community benefits funding, projects and initiatives targeted at women are less likely to be recipients of such funding.

In response, on behalf of the Scottish Government, Local Energy Scotland will develop an Equalities Charter under CARES. The Charter will provide an overview of the new support to be developed under CARES, addressing the issues recommended in the EQIA. LES will begin work on the Charter by the end of 2015.

In addition, HIE have committed to work with its partners in the sector, including CARES, the Renewable Energy Investment Fund, and the WIRES network to encourage women’s involvement in community energy projects.