

## LCITP TRANSFORMATION LOW CARBON (TLC) DEMONSTRATOR – SUCCESSFUL PROJECTS AWARDED FUNDING 2017

The Low Carbon Infrastructure Transition Programme (LCITP), supported by the European Regional Development Funding (ERDF), purpose is to accelerate the development and delivery of low-carbon infrastructure projects across Scotland. The TLC Demonstrator was specifically designed to support the delivery of transformational low carbon energy infrastructure projects in Scotland.

The focus of this TLC Invitation for Funding was on projects that had the ability to demonstrate innovative technologies and/or business models, had the potential to be replicated in other parts of Scotland and have a transformational impact on achieving our climate change ambitions. Following assessment, 13 projects were offered total financial support of just over £45 million. Details of how this is broken down at project level is provided in the table below:

Project Title	Location by Postcode	Project Summary	Total CAPEX	SG LCITP Capital Support Offered	SG LCITP Enabling Support Offered
<b>Fair Isle Unified Low Carbon Electricity Storage and Generation Project</b>	ZE2 9JU	Fair Isle is not connected to the national grid network. Developing the islands local energy system supply is one of the highest priorities identified in the recent community development plan and will transform life on the island. This project aims to develop an innovative and collaborative local energy model potentially replicable across other island communities, based on an innovative combination of technologies.	£3,542,820	£1,492,820.15	£0
<b>Project Alchemy: turning low value residues into high value products</b>	FK3 8TR	Celtic Renewables is resurrecting an industrial fermentation process - the Acetone-Butanol-Ethanol (ABE) fermentation – that was once one of the biggest biotechnology industries in the world (second only to the drinks industry). Celtic Renewables have innovatively re-developed the process to utilise wastes and residues, rather than crops, as the raw material – dramatically enhancing both the economic and environmental sustainability of the process. This transformational project will see the construction at Grangemouth of the world's very first biofuel demonstration facility.	£18,006,420.00	£9,000,000	£100,000.00

<b>REStore Demonstrator</b>	ZE2 9DD	Project partners Nova Innovation will build and operate an energy storage solution for the Shetland Tidal Array. The system combines storage with renewable generation to allow control of output to the grid, contributing to grid stability developing Baseload Tidal power. The project has the potential to facilitate the development of a Scottish supply chain in the emerging smart grid, energy storage and renewable market.	£317,211.00	£188,606.00	£84,000.00
<b>Tackling Fuel Poverty &amp; Grid Balancing with Smart Electric Storage Heat</b>	Various locations across Scotland	This project will impact on the lives of social housing residents with electric storage heating by improving the quality of their heating, reducing their bills and carbon emissions. The project will deploy VCharge technology to enable heaters to be charged at different times for each tenant and each room based on their own requirements and lifestyle. To achieve this the project will bring together: landlords who care about alleviation of fuel poverty; an experienced by local social housing contractor (Keepmoat); Strathclyde University who are experienced in validation and monitoring; and Community Energy Scotland who are experienced in community engagement.	£9,129,324	£4,564,662	£100,000.00
<b>Glenrothes Next Generation Heat</b>	Various locations within Glenrothes	This project is looking to take advantage of the loss of the RWE biomass CHP plant's key industrial heat load by creating an ambitious district heating network to supply low carbon heat to a wide range of local customers in the centre of Glenrothes. The variety of heat consumers enables balancing of the heat loads, and will be used to engage similar ranges of heat consumers in future phases of Glenrothes Heat and new networks elsewhere. The project will also create investment models that will address fuel poverty and economic regeneration.	£17,000,000.00	£8,558,570.80	£100,000.00

<b>Star Renewable Energy ESCO</b>	G5 0YL	<p>The Star Renewable Energy ESCO is aiming to roll-out high efficiency industrial heat pumps for an urban district heating scheme. The Gorbals Heat Pump project will draw water from the River Clyde and supply heat to a number of public buildings, and 4 tower blocks in New Gorbals. The heat pump will reduce carbon emissions by at least 40% compared to conventional gas boilers (actual 2016 intensity), and will also improve local air quality. The project will use the Star Renewable Neatpump, which is manufactured in Thornliebank in Glasgow, supporting permanent manufacturing jobs in Glasgow and generating construction jobs at the project site. It is anticipated that the project will have room for expansion in the future, which will provide low carbon renewable heat to the wider community by extending a district heating scheme.</p>	£3,559,826.00	£1,779,913.00	£100,000.00
<b>Stirling Renewable Heat Demonstration Project</b>	FK7 7SY	<p>Stirling Council and Scottish Water Horizons and the wider Stirling Community have come together to create, develop and deliver a low carbon infrastructure project to the benefit of the Stirling area. The project involves adding innovative energy generation technology to the waste water treatment plant to harness energy from waste and carbon neutral biogas to deliver affordable, low carbon heat to the Stirling Community with negligible air quality impact. The concept utilises the biogas generated by the existing anaerobic digestion (AD) plant (currently a waste product). The electrical power generated will be used at site to offset grid usage and to power a SHARC waste water heat recovery system which harvests heat from waste water.</p>	£3,990,663	£1,995,331.00	£100,000.00
<b>Queens Quay and Clydebank District Heating Network</b>	G81 1SE	<p>This project – led by West Dunbartonshire Council – will establish a district heat network at Queens Quay Clydebank, where the energy source is a privately owned river basin that can supply water for a new energy centre housing heat pumps. These pumps, powered by electricity, act as chillers that extract heat from large volumes of water with an average temperature of between 8-12 °C transfers the resultant heat at around 75 °C into the distribution pipe network. The distributed network will use heavily insulated pipes to deliver heating for all new developments at Queens Quay and a number of</p>	£12,000,000.00	£6,000,000.00	£100,000.00

		nearby buildings. On completion the project is expected to be the largest single heat network in Scotland using water source heat and will permit low carbon homes to be built at Queens Quay.			
<b>Clyde Gateway Wastewater Heat Recovery Project</b>	G40 4LB / G74 5AW	SHARC Energy district heating system in the DHIP area of the Clyde Gateway development, located in the Dalmarnock area of Glasgow, intended to demonstrate how the SHARC low carbon heating solution can be deployed at a district heating level, using 4th Generation low temperature heating loops to distribute heat and cooling services as an alternative thermal energy service to traditional fossil fuel generation. The project involves an innovative cross-sector partnership between SHARC Energy, Clyde Gateway and Scottish Water (Scottish Water Horizons), facilitating access to the productive wastewater assets that surround the development.	£5,996,083.00	£2,980,042	£100,000.00
<b>Low Carbon District Energy Hub</b>	DD4 9BX	Led by Dundee City Council, the Low Carbon District Energy Hub forms an integral part of a partnership project to construct a new £21m Regional Performance Centre for Sport (RPCS) at Caird Park, Dundee. Consisting of a ground source heat pump system, heat will be distributed to three buildings on site via a District Heating network of flow and return pipework buried below ground. Solar thermal heat will also be generated from photovoltaic panels on the roof of the energy centre.	£5,840,970.00	£2,900,000	£100,000.00
<b>Wastewater Heat Recovery Bandwidth Demonstration Project</b>	G3 8AG / KW15 1LR / PA28 6EG	The SHARC Bandwidth demonstrator project is intended to validate how the SHARC low carbon heating solution can be deployed in a variety of locations to showcase the opportunity to retrofit heating systems and replicate and scale. The demonstrator will consider developments in three individual projects located at discreet locations in Scotland, namely: Orkney Islands Council Pickaquoy Leisure Centre; Argyll & Bute Council Aqualibrium Leisure Centre; and Glasgow City Council Kelvingrove Art Gallery and Museum. The project involves an innovative cross-sector partnership between SHARC Energy and Scottish Water (Scottish Water Horizons) allowing SHARC access the Scottish water sewers to create a new heat resource to support the ambitious renewable heat targets of the Scottish Government.	£3,800,852.00	£1,727,194.00	£100,000.00

<b>Dundee and Angus Residual Waste Combined Heat and Power Project</b>	DD4 0NS / DD4 8UQ	The aim of this project is to establish supply of medium pressure steam from a new Energy from Waste (EfW) plant to be built by MVV to an adjacent industrial site. The EfW plant being procured by Dundee City and Angus Councils will be built on land adjacent to the Michelin site and the residual waste heat project has been championed through the procurement approach for the EfW facility.	£3,374,000.00	£1,687,000.00	£100,000.00
<b>SSE Generation Ltd</b>	KA23	The battery energy storage system project at Hunterston, North Ayrshire aims to demonstrate that the use of lithium-ion battery storage systems for mitigating wind variability and accommodating this energy in the National Grid is commercially viable with communication and dissemination of knowledge and learning from the Project shared	£2,053,170	£1,026,585	£40,500

### Key

	Projects that have completed full and final commissioning
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**Total SG LCITP Capital Support Awarded: £43.9 m**

**Total SG LCITP Enabling Costs Awarded: £1.12 m**