

### **Mackie's Low Carbon Refrigeration**

Mackie's Limited produce Scotland's best-selling ice cream from their farm at Westertown, Aberdeenshire. The company has grown organically since the first production of ice cream in 1986 and has always been a leader in low carbon initiatives and renewables. Part of their mission statement is 'to be the greenest company in Britain' and they already produce their ice cream using over 60% renewable energy. Mackie's aim is to reduce grid use and carbon footprint even further with this project, which aims to prove that absorption chilling using heat from a biomass plant can be utilized to achieve temperatures of -25C at a lower energy costs and with lower emission than conventional refrigeration plants.

The project, supported by the Low Carbon Infrastructure Transition Programme (LCITP), will use a combination of a biomass boiler producing superheated water and an absorption chiller/refrigeration plant that will provide a low carbon / low energy solution to businesses that require constant 24/7 cold store refrigeration. The technologies involved are tried and tested methods but have not been commonly combined to produce a low energy solution to cold store refrigeration systems. The project will establish Scotland's first fully working, commercial sized, biomass/absorption chilling demonstrator plant that could provide opportunities for replication of the technology to the Scottish food and drink sector.

### **Aviva Low Carbon Travel**

As a company Aviva strive to create a positive legacy by being good ancestors. Climate change is one of the biggest issues of our time and new ideas are badly needed to help people take action to reduce the risks it poses businesses. As a key employer in Perth with over 1100 personnel working in the historic A listed Perth building daily, Aviva's ambitious plans will bring them closer to being 'off grid' by generating clean low carbon fuel for the business and providing ultra- low emission vehicle infrastructure.

The technology that will be supported by the Low Carbon Infrastructure Transition Programme (LCITP) will incorporate cutting edge carport solar with storage. Aviva has significant external parking areas and it will be a novel way to generate clean electricity for use in the office or charging EV. The 1MW solar carport should be the largest project of its kind in Scotland. 50 zero-emission EV charging stations will be integrated into the solar carports. Battery storage will also be integrated into the system, the battery will be recharged using overspill from solar generation.

### **Aberdeenshire Council Solar and Storage**

Aberdeenshire Council aims improve the condition and energy efficiency of their housing stock from 2017 to 2021. This includes provision to install solar PV to improve energy efficiency, however, the installation of PVs cannot progress on many houses due to there being insufficient grid capacity.

The objective of this project, supported by the Low Carbon Infrastructure Transition Programme (LCITP), is to establish a demonstrator on 500 houses to allow the installation of PVs to proceed as well as providing greater savings for tenants and benefits to the wider community. The learning from the project will provide the basis for developing a business case to support the wide scale

roll out of the scheme. This project will demonstrate the application of generation, storage and grid services across a large housing stock as a route to reducing carbon emissions and fuel poverty. The project has strategic significance due to its wide scale applicability and the importance of the learning which will inform future business cases.

A battery, smart technology and PV will be installed at each demonstrator property. The battery will store the energy while the technology monitors household energy usage and solar energy production. Intelligent forecasting software predicts future usage and production. The system will maximise the benefit to the householder from the solar panel and also enable the provision of grid services. The smart technology remotely controls the batteries to manage the energy to meet the needs of the householder as well as helping balance the grid.

### **Midlothian Council – Millerhill District Heat Network**

The aim of the project supported by the Low Carbon Infrastructure Transition Programme (LCITP), is to deliver an exemplar low carbon district heating network at the new emerging town of Shawfair by using heat from the Millerhill Energy from Waste plant with the scheme being capable of expansion into the wider Midlothian, East Lothian and Edinburgh area. This major heat network for east central Scotland will utilise low carbon heat sources and provide long term effective heating for the Council, domestic and business customers.

This project will see Midlothian Council take a lead role in facilitating delivery by procuring a Joint Venture partner, securing a thermal purchase agreement and delivering heat to local residents, public building and businesses. Midlothian Council, as part of its role in the project, will protect consumers from excessive costs. Through a thermal purchase agreement with an energy from waste plant, the Council will ensure homes and businesses can continue to depend on a secure, resilient and flexible heating supply. By provision of a low carbon source of heating homes and buildings will also have the potential for improved energy efficiency.

**LCITP – LOW CARBON INNOVATION FUNDING INNOVATION  
PROJECTS OFFERED SUPPORT – MARCH 2019**

**LIST OF STAGE 1 DEVELOPMENT PROJECTS**

Applicant	Project	LCITP support	Summary	LA area
<b>Integrated Energy Systems</b>				
Glenshee Ski and Snowboard	Energy System	£7,000	Develop IGBP for off grid energy system and transport project within Cairngorms National Park	Highland
Brathadair Limited	Pot Ale Treatment Claylands Farm	£30,000	Develop IGBP for energy efficient process to produce heat from whisky co-products	Stirling
Esco Energy Limited	Blackdog Aberdeenshire	£100,000	Develop IGBP for low carbon hub incorporating district heat, solar, storage and transport	Aberdeenshire
Scotland Gas Networks	Campbeltown Anaerobic Digestion	£49,997	Develop IGBP for generation of biomethane to inject into existing independent gas grid	Argyll & Bute
Edinburgh Airport	Energy System	£49,230	Develop IGBP for integrated energy system incorporating heat pumps, solar PV, anaerobic digestion and EV charging	City of Edinburgh
Abbey Ecosse	North Coast Energy Network	£30,000	Develop IGBP for flexible heat and power network for business park using co-products from local distillery	Highland
Scotland Gas Networks	Hydrogen 100	£100,000	Develop IGBP for demonstration domestic hydrogen gas network	Fife, Aberdeen and Argyll & Bute
<b>Low Carbon Heat</b>				
Dundee City Council	Dighty Heat Corridor	£68,250	Develop IGBP for DH network to social housing, utilising waste heat from Energy from waste. Also incorporates Energy Hub at Regional Performance Centre for Sport	Dundee City
<b>Ultra Low Emissions Vehicle Infrastructure</b>				

Applicant	Project	LCITP support	Summary	LA area
Scottish Borders Council	Vehicle Charging Infrastructure	£40,000	Develop IGBP for smart charging, PV generation and battery storage to establish flexible system to support use of ULEV in Council HQ	Scottish Borders
City of Edinburgh Council	Solar and Vehicle Charging: Hermiston, Ingliston	£40,000	Develop IGBP for ground mounted solar PV EV charging at Hermiston and Ingliston Park and Ride facilities	City of Edinburgh
Stirling Council	PSIH - Integrated Vehicle Charging	£82,000	Develop IGBP for Integrated Energy Systems approach which combines EV systems, PV and battery energy storage systems within Innovation Hub.	Stirling
Stirling Council	Peak Integrates Energy System	£38,500	Develop IGBP for Stirling Sports Village using solar canopies	Stirling
Kirkton of Monikie	Hydrogen Supply Company	£32,750	Develop IGBP for medium scale hydrogen electrolyser and solar to produce hydrogen fuel for Dundee's new fleet of fuel cell buses	Angus

**Total LCITP Development Stage Support Offered - £667,727.00**

**LIST OF STAGE 2 CAPITAL PROJECTS**

Applicant	Project	Potential LCITP support	Summary	LA area
<b>Integrated Energy Systems</b>				
Mackie's	Low Carbon Refrigeration	£2,000,000	Low carbon absorption chiller from biomass to achieve efficient refrigeration of -25	Aberdeenshire
Aberdeenshire Council	Low Carbon Housing	£2,000,000	Combination of battery storage and smart technology to overcome grid constraints which are currently preventing the development of large scale solar PV on social housing in Aberdeenshire	Aberdeenshire
<b>Low Carbon Heat</b>				
Midlothian Council	Millerhill Heat Network	£7,300,000	District heat network utilising heat from Millerhill EfW plant for new Shawfair development.	Midlothian
<b>Ultra Low Emissions Vehicles</b>				
Aviva	Low Carbon Travel Perth	£1,500,000	Off grid solution for HQ site including carport solar, battery storage and EV charging	Perth & Kinross

**Total LCITP Capital Stage Support Offered - £12,800,000.00**