

SITE GUIDE: ENERGY OPTIONS FOR NEW COMMUNITY HOUSING

LOCAL
ENERGY
SCOTLAND

This guide outlines considerations for those in control of developing new community owned, affordable, low carbon emission housing. It applies to planning a new community owned housing development encompassing minimised energy demand for heating and power, renewable energy generation, energy storage and scope for flexible, responsive energy use.

IDENTIFY AND PRIORITISE CHALLENGES

Solutions must always prioritise energy efficiency. The following issues are common to this type of development and are followed by brief notes on some typical or appropriate initial actions.

Heat losses through the building fabric

Heating accounts for a substantial portion of energy needs and carbon emissions in UK homes. New build housing can have minimal heating needs through careful design specification and build quality. Choices on house type, building fabric, glazing, ventilation and building orientation will have a significant impact in terms of thermal efficiency. The design process will be key in optimising performance.

Heating and hot water requirements

Heating and hot water accounts for a significant portion of energy needs and careful design can minimise it. Including low water use fittings will also reduce energy demand associated with hot water and water treatment and filtration. There are a range of renewable and low carbon options for providing heating and hot water. For heating, choices will need to be made about heat distribution through radiators, underfloor or air circulation and on the fuel source, e.g. biomass, water, air, ground.



New boilers can be up to 90% efficient. The [Product Characteristics Database](#) holds information on boiler and equipment efficiencies.

Grid connection

Grid constraints are a common issue and can result in a significant cost for infrastructure upgrade to connect a new housing development; consultation with the [District Network Operator \(DNO\)](#) will inform on the requirements. Look at designing a development that minimises peak demand from the grid using controls and storage with local generation to match demand as much as possible.

Providing for an energy need for transport

The switch to electric vehicles means it makes sense for new houses to have on site or nearby charging facilities. A present dilemma is whether to install a trickle or fast charger or both. Trickle chargers are more manageable for grid infrastructure; fast chargers provide convenience. Choice gives future options for different householders and evolving markets.

Energy Saving Trust provides information on [vehicle efficiency](#).



Availability of space in, on and around the development

What space is available? What is in proximity to the planned housing development that could restrict or increase available space? Availability of space will influence decisions on orientation and position of properties, scope for renewable generation and decisions on possible shared resource – for example, a shared energy hub, energy storage, car charging or pipework for a shared heating supply.

Influences external to site

Is there scope to connect the development with other local demand and/or generation for the benefit of all? For example, is there a nearby school, community centre or distillery with waste heat that it could be connected to?

Capital and running costs

It's likely that maximising the low/net zero carbon credentials of housing will bring higher capital costs and lower running costs. Present cost benefits on a range of options with an integrated approach and compare these with a consideration of capital and running costs along with social impact and carbon savings. This will help inform decisions by capital funders. Look at affordable rental charges alongside significantly lower running costs that will assist with capital repayment.

Providing individual and collective benefit

With new housing developments, there is scope to have collective solutions such as shared storage, heating and energy generation. In the design process it's important to consult and to go through needs, priorities, costs and benefits for providing individual and/or collective solutions. For supplying a collective solution, would this use a community or third-party energy supply company, for example?

COMMON ACTIVITIES (initial steps towards solutions)

Addressing many of the issues above can begin with the same initial steps. These include:

- ✓ benchmarking against standards on energy performance and running costs – for example, Planning Authority and Building Warrant standards, BREEAM, Passivhaus and 2050-Ready housing
- ✓ asking the local authority about their local plans or local support
- ✓ identifying eligible funding and any deadlines associated
- ✓ seeking out best practice examples in new build housing
- ✓ identifying architect, design team and builders with relevant expertise
- ✓ ensuring an integrated, whole energy system approach.

BENEFITS OF TYPICAL SOLUTIONS

Maximising energy efficiency

- Passive benefit going forward for lifetime of building.
- A high level of confidence in predicted savings.

A heating system with heat recovery and mechanical ventilation

- Low energy consumption.
- Low running costs.
- Responsiveness.
- Comfortable environment.

Installing renewable energy generation and storage

- Zero carbon emissions.
- A low-cost energy supply.
- A flexible and responsive system.



NEW DEVELOPMENTS

Technologies and innovations not yet commonly adopted

Look at government funded initiatives about 2050-ready, net zero carbon housing developments; they are triple glazed, highly insulated and air-tight. They include, for example, solar PV to generate renewable electricity stored in batteries and inter seasonal heat stores, smart home energy management systems and provide a flexible service to the grid.

FURTHER RESOURCES AND READING

- ✓ [Community Housing Scotland](#) can support community housing development.
- ✓ [Home Energy Scotland](#) can provide domestic energy advice and support.
- ✓ [Building Research Establishment](#) is a building science centre that aims to improve buildings and infrastructure through research and knowledge generation.
- ✓ [Building for 2050](#) is a research project to help housebuilders meet the challenge of delivering low cost, low carbon housing.
- ✓ [Active Building Centre](#) seeks to revolutionise the way the UK designs, constructs and operates buildings by realising the potential for the integration of innovative renewable energy generation and storage technologies, coupled with state-of-the-art digital design.
- ✓ Read more about Scotland's [net-zero](#) ambition and the Scottish Government's [Local Heat and Energy Efficiency Strategies second consultation analysis](#).

HOW LOCAL ENERGY SCOTLAND CAN HELP

- ✓ **ADVICE** – We have a network of Local Development Officers across Scotland to provide regional advice and support, wherever you are.
- ✓ **RESOURCES** – Our free online resources, tools and good practice guides will help you along every step of your journey.
- ✓ **FUNDING** – we help you access the Scottish Government's Community and Renewable Energy Scheme (CARES) support and funding.

For more information, call Local Energy Scotland on **0808 808 2288**, email info@localenergy.scot or visit localenergy.scot

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