Local Energy Planning

A guide to developing community-led local energy plans

March 2021

LOCAL ENERGY SCOTLAND

Interreg
North Sea Region
COBEN
European Regional Development Fund
EUROPEAN UNION

Greener
Scotland
Scottish Government

Cover photo: Drumnadrochit

Preface

The Scottish Government's approach to local energy planning is focused on where they have devolved powers: heat and energy efficiency. Local Heat and Energy Efficiency Strategies (LHEES) form the basis of planning and delivering local energy systems in Scotland, led by the local authority, and involve engagement across multiple stakeholders, including community groups. However, there is scope to go beyond this to consider the whole energy system, including energy generation, distribution, storage and transport.

There are a number of different strategic approaches to taking forward plans that encompass the whole energy system, available to local energy planning; community-led is one such approach.

The Guide has been developed as part of a pilot project in 2017 to 2020 to support the development and implementation of four community-led local energy plans. These plans tend to focus on smaller geographical areas, but can benefit, and indeed support, other local, regional, and national strategies.

The pilot is part of the COBEN project (Delivering **CO**mmunity **BEN**efits of Civic Energy) [1], an EU Interreg (North Sea Region) funded programme consisting of six community energy projects taking place across the North Sea region. The COBEN project considers the role that civic society can play as a key driver to support a transition to renewables-based energy and the role that can be played by community-owned renewable energy enterprises that provide tangible economic, environmental and social benefits.

The Scottish Highlands and Islands is one of the regions participating. The pilot project has supported the development and implementation of four community-led local energy plans in the Highland and Islands area: Barra and Vatersay (Outer Hebrides); Brae (Shetland); Drumnadrochit (Highland) and Oban (Argyll). Community-led plans are developed by local people who have an interest in the community, including local residents, businesses, community organisations and working closely with other stakeholders including: local authorities, distribution network operators and local generators.

The Guide is supported by an online toolkit [2] that provides additional guidance, templates and example materials developed as part of the pilot.

The Scottish pilot was 50% match funded through the Scottish Government's Community and Renewable Energy Scheme (CARES). CARES is delivered by Local Energy Scotland. Learning from the pilot will help to inform the wider development of Scottish Government's policy on local energy plans.

The Guide further develops areas of energy masterplanning identified in the Guide to Energy Masterplanning (2015) [3] produced by Scottish Enterprise. Reference is made to the Scottish Government's Energy Strategy [4] to provide context with its overall vision of a flourishing, competitive local and national sector, delivering secure, affordable, clean energy for Scotland's households, communities and businesses. This Guide was created in the policy context current at the time, it is intended that it will be updated to remain consistent and relevant as policy develops.

Version 4: March 2021

Acknowledgement

The Guide has been developed for Local Energy Scotland by

Wood plc.

For further information, please visit: https://www.woodplc.com/

Contents

1.   Introduction

The COBEN (Delivering **CO**mmunity **BEN**efits of Civic Energy) project [5] considers the role that civic society can play as a key driver to support a transition to renewables-based energy and the role that can be played by community-owned renewable energy enterprises that provide tangible economic, environmental and social benefits.

The Scottish Pilot for the COBEN project has supported the development of Community-led Local Energy Plans (LEPs) and has ensured that these are placed within the context of local, regional and national strategy that is developed by local authorities and national government. Community-led plans are developed by local people who have an interest in the community, including local residents, businesses, community organisations and working closely with other stakeholders including: local authorities, distribution network operators and local generators.

1.1   Purpose of document

This document has been produced as part of the COBEN pilot. It explains a process that will support you, as a community to establish a LEP. By preparing a LEP, your community can develop an understanding of its energy needs and identify opportunities to directly improve them.

While the details in your LEP will reflect your community's individual circumstances and opinions, the methodology outlined here provides a consistent template that's applicable to all communities across Scotland. Appendix 1 contains a template for the contents of a LEP.

This document:

- Explains how your community can create its own Community-led LEP

- Reviews how data can be used to assist understanding of your community's energy requirements

- Provides links to information and assistance that's available in the accompanying toolkit

- Reference is made to the Scottish Government's Energy Strategy [6] to provide context with the wider national strategy that is currently being developed by the Scottish Government. Community-led LEPs are one approach that this pilot shows can be of benefit in parallel, and indeed support, other local, regional and national strategies and is intended to be updated to remain consistent and relevant within this changing context. This guide was created in the policy context current at the time, and may be adjusted to suit policy development in future.

1.2   Our energy supply

Our social and economic well-being depends on a secure, affordable and reliable energy supply. This energy supply needs to be capable of meeting our needs for power, heating and transport within homes and businesses across Scotland and the UK. Our energy demands vary depending on the time of day and season of the year. This means the way we supply energy needs to be flexible in order to meet these variations.

The diverse nature of our communities provides challenges in matching demand and supply.

In the case of demand, for example:

- Different sized and designed homes will have different energy requirements (e.g. detached houses, blocks of flats, terraced houses, etc.)

- Different types of businesses in an area will have different requirements for power, heating and transport (e.g. hotels, retailers, supermarkets, warehouses, workshops, etc.)

---

[5] https://civic-energy.eu/ (Accessed March 2021)
[6] http://www.gov.scot/Resource/0052/00529523.pdf (Accessed March 2021)

- Different modes of transport will have different energy requirements (e.g. roads, railways, ferries, distribution companies)

In the case of supply, for example:

- The fuels used in different areas depends on the means of supply available (e.g. mains natural gas, mains electricity, LPG, oil, diesel, biomass, etc.)

- Low carbon energy supply depends on the local resources available (e.g. wind, solar, biomass or hydro power)

1.3   Local energy

The supply of power and heat to homes and businesses is viewed strategically at a national level. However, local communities can also play a role in shaping their energy needs. From a demand perspective, householders and businesses can reduce their energy needs through, for example, better insulation and more efficient lighting and appliances. Smart meters enable more accurate understanding of energy consumption, too, rather than relying on periodic meter readings and estimated bills.

From a supply perspective, communities can look to develop local generation to support their energy needs, either on an individual level (e.g. solar panels on a roof) or a community level (e.g. investment in a wind turbine or hydro scheme).

The Scottish Government sees these community-led renewable energy generation projects (**community energy**) as an integral part of local energy solutions. **Local energy** is any wider energy service/project in a local geographical area which is delivered thanks to the work of multiple organisations. Examples of this would include programmes of insulation improvements or upgrading of public lighting. **Local energy systems** find ways to link together local energy and community energy projects to deliver benefit across power, heat and transport needs.

Understanding the use of power, heat and transport energy in your local community can be the first step to developing a local system that considers and attempts to integrate both the demand and supply perspective. In the context of community-led LEPs there are several benefits:

- End users can better understand the amount of energy they use (and their mix of requirements for power, heat and transport)

- The community as a whole can understand the size of energy demand and how it's divided between homes and businesses

- It's easier to understand how much of this aggregate demand is met by existing local generation

- Future energy requirements (e.g. new housing or business development) can be considered and compared with the size of existing demand

- Affordability and reliability of energy supply can be examined

- All these details can be collated in a single information source shared by everyone

One route for you, as a community to achieving this can be through creating a Community-led LEP.

2.   Wider context to local energy plans

2.1   The Scottish Energy Strategy

The Scottish Energy Strategy[7] sets out Scotland's commitment to wider global actions to reduce the impacts of climate change. In 2019 the timetable for carbon emissions reduction was accelerated and new targets

---

[7] http://www.gov.scot/Resource/0052/00529523.pdf (Accessed March 2021)

were introduced. The targets are set out in the Climate Change (Emissions Reductions Targets) (Scotland) Act 2019[8]. These commit to:

- 100% reduction in total GHG emissions by 2045 (compared to the 1990/1995 baseline)

- 75% reduction in total GHG emissions by 2030

Achieving these targets means changing the way our whole society uses its resources. While focused on energy, waste and transport, it also includes how we manage natural resources and the landscape.

The Scottish Energy Strategy[9] has three main themes:

- **A whole-system view** – looking at the combined energy requirements of power, heat and transport, rather than viewing them as separate items

- **A stable, managed energy transition** – taking the whole-system view means changing the way we produce and use energy in everyday lives. This change needs to be managed efficiently to ensure that the impacts are positive

- **A smarter model of local energy provision** – traditionally we've met our needs by supplying large quantities of energy from large generation plants that feed a large and complex supply network. Being smarter means considering when and how we use energy throughout the day and across different seasons

The ambition behind the whole-system approach is to continue increasing the use of renewable sources to meet all our energy needs. This means considering all of Scotland's heat, transport and electricity requirements added together as a single figure (called an 'all energy' equivalent).

The Scottish Government's Local Energy Policy Statement[10] issued in January 2021 recognises the increasing role that local energy services can achieve to the benefit of local people. It identifies community-led energy projects as a priority within the development of local energy services. It sets out ten key principles that form the Scottish Government's approach. These centre on five themes: people; places; network and infrastructure; pathway to commercialisation and opportunity.

The Policy Statement supports the strategy aims to build on the legacy of strong community engagement in local renewable generation to enable larger strategic projects covering larger geographical areas. The Scottish Government target of 1 GW of community and locally owned energy by 2020 rises to 2 GW by 2030.

It underpins the Scottish Government's commitment to ensure that energy systems are designed and developed in line with local need, with both residential and non-residential consumers able to actively manage and meet their energy needs in an efficient manner. This should assist in lowering annual energy bills, while also offering opportunities for local supply chains and investment in local businesses.

2.2   Local energy generation

The changing approach to energy production and consumption in Scotland means continuing to move away from a traditional supply model, where large power stations and supply networks feed energy to businesses and homes, and where end users don't control when and how supply is provided.

Considerable progress has been made in local ownership and operation of on-shore wind and hydro energy generation assets. Funding of this generation has been primarily supported by feed-in tariffs (and other support schemes). This encouraged generation of energy that could then be sold to the grid, creating a source of income for local generators and communities. This has provided considerable benefits to local communities in the form of direct funds that could be injected into the local area. However, the end to FiT and RHI schemes means that this source of revenue is no longer available to communities.

---

[8] https://www.legislation.gov.uk/asp/2019/15/contents (Accessed March 2021)
[9] http://www.gov.scot/Resource/0052/00529523.pdf (Accessed March 2021)
[10] https://www.gov.scot/publications/local-energy-policy-statement/ (Accessed March 2021)

The most valuable type of local energy generation is used directly in local communities, therefore reducing the need to purchase grid-supplied electricity and expensive fuels such as oil. If energy can be generated locally, then stored and used in alignment with demand, that too will be beneficial for the community.

2.3   What is a Community-led Local Energy Plan?

Community-led LEPs are created by local communities, rather than by other bodies (e.g. local authorities or national government). They set out key priorities and opportunities identified by a community, assisted by a range of individuals and organisations who have an interest in the community, including local residents, businesses, community organisations, local authorities, distribution network operators and local generators.

A LEP enables a community to look at its existing and future energy needs (in terms of power, heat and transport) and state where it sees priorities for action, as well as identify specific actions to take.

An important part of the development process is coming to understand your community's own energy and transport systems, and how they fit in the context of wider changes taking place across Scotland. Then you can look for opportunities that offer local benefits consistent with national low carbon targets. These benefits can be:

- Direct – such as the generation of electricity or heat for local use, displacing more expensive grid-supplied electricity or fossil fuel

- Economic – the emergence of employment opportunities associated with energy supply (e.g. in hydrogen production) or enhanced efficiency (e.g. insulation and glazing work on homes)

- Indirect – such as a switch from diesel to electric vehicles, reducing emissions from exhausts and improving air quality

- Social – production of local energy to supply homes in fuel poverty can reduce stress and enhance health for residents

- Strategic – using energy-storage mechanisms to maximise outputs from community-owned generators, or using technology to enable better trading of locally produced energy

The Community-led LEP is a starting point for your community's engagement with its energy needs. It offers focus for immediate opportunities to develop in the short term, and scope for longer term planning for changes in the future.

3.   The Community-led Local Energy Plan journey at a glance

The process of developing your LEP will involve several stages. First, you'll explore what's already known by your community about its energy use and requirements. These initial thoughts can then be built upon with other organisations (such as your local authority or local businesses) who can provide more detail. As you gather more information, you'll need to analyse what it means for your community and how it affects the initial thoughts. You'll need to do several cycles of data collection, analysis and reflection to ensure your community has contributed as much as it can.

You can consider the overall development process as six interlinked stages, as shown in Figure 3.1.

Figure 3.1   An overview of the Community-led LEP journey

The stages are deliberately portrayed as a cycle with the community at its centre. That's because developing your LEP is essentially a cycle of actions that potentially brings to light fresh data that alters the overall picture of energy use and requirements.

A Community-led LEP can capture all local knowledge, and broaden your community's understanding of the options for change.

3.1   Initialising

The first step of developing your LEP is to reflect on what's already known about your community's energy needs, challenges and opportunities.

What is it?

This can be as simple as an initial 'brainstorm' of ideas about:

- What kind of community are we? (rural, island, semi-rural, urban)

- What energy-related actions have been undertaken so far, if any? (e.g. community energy generation feasibility study, programme of insulation for residential properties)

- What issues do we have regarding energy? (e.g. high cost of fuel for heating and transport, limitations to amount of energy generated by community renewables, hard to heat homes)

- What size of study area would suit our community?

Who does it?

This brainstorm can be done by any local group with community interests, or by an individual community member.

What will be the result?

After completing this step, you should have a short note summarising everyone's initial thoughts. This can be used as a starting point to examine the details later.

Where can I find more information?

Section 4.1 provides more details about this stage.

3.2   Mobilisation

The next stage is identifying representatives from your local community who could (and want to) work together to develop your LEP, and what other organisations could help with this.

What is it?

This stage is about understanding the knowledge and skills in your community relevant to the LEP, and what wider organisations need to be involved. It's also for defining the proposed study area boundary and considering the aspirations the LEP might address.

Your community may be home to a range of individuals and organisations with knowledge, skills and experience relevant to energy use. For example:

- Community development trusts (and similar) involved in the feasibility and funding of potential local renewable energy generation

- Housing associations (Registered Social Landlords) and residents' associations

- Employees of energy supply companies, utility companies or engineering companies

Consulting with these people and organisations will ensure you get a broad view from your community, building on the notes from the initialisation stage.

It's also useful to think about what other organisations could offer guidance (e.g. planning or environmental regulations) or information and data (e.g. local authorities, business organisations) in the future.

During this stage, you also need to think in a little more detail about your community's study area boundary, which will provide a focus for data and information gathering. The final element of this stage is thinking about the main aspirations and ambitions of your community that the LEP could address.

Who does it?

The individual or organisation who wrote the initialising document can carry out this task, or they can find someone else to tackle it, such as a community development trust or community council.

What will be the result?

At the end of this stage, you should have:

- Understanding of any relevant projects or work done that reviewed the energy needs of the community

- Initial awareness of individuals and organisations in the community who are interested in developing a Community-led LEP, and what skills, knowledge and experience they can offer

- A list of external stakeholders that need to be (or could be) consulted during the development of your LEP

- An initial study area boundary, and the aspirations and ambitions the community wants to see addressed in the LEP

Where can I find more information?

Section 4.2 provides more details about this stage.

3.3   Data and Information Gathering

This stage is about using publicly available datasets and local knowledge to build up an overview of energy use and generation in the area.

What is it?

Data and information in this case means both quantitative details, such as energy consumption and fuel used in transport or heating, and qualitative information, such as local planning policies, the location and capacity of electricity supply networks, and what studies have already been undertaken in the area.

Your list of organisations from the mobilisation stage will provide some immediate sources of information. There are also lots of data sources available via public websites (e.g. Scottish Government, Scotland's Census, UK Government).

Who does it?

The organisation or group of people involved in the mobilisation stage can coordinate the data and information gathering. This could involve doing direct research or requesting data from relevant organisations.

If your community previously agreed that external help will be required, there may also be consultants (or similar) involved in this stage.

What will be the result?

At the end of this stage, you'll have a snapshot of your community's energy needs across a typical 12-month period. This will include an understanding of power, heat and transport energy needs, as well as the proportion of demand from homes and businesses. Any understanding of significant changes to future energy requirements (e.g. major new housing being built) can be included here, too.

You should also note any existing or planned community energy generation.

Where can I find more information?

Section 4.3 provides more details about this stage.

3.4   Options Appraisal

This stage is about considering opportunities for change in your community, either to reduce demand or provide alternative energy generation and supply.

What is it?

You'll use the understanding gained from the data and information gathering stage to consider what actions your community might take to change how it uses and receives its supply of energy.

Ideas will address how the community could use less energy (e.g. reducing heating energy demand through better insulation) or change the way energy is supplied (e.g. locally owned energy generation).

As with all stages, your community's views will be useful to include here. It's useful to understand any good and bad experiences from previous energy efficiency works, and what feasibility work has previously been done. There will be other ideas that can be explored, too.

You'll draw up a list of potential opportunities and assess the net benefits that might be delivered. This can be discussed among your community, with a prioritised list of opportunities looked at in more detail.

Who does it?

The organisation or group of people involved in the mobilisation stage can coordinate the data and information gathering. This could involve doing direct research or requesting data from relevant organisations.

If your community previously agreed that external help will be required, there may also be consultants (or similar) involved in this stage.

What will be the result?

You'll draw up a finalised list of opportunities for inclusion in your LEP. This will include how much each action will cost and what the net benefits might. These benefits relate to energy saving and cost savings, but also to wider environmental and social benefits (e.g. air quality improvements, improvements to local environment or economic activity). You'll also include an idea of how long it might take for these actions to be completed. This is important where a specific project (e.g. a community wind turbine) is proposed, so you understand how long it will take to achieve planning and environmental permits, for example.

Where can I find more information?

Section 4.4 provides more details about this stage.

3.5   Plan Development

This stage provides a summary of all the information and data collected, and the actions the community has prioritised to take forward.

What is it?

You'll create a draft of your LEP that brings together all the information and data collected in the previous stages.

The aim is to give an overview of the study area's characteristics, in terms of energy and transport, and offer evidence for how the actions in the plan were decided on.

Who does it?

The organisation or people involved in the previous stages can coordinate writing the draft LEP.

If your community previously agreed that external help will be required, there may also be consultants (or similar) involved in this stage.

The draft LEP should be shared with your community so you can get feedback on how easy it is to read and understand. Feedback on how well it addresses the community's initial aspirations and ambitions is also useful. Once you've gathered this feedback, you can produce a finalised document.

What will be the result?

The Community-led LEP itself, which can be a written report, presentation, website, or combination of these, depending on what the community feels is most useful.

Where can I find more information?

Section 4.5 provides more details about this stage.

3.6   Taking the Plan Forward

A beginning – not the end!

Developing your LEP is not the end of the process. Your LEP will provide a single reference point for your community, and should be returned to and updated as circumstances change and actions are carried out.

It will provide details that can be used by your community when applying for funding for specific feasibility studies or wider initiatives.

As each action is addressed, the LEP can be used to help monitor and assess its outcome and the benefits the community achieves.

Who 'owns' the Community-led LEP?

The people involved in the development of your LEP can decide how to manage it in the future. It can be done by the core group of contributors, passed to your community council or other local body, or involve a new group of representatives.

Your community won't easily achieve the actions set out in the LEP without talking to organisations. While the LEP will reflect your community's view of what it wants to achieve, it won't have any formal legal or statutory status, so you can only achieve actions by collaborating with relevant organisations. The LEP will put your community in an informed position from which they can arrange these collaborations.

At minimum, the 'owner' of the LEP should have a clear understanding of the documents and supporting information in it, where it's stored (e.g. a website, server) and how it can be accessed (e.g. passwords or usernames that need to be recorded and kept safe).

How can a Community-led LEP be taken forward?

Collaboration with organisations is likely to take place for one of two reasons. The first is to gather further information or expertise (e.g. awareness-raising work with your community around energy efficiency, or technical support in looking in more detail at a local energy generation scheme). The second is to confirm the proposed action is consistent with any planning, environmental or other regulations.

Most of the organisations you might contact are likely to have been involved in earlier phases of work, or at least be aware of the ongoing work around the LEP. For example:

- Local authority and key agencies
- Electricity network operator
- Land owners
- Individual businesses

An initial list of these organisations is provided in Appendix B.

Keeping your Community-led LEP relevant

Your LEP needs to be reviewed periodically in order to reflect the changes that have taken place since its development. These changes may be in energy requirements (growing or reducing demand for power, heat or transport energy) or in energy supply and the scale of local generation.

Actions tackled in your LEP are likely to achieve different levels of success. Some may have to be paused if sufficient funding can't be found. Specific projects may be found to be unviable for technical reasons. Others may become less relevant to the community due to changing demand requirements.

It's useful to update your LEP when these outcomes are known. This should be coordinated by whoever has overall responsibility for it.

3.7   Further details on how to tackle each stage

The flowchart below gives an overview of the inter-related key stages in the development of your LEP. These are expanded upon in Section 4. The accompanying toolkit also has useful information, templates and suggestions to help your community develop a LEP.

Stage	Development step		Description	Toolkit signpost
INITIALISING	Outline the challenges		Give initial thoughts about a defined local area, its characteristics and energy challenges. These could be from an individual, community group or local authority	Module 1: Initial Challenges
	↓			
	Initial approach		Take initial discussions to wider organisations. Depending on how initial thoughts were developed, this could involve first (or further) discussions with your local authority, as well as other community groups, local DNO and transport organisations	Module 2: Initial Approach Module 3: Stakeholder Checklist
	↓			
MOBILISATION	Develop local community actors		Seek local community representatives to represent cross-section of views and interests. Consider initial mix of skills and experience in terms of data analysis and project development	Module 1: Community Engagement
	↓			
	Consider how to manage the initial study work		Reflect on how to manage initial study work. If appropriate, create a local steering group from the representatives identified in previous step and via discussions	Module 4: Developing Community Actors
	↓			
	Determine study area boundary		Review proposed study area and agree initial boundary for data collection	Module 2: Data Boundary Area
	↓			
	Aspirations and ambitions		Review national and devolved governments' views of low carbon future. Consider local response to these and how this relates to local challenges and opportunities. Determine initial aspirations and ambitions for the LEP	Module 3: Aspirations and Ambitions
	↓			
DATA GATHERING	Local authority context		Review present planning policy position relevant to LEP. Include Local Development Plan, LHEES, Locality Planning, Local Outcome Improvement Plans, Local Place Plans, Carbon Management Plans and Sustainable Energy Action Plans (where applicable)	Module 1: Local Authority Context
	↓			
	Energy and transport work to date		Review relevant reports/studies and pilot schemes relating to local action around energy and transport	Module 2: Previous Studies
	↓			
	Tier 1 data gathering – baseline energy, transport and natural resources data		Use existing publicly available data from UK and Scottish Government sources. Supporting infrastructure data via relevant utility companies	Module 3: Tier 1 Data Gathering Module 8: Tier 1 Data Sources Module 9: Tier 1 Data Collection Module 10: Tier 1 Data Summary
	↓			
	Tier 2 data gathering – baseline energy data		Obtain actual billing data for RSL, local authority, NHS and other non-domestic premises (where available). Obtain access to EST-held databases for domestic properties	Module 4: Tier 2 Data Gathering Module 11: Tier 2 Data Gathering Template
	↓			

		Tier 3 data gathering – baseline energy data	Use energy billing information and efficiency information from local surveys, reports and studies (as available). Do the same in the case of travel surveys and transport related work	Module 5: Tier 3 Data Collection
		↓		
		Assess future development impacts	Use local development plan, other regeneration/economic growth plans and relevant planning application details to determine scale of future changes in study area for duration of LEP	Module 7: Baseline and Future Projections
		↓		
		Create initial baseline and future projection	Breakdown of energy and transport profile based on data obtained	Module: 12: Tier 2 & 3 Data Summary Module 6: Data Analysis
		↓		
OPTIONS APPRAISAL		High level options review	Review opportunities for action within areas of energy efficiency, low carbon generation, heat supply and transport. Look at case studies from other areas with emerging technologies (as relevant)	Module 1: High Level Options Review
		↓		
		Review against original ambitions and aspirations	Review with local steering group and wider community the range of high level options. Determine those most relevant to local ambition and the challenges/opportunities identified in previous steps	Mobilisation Module 1: Community Engagement
		↓		
		Concept design work	Develop concept design for each option identified in the previous step (as relevant). Determine sufficient detail to provide order of magnitude assessment of the costs, benefits and associated impacts of opportunities	Module 1: Opportunity Template Module 2: Concept Design Support Tool
		↓		
		Initial net benefit analysis	Develop initial benefit assessment for each option (financial, environmental, social)	Module 1: Technology Review & Opportunity Template
		↓		
		Review initial options output	Review initial options appraisal work and confirm prioritised options or seek further work	Module 1: Opportunity Template
		↓		
		Refine options appraisal details	Refinement of initial work and/or extension of options	Module 2: Concept Design Support Tool
		↓		
		Finalise opportunities identified	Finalise details of opportunities, and prioritise for inclusion in LEP	Module 1: Technology Review & Opportunity Template
		↓		
PLAN DEVELOPMENT		Draft Local Energy Plan	Develop initial draft of LEP based on outputs of earlier tasks	Module 1: Presenting the LEP
		↓		
		Review draft plan	Review draft LEP with local community to confirm details align with aspirations/ambitions	Mobilisation Module 1: Community Engagement
		↓		
		Final plan	Complete finalised LEP and collate all relevant supporting documentation and analysis. Feed back to local community	Module 1: Presenting the LEP
		↓		

TAKING THE PLAN FORWARD		Access to the plan	Decide how to store the LEP and relevant data and information securely. Ensure copies of the LEP are available to the local community	Module 1: Taking the Plan Forward
		↓		
		Making actions happen	Identify community body tasked with specific actions. Use wider organisations to support delivery of specific actions	Module 1: Taking the Plan Forward
		↓		
		Keeping the Community-led LEP relevant	Consider how and when elements of the LEP need to be updated	Module 1: Taking the Plan Forward

An 11kW solar PV array and two 12kW air source heat pumps provide low carbon power and heating to the community owned Glenurquhart Centre in Drumnadrochit

4.   Methodology overview

4.1   Initialising

First, you will develop an overview of your community's current position and views on the challenges and opportunities it faces in relation to energy and transport.

Stage		Development Step		Description	Toolkit signpost
INITIALISING		Outline the challenges		Give initial thoughts about a defined local area, its characteristics and energy challenges. These could be from an individual, community group or local authority	Module 1: Initial Challenges
		↓			
		Initial approach		Take initial discussions to wider organisations. Depending on how initial thoughts were developed, this could involve first (or further) discussions with your local authority, as well as other community groups, local DNO and transport organisations	Module 2: Initial Approach Module 3: Stakeholder Checklist
		↓			

Outline the challenges

An outline of the energy challenges facing the local area should be prepared by a representative body from the local community. This could be an individual, a community trust, community council, renewable energy development organisations or local community cooperatives.

The review can include short details about:

- Proposed study area to be included in the Local Energy Plan

- Challenges relating to energy supply and use (power and heat) in the proposed area

- Details of any additional specific housing, fuel poverty or transport related issues within the proposed area

- A list of relevant previous studies or reports that have been done in the local area

- A summary of characteristics relevant to the local study area:

    - Settlement area (urban, semi-rural, rural, island)

    - Environmental designations (SSSI, Special Protection Area and/or Special Area of Conservation)

    - Cultural and historic designations (ancient monuments, listed buildings, etc.)

    - Infrastructure (major/minor roads, air, bus, and ferry links, grid infrastructure)

    - Residential

    - Business and public bodies (commercial premises, NHS and local authority buildings)

- The extent to which the document has been discussed with local community representatives

This is not a prescribed list, as local situations will vary. The aim at this stage is to provide a jumping-off point for further dialogue and thinking around what could be achieved. You could include notes on:

- Details of renewable energy generation in the local area (e.g. wind turbines, solar PV panels, biomass boilers), including offshore resources in the case of coastal communities (e.g. wind, wave and tidal)

- Large energy users in the area (e.g. businesses, local authority offices, transport companies)

- Energy efficiency projects that have taken place (e.g. local authority-led insulation programme for houses, supply of low energy lightbulbs from utility company)

- Future development that might change the energy requirements (e.g. replacement school, care home, or new build housing or commercial premises)

Output: A short document that summarises the initial view of energy and transport related challenges in the community and any existing or proposed projects that support local energy generation or supply.

Initial approach

The ideas outlined in the previous step provide a starting point for engagement with wider stakeholders. Next you need to consider how to capture and build local knowledge and gather more information to help develop the LEP. Assistance here can come from a variety of sources, such as:

- Local authority

- Community group support networks

- Community energy support organisations

- Local energy specialists in the area

You need to decide how best to gather data and analyse it to understand the energy generation and supply, and transport system energy requirements, in your local area.

Installation of the 30kW solar PV array on Canna in 2018. It is estimated that the community owned renewable electricity system based on solar PV, wind, and battery storage will save 36,000 litres of diesel per year.
Photo: Sun and Wind Ltd

Output: Understanding of who can help develop the LEP. Statement of the support the community needs from wider stakeholders, such as the local authority.

4.2 Mobilisation

An effective Community-led LEP will reflect a broad range of views from the local community. To achieve this, it's helpful to recognise the existing skills and experience in your community and how they can be used to best effect when developing your LEP.

Stage	Development Step	Description	Toolkit signpost
MOBILISATION	Develop local community actors	Seek local community representatives to represent cross-section of views and interests. Consider initial mix of skills and experience in terms of data analysis and project development	Module 1: Community Engagement
	↓		
	Consider how to manage the initial study work	Reflect on how to manage initial study work. If appropriate, create a local steering group from the representatives identified in previous step and via discussions	Module 4: Developing Community Actors
	↓		
	Determine study area boundary	Review proposed study area and agree initial boundary for data collection	Module 2: Data Boundary Area
	↓		
	Aspirations and ambitions	Review national and devolved governments' views of low carbon future. Consider local response to these and how this relates to local challenges and opportunities. Determine initial aspirations and ambitions for the LEP	Module 3: Aspirations and Ambitions
	↓		

Develop local community actors/consider how to manage initial study work

You'll need to talk to people in your community to find out who has knowledge, skills and experience that could contribute to the development of your LEP. It's important to understand the different aspects of community life and their associated power, heat and transport energy needs.

There are several ways to figure out the capacity of the local community to help develop the LEP. You could simply take a structured approach, managed solely by the community, as offered by this methodology and the supporting toolkit, or you could bring in expertise from wider organisations or contractors.

You may feel comfortable continuing to lead the development, seeking wider support where appropriate. Or you might prefer to develop a local steering group, which would offer a more formal way of including thoughts from community representatives. This could include representatives from:

- Local authority
- Community council
- Development trusts
- Community development groups
- Registered social landlord or other body with interest in housing
- Local business(es)

The numbers of representatives will vary depending on the size of your community and the variety of interests that need to be considered. All representatives will reflect the views of the community, rather than just the interests of their employer or organisation.

Stakeholders

In your community, there will be several stakeholders who will contribute to the overall development and delivery of the LEP. Some are supportive stakeholders who can assist understanding of local energy needs and how these might be met in future. Examples of such stakeholders include electricity suppliers, fuel suppliers and transport operators. Other stakeholders will help in both developing data and thinking about how to change their own energy use and purchase. Examples include local authorities, public agencies and local businesses.

There will be some agencies you must consult with if you're taking forward a project that requires planning permissions. Examples include SEPA, HES and SNH. Where it's already recognised that there are environmental, cultural or historic designations in the proposed study area, it's worth noting the relevant agencies that would need to be consulted. Early consultation can help clarify how best to consider these assets when evaluating opportunities for inclusion in your LEP. These agencies can also assist in understanding the national view of a low carbon future and how this relates to local challenges and opportunities.

At this early stage, it's useful to try and map out who stakeholders might be and what role they might have in the LEP's development. This helps identify where support might come from during data collection and analysis, and in ensuring wide community engagement when considering how energy requirements can be met locally.

An example of a stakeholder list is provided in Appendix B. It's not an exhaustive list and there may be other organisations/agencies in your area that can be brought into the project via some of the other stakeholders.

Output: Agreement about how the initial phases of the LEP development will be managed. List of stakeholders who may be involved in development of the LEP.

Two 25 kW turbines supply power to local buildings and two thermal stores on Fetlar
Photo: Fetlar Developments Ltd

Determine study area boundary

The study area boundary you determine will provide a focus for data collection and related analysis. It doesn't necessarily exclude the region outside the study area if it's relevant to the challenges your community wishes to address. For example, where land is available for energy generation (e.g. suitable site for a wind turbine or small hydro scheme) or transport links/corridors (e.g. ferry routes or major roads).

There are several pre-defined areas used in the collection of statistics across Scotland. There are also boundary areas used by local authorities when drawing up school catchment areas, etc. These may be a useful guide when setting out your own boundary. Examples of these pre-defined areas include:

Table 4.1   Examples of pre-defined geographical boundary areas

Item	Description	Data source
Output area	Smallest possible area used in census data collection. Contains at least 50 people and 20 households	Scotland's Census http://www.scotlandscensus.gov.uk/ods-web/home.html
SNS datazone	A group of areas containing 500–1,000 household residents	Scotland's Census http://www.scotlandscensus.gov.uk/ods-web/home.html
Local characteristic postcode sector	Areas defined by postcode (e.g. EH1 2LP is defined as the area EH1 2)	Scotland's Census http://www.scotlandscensus.gov.uk/ods-web/home.html
Settlement	Area with a relatively high density of people/properties (with a population of at least 500) surrounded by lower density areas	Scotland's Census http://www.scotlandscensus.gov.uk/ods-web/home.html
Primary School catchment area	Boundary for catchment of a primary given school	Local authority
Secondary School catchment area	Boundary for catchment of a secondary given school	Local authority

Note: Data sources offer maps showing boundary areas

There's likely to be a suite of government or public sector statistics for each of these areas. This means you can match up your selected study area with the greatest amount of available data.

If you select a different area, there will be more work to do to compile datasets. Collected statistics may not sit neatly inside your study area, so they'll need to be filtered to align with your boundary. It's not a barrier to selecting your study area, though. If your local area is an island community or a major settlement with clear boundaries that separate it from other smaller settlements nearby, a simple geographic boundary may be sufficient.

The size of community that can develop a LEP is not prescribed, but the information here is most likely to apply to communities in classification groups 4–8 on the Scottish Government 8 fold Urban Rural Classification[11]. Reflecting on your outlined challenges and the knowledge already available may help you decide the scale of your proposed study boundary.

Output: Initial study area boundary to be used as focus for data collection.

---

[11] See https://www.gov.scot/publications/scottish-government-urban-rural-classification-2016/pages/2/ for details (Accessed March 2021)

Aspirations and ambitions

The energy challenges and opportunities in your local community are impacted by the national picture in Scotland. That's why thoroughly reviewing Scottish Government policy direction and action around energy and transport is useful. You won't find a lengthy analysis of all the implications of actions around climate change and development of a low-carbon economy, but a summary of how transport systems and energy generation and use (both power and heat) may evolve in the short, medium and long term.

The Scottish Government sets out the overall challenges Scotland faces in responding to climate change, and the overall targets for reductions in carbon (GHG) emissions. Understanding the main targets and changes will help you and your community figure out what projects will offer local benefits while aligning with national efforts. It's important to understand that effective environmental conservation and enhancement of biodiversity are an integral part of these targets and changes.

This is helpful for the immediate work of progressing your LEP, and for context when consulting with your community.

Potential sources of information include:

Scottish Government publications (e.g. consultations, plans for government, funding and budget announcements around energy and transport)

Commentary from third parties (e.g. Local Energy Scotland, Energy Saving Trust, COSLA, Environmental charities)

News articles by trade or professional bodies (e.g. Scottish Renewables, engineering councils, Energy Institute)

Local authority news articles or energy/transport policy statements

Community engagement and consultation

At this point, you should review the initial thoughts about the energy and transport challenges relevant to your study area. Questions to consider are:

- What aspects of power, heat and transport energy might be addressed? (e.g. grid constraint to maximise use of local generation, switching transport to electric or alternative fuels)

- What's the scale of the community's ambition? (e.g. to deliver affordable energy to all members of the community, to become an exemplar low carbon community)

- What objectives are the community looking to achieve? (e.g. reduce fuel poverty by 50% over a given time, maximise use of electric vehicle hubs).

This can then be shared with your community for feedback, which is an important step in helping the community understand its energy and transport needs. It also establishes the areas of energy supply or generation the community is interested in.

There are several ways to engage with your community, such as:

- Public meeting to provide a summary of thoughts around the LEP and existing Scottish Government projections regarding use of energy and transport in the medium term

- Online survey seeking reactions to potential aims and objectives, and a view of energy requirements in general

- Poster display in a public building with a suggestion box for ideas about changing local energy supply and generation. This could also ask for volunteers with relevant skills to help develop the emerging plan

These ideas will provide a preliminary guide to the opportunities and technologies to review as part of your LEP. These will be subject to revision as the LEP develops and more data and information is analysed.

Output: Summary of community's initial aims and objectives the Community-led LEP can address.

4.3   Data and information gathering

Once you understand the community's view, the wider data gathering stage can begin.

Stage		Development Step		Description	Toolkit signpost
DATA GATHERING		Local authority context		Review present planning policy position relevant to LEP. Include Local Development Plan, LHEES, Locality Planning, Local Outcome Improvement Plans, Local Place Plans, Carbon Management Plans and Sustainable Energy Action Plans (where applicable)	Module 1: Local Authority Context
	⇨	Energy and transport work to date	⇦	Review relevant reports/studies and pilot schemes relating to local action around energy and transport	Module 2: Previous Studies
	⇨	Tier 1 Data gathering – baseline energy, transport and natural resources data	⇦	Use existing publicly available data from UK and Scottish Government sources. Supporting infrastructure data via relevant utility companies	Module 3: Tier 1 Data Gathering Module 8: Tier 1 Data Sources Module 9: Tier 1 Data Collection Module 10: Tier 1 Data Summary
	⇨	Tier 2 Data gathering – baseline energy data	⇦	Obtain actual billing data for RSL, local authority, NHS and other non-domestic premises (where available). Obtain access to EST-held databases for domestic properties	Module 4: Tier 2 Data Gathering Module 11: Tier 2 Data Gathering Template
	⇨	Tier 3 Data gathering – baseline energy data	⇦	Use energy billing information and efficiency information from local surveys, reports and studies (as available). Do the same in the case of travel surveys and transport related work	Module 5: Tier 3 Data Collection
		Assess future development impacts		Use local development plan, other regeneration/economic growth plans and relevant planning application details to determine scale of future changes in study area for duration of LEP	Module 7: Baseline and Future Projections
		Create initial baseline and future projection		Breakdown of energy and transport profile based on data obtained	Module 12: Tier 2 & 3 Data Summary Module 6: Data Analysis

What data and information?

Data and information in this case means both quantitative details, such as energy consumption and fuel used in transport or heating, and qualitative information, such as local planning policies, the location and capacity of electricity supply networks, and what studies have already been undertaken in the area.

Publicly available data is most likely to provide a total annual energy consumption value for a geographic region (for example a postcode area). What it won't provide is more detail about the users of this energy. However, you'll already know what larger buildings are in your area (such as schools, leisure centres or community centres) and these will be the main sources of energy demand in your LEP area. You can ask the

people running these buildings for billing data, which will give you a better understanding of overall energy use in your community.

Billing data will often be available for each month in the year (rather than a single yearly figure). To build up a picture of energy consumption in your area, it's important (where possible) to look at a 12-month period so you can account for changes in energy demand throughout the seasons.

This level of detail won't be available for every building in your area, but will hopefully be available for a good number of the larger energy users/buildings.

To understand the total energy demand for each type of fuel, you can add up the data for each building. The process of collecting data for each energy source (electricity, LPG, oil, etc.) is the same, and will ideally come from billing information.

Here's an example of heating energy requirements for buildings:

Table 4.2   Example of heating energy data for buildings

Month	Building 1 (MWh)	Building 2 (MWh)	Building 3 (MWh)	Sub-Total (MWh)
January	1	138	134	273
February	0	131	86	217
March	0	127	71	198
April	0	89	39	128
May	83	39	22	144
June	51	0	0	51
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
October	0	6	16	21
November	5	98	92	195
December	15	124	133	271
Total	154	753	592	1,499

Note: Values for illustration only

More detail may be available for larger electricity or heat consumers where meters are in place that collect consumption data at half-hourly intervals. When this is the case, it's useful to look at typical hourly demand for a 24-hour period. Here's an example:

Figure 4.1   Electricity use profile for a school (example)
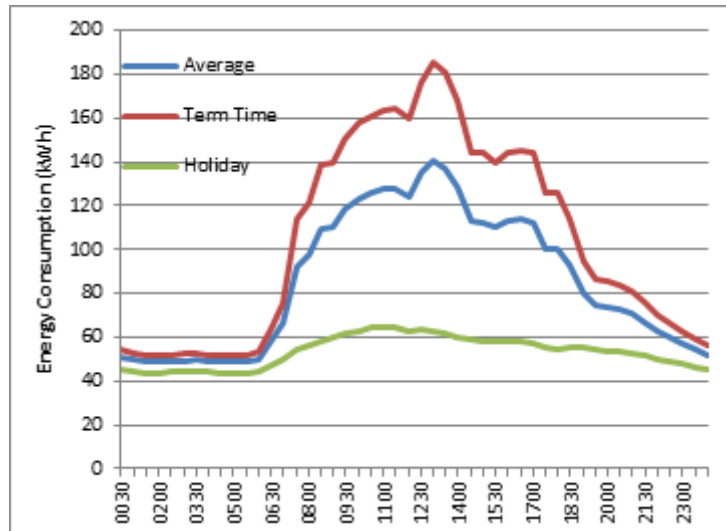
It's also useful to look at how energy demand is distributed among buildings in a given area. This can help when looking at the potential for district heating, for example. Scotland's Heat Map is one way to find this information, as you can see below. The colouring represents different scales of demand.

Figure 4.2   Example of mapping energy demand in an area

| 0 - 10,000,000 kWh |
| 10,000,000 - 40,000,000 kWh |
| 40,000,000 - 100,000,000 kWh |
| 100,000,000 - 250,000,000 kWh |
| > 250,000,000 kWh |
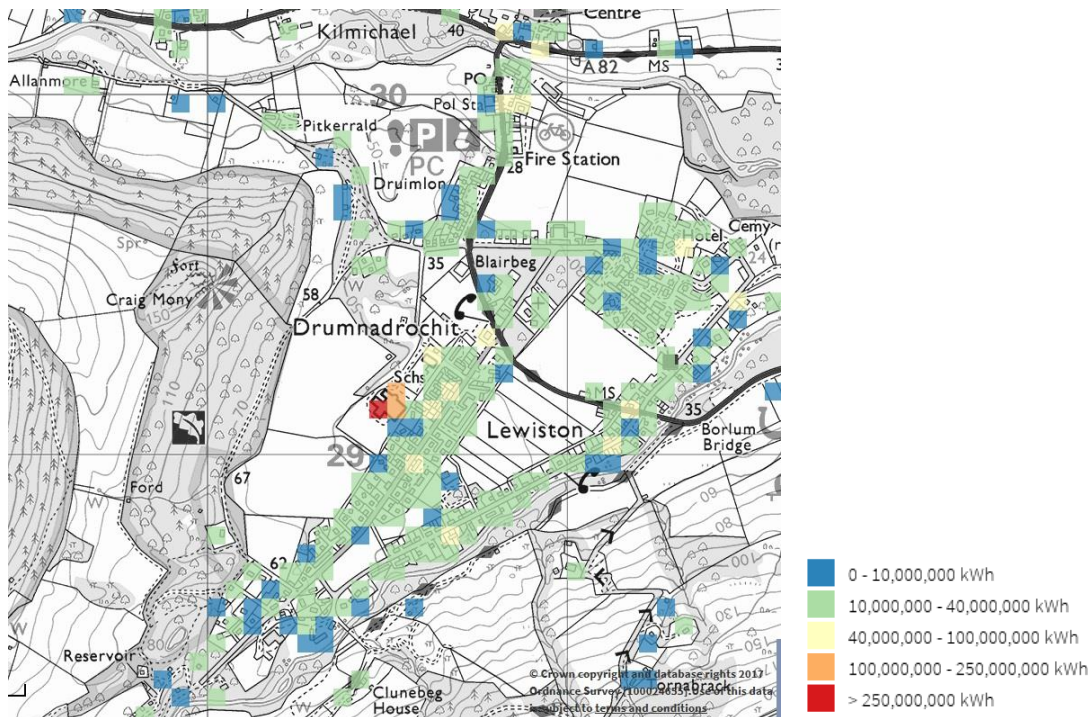
How to collect it?

Collecting information is inevitably an iterative process. Some datasets are publicly available and can easily be obtained from relevant sources. These vary in detail and geographic area. You can get more detailed information through agreement with relevant organisations, such as:

- Local authority

- Other public sector organisations (NHS Scotland, Police Scotland, etc.)

- Energy Saving Trust

- Local businesses

At each stage of data gathering, it's useful to consider what the information means for the community and where further detail needs to be explored. This will require several data gathering cycles as the local energy and transport picture emerges. The aim is to get enough evidence to identify opportunities for action. Some of these will be opportunities already identified earlier in the process, while others will be newly identified.

The overall point of gathering data is to develop an understanding beyond a simple aggregate of energy generated and consumed in the area, including fuel used in local transport. This overall figure also needs to account for variation in energy needs throughout the seasons. It's useful to break it down into monthly numbers that show how needs for heating change across a typical year and during seasonal peaks associated with tourism, etc.

Another use of collecting data is to understand actual consumption (as measured through bills and supplier dispatch notes) rather than estimates (typically based on the broad energy requirements of different types of buildings). This will help you understand the scale of local generation that could support these needs.

Local authority context

For your Community-led LEP to be viable, it needs to take into account relevant guidance from your local authority. Of particular relevance are the Scottish Government's Local Heat and Energy Efficiency Strategies (LHEES) that may be in development or completed when your LEP is being created. LHEES strategies take a 20-year view of how the energy efficiency of buildings can be improved and heat supplies switched to lower-carbon sources in a given local authority area. LHEES supports a coordinated approach to the local planning and delivery of energy efficiency and heat decarbonisation programmes within Energy Efficient Scotland, and to ensure that national level policies and ambitions are delivered on the ground. It is proposed that LHEES will:

- Conduct an authority-wide assessment of the energy performance and heat demand of the existing building stock, enabling potential for improvement to be identified and target-setting for energy demand and carbon reduction;

- Undertake a socio-economic assessment of potential energy efficiency and heat decarbonisation solutions, allowing Local Authorities to identify and prioritise local projects for delivery; and

- Cost and phase delivery over the lifetime of Energy Efficient Scotland, ensuring local and national support is in place to support building owners and sending strong investment signals to the supply chain.

The LHEES strategies often define smaller areas (or 'zones') within the local authority boundary area where specific actions are proposed. This helps to fairly meet the different requirements of larger towns and smaller settlements.

Any LHEES programmes of works taking place (or completed) in your area are likely to be complementary to your LEP, and the opportunities identified in your LEP will be similar to those in the LHEES. Both the Community-led LEP and LHEES must be consistent with other local planning work, including the Local Development Plans, which means they're likely to be mutually supportive. It's important that both the community and the local authority recognise these mutual benefits, and collaborate when seeking finance and implementing work.

Given the broader remit a Community-led LEP has, it will identify and work towards opportunities that don't fall within the remit of the LHEES – but the delivery of the LHEES will still benefit the Community-led LEP (and vice-versa). For example, a LHEES can deliver improved insulation to a number of homes. This will reduce the heating needs of the residents and the amount of money they spend on fuel. A Community-led LEP could look to develop community-owned local renewable electricity generation, which would provide a

cheaper power supply to the same homes that benefitted from the LHEES works (and others). Both of these actions assist the shared ambition to reduce overall fuel poverty in the local area.

Aside from this, a review of other policy areas should include (where applicable):

Local Development Plan

Strategic Growth or Economic Development Plan

Locality Planning

Local Outcome Improvement Plans

Sustainable Energy Action Plans

Planning guidance for low carbon energy generation

You should consult with your local authority when undertaking your review. This will ensure any relevant plans, changes and actions in your community (such as new facilities or infrastructure, energy efficiency programmes or decentralised energy systems) are taken into account when developing your LEP.

Arrochar & Tarbet and Luss & Arden Development Trusts worked with Luss Estates to develop the 123kW Arrochar Community Hydro. This opened in 2018 and was funded a community share offer.
Photo: Duncan Legate

Table 4.3   Local authority documents and relevance to a community-led local energy plan

Document	Acronym	Description	Relevance to Local Energy Plan
Local Heat and Energy Efficiency Strategies	LHEES	Area-based strategies looking at how to improve energy efficiency of buildings and decarbonise their heat supply. Strategy looks at a 20-year period	Proposed by Scottish Government, to be developed and implemented by local authority. Shows where mutual actions by the community and local authority can deliver for both the LHEES and Community-led LEP
Local Development Plan	LDP	Vision for how communities will grow and develop in the future. The intention is to provide certainty, for communities and investors alike, about where development should and shouldn't take place, and the supporting infrastructure required for growth. Updated every 5 years. Accompanied by an Action Programme to assist delivery. May also be accompanied by associated Supplementary Guidance and/or non-statutory guidance/advice.	Shows where future development is anticipated, and supporting infrastructure (roads, water treatment, and utilities). Enables an assessment of the scale of energy demand this may bring and what land areas are used in building
Strategic Growth or Economic Development Plan		Three or five year plans that prioritise activities by local authority to stimulate economic growth in the area	Indicates the type of businesses and development that may take place in the local area. Allows thought about the scale of power, heat and transport energy requirements this may bring
Local Outcome Improvement Plans	LOIP	Sets out objectives for public sector agencies working in a local authority area. Brings together health and adult services, transport and housing. The collection of agencies forms a Community Planning Partnership	Provides some guidance regarding potential transport, infrastructure and building needs within a local authority area
Locality Planning	LP	Specific areas drawn up by the Community Planning Partnership to deliver supporting actions within the LOIP	Provides an overview of how health and social care services are delivered and the impacts this may have on energy use (community buildings and housing) and transport (home visits and clinical services)
Local Place Plans	LPP	Community-led plans that set out a community's view on proposals for the development and use of land.	Sets out what the local community considers to be of particular significance to the local area.
Sustainable Energy Action Plans	SEAP	Show how a town, city or region will deliver a target for carbon reduction. Includes actions and timeframes for work in buildings, equipment, transport and local energy production	May include specific actions relevant to the proposed study area for a Community-led LEP
Planning guidance for low carbon energy generation		Local authority's guidance about how to develop local	Provides guidance about scale and nature of local energy

	energy generation projects, which must be consulted and followed	generation likely to achieve planning consent. Useful for avoiding immediate issues that would prevent development going ahead

Output: Summary list of relevant plans from local authority and other public agencies. Note of aspects that will impact power, heat and transport energy requirements in the study area.

Previous Energy and Transport work

There may be a list of relevant studies and reports already carried out in your community. These will provide useful information about the scope of work already undertaken and the feasibility of action in the areas explored (heat supply, electricity generation or transport). Ideas that were deemed feasible can be looked at in more detail to understand the aspects that were taken forward (or are planned for completion). Ideas that weren't considered feasible can be reviewed to understand if this was due to the maturity of technology, an inappropriate match with local needs or financial viability. If circumstances have changed and an idea has now become more feasible, you can share this with your community and decide whether to include it in the options appraisal.

Potential sources of information include:

- Energy efficiency studies – Any previous work relevant to energy efficiency in either residential or non-domestic premises. For example, surveys by the local authority or a registered social landlord

- Renewable energy feasibility reports – Local community groups (e.g. renewable energy trusts or community development trusts) may have carried out feasibility reports for community-scale renewable development. Local landowners may also have similar reports about their managed assets. Your local authority may have initial feasibility studies for power generation (wind, solar PV, etc.) or heat supply (decentralised heat supply, district heating)

- Transport studies – Traffic-count numbers or other studies of traffic movements may have been done for planning applications for nearby renewable energy developments, such as a wind turbine or farm. These will be available via planning application documents. Regional transport partnerships (RTPs) or your local authority may also have conducted studies of local traffic movements for initiatives around public transport, alternative vehicle roll-out or supporting locality planning. Active travel studies and associated works to encourage walking and cycling may be available too

To get hold of these reports, you'll need to talk to your local authority and search the relevant planning portal. This could lead to conversation with local community groups, regional transport partnerships or other bodies, as directed by your local authority.

Output: Summary of relevant details from any energy and/or transport related reports produced for the study area.

Tier 1 Data gathering – baseline energy, transport and natural resources data

You'll need to figure out a baseline of energy-use in your local area. A baseline view of energy-use in a community is calculated from total energy-use over a selected 12-month period. The baseline looks at how this total energy demand varies by season/month. It also shows the individual contributions to this total from domestic, non-domestic and transport energy-use. The relevant data available for your community will vary in its detail.

The point is to get a snapshot of existing demand for energy (electricity and heat) and transport to use as a baseline. It needs to include known proposed changes within the area that will impact future energy/transport demands. For example, a major housing development or an extensive business expansion earmarked in the Local Development Plan.

It's useful to include as much detail as you can, but remember its primary function is to help understand the scale of impact any changes to energy supply or use in your area will have. You'll need to make a judgement about how much data you can gather in a sensible timeframe, rather than trying to gather every tiny piece of information you can and delaying progress of the LEP.

There are several publicly available datasets you can use to begin to characterise your study area in this way. These data sources, and how they contribute to understanding local energy needs, are shown below. You can find more details of these data sources in Appendix B.

Table 4.4   Initial sources of data and information

Detail	Data sources	Existing Energy Needs	Future Energy Needs
Community characteristics	Scottish Census Data Local authority development plans Local Place Plan	The local population in the study area, its demographic and broad nature, and scale of employment and associated travel requirements	Population trends and known development proposed in future
Environmental resource and designations	HES Local authority SNH Renewable energy assessment tools	Estimated local resource (wind, solar, hydro) Existing environmental and cultural designations, sensitive habitats	Estimated local resource (wind, solar, hydro) Proposed designations (e.g. National Park)
Overview of buildings	Scottish Census Data Local authority Local Place Plan	Number of domestic buildings, age, efficiency and fuel used for heating Number of non-domestic buildings and use	Proposed scale of domestic or non-domestic development
Energy demand	UK and Scottish Government Scotland's Heat Map	Electricity consumption data for domestic and non-domestic properties Other fuel consumption data for domestic and non-domestic properties Indicative heat demand for domestic and non-domestic properties	Additional energy demands from proposed developments
Energy generation	FiT/RHI registration Local authority Local community	Existing energy generation capacity	Any proposed local community generation
Supporting infrastructure	Utility companies Local authority Local Place Plan Public agencies	Transport links, electrical grid infrastructure, water supply and treatment, and waste management. Active travel networks and infrastructure	Proposed upgrades or changes to any of the supporting infrastructure

	Scottish Census Data		
Transport	UK and Scottish Government	Vehicles owned by residents	Known future changes (alternative fuel changes or other changes)
		Active travel plans	
	Local authority		

This data will give you a preliminary understanding of your local energy and transport system. It should be reviewed so you can consider further areas for data development and understanding.

In most cases, the data will be available in a workbook-format suitable for use in Excel. You can then analyse it and produce summarised tables, and accompanying charts and maps where appropriate.

You can refine the level of detail in a second round of data gathering.

Community engagement

There's likely to be several people involved in the data collation by this stage. Working together, it's helpful to create a summary at the end of the Tier 1 data requests to share with the wider community. This will help people more easily give feedback and share further information with you.

If you've created a local steering group, its members can seek opinions from within the wider community. If no group is in place, you'll need to prepare a communication to the wider community.

The purpose of engaging with the community at this stage is to:

- Get local people, organisations or businesses to share more detail about their actual energy consumption

- Get views on the emerging energy demand picture and whether this changes the initial focus or ambitions decided upon

- Get details from people or organisations who propose to develop local energy generation in the near future

Output: Initial view of existing energy and transport systems in the study area (considering both demand for energy and how it's supplied). Identification of people and organisations to obtain further detail from about the energy baseline.

Tier 2 Data gathering – developing your baseline energy data

Your Tier 1 data will provide initial detail for your study area, including a mixture of energy consumption data – some based on actual consumption, the rest on estimates. Your summary of Tier 1 data can be referred to when seeking more detail about actual energy requirements and proposed local energy generation from stakeholders for your Tier 2 data.

Tier 2 data is focused on actual energy (heat and power) consumption for individual buildings. It will build on Tier 1 information, and in some cases may fill gaps in understanding not available through the Tier 1 efforts. Most of the data will need to be requested from individual organisations, and will ideally come from billing information. For residential buildings, you'll collect information about actual or estimated energy consumption from previous surveys and assessment by bodies such as local authorities or registered social landlords (RSLs).

The information you'll collect includes, but is not limited to:

- Actual billing data for a 12-month period, broken down by month, for electricity and heating fuels for buildings operated by:

- Local authority

- NHS Scotland

- Registered Social Landlord

- Other non-domestic consumers

- Consumption data for domestic properties (for example via the Home Analytics database held by the Energy Saving Trust)

- Existing or proposed large-scale energy generation (e.g. wind turbines, solar PV, biomass boilers, combined heat and power engines or turbines, etc.) and how the outputs from these generators are used (energy used on site, or heat and/or power supplied to other buildings or end users)

- Floor areas of larger buildings, and details of any energy efficiency works that have been carried out (or are planned for near future)

- The transport needs of organisations and businesses and how they are met at present (e.g. small number of vehicles used by health visitors working from a local medical centre)

First, you'll approach the owners of these datasets to find out how much detail is available. People within your community may be able to help with obtaining this data, and if you've worked with your local authority, they may be able to help make contact with various organisations.

One option to gather information from wider non-domestic consumers is a short online survey, promoted by a representative body (e.g. a local business forum representative or the steering group if you've created one).

You can see an example of the type of data you might find in Appendix B.

You should review the data you obtain at the end of this stage to understand how it adds to the overall picture of local energy and transport systems. By this point, you'll have greater detail about:

- Overall breakdown of energy use in terms of heat and power

- Fuel and transport costs

- Understanding of transport requirements associated with non-domestic premises

- Peak periods (and scale) of demand for heat and power across a 12-month period

- Potential supplies of power and/or heat that could be used by some end users in the study area

It's likely that you'll have some gaps or areas of uncertainty in your data at this point. You can do another review to consider how best to fill in the gaps and reach a useful baseline. It may be possible to go back to some data providers and ask for more specific information about billing or how energy is used. Where more details are not available, you may be able to use benchmark data or rules of thumb to complete reasonable estimates of energy use.

Where useful, feasible and possible, you can do further data gathering and analysis in a final iteration of this phase.

Output: Further details of existing local energy use by end-user buildings. Identification of data gaps to fill with another iteration of data collection.

Tier 3 Data gathering – delving into your baseline energy data

The final level of detail to acquire is from specific surveys or studies carried out in your local area. Some of these may have been identified earlier the process. Examples include:

- Local energy efficiency surveys carried out on domestic or non-domestic properties

- Local transport surveys (mode of travel, commuting patterns, use of public transport and/or ferry/air/rail)

- Local energy generation profiles (monthly for assets such as wind turbine, solar array, etc.)

Any information you gather here will provide greater detail than your Tier 1 or Tier 2 datasets. Examples of detail that could be obtained include:

- Typical daily profiles of electricity demand over a 24-hour period for larger non-domestic properties that have half-hourly records of metered consumption

- Energy efficiency assessments of domestic or non-domestic properties carried out for documents such as Energy Performance Certificates or Green Deal Assessments

- Transport information about vehicle movements in the local area and typical distances travelled and/or use of public transport by ferry/air/rail/road

- Active travel surveys and extent of walking and cycling in the local area

- Typical energy output from larger energy generation equipment, such as wind turbines, large boilers, etc.

You can use industry and sector benchmark data where no specific site data is available. These provide typical and best-practice energy consumption information for different types and uses of buildings. This relies on a floor-area estimate for each building, which can be measured from a map (it may also be provided by some individual organisations). Examples of benchmark data sources include:

- CIBSE Guide F, Energy Efficiency in Buildings

- CIBSE TM46, Energy Benchmarks

- BSRIA, Rules of thumb – guidelines for building services (5th Edition)

- Elexon typical electricity demand profiles for classes of electricity meter (https://www.elexon.co.uk/operations-settlement/profiling/)

This final tier provides information that can be linked to individual buildings, and the greatest level of detail regarding the breakdown of local energy generation and use. It's of most use when looking at specific opportunities for projects. For example:

- A heating project could work out the size of a boiler that would closely match the monthly demand profile of an individual building

- The variation in daily output from a wind turbine could be matched to the electricity needed to charge a large community battery

A final review here will confirm that the extensive view of local energy systems you compiled from your gathered data is accurate. It will also enable speculation about potential projects to consider during the options appraisal.

Output: Finalised breakdown of existing local energy use (electricity, heat and transport). Summary of total existing local energy generation.

Assess future development impacts

Your review of previous relevant energy and transport studies, combined with information from your local authority about upcoming plans, will give you an overview of significant changes in the study area that will change its energy and transport needs. You can estimate the impact of these changes with appropriate assessment methods, including:

- Use of published benchmark figures for energy demand relating to new buildings

- Use of initial figures in relevant reports (e.g. outline planning application documents available from the local authority planning portal)

- Use of population estimates (and visitor/tourist data where available) to assess transport needs

For more advice on how to determine future demands, see the accompanying toolkit.

Output: Summary of estimated future changes in electricity, heating and transport energy requirements for the study area.

Create initial baseline and future projection

The datasets gathered in Tiers 1–3, combined with your future impact assessment, will give you a snapshot of the power, heat and transport energy needs in your study area. This will provide a profile of energy needs (power and heat) across a 12-month period, plus the aggregate total, as well as transport use and typical journeys made by the community during that timeframe.

Your future projection will simply look at how the scale of total demand might change. You may include monthly variation if that level of detail is available in the information you gathered.

This data will form the baseline to assess how proposed changes to energy supply, efficiency of energy use, or transport use will impact community use. This breakdown can be formatted in several ways, one of which is shown in the table below.

Photo: Eco-housing at the East Whins development at Findhorn include mechanical ventilation systems with heat recovery. Underfloor heating is fed by an air source heat pump in connection with solar thermal panels. Power is supplied from Solar PV panels and wind turbines located on the Park.

Table 4.5   Example breakdown of energy profile of study area (annual snapshot)

Existing energy demand	Domestic	Non-domestic	Sub-total	Carbon sub-total
Electricity	Residential – privately owned Residential – RSL	Local authority buildings NHS Scotland buildings Local commercial business Utility companies Transport companies Charitable and other bodies	Sum of domestic + non-domestic consumption	Carbon emissions associated with sub-total demand figure
Heating fuel (broken down by relevant fuel types e.g. natural gas, LPG, biomass, oil, peat, etc.)	Residential – privately owned Residential – RSL	Local authority buildings NHS Scotland buildings Local commercial business Utility companies Transport companies Charitable and other bodies	Sum of domestic + non-domestic consumption	Carbon emissions associated with sub-total demand figure
Transport	Residential – privately owned Residential – RSL	Local authority NHS Scotland Local commercial business Utility companies Transport companies Charitable and other bodies	Sum of combined fuel use (where known) or distances travelled (if not) as an energy total	Carbon emissions associated with sub-total transport figure
Electricity generation	Existing domestic scale generation (FiT eligible)	Community generation (wind turbines, solar array, combined heat and power, other power generation)	Sum of total energy generation	Carbon emissions associated with sub-total generation figure
Heat generation	Existing domestic scale generation (RHI eligible)	Community generation (biomass, combined heat and power, heat pumps, district heating)	Sum of total energy generation	Carbon emissions associated with sub-total generation figure
Future energy demand	Domestic	Non-domestic	Sub-total	Carbon sub-total
Electricity	New build residential – privately owned New build residential – RSL	New build premises: Local authority buildings NHS Scotland buildings Local commercial business Utility companies Transport companies Charitable and other bodies	Sum of domestic + non-domestic consumption	Carbon emissions associated with sub-total demand figure
Heat demand	New build residential – privately owned New build residential – RSL	New build premises: Local authority buildings NHS Scotland buildings Local commercial business Utility companies Transport companies Charitable and other bodies	Sum of domestic + non-domestic consumption	Carbon emissions associated with sub-total demand figure

This high-level summary of overall energy requirements can be broken down into finer detail, such as:

- A chart of overall energy demand by month across a given 12-month period

- Sub-totals within the monthly demand showing the mix of domestic and non-domestic use

- A summary of existing monthly energy generation from large-scale generation over a 12-month period and how this compares with total energy demand

- Monthly profile showing typical transport volume and seasonal trends in numbers of vehicles travelling in the study area

- Breakdown of residential energy use by age or type of dwelling (detached, semi-detached, etc.)

You can see more examples of how these details can be presented in the accompanying toolkit.

If premises have half-hourly electricity data available, you can use this to present some typical demand profiles for those premises over a 24-hour period. Charts for different days, e.g. weekday, weekend, winter, summer, etc. can show significant variations during the 12-month period.

Alongside the baseline energy and future energy projections, it's useful to summarise details of local environmental designations, such as protected wildlife areas, archaeology, listed buildings and ancient monuments. You can seek advice from relevant bodies (HES, SNH, SEPA) to understand the opportunities for renewable energy generation that won't cause undue impact on these sites.

Local infrastructure is another important element to consider here. Your snapshot will note existing capacity of sub-stations to accept local electricity generation and other aspects of capacity relevant to existing or future use (e.g. upgrade of distribution networks or additional transport services).

All energy details can be summarised in units of energy use (typically kWh or MWh [1,000s of kWh]). UK Government has published statistics that provide a guide to the typical costs of energy sources (e.g. electricity, LPG, biomass, etc.), which will enable you to summarise your energy data in terms of estimated costs.

UK Government has also published data that will enable you to convert energy used (for a given fuel) to carbon emissions. This will complete your summary of local energy use, by showing:

- Scale of local energy demand in the study area

- Typical costs of current energy consumption

- Environmental impact of this energy use in terms of carbon emissions

Community engagement

Completion of the energy baseline is another good time to update your community on the LEP. You can provide a summary for wider comment, highlighting:

- The aggregate total of demand for electricity and heat in the study area, and the projection of how this might be significantly impacted by identified future development(s)

- Typical fuel use for heating

- Existing energy efficiency (e.g. properties with lowest demand, properties with highest demand)

- Identified high-demand consumers (e.g. school, leisure centre, residential housing)

- Size of existing renewable generation output compared to overall demand in the study area

- Transport trends – typical length of journeys and distance travelled

- Typical costs and carbon impacts of existing energy consumed

This will enable your community to learn more about its energy use and where it might reduce overall demand or be supplied by a different source. It will also prompt discussion around the community's priorities for reducing the impact of their energy use. For example, the costs to end users may be a primary focus.

Output: Summary energy baseline for study area in a given 12-month period. Sub-totals for electricity, heat and transport use by end users (domestic and non-domestic). Projection of significant changes to future requirements (electricity and heat). Summary of associated carbon emissions.

4.4   Options Appraisal

The preceding steps provide a view of the existing situation within the study area in terms of power, heat and transport energy use as well as the supporting infrastructure (local electricity grid, transport networks etc.).

The next stage of work is to develop an initial view of options for change that could be explored by the local community.

Stage		Development step		Description	Toolkit signpost
OPTIONS APPRAISAL	⇨ ⇦	High level options review		Review opportunities for action within areas of energy efficiency, low carbon generation, heat supply and transport. Look at case studies from other areas with emerging technologies (as relevant)	Module 1: High Level Options Review
	↓				
	⇨ ⇦	Review against original ambitions and aspirations		Review with local steering group and wider community the range of high level options. Determine those most relevant to local ambition and the challenges/opportunities identified in previous steps	Mobilisation Module 1: Community Engagement
	↓				
	⇨ ⇦	Concept design work		Develop concept design for each option identified in the previous step (as relevant). Determine sufficient detail to provide order of magnitude assessment of the costs, benefits and associated impacts of opportunities	Module 1: Opportunity Template Module 2: Concept Design Support Tool
	↓				
	⇨ ⇦	Initial net benefit analysis		Develop initial benefit assessment for each option (financial, environmental, social)	Module 1: Technology Review & Opportunity Template
	↓				
	⇨ ⇦	Review initial options output		Review initial options appraisal work and confirm prioritised options or seek further work	Module 1: Opportunity Template
	↓				
	⇨ ⇦	Refine options appraisal details		Refinement of initial work and/or extension of options	Module 2: Concept Design Support Tool
	↓				
		Finalise opportunities identified		Finalise details of opportunities, and prioritise for inclusion in LEP	Module 1: Technology Review & Opportunity Template
	↓				

High-level options review

To enable an informed discussion in your community, you should put together an initial options review, which offers short summaries of potential actions in the areas of energy efficiency, energy generation (power and heat) and transport. You can provide details summarising:

- Brief description of what the action or technology involves

- Scale of operation (size of equipment and scale of energy output)

- Infrastructure that might be required (e.g. charging points for vehicles, revised operation of local electricity grid, private wire arrangement)

- Maturity and technology readiness (how well-established and reliable is the technology and is it widely available to purchase from suppliers?)

- Assessment of net environmental implications

- Scale of impact on community in terms of output, associated cost and wider social benefits

Where relevant (and available), you can use case studies from other communities to demonstrate what sort of change would be required and how it might impact energy and transport in the area. For example, the impact of energy-efficiency measures such as insulation works, wider community education programmes around energy awareness, or roll-out of smart meters.

Some technologies will be more relevant to the needs of your community's LEP than others. The main issues to address here are:

- Suitability for energy needs – e.g. if most of the community's requirements are around power demand, local generation should focus on electricity

- Using local resources – ability to use local natural resources for energy generation (e.g. wind, solar, water)

- Fuel switching – ability to reduce reliance on fossil fuels and expensive imported energy sources

- Energy efficiency – options that could improve efficiency of energy use

You can reference several resources and introductions to technologies in the CARES Toolkit[12].

You also need to mention the practicalities of each option, including the size of equipment required, how it would be used (one unit serving several buildings, or one for each building) and how much ongoing maintenance would be required.

The goal is to offer a short and easy-to-digest summary of the options, to enable a broader discussion around the details of the energy baseline.

Output: Summary of technology options and overall relevance to the energy baseline calculated.
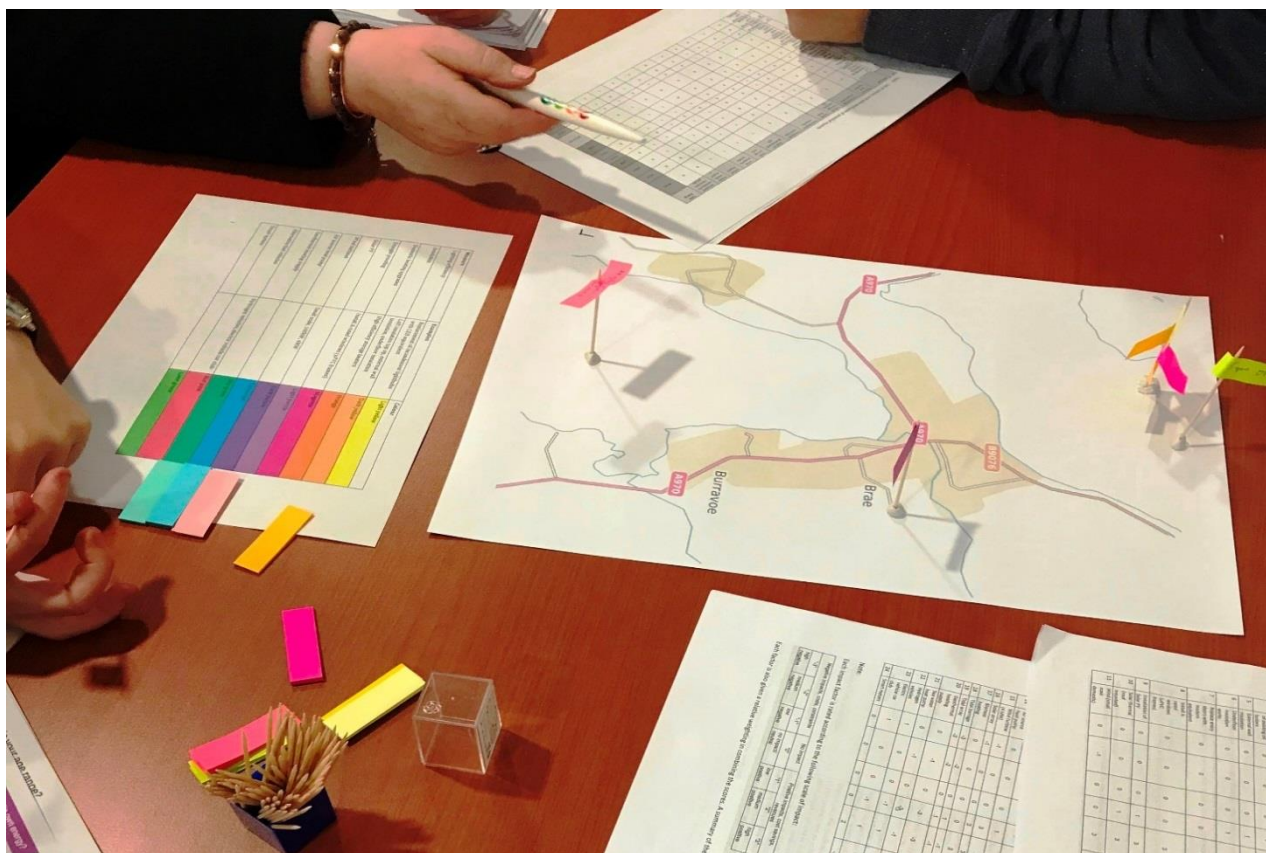
Community views help to inform the development of the local energy plan in Brae.
Photo: Beyond Green Advisors Ltd

---

[12] https://www.localenergy.scot/resources/cares-toolkit/ (Accessed March 2021)

Review against original ambitions and aspirations

Community engagement

To begin to prioritise the options of most interest to your community, you'll need to discuss the options review with them. This will mean reflecting on the ambitions and aspirations outlined earlier, so you can identify how they align with the available options. You may end up modifying the ambitions and aspirations if they don't coincide with the options seen as important by the community. The data you've gathered provides a straightforward way of understanding local energy needs and deciding on the options to take forward.

This engagement phase could be combined with the energy baseline review or carried out separately. Either way, it should offer your community a chance to ask questions about the energy baseline. This will aid people's understanding of local energy needs and the size of demand among larger end-users in the area. Everyone should also be able to understand, in broad terms, the options to change the way energy is used in the area.

If high-level options aren't prioritised by the community, make a note of this with a short justification. The ability to revisit options as circumstances change is encouraged in the supporting toolkit and the structure of the Community-led LEP itself.

This review should result in a starting point for concept design work, focusing on the technologies and ideas your community feels are most supportive of its energy needs.

Output: Refreshed aims and objectives for the Community-led LEP to address.

Concept design work

For each of the options taken forward, concept design work will be carried out to look at the requirements for implementation in the study area. The intention is to provide sufficient detail for comparison of each option's impact on power, heat and transport energy requirements. However, it won't offer enough technical detail to go to buy equipment or services. It will summarise:

- Nature of primary assets and associated requirements (e.g. a location for a new energy generation asset, storage medium or heat supply centre)

- Enabling infrastructure (e.g. supply pipework for heat when connecting a heat source to multiple buildings, an electrical supply cable if supplying directly from a wind turbine to local buildings, charge points for electric vehicles, etc.)

- Output or impact of works (energy output or improvement of energy efficiency or transport impact, as well as assessment of net environmental impacts)

- How it could be delivered (proposed ownership and governance)

- Potential risks, constraints or other issues that may limit the ability to deliver

Where relevant, input from your community can be used to help develop these options. This could include contact details for stakeholders who offer expertise or local knowledge (e.g. Scottish Water, utility supply companies or community trust members). Specialist contractors or suppliers may also be consulted (where relevant) for each option. Experience from other supporting bodies can be drawn upon where ideas or technologies have been implemented in communities elsewhere (in Scotland, the UK or globally), too.

You can create a simple table (matrix) of options to capture all this information in a way that enables easy comparison. You can see an example in Appendix B.

Output: Table of potential opportunities to address local power, heat and transport energy needs. Details about how ideas might be implemented and the associated benefits and risks of each one.

Initial net benefit analysis

The 'whole system' approach to Community-led LEP development means an assessment of the benefits of a given option needs to consider not only the economic impacts, but also the environmental and social benefits too.

Figure 4.3   Whole system approach to assessing benefits
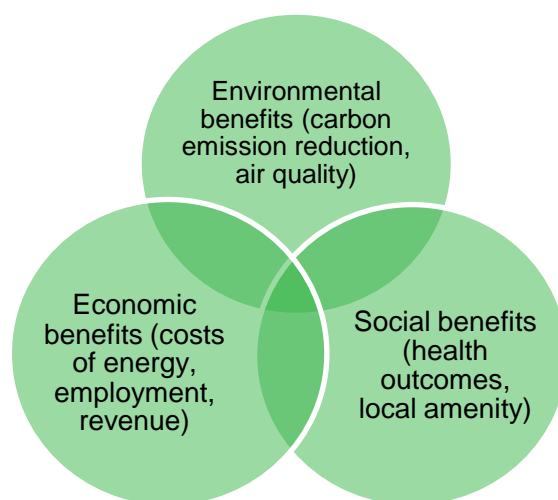
You should extend the matrix of options you put together in the previous step to include an initial view of the net economic, environmental and social benefits. You should also include a timeframe that shows how soon each opportunity might be achievable:

- Short term (up to 5 years)

- Medium term (5–10 years)

- Long term (more than 10 years)

This will show how options that are taken forward could be arranged in situations where the preferred technology isn't yet available to the community for some of the options.

A summary table is the easiest way to present this information. Each option can be listed in a row with a short description of what it is, and columns can capture details such as:

- The change in energy use the option will offer (increase or decrease compared to the present)

- The change in carbon emissions the option will deliver

- An estimate of the cost of implementing the option (and how it might change the cost of energy use in the community)

Benefits that could be included depend on the option being considered. For example, improving insulation and minimising damp in houses is likely to lead to better health outcomes for residents. A transport project that reduces use of conventional diesel cars is likely to lead to better air quality, which would also improve health.

There are many reasons an opportunity may be beneficial to your community beyond cost savings. It's useful to consider primary and secondary benefits when summarising the options.

You can see an example of the type of analysis you could do in the accompanying toolkit.

Output: Extension of initial options appraisal to look at the wider financial, carbon and social benefits of each opportunity.

Review initial options output

Community engagement

You'll review the summary of options and associated net benefits with your community, allowing people to offer their thoughts and ask questions about each option. This may mean that some options are put aside because the net benefits are seen as insufficient, the risk is considered too great, or the timeframe is considered too long to be useful.

You can tailor this engagement to suit your community and their level of knowledge. Your aim is to summarise how each opportunity supports energy use in the wider community. This is relatively simple when the opportunity is a source of electricity or heat generation. However, some options may be harder to describe if they involve combinations of technology, such as use of battery storage alongside a wind turbine to maximise use of local energy generation.

You may need to enlist external contractors or other technical specialists to help explain how technology options will support energy use in the community. You could also bring in people from other communities who have experience of a given option, to help explain what might be feasible in your area. The outcomes of this community engagement will include three things:

- Enthusiasm for the opportunities your community feels are most suited to their ongoing energy needs

- Lack of enthusiasm for some opportunities, and commentary on why (e.g. fail to see wider benefits, opportunity too risky or too expensive)

- Interest in some opportunities, but with a desire for more explanation about implementation

You should summarise the review so you can maintain evidence of how options are refined or set aside. This will allow for easier future reviews if similar opportunities come to light.

This is part of the cycle that reflects on the requirements highlighted in the data analysis and use this to build up options for consideration. The data analysis may be reviewed to consider specific areas, where more detail would help develop an opportunity that was initially considered low priority.

Output: Commentary on initial options assessment. List of opportunities to take forward, plus those that need more detail and those that are set aside as inadequate.

Refine options appraisal details

You should refine the remaining options from the review to help finalise the list for inclusion in the LEP. This will include:

- Updating or extending details in concept design. For example, reviewing routing for pipework supplying a heat network, checking the size of electricity generating assets, or reviewing how a local energy storage system might operate

- Discounted cashflow details to show the size of initial investment and ongoing operating costs

- Net environmental benefits (impact on local carbon emissions, qualitative benefits for land use or enhancement)

- Wider socio-economic impacts (social NPV)

Once you've completed this step, you'll have a final list of options, including scale of investment needed and estimated benefits. The list may include some options involving emerging technologies that have insufficient information available during creation of the LEP. In these cases, highlight the need for further feasibility work for inclusion in the LEP.

Finalise opportunities identified

Community engagement

When you have the final list, you can show it to your community for consideration. This will allow people to reflect on the details and consider how to prioritise the remaining opportunities, and result in the net benefit assessment and previously agreed ambitions and aspirations coming together.

Finally, your local community can arrive at a finalised list for inclusion in the draft LEP.

Output: Finalised list of opportunities for inclusion in the draft LEP.

4.5   Plan Development

Stage	Development Step		Description	Toolkit signpost
PLAN DEVELOPMENT	Draft Local Energy Plan		Develop initial draft of LEP based on outputs of earlier tasks	Module 1: Presenting the LEP
	↓			
	Review Draft Plan		Review draft LEP with local community to confirm details align with aspirations/ambitions	Module 1:Community Engagement
	↓			
	Final Plan		Complete finalised LEP and collate all relevant supporting documentation and analysis. Feed back to local community	Module 1: Presenting the LEP

Draft Local Energy Plan

The draft LEP will bring together all the information and data collected in the previous stages.

The aim is to give an overview of the characteristics of the study area, in terms of energy and transport, and offer an evidence base for how the actions in the plan were arrived at.

While the precise details will be different depending on your local area, the LEP will typically include:

- A statement of the energy-related ambitions and aspirations of your community

- An overview of the characteristics of the community, including:

    - Residential and non-residential (community, commercial and institutional) buildings

    - Existing energy and transport infrastructure

    - Existing local low carbon energy generation

    - Environmental designations and natural resources

- An assessment of the identified challenges for your community in relation to energy (power and heat) and transport

- A baseline assessment capturing annual energy consumption and relevant transport details for your community

- An assessment of how changes in your local area (typically economic development) are likely to alter the scale of energy demand

- A qualitative review of high-level options considered for inclusion

- Quantitative analysis of options taken forward (economic, environmental and social)

- Action list identifying priorities and timeframes (short, medium, long term)

The LEP will be designed for a lay reader, but should include supporting technical evidence and analysis where appropriate. Details of options not taken forward should also be included. The LEP will act as a single point of reference for how decisions were made throughout the development of the plan and in coming to the final prioritised list of opportunities.

The format of the LEP is for you and your community to determine. Supporting information is likely to be in a series of spreadsheets and associated calculations. Maps of the study area showing details related to the baseline and associated opportunities will also be useful. There are several factors to consider when deciding the format of the LEP:

- How can the combined detail and analysis be collated in a form that's easy for your community to store and update in the future?

- What file format is best suited for storage, avoiding costly software or potential limitations in system speed or access?

- Will a visual summary of the LEP be more useful than a written summary report?

- Will non-technical presentation slides be useful for summarising the opportunities?

- Which individual or body is responsible for the LEP and manages access to it and its associated files?

You may enlist help from technical specialists, graphic designers and others to create the LEP most suited to your community's needs.

The LEP is *for* your local community and, ultimately, owned by the people in it, so it's important to consider how best to store and present the information to meet their needs. You should also anticipate that the LEP will be revisited and updated in the future as opportunities are taken forward.

Output: Draft LEP and associated supporting information.

Review Draft Plan

You should share the draft plan will your community for review and comment. This is to ensure that the LEP is fully understood and that the community believes the details accurately reflect their expectations and ambitions, as discussed throughout the development process.

You should consolidate feedback into a list to make finalising the plan easier to manage.

Output: Feedback from community on draft LEP and associated supporting information.

Final Plan

You'll present the finalised LEP to the community. How you do this will depend on your community's needs and how the development of the LEP has been managed. Ideally, you should create a practical summary that highlights the options and actions decided upon, and the intended next steps.

Alongside the LEP, you'll have all the associated supporting documents and analysis. Again, where and how you store this information for future use will depend on your community's needs. You could use a system operated by third parties which requires a username and password, or you may simply have it stored by a local representing body (such as the original applicant or another community body).

Output: Finalised LEP and associated supporting information. Confirmation of how community is allocating responsibility for managing, updating and delivering the LEP.

A business in Borgh on Barra uses a solar PV array to supply on site demand

4.6   Taking the Plan Forward

Stage		Development Step		Description	Toolkit signpost
TAKING THE PLAN FOWARD		Access to the plan		Decide how to store the LEP and relevant data and information securely. Ensure copies of the LEP are available to the local community	Module 23: Taking the Plan Forward
		↓			
		Making actions happen		Identify community body tasked with specific actions. Use wider organisations to support delivery of specific actions	Module 23: Taking the Plan Forward
		↓			
		Keeping the Community-led LEP relevant		Consider how and when elements of the LEP need to be updated	Module 23: Taking the Plan Forward

Access to the Plan

Maintaining interest in the Community-led LEP will require your community to remain aware of its existence. While a limited number of hard copies can be kept in local community facilities (e.g. community hall or library) it's also useful to have an accessible electronic copy. This could be posted on a local community website or blog.

You should also consider how best to demonstrate progress in actions linked to the LEP. This could be done on a dedicated website that hosts the LEP and has a news feed/blog that's updated on a regular basis. It could also be done through the general work of the local community council (i.e. included in meetings' agenda, progress recorded in meetings' minutes). You should choose whichever option is likely to capture the attention of the widest possible number of community members.

Ensuring your community has ready access to a copy of the LEP and its progress is only part of the management process. The other part is the practical issue of how to store all the material collated during the creation of the LEP. There are many potential solutions. Your main considerations should be:

- Finding a secure solution (at a suitable cost) that enables all electronic materials to be easily stored and accessed when required, including relevant email threads relating to feasibility studies, funding applications, etc.

- Ensuring login and password details are kept by at least two people. Ideally a short note of access details should be kept by a community organisation

Making Actions Happen

Your Local Energy Plan will set out opportunities for change – including some specific projects.

These opportunities will be at different stages of development (some at early feasibility, others at the point of seeking investment) and will need local community management to be completed. The timescale and level of detail for each action will help you prioritise them.

As actions are completed, particularly where feasibility study outcomes become known, you will need to review these priorities. The reasons for review can include:

- Feasibility study is inconclusive or shows an opportunity to be unviable

- Limited local capacity means a need to prioritise one action over others

- Funding becomes available for one particular option rather than another

- New action points arise from completion of others

- Changes in community circumstances

'Ownership' of particular actions should be clearly understood. Responsibility for implementing actions is likely to be held by at least some of the organisations and people that were involved in the creation of the LEP. However, there may also be other parties who become involved for specific actions.

You'll need to take a consistent approach so all efforts are coordinated. Online updates (as noted in the Access to the Plan section) can help ensure that this consistency is maintained and noted to the wider community.

Keeping the Community-led LEP Relevant

The LEP is not a static document. While much of the material within it will remain valid for a long time, inevitably some it will date. This reflects the inherent ongoing changes in patterns of energy use, employment, transport and development.

There are no simple rules that can determine when your Community-led LEP should be updated. This is for your community to decide.

Sometimes an update may be made when an involved community organisation has some spare time and resources. simply by the availability of time and resource within a community organisation. On other occasions, further information may become available that necessitates an update (for example, new data from a census), or most of the original action points have been completed or superseded.

The same processes of ownership and coordination of effort apply when making updates. As with all the work relating to your LEP, your community needs to be kept informed when updates take place.

The shower and toilet block installed in 2019 at the pontoon in Castlebay, Barra, showcases a range of water saving and energy saving features and has a 4.2kW solar PV array on the roof.
Photo: Coimhearsnachd Bharraidh agus Bhatarsaidh Ltd

Glossary

Acronym	Details
BSRIA	Building Services Research and Information Association – Member based organisation offering range of services to help companies improve the design, build and operation of buildings
CIBSE	Chartered Institution of Building Services Engineers – Professional body for building-services engineers, codes of conduct and standards development
COSLA	Convention of Scottish Local Authorities – Representative body for member local authorities
DNO	Distribution Network Operator – company responsible for maintaining the national electricity distribution network in a given regional area in the UK
EST	Energy Saving Trust – Independent organisation that manages programmes of advice and services around low carbon behaviour in Scotland and the UK
FiT	Feed-in tariff – Regulated by Ofgem, these payments are made to electricity generators for eligible low carbon technologies. Payments are for each kWh of energy generated and are fixed for a period of 20 years
GHG	Greenhouse gases – The collective name for gases in the atmosphere that are monitored due to the impact they have on global warming and associated climate change. Includes carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), chlorofluorocarbons (CFCs), hydrofluorocarbons (including HCFCs and HFCs), and nitrogen trifluoride (NF_3)
HES	Historic Environment Scotland – Public body responsible for the care of Scotland's historic environment
kWh (also MWh or GWh)	Unit of energy consumption. A MWh of energy use is equivalent to 1,000 kWh. A GWh of energy use is equivalent to 1,000 MWh or 1,000,000 kWh
kW (also MW or GW)	Unit of energy output from a given generator. A MW of energy output is equivalent to 1,000 kW; a GW of energy output is equivalent to 1,000 MW or 1,000,000 kW. This can be a measure of electricity or heat output
LDP	Local Development Plan – Vision for how communities will grow and develop in the future. The intention is to provide certainty for communities and investors about where development should and shouldn't take place, and the supporting infrastructure required for growth. Updated every 5 years
LEP	Local Energy Plan –An action plan that identifies key priorities around energy and transport systems in a local area. Identifies opportunities for changes to these systems and the benefits this might bring to the community.
LES	Local Energy Scotland – Advisory body for businesses, communities and other groups in developing local, renewable energy
LHEES	Local Heat and Energy Efficiency Strategy – Area-based strategies looking at how to improve energy efficiency of buildings and decarbonise their heat supply. Strategy looks at a 20-year period
LOIP	Local Outcomes Improvement Plan – Sets out objectives for public sector agencies working in a local authority area. Brings together health, adult services, transport and housing. The collection of agencies forms a Community Planning Partnership
LP	Locality Plan – Specific areas drawn up by the Community Planning Partnership to deliver supporting actions within the LOIP
LPG	Liquefied Petroleum Gas – a liquid fossil fuel used for heating homes, cooking equipment and transport
LPP	Local Place Plan - Community-led plan that sets out a community's view on proposals for the development and use of land.
LSG	Local Steering Group – a body made up of community representatives, which oversees development of a Community-led LEP or specific projects within one
NHS Scotland	Ultimate administration body for delivery of NHS health services in Scotland. Consists of several individual boards that operate service at local level

NPV	Net Present Value – A measure of profit using projected revenues and costs over a period of investment (e.g. 20 or 25 years)
RHI	Renewable Heat Incentive – Government-regulated payment to eligible technology operators. Payments are received per unit of heat output and are fixed for a period of several years (typically seven)
RSL	Registered Social Landlord – Not-for-profit housing providers offering rental properties in a given area
RTP	Regional Transport Partnership – Body that develops transport strategies for specific regions of Scotland. Includes local authorities in the development of these strategies
SAC	Special Areas of Conservation – designation of a particular area for protection of local habitat
SEAP	Sustainable Energy Action Plan – Plans that show how a town, city or region will deliver a target carbon reduction
SEPA	Scottish Environment Protection Agency – Public agency whose role is to help protect and maintain Scotland's environmental resources
SNH	Scottish Natural Heritage – Public body responsible for protecting and promoting Scotland's natural heritage
Social NPV	Social Net Present Value – Similar to NPV, but includes monetary values for wider social benefits resulting from the specific investment
SPA	Special Protection Areas – Conservation designation that protects a given habitat for migratory birds
SSSI	Site of Special Scientific Interest – Conservation designation that protects a particular area of land
tCO$_{2e}$	Measure of GHG emissions – a single unit of measure that captures all the impacts of the range of gases known as the greenhouse gases (GHG)

The community owned 900kW turbine on Barra provides power to the local grid.

Appendix A   Proposed contents of a Community-led Local Energy Plan

The following structure is a suggested overview of the details that may be included in a Community-led Local Energy Plan. It is intended as a guide to overall development rather than a comprehensive requirement. It can be used as a means of structuring thinking when developing the details within each Local Energy Plan.

Introduction

Overview of 'whole system' approach

Introduction to the overall 'whole system' approach looking at all relevant aspects of energy use within the proposed study area. Statement that the plan will cover all aspects of energy use in terms of power, heat and transport both in terms of demand side management and supply technologies.

Aims and objectives

The intention of the Local Energy Plan is to address the aspirations and ambitions of the community. These high level objectives, agreed as part of the process of Plan formation, should be laid out here.

Local Infrastructure

Electricity – Description of local grid supply in terms of key high voltage feeds into the study area and relevant transformers and sub-station capacity details. This may be written by the DNO, but at very least needs to be informed by them. Note of any community generation assets already in operation (e.g. wind turbine etc.)

Heat – Details of supply capacity relating to relevant local gas networks or existing decentralised heat supply networks. Short overview of other relevant fuel sources used in local area.

Water – Overview of local water supply (including extent of any private water supply) and wastewater treatment capacity.

Transport – Description of key road, rail, air and sea links or corridors (as applicable).

Characterisation of local area

Residential

Estimated total number of dwellings and classification in terms of:

- Archetype and size (flat, semi-detached, terrace etc.; 1-bed, 2-bed etc.)

- Tenure (owner occupied, RSL owned, tenant etc.)

- Construction type (cavity wall, solid/stone wall, system built etc.)

- Estimate of fuel poverty levels from Scottish Government statistics

- Estimate of existing energy efficiency (e.g. where EPC ratings are available)

Non-residential

Estimated number of non-domestic properties in terms of:

- Local authority buildings (offices, schools, care homes etc.)

- NHS buildings (hospitals, GP surgeries etc.)

- Business premises (sector and size of property)

Transport

Transport system classified in terms of:

- Local road network

- Rail and/or ferry links

- Estimated vehicle ownership within settlement area (UK Government and Scottish Census data)

- Estimated commercial vehicle ownership and use in settlement area

- Extent of passenger/freight movements into and outwith study area

- Breakdown of fuel type usage (petrol, diesel, ULEV etc.)

- Estimated distance travelled by pedestrians and cyclists

Environment

Overview of study area in terms of:

- Areas of recreational use, open land, etc. within study area

- Summary of environmental designations and other relevant heritage items

- Estimated solar resource

- Estimated wind resource

- Estimated hydro resource

- Estimated biomass resource

Energy Baseline

Electricity – Overview of total demand over a 12-month period broken out by month. Sub-categorisation by residential and non-residential demand. View of power demand (rather than consumption patterns) where details are available. Depending upon resolution of data this to be visualised at street and individual building level.

Heat demand – Analogous to electricity – heat demand overview and monthly breakdown for 12-month period. Further sub-characterisation by end users where data allows.

Transport – Overview of local travel patterns via privately owned vehicles and estimated fuel consumption and annual mileage. Review of other relevant public transport routes and use of air and ferry services (as applicable) over selected 12-month period.

Future changes – Statement of significant known changes to occur in the local area that will impact on future demand (e.g. housing development, incoming business premises or other). Estimate of impact in terms of energy consumption within existing 12-month model.

Options Appraisal

Scottish context

Overview of existing position from Scottish Government in terms of changing features of energy supply and use that impact on local area. This captures extent to which change may be seen in electrification of vehicles, alternative fuels and use in heating, power and transport.

Local context

Overview of relevant local planning documents (e.g. Local Development Plan and associated documents) and context at local level in terms of any known changes to energy and transport networks.

High level technology review

Given preceding commentary some brief introductions to technology options most relevant to local area. This to be gleaned from supporting information within the Toolkit. Details focused on nature of technology, how it would help in the local area and the scale of impact it might provide (in relation to the energy baseline).

Review of local options

Summary of concept work used to develop options for consideration, including:

- Nature of primary assets and associated requirements (e.g. a location for a new energy generation asset, storage medium or heat supply centre)

- Enabling infrastructure (e.g. supply pipework for heat when connecting a heat source to multiple buildings, an electrical supply cable if supplying directly from a wind turbine to local buildings, charge points for electric vehicles etc.)

- Output or impact of works (energy output or improvement in energy efficiency or transport impact)

- Net local environmental impacts (positive and negative as applicable)

- How it could be delivered (proposed ownership and governance of the output)

- Potential risks, constraints or other issues that may constrain or limit the ability to deliver the opportunity

- Net benefits from an economic, environmental and social viewpoint

Summary of prioritised actions

Summary of details and actions to take forward in each case. This to include:

- Nature of opportunity

- Scale of net benefits (energy, carbon, finance, social)

- Actions to take forward

- Proposed timeframes for development

225kWh of battery storage has been installed on Canna as part of the community-owned renewable electricity system to provide continuous energy from solar PV and wind. *Photo: Wind and Sun Ltd.*

Appendix B   Supporting information

Mobilisation – identification of stakeholders

Table B.1   Wider initial potential stakeholder list

Stakeholder	Influence	Role
Development Trust	Ownership or management of local community assets and investment in local area	Introductions to other partners e.g. local authority, private or third sector bodies
Community Council	Promotion of local activities to support community	Source of previous surveys or questionnaires relating to local energy or transport issues Links with local authority and other public bodies
Community Energy group	Charitable or third sector body involved in promoting sustainable energy use and associated initiatives	Details of existing community energy generation Source of previous surveys or questionnaires relating to local energy or transport issues Links with local authority and other public bodies
Community groups / enterprises	Operation of community assets (e.g. shops, advice centres)	Experience in seeking funding for projects Direct energy consumption data for any buildings they operate
Local business representatives	Energy requirements for local businesses	Views of local business energy needs Source of previous surveys or questionnaires relating to local energy or transport issues Direct energy consumption data for any buildings they operate
Scottish Natural Heritage (SNH)	Protection and promotion of Scotland's natural heritage	Guidance on what items need to be considered in initial development thinking around stand-alone energy generation (e.g. wind turbines etc.)
Scottish Environment Protection Agency (SEPA)	Permitting of energy generation where impacts are large enough and relevant to air, land or water	Guidance for initial work on hydro schemes Guidance for initial work on larger combustion plant (e.g. air quality requirements, decentralised energy schemes)
Historic Environment Scotland (HES)	Management of cultural heritage and ancient monuments	Guidance for siting community energy generation taking account of relevant cultural heritage issues. Experience and case studies of energy efficiency works and renewable energy installation within traditional buildings
Scottish Canals	Management of all assets associated with Scottish Canal network	Advice on feasibility work looking at using water source heat pumps or other ways of extracting heat from Canal water
Forestry Commission	Management of forestry in Scotland	Advice on land ownership Details of existing energy generation either proposed or operational on Forestry Commission land Advice on biomass supply chain
Scottish Power Energy Networks (SPEN)	Distribution network operator for electricity distribution and transmission network in central and Southern Scotland	Initial details regarding local electricity network and relevant sub-stations Support in developing larger scale energy generation

		Experience from any previous local community generating assets
		Supplier of information about location of electricity supply cables and infrastructure
Scottish and Southern Electricity Networks (SSE)	Distribution network operator for electricity distribution and transmission network in Northern Scotland	Initial details regarding local electricity network and relevant sub-stations
		Support in developing larger scale energy generation
		Experience from any previous local community generating assets
		Supplier of information about location of electricity supply cables and infrastructure
		Information regarding potential future investment in the local area network
Scottish Gas Networks (SGN)	Gas distribution operator for Scotland	Initial details regarding local gas network and relevant details
		Support in developing larger scale energy generation
		Experience from any previous local community generating assets
		Supplier of information about location of mains gas pipework
		Information regarding potential future investment in the local area network
Scottish Water	Management of local water supply and wastewater treatment works	Overview of existing capacity of supply and wastewater treatment works in local area
		Details of energy consumption relating to operation of water supply and wastewater management
		Understanding of existing or planned energy generation on Scottish Water land (e.g. combined heat and power, anaerobic digestion, solar PV etc.)
Local Authority	Operator of buildings in the local area Operator of transport vehicles in the area Local planning and economic development lead	Support in understanding relevant local development, planning and other policy documents
		Broker to liaise with other stakeholders
		Supplier of data regarding energy consumption in local authority operated buildings (offices, schools, leisure centres etc.)
		Understanding of potential new development (residential and non-residential buildings) in the local area
		Understanding of existing support schemes for energy efficiency in targeted households
NHSScotland Health Board	Responsible body for operating health service buildings in the local area	Part of Community Planning Partnership group working in local area
		Details of energy consumption of health service buildings
Energy Saving Trust (EST)	Supporting organisation for energy efficiency and low carbon behaviours in Scotland	Details of existing support initiatives led by Home Energy Scotland and other third party bodies
Local Energy Scotland	Advisory body supporting communities across Scotland in seeking local energy projects	Advice around how to go about developing project ideas and sources of funding
		Experience from other existing community energy schemes and projects

		Working relationships with other bodies relevant to energy generation
Registered Social Landlord (RSL)	Not-for-profit owner and operator of social housing (Housing Association)	Details of existing housing stock in the local area and current works around energy efficiency and local energy supply
		Details of existing energy consumption among relevant housing stock
		Understanding of any future development in terms of the scale of development and associated energy requirements
		Experience in raising and applying for funding for projects
Regional Transport Partnership (RTP)	Prepare and support regional transport strategies	Details of transport / travel surveys relevant to local area
		Understanding of ongoing transport system initiatives in local area and across Scotland
		Working relationships with other bodies relevant to transport planning
Transport Scotland	National transport agency for Scotland	Understanding of larger transport projects across Scotland that may impact on local area
Scottish Enterprise	Main economic development agency in Scotland	Understanding of wider development programmes relevant to local area
		Overview of previous studies or reports relevant to local energy planning
		Connections with wider stakeholders
South of Scotland Enterprise	Economic and community development agency for Dumfries and Galloway and Scottish Borders	Understanding of wider development programmes relevant to local area
		Overview of previous studies or reports relevant to local energy planning
		Connections with wider stakeholders
Highland and Islands Enterprise	Economic and community development agency for Highlands and Islands	Understanding of wider development programmes relevant to local area
		Overview of previous studies or reports relevant to local energy planning
		Connections with wider stakeholders

A workshop in Castlebay was used to help identify the key activities to take forward in the Barra & Vatersay Local Energy Plan. *Photo: Community Energy Scotland*

Tier 1 Data Sources

Table B.2   Tier 1 data sources and use in Local Energy Plan

Data source	Description	Purpose for Local Energy Plan
Scotland's Census Data	Population estimate (and breakdown of age profile). Trends in population within the area	Provides a guide as to the scale of overall energy demand and how this might change in future based on broad population trends. Age profiling shows where different needs within the community might need to be met
	Housing data (total number of houses by tenure, age, type of dwelling and form of central heating)	Knowledge of tenure helps understand who can influence improvements in energy efficiency or changes to energy supply (private owners, registered social landlords etc.) Understanding the typical age and type of dwelling (pre-1919, post-2002, detached, terraced etc.) helps to build a picture of the scale of energy requirements and what efficiency options are more or less appropriate for given dwellings (e.g. pre-1919 solid wall properties won't benefit from cavity wall insulation) Understanding how many properties have central heating and what fuel is used to supply them helps understand how alternative systems could be used to replace or update them
	Employment (numbers of economically active and inactive; typical occupations and sectors of work)	Offers a snapshot of the scale of employment in the local area and how many residents are likely to travel to work rather than being home-based. Also shows scale of population likely to be at home during large parts of the day.
	Typical journey to work	Details of how economically active population typically travels to work guides understanding of scale of car use and other transport modes
	Vehicle ownership	Direct measure of the number of cars and vans registered as owned by residents within the study area. This supports the journey to work data and other statistics (see below) to understand travel patterns in the study area
Scottish Government Urban Rural Classification	6-fold or 8-fold scale that classifies areas on a scale of large urban to remote rural	This is useful simply to help direct further data gathering from other sources.
Scottish Index of Multiple Deprivation (SIMD)	Provides a basket of indicators that offer a view of relative deprivation for a given area. The ten point scale ranks from 1 (most deprived) to 10 (least deprived)	Within the indicators are specific details that relate to transport requirements: Geography: - Average drive time to a petrol station in minutes - Average drive time to a GP surgery in minutes - Average drive time to a post office in minutes - Average drive time to a primary school in minutes - Average drive time to a retail centre in minutes - Average drive time to a secondary school in minutes - Public transport travel time to a GP surgery in minutes - Public transport travel time to a post office in minutes - Public transport travel time to a retail centre in minutes There are also details that enable a cross-check of central heating details Housing: - Number of houses without central heating The overall SIMD rating also offers guidance in terms of where aspects of fuel poverty or wider deprivation could be addressed to some extent by the LEP
Scottish Government Energy Statistics	Overarching data for local areas looking at electricity and other	Provides a guide to overall trends in energy consumption across Scotland and in specific regions and areas.

	fuel consumption. This combines some specific Scottish Government data with other data available via UK Government	Provides more detailed overall consumption data for localities and settlements.
	Community owned renewables	Details of existing community owned renewables within local authority areas.
Scotland's Heat Map	Overview of heat demand in local areas across Scotland	Combines actual and estimated data for all areas across Scotland. Guides initial thoughts around where largest sources of heat demand are. It also provides details of large heat generating equipment (e.g. boilers, heat pumps) within a given area. Some information is also available regarding renewable energy generation including existing or proposed district heating networks. Geothermal data such as old mine working locations helps to identify potential ground based heat sources
Historic Environment Scotland	Searchable details of environmental designations and cultural heritage and other aspects of local environment	Need to consider location of sensitive environmental areas and other cultural designations to ensure that any community energy development doesn't impact on them. Planning permission is less likely to be granted for any energy proposal if it impacts on these aspects. Case studies from HES also offer understanding of how energy efficiency and renewable energy related works can be carried out in traditional buildings
Scotland's Environment	Website that provides environment information and data in one source.	Provides data about environmental designations and relevant indicators of environmental impact that need to be considered during the formation of an LEP
Scottish Renewables	Details of existing and proposed renewable energy schemes	Provides a national picture of the scale of renewable energy generation. Also offers more detail at a local authority level
Local Authorities	Details of existing and proposed renewable energy schemes	Some local authorities provide interactive maps showing renewable energy schemes in their area. This provides an indication of the scale of energy output that these schemes offer as well as their physical location
Home Energy Scotland	National provider of advice regarding energy saving, renewable energy, sustainable transport, waste prevention	Understanding of energy use in residential properties and data availability (including limitations) in this respect. Source of information regarding programmes of energy efficiency works and use of renewable energy generation in residential properties
Energy Efficient Business Support	National programme offering advice and technical support to organisations around resource efficiency	Experience and case studies relating to resource efficiency and renewable energy generation within organisations and businesses across Scotland
Third party sites	Details of existing and proposed renewable energy schemes	There are a number of other sites that can offer a view of existing and proposed renewable energy developments, for example http://renewables-map.co.uk/county.asp?countycode=HLD&SUBMIT=Show+by+County
Scottish Power	Details of individual sub-stations and existing capacity to connect energy generation	Interactive map provides overview of existing sub-stations and how capacity is available for future local energy generation https://www.spenergynetworks.co.uk/pages/sp_distribution_heat_maps.aspx
Scottish and Southern Electricity Networks	Details of individual sub-stations and existing capacity to connect energy generation	Interactive map provides overview of existing sub-stations and how capacity is available for future local energy generation https://www.ssepd.co.uk/ContractedDemandMap/?mapareaid=3

Scottish Water	Details of water treatment capacity and scale of wastewater treatment facilities. Energy consumption and generation on operating sites	Determines any constraint to future development due to over capacity on water and sewage systems. Potential supplier of electricity or heat from operating sites. Otherwise, also a large energy consumer that could purchase energy generated within the local community.
Scottish Gas Networks (SGN)	Overview of mains gas supply pipelines	Initial overview of the location of high pressure transmission pipework and availability of mains gas supply in a given area

Tier 2 Datasets

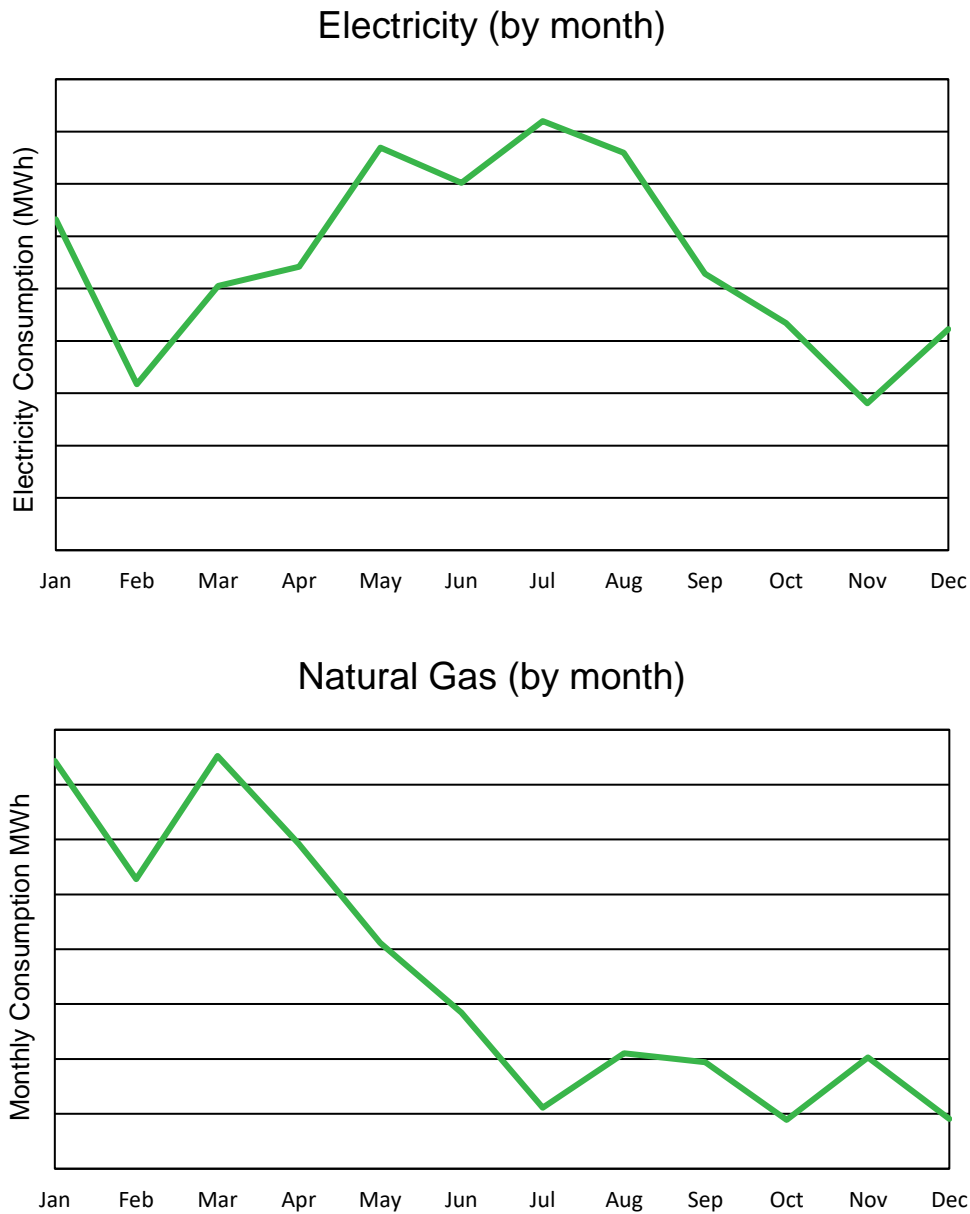Figure B.1   Example of consumption data collected

Electricity (by month)

Natural Gas (by month)

Table B.3   Tier 2 datasets available

Source	Description	Examples of buildings	Level of detail	Use in Local Energy Plan
Local Authority	Energy use data from buildings operated directly by the Authority Renewable energy generation in operation	Offices, storage facilities, depots, leisure centre, community halls, theatres, court buildings	Monthly breakdown of actual billing data by fuel type over a 12-month period. Energy data in kWh (or similar energy units) for each fuel Confirmation of floor area of individual buildings and general construction details Monthly output from renewable energy generation	Builds detail of local energy plan demand Builds detail of existing available energy generation
NHS Scotland	Energy use data from buildings operated directly by the NHS Renewable energy generation in operation Fleet vehicles used locally	Hospitals, clinics, health centres, community care facilities	Monthly breakdown of actual billing data by fuel type over a 12-month period. Energy data in kWh (or similar energy units) for each fuel Confirmation of floor area of individual buildings and general construction details	Builds detail of local energy plan demand Builds detail of existing available energy generation Overview of fleet vehicles that might be alternatively fuelled in future
Registered Social Landlord	Energy use data from buildings operated directly by the RSL Renewable energy generation	Housing schemes, housing blocks	Monthly breakdown of actual billing data by fuel type over a 12-month period. Energy data in kWh (or similar energy units) for each fuel Confirmation of floor area of individual buildings and general construction details	Builds detail of local energy plan demand Builds detail of existing available energy generation and heat networks (where applicable)
Other businesses	Energy use data from buildings operated	Industrial premises	Monthly breakdown of actual billing data by fuel type over a 12-month period. Energy data in kWh (or similar energy units) for each fuel Confirmation of floor area of individual buildings and general construction details	Understanding of demand for energy and potential waste heat or electricity that could be used to supply neighbouring premises
Transport operators	Existing services and fuel used Ongoing or proposed changes to vehicle fuel or type	Road, air or ferry links	Description of vehicle fleet Quantities of fuel used and typical fuel efficiency	Understanding of impact within local community and where future energy supply might support fuel switching
Energy Saving Trust	Home Analytics database / Portfolio Energy Analysis Tool (PEAT)	Residential dwellings in the area	Details of energy efficiency, existing heating fuel used and costs of energy. Estimates of benefit of interventions such as insulation or renewable energy generation	Builds understanding of existing efficiency and fuel use and how this might be improved or changed

Energy baseline

Table B.4   Example breakdown of energy profile of study area (annual snapshot) - electricity

Existing energy demand	Domestic	Non-domestic	Sub-Total	Carbon sub-total
Electricity	Residential – privately owned 40,000 kWh Residential – RSL 120,000 kWh	Local authority buildings 30,000 kWh NHS Scotland buildings 65,000 kWh Local commercial business 40,000 kWh Utility companies 100,000 kWh Transport companies 0 kWh Charitable and other bodies 6,000 kWh	401,000 kWh	154 tCO$_{2e}$

Note: Carbon emission conversion factor taken from BEIS

Part of an information display stand at the library in Oban as part of community engagement activity for the local energy plan. *Photo: ALIenergy*

Concept Design Options

Table B.5   Options matrix summary example

Opportunity	Description	Enabling infrastructure	Output / Impact	Risks / Constraints	Funding / Delivery
District heating	Use of waste heat from industrial user to feed heating for new development of 12 houses	Distribution pipework from industrial user to housing development site (ca. 1 km) Underfloor heating for new homes (40 deg C supply temperature)	80,000 kWh per annum of heat. Sufficient for ca. 80% of total heat demand	Industrial user may replace existing turbine Developer selects wall mounted radiators	Work with local authority as identified project within LHEES
Water source heat pump	Heat pump fed from local loch supplies space heating for community centre and adjacent industrial units	Heating coil in loch Plant room housing for heat pump Large radiators	50,000 kWh per annum of heat. Sufficient for 100% of demand	Maintenance regime for heat pump (insufficient local experience)	Crowd funding route
Solid wall insulation programme	Solid wall insulation work on targeted pre-1919 dwellings in the area	None	40% reduction in heating energy for each dwelling	Lack of associated work to reduce damp in some dwellings Lack of local installers	Work with local authority and explore funding routes via Warm Homes Grant
Solar PV ground mounted array	Ground mounted solar array in land adjacent to settlement	Private wire to feed supply to community hall and RSL operated housing block	100 kWp array	Objection through planning process	Match funding with RSL
Etc	Etc	Etc	Etc	Etc	Etc

Note: All examples are for illustrative purposes only; this does not reflect actual analysis for any LEP