Better Energy Communities

Case Study: South Dublin Co. Council

2015 Project Snapshot

LEAD APPLICANT
Retrofit Energy Ireland Ltd, REIL, Paddy Sweeney

PROJECT CO-ORDINATOR
Retrofit Energy Ireland Ltd, REIL, Ken Gallagher

PROJECT
Retrofit of 79 houses and 4 community buildings across South Dublin. The installation of smart meters in 10 households and most of the community facilities as part of the extension of the 'Smart Grid Micro Cluster' project.

FINAL PROJECT COST
€591,148

BEC GRANT
€265,912.20

PROJECTED ENERGY SAVINGS
25%

Background

The 2015 South Dublin County Council (SDCC) Community project built on a series of targeted and innovative sustainable energy initiatives that have been developed in the district in recent years. SDCC have been championing these initiatives in a strategic manner since 2013 with the launch of their first five-year 'Sustainable Energy Action Plan' (SEAP). This committed the Council to act as a platform, supporting community and sectoral programmes of knowledge transfer, training and physical projects designed to promote energy efficiency and reduce energy consumption.

The 2015 SDCC BEC project was linked with one key initiative, the Smart Micro-Grid Cluster, launched in 2013 in conjunction with the Micro-Energy Generation Association (MEGA), Tallaght IT, Enterprise Ireland, Tallaght Hospital and the Square Shopping Centre. The Smart Micro-Grid Cluster, is a pilot project to examine how organisations and households can work together within a target area to adapt their energy usage in response to increasing levels of renewable energy while maintaining stability of the electricity grid. In 2013 smart meters were initially installed in in the Bohernabreena and Old Bawn estates in the Tallaght area along with a Micro-CHP Group Heating System (St Annes GAA, 3 kW Rooftop Solar (Glenasmole National School) and four 6.5KW Battery/ Inverter Units in prosumer dwellings at Glenasmole. The prosumer kit-outs were co-funded by the SEAI and MEGA. A successful application for BEC funding in 2014 managed by South Dublin County Council and facilitated by Retrofit Energy Ireland Limited (REIL) allowed them to pursue phase two of this Smart Micro-Grid Cluster. This involved residential retrofits along with the installation of smart meters in Tallaght swimming pool, two community centres and 23 homes in the Bawnlea Estate.

In 2015, building on lessons learnt and momentum from their 2014 BEC project, South Dublin County Council led the design and implementation of another innovative BEC application, again working with REIL (who acted as Project Coordinators and Lead Applicants). The aim was to evolve the Smart Micro Grid Cluster in a coherent and graduated manner while also completing energy efficiency upgrades within a variety of facilities to create broader impact. Having developed and installed the first Micro Grid stabiliser at County Hall[1], the project was adopted by the International Energy Research Centre (IERC) and re-named Tallaght Smart Grid Test Bed under the Action Plan for Jobs. MEGA were involved as project partners, while beneficiaries included a library, two community centres and 79 households within the South Dublin region.

These homes were targeted following a scoping phase with South Dublin County Council. This aimed to identify residential estates that were known to have a highly inefficient housing stock coupled with fuel poverty. A letter was issued to homes in these target estates explaining the work that could be done and the proof required to demonstrate fuel poverty status and tenure in order to participate. Households who satisfied these

[1] *For further information see link here.*

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participation criteria and expressed interest were then 'pre-surveyed'. This involved a visit from REIL staff to assess their suitability and what improvements could be made. In addition BERs were obtained for a sample of 10% of the residential stock and included in the BEC application. Each of the 79 houses ultimately included were deemed high need with potential for generating high energy savings for a cost-efficient investment. Of these, 55 were 'fuel poor' local authority homes, 20 were non-fuel poor local authority homes, and four were fuel-poor private houses. Most of these homes were in the Whitechurch estate in Rathfarnham with a smaller number in nearby Wilbrook Park and Palmer Park.

Project Overview

A core aim of the 2015 project was to extend the smart meter trial to a broader demographic of households with different socio-economic and tenure profiles than those included previously. This aimed to lead to more detailed and representative results for the Smart Micro Grid Cluster study team. Ultimately 10 households in Whitechurch Estate, Rathfarnham received smart meters. All 79 homes identified for retrofits had an average BER of between G and E1 with poor insulation and heating technologies. The aim was to improve them through thermal and electrical efficiency measures to bring their BERs to C1. Almost all 79 homes received roof insulation, cavity wall insulation and lighting upgrades to CFL bulbs. Half received a high efficiency gas or oil fired boiler with fully

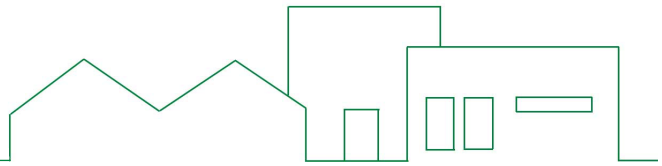
integrated heating controls upgrade and one third received window replacements. The average cost for the deep retrofit of each house was €6,308.

In addition to residential improvements, four community centres were targeted for upgrades. Perrystown Community Centre, which provides educational and recreational activities for the residents of Perrystown Manor Estate, received a number of upgrades. These included cavity wall insulation, new high-efficiency condensing gas boilers, replacement of existing lights with LED high performance fittings and a smart meter. Jobstown Community Centre, which hosts a variety of activities including dance classes, sports activities and senior citizens clubs, was upgraded with cavity wall insulation, new double glazed uPVC units and LED light-bulbs. This work cost €34,000 and is estimated to reduce their annual energy bill by €2,000 with a payback of 15 years. An Cosán, a centre for learning, leadership and enterprise in Tallaght, had a smart meter installed and White Church library in Rathfarnham was also upgraded as outlined in the 'Spotlight' box. The upgrades works started in late June and were all completed by the end of October, with final inspections taking place in December. Aside from the direct benefits of increased comfort and lower energy bills, these buildings which are focal points for the community have the potential to generate wider benefits by influencing broader action and awareness of energy efficiency amongst the community.

Innovation

Smart Micro Grid Cluster

Along with the South Dublin County Council Horizon 2020 Smart City bid, the joint SDCC-MEGA research programme has been setting bolder goals for the Irish approach to Smart Grids. The project has become commonly known as the Tallaght Smart Grid Test Bed and is dedicated to generating and sharing energy within the community using a variety of renewable technologies. The 2015 South Dublin Community BEC project builds on this test bed project and aims to inform how to efficiently enable the broader transition to higher levels of renewable penetration on our national grid. The 2015 BEC project also comprises the second stage of a five year programme to grow this cluster in scale and function to form a hardened, balanced energy-node. In 2015, 'Communication Network strategies' were developed, expanded and tested based on the Bawnlea work carried out in 2014. The meters now transmit real time data to MEGA which is analysed by Tallaght IT and the IERC.



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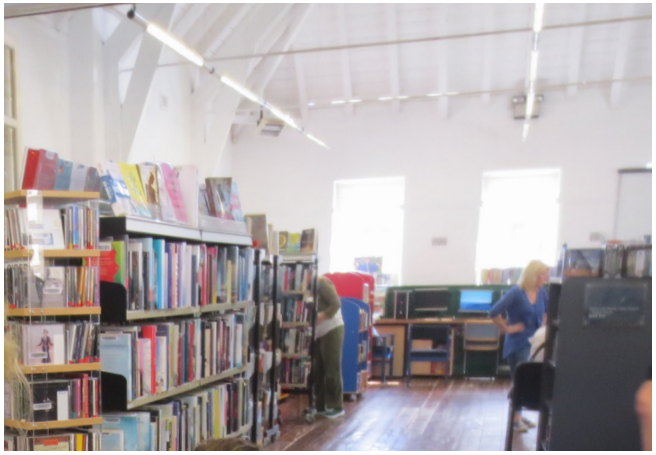
Spotlight on… White Church Library, Rathfarnham

White Church Library in Rathfarnham, Dublin 16 is a detached red brick building, built in 1911 and used daily by the community of Rathfarnham. The library is a hub of the community catering for young and old. It offers services such as books, DVD rentals, and also hosts events, exhibitions and children's activities. South Dublin County Council had identified a need to target energy improvements in the library due to their inefficient heating and lighting technologies and associated high thermal energy and electricity costs. A particular problem was the old storage heaters and direct electric heaters used to heat the building. These were switched to a gas fired central heating system with time and temperature zone control. High-performance LED lights have replaced standard fittings while the building also received a smart meter to link in with the Smart Micro-Grid Cluster. These upgrades have greatly improved the comfort of the library, brightening the space and improving the quality of lighting. The total cost of the works was €23,000. Of this, the BEC grant covered 30% or €6,900 while South Dublin County Council covered the remaining costs. It is estimated that these works will save €4,000 per year from their fuel bills allowing the library to reinvest this money in vital services and library resources for their community.



Where to Next?

While SDCC did not submit a BEC application in 2016 due to a shift in focus to housing, REIL included Killinardan Community Centre and Kilnamanagh Community centre, both in Tallaght and part of the 2015 project, in one of their BEC 2016 applications. SDCC are continuing with their energy drive by enabling the installation of the 50 kW of solar photovoltaic panels on the roof of County Hall which is now the focus of a joint MEGA and Tallaght IT research programme, and further large scale solar energy projects are planned for electric vehicle charging, in conjunction with the emerging South Dublin Alternative Transport Group.

The long term aim for the Smart Grid project is to become a cellular Smart Grid system which is built from clusters of small self-regulating / balancing Smart Energy Cells into a mesh of interlocking and aggregated Smart Grids connecting right across the national grid. SDCC and MEGA are working with SEAI to deliver this in line with official EU Smart Grid policies. Energy associations in Knocklyon and Terenure are also actively developing plans to unify their efforts within the Smart Grid Test Bed Programme.

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Insider's Tips...

Below are some tips and advice from the project leaders for preparing and carrying out a BEC project:

1. If completing upgrades within County Council owned property, ensure that all works comply with their requirements:

County Councils have technical specifications for new energy efficiency technologies such as LED lighting and heating controls that are installed in their housing stock. It is important to ensure that all new technologies implemented as part of any BEC programme comply with these requirements as the Council will have to sign off on mechanical and electrical work and SEAI need to be assured that these criteria are fulfilled. Consider carrying out quality checks on each property, rather than amongst a sample only, as this will help prevent issues with SEAI inspections which can lead to delayed grant payments.

2. Ensure householders and council staff know how to operate their new technical systems:

Householders should be shown how to operate their new heating systems and controls. In this project, the plumber responsible for installing the new equipment demonstrated their use and left instructions. As part of quality checks on each building at the end of the project, REIL also checked that occupants were using equipment appropriately. Council staff must also be instructed in how to operate any new technologies within their stock in case residents contact them with issues in the future.

3. Focus on high-impact energy efficiency upgrades in your application:

Given the application is through a competitive process, it is wise to go for high impact measures where you can demonstrate high kWh savings for a low investment. Include multiple measures for each building and aim for deep retrofits to maximise impact.

4. Consider strategic partnerships with County Councils:

Through Ireland's National Energy Efficiency Action Plan, councils are mandated to reduce their energy consumption by 33% by 2020 and are pursuing their own initiatives, energy efficiency action plans, and local area renewable energy strategies. Consider cultivating a relationship with a local council to maximise impact and the resources available for your BEC project.

5. Ensure you have adequate technical expertise:

Technical expertise and project management is required from application phase through to implementation and evaluation. Experienced agencies can advise on appropriate measures, have existing relationships with quality suppliers and contractors and the in-house expertise to cover all dimensions of a BEC project.

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