



Llywodraeth Cymru  
Welsh Government

REPORT

# Optimised RetroFit Programme 2.2: funded projects

Projects funded by the scheme for upgrades to the energy efficiency of homes.

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## Optimised RetroFit Programme funded projects

	Organisation	Local Authority Project Location	Project Description	Number of Homes	Grant £
Registered Social Landlord (RSL)	Barcud	Powys	Improve thermal performance and reduce carbon emissions – thus addressing both affordable warmth and decarbonisation.	7	66,340
RSL	Barcud	Powys	Retrofitting External Wall Insulation;  replacing poor window units with new double glazed high performance units;  replacing old storage heaters with new controllable high heat retention and panel units;  installing solar PVs to benefit each property; providing intelligent hot water cylinders which are heated in the first instance by the solar PV panels Installing	23	543,000

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			new, substantial, insulation within the roof space;		
			Replacing the roof tiles to enable the integrated solar PV installation		
Local Authority (LA)	Carmarthenshire	Carmarthenshire	Improve the thermal qualities of the building and flats are heated by mains gas. Building on the research previously done by WG and the WSA, combined with a major RMI program and explore the possibility of community/ combined low carbon heating sources.	32	616,289
LA	Carmarthenshire	Carmarthenshire	Supported living project that will provide low carbon, low cost housing for vulnerable people that share or live independently.	8	264,000
LA	Carmarthenshire	Carmarthenshire	E Grade Boiler upgrades to Hybrid Systems	50	685,000
RSL	Clwyd Alyn	Flintshire,	ClwydAlyn currently	152	198,400

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Denbighshire,  
Conwy,  
Wrexham, Ynys  
Mon,

has a small proportion of homes with an EPC rating of E,F,G. These homes are not energy efficient, causing our residents to pay more for fuel to keep their homes warm and comfortable. We would like to install IES systems into these homes and carry out measures to ensure the fabric first approach is carried out.

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LA	Denbighshire	Denbighshire	Energy measures to our off grid, hard to treat sheltered housing, works would follow a fabric first approach; EWI uplift to our already proposed RMI 16mm dash render works, new roof and roofline, Solar thermal (priority hot water and if enough capacity; space heating using the existing radiators, heat pump ready) and PV/ battery to offset higher electricity costs. We'd like to pilot this scheme to see how	10	222,821
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			efficient today's solar thermal cylinders perform.		
LA	Denbighshire	Denbighshire	Works to offer the residents in a village a district heating system, village is a manageable size to pilot a scheme as the houses cluster, are hard to heat as fabric works are a challenge due to the traditional Welsh vernacular. Houses in this village have poor E/F/G EPC ratings	40	671,000
LA	Denbighshire	Denbighshire	New roofs and roof line, PV and battery, EWI uplift where we would normally 16mm dash render and insulate the suspended timber floors (where practical)  + Whole house assessments and passports. These properties already have IES sensors monitoring the building physics as they	17	343,796

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currently perform.

We will offer residents the 'City and Guilds' energy awareness course, upskill our DLO's and local subcontractors in PV and battery installation.

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LA	Flintshire	Flintshire	Affordable Green homes, the scheme will deliver a comprehensive fabric first retrofit. After establishing the existing baseline through IES data testing, based on current usage and performance, a series of bespoke and innovative measures will be implemented and monitored based on stock typology.	196 2,984,922
RSL	Linc Cymru, Bron Afon, Cadwyn, Melin, United Welsh	South East Wales	Climate Collective Climate collective - The scheme is a collaboration of RSLs and 11 external partners that are sharing learning, skills	344 4,267,220

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and resources to collectively drive optimised retrofit action across 4 linked themes:

- Retrofit Investment in Homes in Key Communities – Improvements to 344 homes. This investment includes innovation using timber and hydrogen.
- Supply Chain Development – Enable micro-SMEs in South Wales to prosper under a PAS umbrella
- Jobs, Training and Skills – Developing pathways in partnership with qualification providers to create careers in decarbonisation
- Engaging Communities and Building Trust – Empower tenants

			to lead 'peer to peer' conversations through sharing tenant lived experience and carbon literacy training.		
RSL	Taff	Cardiff	Putting Tenants at the Heart of decarb	20	50,000
LA	Wrexham	Wrexham	The scheme is to retrofit 2 sheltered housing schemes with renewable technology to improve the energy efficiency of the properties.	43	408,114
LA	Wrexham	Wrexham	Retrofit Pilot scheme, refurbishment and retrofit of 12 empty properties across the Borough. Works to exceed the current version of WHQS, each property will be installed with Intelligent Energy Systems to allow evaluation and monitoring to ensure optimum benefits and impacts are realised for use in future work	12	440,100



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programmes.

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RSL	Aelwyd	Rhondda Cynon Taff	Installation of solar PV with battery storage, IES Monitoring and upgraded replacement window	8	37,242
RSL	Aelwyd	Rhondda Cynon Taff	Installation of solar PV with battery storage, IES Monitoring and upgraded replacement window	15	77,292
RSL	Bro Myrrdin	Carmarthenshire	The scheme is made up of 33 properties with a mixture of houses and bungalows predominantly heated by electricity. The majority of properties selected are termed as 'off grid' regarding mains gas and are of a traditional construction type. The property ages ranges from 120 to 30 years and are in a well maintained condition	33	405,000
RSL	Caredig	Carmarthenshire, Swansea	PV with Battery	30	299,550

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RSL	CCHA	Cardiff	The scheme is based on the commencement of decarbonising 29 homes in Cardiff by installing External Wall Insulation, triple glazed windows, new external doors, new roofs, PV and battery storage (including IES), electrical upgrades and loft insulation.	29	902,500
RSL	Clwyd Alyn	Wrexham	install IES' in each home and communal area to capture live data on low performing homes and resolve cold bridging and heat loss into communal areas	59 flats and 18 houses	222,150
RSL	Coastal	Swansea , Neath	Embodied & Construction Carbon Assessment. To undertake assessment for either EWI or IWI and provide retrofit in accordance with PAS2035	16	229,000
RSL	Coastal	Swansea , Neath	PV & Electric Heating Upgrades	40	238,000
RSL	First Choice	Across Wales'	Generate Energy -	60	414,736

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		Local Authorities	Affordable Warmth, fit PV array and battery storage solutions to 60 social homes throughout Wales. They currently accommodate adults with a disability. The scheme will target a number of agendas including fuel poverty, tenant well being and affordability.		
RSL	Hafod	Merthyr Tydfil	59 flats with large communal areas. They have a communal kitchen and laundry flats. The scheme was built in 2012. Looking to install PV and batteries into the communal supply that feeds the flats and communal area	59	100,000
RSL	Linc	Newport	A path to universal basic heat! heating improvement measures and, where necessary, fabric improvement measures which will enable the occupier to maintain a minimum heat setting of 18	119	540,000

degrees, thus leading to improved health benefits and enabling residents to be free of fuel poverty. The project supports foundation economy principles through specification of Welsh products and involvement of SME's where hyper local procurement and upskilling are undertaken

RSL	Merthyr Valley Ho	Merthyr Tydfil	Low Carbon EWI	80	339,000
RSL	Newydd	Rhondda Cynon Taff and Vale of Glamorgan	Low embodied carbon loft insulation	80	20,000
RSL	Newydd	Rhondda Cynon Taff & Vale of Glamorgan	Solar PV with battery backup and IES install, working with a local Welsh manufacturer to install integrated Solar PV with Battery backup across our worst performing stock	40	454,775
RSL	North Wales Housing	Across North Wales	Cavity wall insulation (polybead) to fifty properties Internal wall	131	373,363

			insulation to eighty properties External wall insulation to one large historic stone detached bungalow housing a number of residents with high physical and learning difficulty needs (aerogel)		
LA	Pembrokeshire	Pembrokeshire	Installation of PV, battery storage mechanical ventilation with heat recovery to a selection of properties.	50	298,000
LA	Pembrokeshire	Pembrokeshire	Study and installation of high performance composite (aluminium clad timber frame) triple glazed windows. Encompassing Construction and Embodied carbon and the impact on Operational Carbon savings compared with the previously proposed replacement standard uPVC double glazing in a complex of 23 low rise sheltered housing flats	23	69,500
RSL	Pobl	Swansea	Installing rooftop PV	557	808,207

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and in-home batteries, financial benefit of onsite renewable generation will be shared across the community so those with unsuitable roofs for PV installation are not disadvantaged. Heating controls integrated to the existing homes' systems and the Building Energy Engine will be installed as part of this project

RSL	Pobl	Across South Wales	Vulnerable Households Energy Intervention Project - Working in partnership with Warm Wales, Pobl will provide a series of holistic interventions including loft insulation top ups to 300mm with loft storage, LED lighting, and the provision of tailored energy saving information, advice, signposting and support for each household to achieve income maximisation/ financial resilience, improved home energy	250	87,500
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efficiency, lower fuel costs, reduced carbon emissions and improved health and wellbeing

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RSL	Pobl	Newport	A pilot to explore ways that homes in Newport can be retrofitted with heating improvement measures and, where necessary, fabric improvement measures which will enable the occupier to maintain a minimum heat setting of 18 degrees, thus leading to improved health benefits and enabling residents to be free of fuel poverty. The project supports foundation economy principles through specification of Welsh products and involvement of SME's where hyper local procurement and upskilling are undertaken. The outcome will help shape all parties' educational journey on how correct usage of heat models can	150	450,000
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ensure efficient and effective heating within the home

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RSL	Pobl	Carmarthenshire	1970's - 2 and 3 storey apartment blocks. Fabric first approach, installing EWI and warm roof. 12 remaining Economy 7 electric storage heating replaced with air source heat pumps. New heating systems to be compared with gas heated homes to evaluate whether ASHP's deliver affordable heating. Existing gas heating will be replaced at the end of economic life (approximately 10 years) with a low carbon alternative, thus following the creation & use of property passports. The flat roof of the blocks will have PV array & battery storage to generate electricity for communal areas. Communal EV charging to be installed.	32	4,939,699
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RSL	RHA	Rhondda Cynon Taff	Installation of 3.3kw Solar PV and 5.2kw. All are the same 3 bed house with a south east facing roof.  Welsh manufactured solar PV	14	124,839
RSL	Taff	Cardiff	Installation of solar panels with battery back up	10	100,000
RSL	Taff	Cardiff	Researching via the IES system to ensure the suitability of the properties for either EWI or IWI	4	25,000
RSL	Tai Calon	Blaenau Gwent	use of non-fossil fuel EWI	92	1,462,762
RSL	Tai Tarian	Neath Port Talbot	Fabric insulation & ventilation - Undertake fabric improvement works utilising different materials and systems on different architypes to determine the best low carbon material selection whilst improving the thermal performance of each	150	1,070,000

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			property	
RSL	Tai Tarian	Neath Port Talbot	Undertake pathfinder retrofit to void properties to include the provision of EWI + IWI, floor insulation, new heating, the installation of PV and battery along with a ventilation strategy to compliment the improvement works.	45 1,030,000
RSL	Tai Tarian	Neath Port Talbot	Tenant Energy Optimisation Programme and R&D woodfibre and laser scanning	288,485
RSL	United Welsh	Cardiff	Scheme comprises three blocks of single-storey flats of early 1980's construction. Particularly prone to condensation damp and mould reflected in high repairs demand for these problems. Aim is to deliver affordable warmth and thereby improve the quality of the internal environment within each dwelling installation of MVHR	25 198,165

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systems and PV generation. The compact and contained nature of the site lends itself to “socialised” energy generation and we want to explore this and we particularly want to test how solar PV can be successfully delivered on flatted blocks.

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RSL	United Welsh	Caerphilly	Scheme comprises a relatively contained community of pre WW1 terraced former miners’ cottages of solid wall construction. Particularly prone to condensation damp and mould reflected in high repairs demand for these problems. Aim is to improve the internal environment within each dwelling by making heat more affordable through improvements to external fabric and deliver energy generation. The compact and contained nature of the site lends itself to	64	970,983
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“socialised” energy generation and we want to explore this.

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RSL	Valleys 2 Coast	Bridgend	There are 3 elements to this scheme;  <ol style="list-style-type: none"><li>1. 25KwH battery to 5 sheltered schemes, fed from solar PV, low energy lighting upgrades. This will improve the energy efficiency of the scheme with a positive impact on 128 households energy costs.</li><li>2. 12KwH battery to 15 homes with solar PV and ASHP’s currently in place, with improvements to hot water storage, reducing energy consumption and costs.</li><li>3. 9KwH battery to 20 homes with solar arrays, reducing energy consumption and costs</li></ol>	163	489,300
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RSL	Valleys 2 Coast	Bridgend	<p>The scheme will provide significant fabric upgrades at the most beneficial time – when properties are void and require a range of replacement and repair works. This approach will:</p> <ul style="list-style-type: none"> <li>• Follow the Optimised Retrofit approach, improving energy efficiency of homes when most appropriate – identifying measures and installing them with no disruption to householders,</li> <li>• Measures will be guided by Pathfinder Surveys and will concentrate on reducing energy loads of properties,</li> <li>• New occupants will be extensively engaged with before they take up tenancy and after they move</li> </ul>	30	441,000
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into their home, maximising the impact of the energy efficiency measures in place.

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RSL	Wales & West	Ceredigion	This scheme comprises of 23 properties which are currently rely on solid fuel to provide heating and hot water. The build dates of the properties range between pre-1900's to post 1990. Our proposal is to replace the solid fuel appliances with a low carbon air source heat pump system. In addition, the schemes will also have PV & Battery Storage systems installed to further reduce energy usage and help reduce energy bills for the residents.	23	374,200
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RSL	Wales & West	Cardiff / Ceredigion	The project is in two parts	48	103,600
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1. The proposal comprises of two schemes of 24, a flat block and a scheme of houses. The proposal is to provide a 2.2kW PV system to each individual flat to ensure an equitable proportion of solar generation to benefit all residents.
  2. The second scheme is currently in the ORP 2.1 bid for trialling hybrid systems, a combination of ASHP's with the existing oil system. PV & Battery Storage will be installed to further support the residents for additional electricity costs that may be incurred by the hybrid systems.

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RSL	Wales & West	Carmarthenshire	The project is in two parts	25	472,706
			<ol style="list-style-type: none"><li>1. properties have started their decarbonisation journey with a heating upgrade to a Ground Source Shared Loop system. EWI, windows &amp; PV/ Battery storage will continue this journey and significantly reduce energy use and running costs.</li><li>2. scheme consist of 30 flats which sit in an exposed &amp; coastal location. It is proposed to upgrade the fabric by replacing windows and External Wall Insulation. These measures reduce energy usage and costs and improve the comfort of the residents.</li></ol>		

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