

Appendix 3

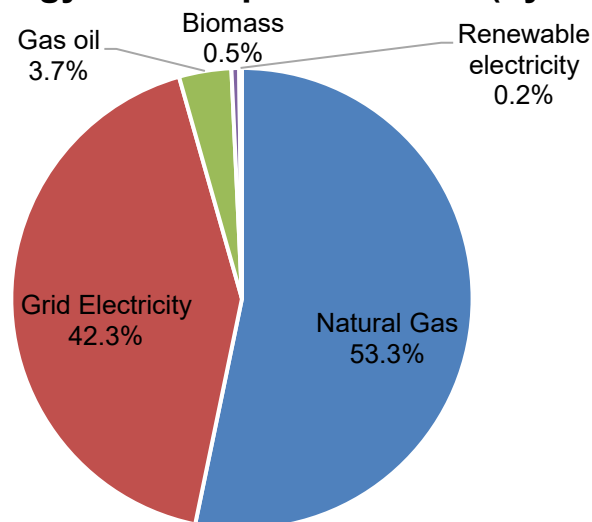
Energy, Water & Renewables

Context

Energy consumption (via heat, power and water), including their subsequent emissions, are dependant on many factors (both social and economic). Some of these factors can be addressed in the short term, while others need to be considered over long periods of time which involves strong and sustained data records from these energy sources. In recent years significant progress has been made in better understanding, monitoring and recording these energy sources in order to reduce consumption and improve practice.

West Dunbartonshire's total energy consumption from heat and power in 2012/13 was estimated as 67,469,118 kWh and had reduced almost 30% to 47,312,507 (largely due to a combination of: energy efficiency projects; estate changes/building closures; and the decarbonising of the electric grid, etc.) kWh by 2018/19. Currently, emissions from these sources make up 43% of the overall carbon footprint, so it is important that we continue to make efforts to reduce our emissions from energy and water to have a greater chance of getting to net zero.

WDC Energy Consumption 2018/19 (by fuel)



This amount of energy consumption is equivalent to almost 3500 homes being powered for the year or over 7000 return trips from Scotland to New York.

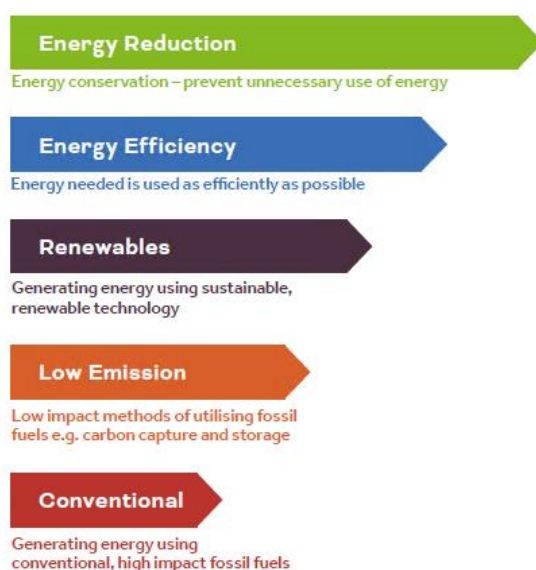
Additionally, water use from Council owned buildings and services has seen roughly a 3% reduction in consumption since 2012/13. However, emissions from water makes up less than 1% of overall emissions and so the ability for this fuel source to impact heavily towards a net zero target is low but there are opportunities to make significant cost savings and improve behaviours in advance of water.

Water use	Consumption (m ³)	Emissions (tCO ₂ e)
2012/13	364,235	190

2018/19	353,998	185
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Energy Hierarchy

The Council will follow the principles of the energy hierarchy as developed by the Scottish Government. This approach first looks to reduce the amount of energy consumed before employing more advanced techniques and technologies, such as renewables, to reduce energy. The most cost-effective way to reduce emissions is to reduce the amount of energy used in the first place. This is why reducing consumption is such an important pillar of this strategy. It can be usually be done cheaply and in the short term (often by staff empowerment change methods).



Energy Hierarchy – the Council’s approach to energy efficiency in buildings.

District Heating Networks (DHN) & Local Heat and Energy Efficiency Strategies (LHEES)

The concept of Local Heat and Energy Efficiency Strategies (LHEES) was introduced in 2016 and is being piloted as part of the Energy Efficient Scotland programme. LHEES aim to establish area-based plans and priorities for improving the energy efficiency of buildings, and decarbonising heat.

One way to do this is via District Heating Networks (DHN). DHNs aim to distribute large-scale sources of heat over a large geographic area and connect multiple buildings in a heat network. These networks are a particularly attractive option in dense urban areas, and have been cited as a way of tackling fuel poverty while also reducing building and housing management costs.

Our DHN at Queens Quay in Clydebank is operated through an energy centre. Within the energy centre, heat pumps extract water from the River Clyde. This water is transported via district heating pipes to homes and businesses to heat them. Additional pipes mean public buildings such as Clydebank College and Leisure Centre and other businesses into the town centre can be supplied.

The energy centre also accommodates gas boilers, pressurisation units and distribution pumps together with a building control and management system to operate and monitor the system.

Each property connected to the district heating network will have a Heat Interface Unit (HIU) which is similar in size to, and looks like, the traditional boiler it replaces. This device allows tenants and landlords to switch on heat and hot water as and when it is required. It also allows them to monitor the amount of energy consumed to ensure they are billed accurately for it.

Building upon this success, the Council are now developing a pilot LHEES and report which will set the strategy and framework for reducing energy demand and decarbonising the heat supply in the Clydebank area, across the timeframe of the Energy Efficient Scotland programme.

It will seek to identify local solutions to reduce emissions from buildings and tackle fuel poverty across all building types within the town of Clydebank, from the boundary with Glasgow City Council on the River Clyde, northwards using Great Western Road as a boundary and to a westerly limit of Mountblow Road.

It plans to identify opportunities for additional connections to the Queens Quay DHN. It will also explore the feasibility and costs of other energy efficiency measures across this area and build on existing external wall insulation programmes, explore alternative heating solutions and opportunities with a focus on solutions and technologies around energy efficiency and heat decarbonisation.

This LHEES pilot is the first step in the Council developing and adopting a wider 20 year strategy that will strive towards achieving net zero emissions from buildings by 2045, and removing poor energy efficiency as a driver for fuel poverty.

Renewables

Utilising renewable energy technologies can rapidly reduce emissions (and costs), particularly within heating and power. The Council currently has the capacity to produce renewable electricity via solar Photovoltaic panels and renewable heat via biomass boilers. With increasing decarbonisation of the electricity grid, Council emissions from gas heating will rise proportionately over the next decade, necessitating a further transition to renewable heat sources over this period.

Throughout the year, 2018/19, the Council generated the following amount of renewable energy;

Technology	Renewable energy type	Total consumed by the organisation (kWh)
Solar PV	Electricity	89,843
Biomass	Heat	231,770

Therefore, last year, less than 0.5% of our locally generated electricity and around 1% of our heat comes from renewable sources. So the potential to grow is considerable.