



Bishops' Conference of Scotland Care of Creation Office – Property Sub-Group

Promotion of Alternative Sources of Energy for Church Properties



Case Study

St. Ninian's, Dickson Avenue, Dundee, DD2 4DA

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Summary

Advice and funding were given by the Scottish Government's Community and Renewable Energy Scheme ([CARES](#)) for this project. 80% of the capital cost for the new heating system was received as a grant from CARES, with another 10% from other grants, and the remainder an interest-free loan, so a much lower cost than replacing the boilers.

Based on this experience, air-to-air heat pumps can replace gas heating systems in churches and halls at a similar capital and running cost, but with a much lower environmental impact and better warranties. With the addition of solar PV, the running costs should be much lower.

Introduction

The Parish Pastoral Council (PPC) of St. Ninian's Church approached CARES in November 2019, following the call from the late Pope Francis in his Encyclical Letter ***Laudato Si'*** –

“There is an urgent need to develop policies so that, in the next few years, the emission of carbon dioxide and other highly polluting gases can be drastically reduced, for example, replacing fossil fuels and developing sources of renewable energy...Investments have also been made...in methods of construction and renovating buildings which improve their energy efficiency” (LS 26)

The church can seat up to 175 people, and the hall has capacity for seating 65 people. This Case Study charts the process which ultimately resulted in the fitting of four air source pumps, installation of roof, underfloor and wall insulation, LED lighting and, most recently, solar panels and battery back units.

Any quotes received covered ALL aspects of the material being fitted, especially as the heating also had electrical costs in connecting to the mains supply. Consideration was also given to using reputable manufacturers (e.g. Mitsubishi Electric, Midea, Daikin, Toshiba), as well as the maintenance costs and contracts for the life of the systems, with the offers of at least 7-year warranties advised. The support from CARES has been excellent, including 80% grant funding.

As of April 2026, St. Ninian's, Dundee is now completely powered by renewable energy sources, not only resulting in significant savings in energy costs, but soon to generate income by exporting unused electricity back to the National Grid.

Jim Hampton, Chairman of PPC of St. Ninian's, Dundee

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Timelines

The initial enquiry was in November 2019, but discussions with CARES about replacing gas-powered boilers with air source pumps took place on 7th September 2021 and a surveyor was appointed to conduct an energy survey, dated 24th November 2021, stating current energy consumption as well as the savings that could be achieved using 'green' energy. St. Ninian's Parish was advised by Local Energy that we required 79kW of heating pumps for the church and a 15kW pump for the hall.

We approached 3 contractors and received 2 quotations and, after a meeting of the PPC and discussion with CARES, a contractor was agreed. A programme of electrical and insulation work was put in place, and there was little disruption as contractors stopped work during weekday Mass times and all scaffold towers were stowed away at the rear of the church at weekends. Work lasted from 1st October 2022 to 10th February 2023.

For the solar panels and batteries, application was submitted to CARES on 17th October 2025, accepted for grant purposes on 23rd January 2026, and installation completed 3rd April 2026.

Heating

The installation of the heating took 14 days. Outside, there are three units mounted on a wall and one on a flat roof. Inside the church there are six indoor units on the ceiling, and one wall unit in the hall. The automatic controls, which can be accessed via the internet, work well with minimal input and are easy to use if changes are required. Currently, the heating in both the church and hall runs at 16°C all the time, changing to 21°C for 2 hours before Masses in the church and to 20°C 2 hours before the hall is used. Both the church and hall are warmer now than with the previous radiators, and we are considering reducing the energy used by just dehumidifying the church and hall between uses. Concern was raised about possible noise from the indoor heating units, however there is minimal noise when all six units are on, ensuring no disruption.

Filters are cleaned every 250 hours, i.e. typically every two weeks. Depending on the height of the filter, we either use a small scaffold tower or ladders, and cleaning is very easy, taking less than 5 minutes per filter. We have the facility to use 'Active Clean' that shuts the unit down for 30 minutes to allow inside the unit to be cleaned, preventing the build-up of bacteria. If we find that it is sufficient to only use the heating for just an hour before the building is used, then the frequency of filter cleaning may only be every six months; where the indoor units are mounted high away from dust, simply cleaning as part of the annual service may be sufficient. Some air-to-air heat pumps now monitor when the filters need to be cleaned.

Once, every 12 months, the contractor carries out a maintenance check on all of the air source pumps. We have only had to re-gas one of the air pumps as it was not defrosting as quickly as it should – other than that, there have been no issues with the system in nearly four years since installation. The heating capital costs were not the lowest quote received, but it was a local company with a good reputation for completing on time to a good standard.



Outside



Inside unit beside lighting

Insulation

The walls and floor of the church were insulated, and an insulated ceiling was installed which improved the church's appearance. Without this insulation, it may have been necessary to install larger and/or more heat pumps.

The installation of roof insulation and new ceiling took 14 days. The installation of wall insulation took 5 days, and the installation of underfloor insulation took 2 days. This insulation has ensured that heating costs have been reduced.



Void Filling in Ceiling – Before



Void Filling in Ceiling - After



Exterior Wall Insulation

LED Lighting

Whilst the major work was being completed, LED lighting was installed, six large display lighting systems in total.



Solar Panels and Batteries

In April 2026, solar panels (PV) and lithium batteries were installed. If we were looking at batteries now, we would explore sodium batteries that are now available, because of their lower fire risk and lower environmental impact from manufacturing; however, the lithium batteries have built-in fire suppression. There are 105 solar panels fitted onto the church's flat roof.



Solar Panels on Roof



Battery Backup Units & Inverters

Costs and Funding Received

The total project costs were as follows:

Installation of heating to church and hall	£62,760.00
Installation of wall insulation	£11,098.20
Installation of ceiling and roof insulation	£25,905.60
Installation of underfloor insulation	£8,809.20
High-quality LED lighting in church and hall	£14,520.00
PV Solar Panels (46.2kW peak)	£25,500.00
Batteries (50kWh)	£39,500.00
TOTAL	£ 188,093.00

Funding Received

Grants from CARES, covering 80% of costs (including VAT) for heat pumps, insulation and LED lighting PLUS 100% for solar panels and batteries	£140,578.00
Local Energy Grant	£14,998.00
SME Loan, payable over 8 years interest free at £338.72 per month, as parish did not have the finance to pay the balance	£32,517.00
TOTAL	£188,093.00

Reference:

Local Energy Scotland manages the Scottish Government's Community and Renewable Energy Scheme (CARES), giving advice and funding about local renewable energy.

<https://localenergy.scot>