

SuperHomes Ireland

Giving homeowners the opportunity to access finance and retrofit their house into a Near Zero Energy Building (NZEB)



A Covenant of Mayors 2016 Case Study

In a nutshell

Tipperary Energy Agency has recently developed the SuperHomes pilot project, with the aim of providing technical assistance to local citizens retrofitting their house into an “A” energy rating standard.

Background

Buildings account for 40% of total energy consumption and 36% of CO₂ emissions in the EU. Meeting the EU's 20% energy efficiency target for 2020 and 27% target for 2030 requires raising the current level of investment in this sector through innovative methods that can secure affordable and clean energy with a return of investment.

The Tipperary Energy Agency (TEA), Ireland, committed to the Covenant of Mayors since April 2015, has developed SuperHomes, a one stop shop pilot project that provides technical assistance, as well as facilitates access to finance and lower interest loans, to local citizens for the development of Near Zero Energy Buildings (NZEB), through deep retrofits for their domestic buildings. The homeowner is accompanied through the entire journey by TEA, from the initial energy and financial audit through to the final development of the retrofitting. The energy agency is associated to Tipperary County Council, a signatory municipality of the Covenant of Mayors since 2015.

The SuperHomes project

For the second year running, SuperHomes Ireland, funded by the Sustainable Energy Authority of Ireland (SEAI), provided homeowners with the opportunity to retrofit their house to an ‘A’ energy rating standard.

The pilot project is an exemplary method for reducing building energy consumption by providing a technological and financial means for homes to undergo a deep energy renovation. The NZEB retrofit seeks to reduce energy use by using available technologies that have a payback period of 7-15 years. SuperHomes also aims to remove fossil fuels from the domestic sector and increase the utilisation of the cheapest forms of large renewable energy systems (i.e. Wind and increasingly Solar PV). The main methodology for the utilisation of these forms of renewables is through heat pumps. While heat pumps are not strictly defined as wholly renewable energy, their CO₂ per kWh of net heat production in an Irish context is significantly low in carbon, and as the grid further decarbonises over the next 25 years should lead to a near zero carbon energy system by 2040/2050.

There are many new developments in terms of methods, organisational delivery structures and technologies that made 2015 and 2016 the time to try to achieve NZEB as a specific target.

A SuperHome is an energy efficient home that has implemented all the cost effective and sensible energy measures for the development of a NZEB. TEA completed a deep energy retrofit pilot project with better finance in 2015 and 2016, whereby 10 houses were retrofitted in 2015 and 22 in 2016. TEA hopes to inform policy makers of the drivers behind people taking up the agency's retrofit measures.



A nearly zero-energy building is defined in Article 2 of the Energy Performance of Buildings Directive recast as: *“a building that has a very high energy performance. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby”*.

Specifically, the SuperHomes, NZEB retrofit project aims to:

1. Provide up to 35% financial support.
 - Offer a Home Renovation Incentive available depending on individual circumstances.
 - Spread the remaining cost of the retrofit over 5 years with a loan.
2. Bring your home to an A3 or as near as is economically possible.
3. Provide a mechanism to support home-owners to decide on the correct course of action for them and ensure value for money.
4. Implement all cost effective retrofit measures in one package.
5. Provide a warm house, with healthy interior air (through excellent ventilation).
6. Reduce colds, flues and respiratory illnesses.
7. Provide a green, low carbon home that will be substantially cheaper to heat (aiming for 50% to 70% reduction of energy bills).

Project numbers

32 homes retrofitted between 2015-2016

€1,000-1,500 average saving per annum on oil

€18,000 average net investment in the pilot project

50-70 % energy bills reduction objective

The measures implemented in the project are described in the table below. TEA emphasizes the need to be cognisant of varying types of buildings and various standards of retrofit and provides a dwelling/ customer led flexible package, however a minimum criteria and target standards are required.

Measures	Mandatory Measure	Target Level	Minimum Standard
Air permeability reduction	Yes	Q50 of 3	Q50 of 5
Wall insulation	No	0.27	0.4
Roof insulation	No	0.16	0.2
Heating controls	yes	Multi zone c/w remote access	2 zones incl. Temp
Flat roof insulation	No	0.16	0.3
Primary heating system	Yes	Inverter based heat pump as a standard. Provision could be made in exceptional circumstances for a wood based system. (e.g. pellet / log boiler)	
Ventilation	Yes	Mechanical Heat recovery, either decentralised or central.	Demand Control Ventilation
Solar system	yes	Solar PV	Solar Thermal
Domestic hot water storage	No	To 2008 regulations + load shift (night meter)	2008 regulation tank
Windows	No	1.4 U Value	2.7 U Value
Energy display	Yes	Advanced energy meter	Display Energy Meter

The pilot project required a minimum expenditure by homeowners after discount, of €12,500-€30,000 for energy upgrades. SEAI and DCENR have progressed pay-as-you-save-type of offerings with the existing and potentially new credit facilities (EE fund). The pilot project allowed for the testing of methodologies assessing potential financing options that could become available to the applicants in the form of traditional finance or through new financing mechanisms. The pilot project also aimed to have a clear and listed description of available financial products as well as developing local knowledge of these products in local financial branches.

Measure	Typical cost (€)	Range (€)	Price drivers
Heat pump package including controls, disposal of oil boiler, pressurisation	8000	6500-9500	Sizing, civil works, control wiring and pipe modification, condition of existing system
Low temperature radiator	300	200-400	Output
Large heat pump cylinder	800	600-1800	Manufacturers integral cylinders with controls can be more expensive (lower loss, higher performance)
Heat Recovery Ventilation	€6000	4500-7500	Duct routing, no. of rooms etc.
Demand Control Ventilation	€2500	€2000-€3500	No. of extract fans (rooms duct routing between), No. of inlets
Airtightness to 5 AC/h @50pa	€1800	€1,500-€3,500	Window servicing, number of windows, openings to be sealed. Timber frame, dry lining/ dormer.
External wall insulation	€100/m2	€90-€115	Scaffolding, access, window size, fixtures
Attic insulation	€6/m2		Depth, access, materials
Cavity wall insulation	€8/m2	€7-€9/ m	
Stove c/w Chimney liner	€1,800	1500-2500	Choice of stove, access/ ease of lining, height.
PV	€2100/kW	+/-200/kW	Access, panel & inverter quality, overall size, immersion dump, micro Vs single inverter.
Doors (U value 1.1 W/M2 or better)	€1800	1500-3500	No. of panes/ doors/ fanlights etc.
Windows	€400/m2	€300-€500	Frame size, making good requirements, frame aesthetics and type.

For more information on the project, please contact:

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