



Department for  
Business, Energy  
& Industrial Strategy



# Public Sector Decarbonisation Scheme

Phase 2 Summary report



January 2022

## Public Sector Decarbonisation Scheme

### Phase 2 Summary Report

This report provides an overview of applications received and grants awarded through Phase 2 of the Public Sector Decarbonisation Scheme.

A list of all projects funded in Phase 2 of the Public Sector Decarbonisation Scheme, and short summaries of these, can be found on the [Public Sector Decarbonisation Scheme gov.uk page](#).

#### **Title image: Gloucestershire College**

Gloucestershire College has been awarded £2,845,921 to replace gas boilers with ground source heat pumps at the college's Cheltenham and Gloucester campuses. Solar panels and building energy management system upgrades will also be installed. This will help the college to achieve their target of net zero carbon emissions by 2040.

*Image by: Gloucestershire College*



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## Executive Summary

Phase 2 of the Public Sector Decarbonisation Scheme builds on the £1 billion investment provided by Phase 1 and continues to support public sector bodies to transition to low carbon heat and energy efficiency measures in their buildings. Phase 2 has a stronger focus on heat decarbonisation than Phase 1 in line with the need to reduce direct emissions from public sector buildings to meet the UK's net zero goals. Applicants were required to look at the overall energy usage and combine energy efficiency measures with the most appropriate low carbon heating measures, thereby encouraging them to consider the whole building in their decarbonisation measures.

Phase 2 is providing £75 million in grants during the financial year 2021/22 to public sector bodies to install low carbon heating measures that reduce direct carbon emissions from their buildings.

Overall, 245 applications were submitted with a combined value of £272.7 million. 54 projects were awarded funding through the scheme, to be delivered by 49 public sector organisations.

Monitoring and evaluation of Phase 2 is being undertaken to check progress against planned milestones, to understand how well the scheme is delivering on its objectives, and to analyse how the scheme has performed against its intended impacts. The evaluation will also provide clarity as to how the scheme can evolve to continue supporting decarbonisation of the public sector and enhance its ability to support our wider net zero goal.

# 1. Background

The Public Sector Decarbonisation Scheme provides grants for public sector bodies to fund heat decarbonisation and energy efficiency measures.

Phase 2 of the Public Sector Decarbonisation Scheme is providing £75 million in grants over the financial year 2021/22. The scheme is managed by the Department for Business, Energy and Industrial Strategy (BEIS) and is delivered by the BEIS non-departmental public body, Salix Finance Ltd ('Salix').

Phase 2 of the Public Sector Decarbonisation Scheme follows Phase 1 of the scheme, which is providing £1 billion in grants over the financial years 2020/21 and 2021/22. Phase 3 of the scheme launched in October 2021 and will provide funding over the financial years 2022/23 to 2024/25. This report covers Phase 2 only. A summary report for Phase 1 is available on the [Phase 1 Public Sector Decarbonisation Scheme gov.uk page](#).

## 1.1 Policy Drivers

The Public Sector Decarbonisation Scheme aligns with the UK's ambitious goal to become net zero by 2050 and the Net Zero Strategy goal to reduce direct emissions from public sector buildings by at least 50 percent by 2032, and by 75 percent by 2037, compared to a 2017 baseline. The scheme will reduce carbon emissions from the public sector, contributing to meeting Carbon Budgets 4 and 5. Funding for Phase 2 of the Public Sector Decarbonisation Scheme in 2021/22 was confirmed through the Spending Review 2020 settlement.

## 1.2 Scheme Objectives

The objectives of Phase 2 of the Public Sector Decarbonisation Scheme are to:

- Support the transition to low carbon heating in public sector buildings;
- Reduce carbon emissions from the public sector by up to 0.02 MtCO<sub>2</sub>e/year and up to 0.1 MtCO<sub>2</sub>e over each of Carbon Budgets 4 and 5.

## 1.3 Eligibility

Phase 2 was open to public sector bodies in England, including central government departments and their non-departmental public bodies, the NHS, schools (including maintained schools and academies), emergency services, further and higher education and local authorities. Central government departments operating in areas of reserved policy (i.e., not devolved to Scottish or Welsh Governments or the Northern Ireland Executive) were also eligible to apply for funding for estates located anywhere within the UK.

To support the increased focus on heat decarbonisation, applicants were required to focus on replacing end-of-life fossil fuel heating systems with low carbon heating systems such as heat pumps and connections to low carbon heat networks. All applicants were required to include at least one measure to decarbonise part or all of the heating within a building with a low carbon heating system. Applicants were also required to take a whole building approach to decarbonising their buildings, looking at the overall energy usage and combining energy efficiency measures with the most appropriate low carbon heating measures.

Eligible measures could fall into three categories. It was compulsory to include a low carbon heating measure that reduces direct carbon emissions, such as heat pumps, electric heating or district heating. Other measures that reduce direct carbon emissions could be included such as solar thermal, building fabric upgrades and piping insulation. Finally, measures that reduce indirect carbon emissions such as solar panels and LED lighting could also be included.

Funding was provided for the marginal costs of installing a low carbon heating system (i.e., the additional costs on top of the business-as-usual costs of replacing the existing fossil fuel heating system on a like-for-like basis). To ensure fair access to funding, applications could not exceed £5 million.

### **Cranfield University, Bedfordshire**

Cranfield University has been awarded £4,993,701 to deliver a wide range of improvements centred on the district heating system on the university's campus.

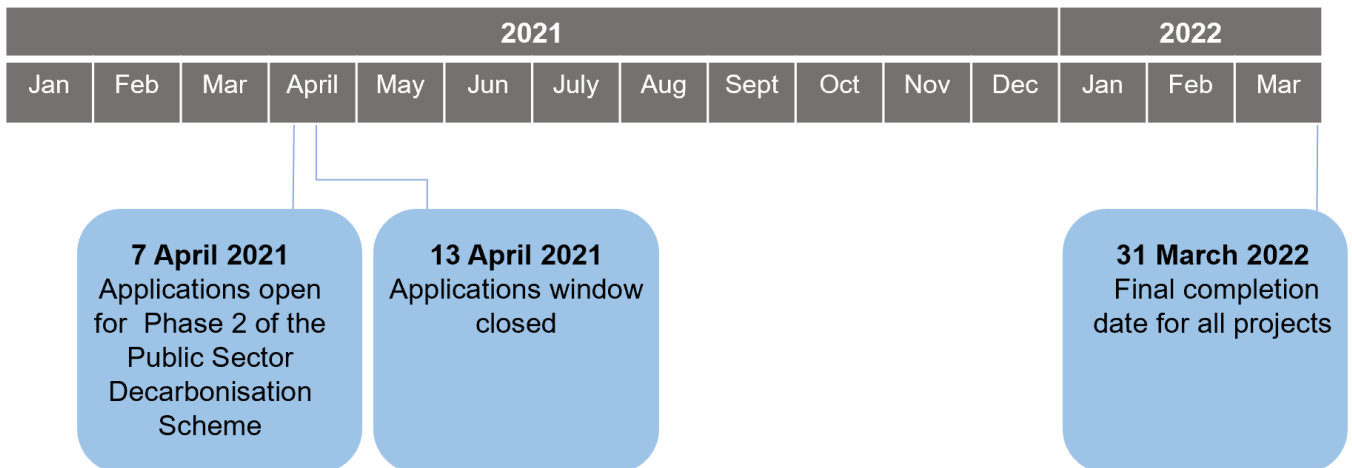
Measures include upgrades to the building management system and the installation of an air source heat pump. LED lighting upgrades will also be installed, and the solar farm will be extended to help balance the electrical system as reliance on the existing gas fired combined heat and power is reduced.

*Image by: Cranfield University*



## 1.4 Timeline

Phase 2 of the scheme opened for applications on 7 April 2021 and closed on 13 April 2021, as the value of applications significantly exceeded the available funding by that date. The scheme runs until 31 March 2022, when all projects must be completed.



## 1.5 Budget

Phase 2 of the Public Sector Decarbonisation Scheme is providing £75 million in grants over the 2021/22 financial year. A maximum grant value of £5 million per application was set in order to ensure a good number of organisations could benefit from the funding (rather than the funding being awarded to a small number of very large grants), although applicants were permitted to submit multiple applications. No minimum grant value was specified.

Funding is provided to grant recipients using Section 98 of the Natural Environment and Rural Communities Act 2006 and is paid by Salix to grant recipients in arrears.

## 1.6 Monitoring and Evaluation

Monitoring of Phase 2 of the Public Sector Decarbonisation Scheme is being undertaken to check progress against planned milestones. Monitoring data will also provide additional evidence for the scheme evaluation.

## 2. Applications to the scheme

Applications were assessed against the eligibility criteria set out in the scheme guidance. Applications that met the eligibility criteria (summarised in Section 1.3) were assessed in the order in which they were received. When the application window closed, the scheme had received a total of 245 applications, with an overall value of £272.7 million.

### 2.1 Applications by value

There was no minimum value for applications, which ranged in value from £42,596 to the maximum application value of £5 million. 67 percent of applications were for less than £1 million, while only 6 percent of applications were for £4 million or more. The median value of all applications was £555,215 and the average (mean) application value was £1,113,105.

Figure 1 below shows the number of applications by value band and Figure 2 shows the total value of all applications by value band.

#### **Keele University**

Keele University has been awarded £127,716 to replace end-of-life natural gas boilers in the Walter Moberley building with a connection to the Horwood district heating system. This will also provide heating to the chapel.

*Image by: Keele University*





Figure 1: Number of applications by value band

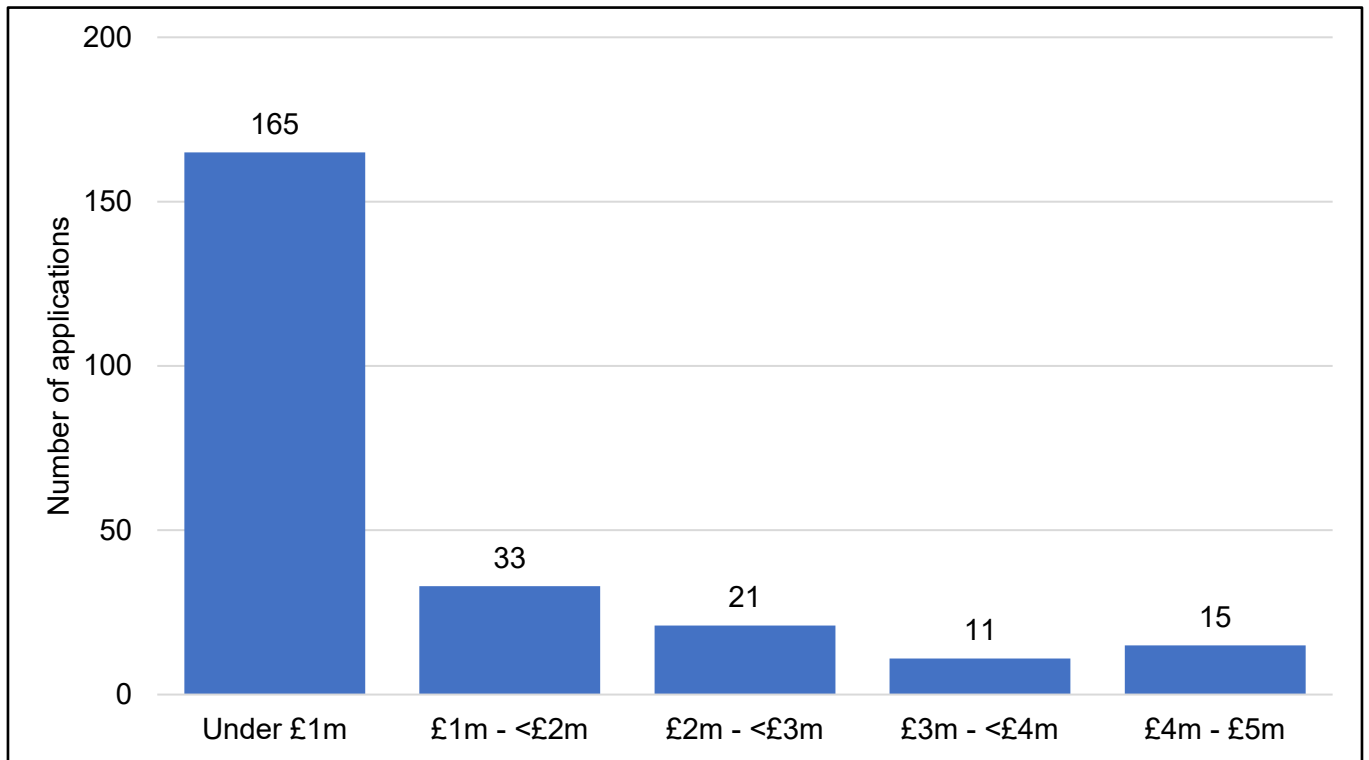
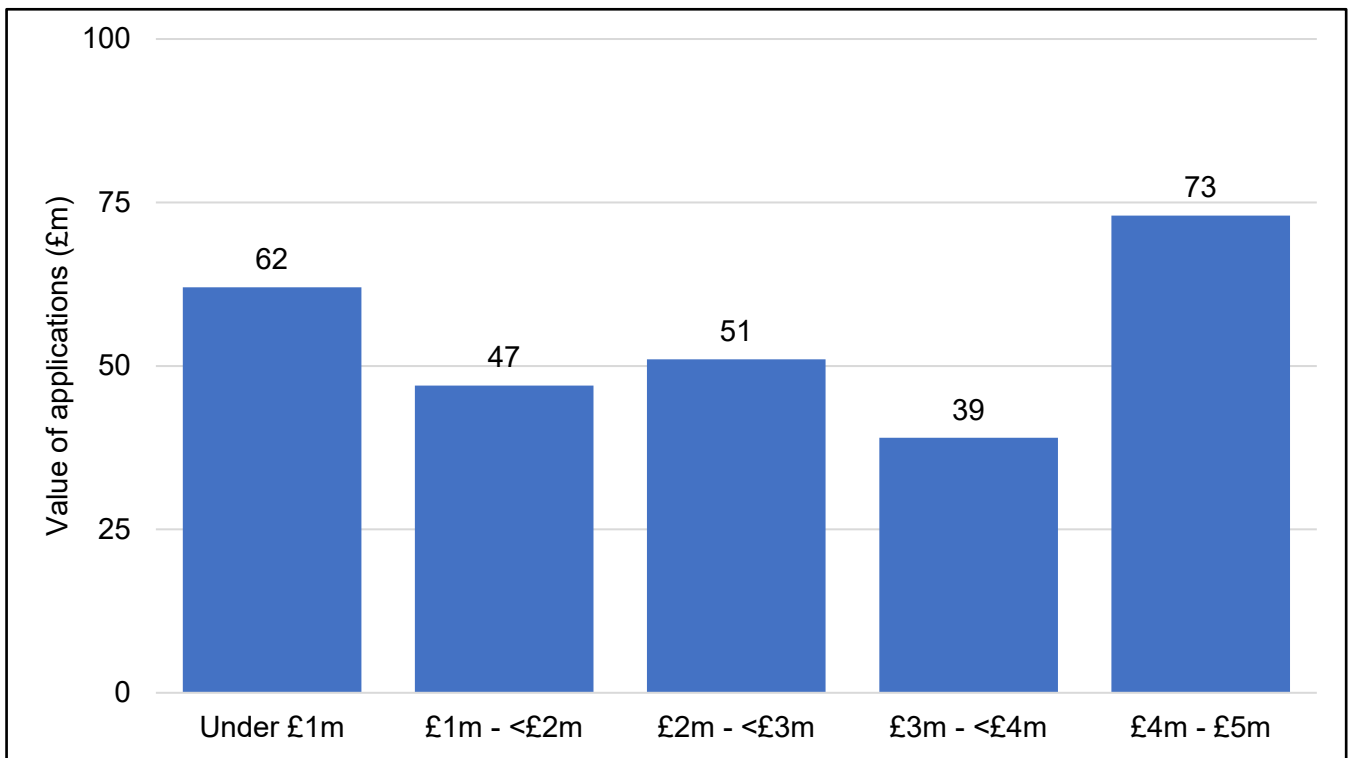


Figure 2: Total value of applications by value band



## 2.2 Applications by sector

Applicants can be grouped into seven different public sector categories: schools (including maintained schools and academies), further and higher education, NHS, local authorities, central government, non-departmental public bodies, and emergency services. There were no limits on the number of applications an organisation could submit, resulting in some organisations submitting multiple applications.

This section looks at the number of individual applications rather than the number of organisations which applied. It is important to note that local authorities were able to apply for funding across a wide range of buildings, including schools managed by the local authority. Therefore, applications for investment in schools are represented not only through applications received directly from schools, but also through some applications submitted by local authorities.

The largest number of applications came from schools (including maintained schools and academies), accounting for over 39 percent of all applications. Further and higher education applied for the largest proportion of funding with a total application value of £90.5 million, representing 33 percent of the value of all applications.

Figure 3 shows the number of applications by type of public sector organisation. Figure 4 shows the combined value of applications by type of public sector organisation.

### **Alpha Trust, Essex**

Alpha Trust has been awarded £153,052 to deliver energy efficiency and heat decarbonisation measures at Manningtree High School and Colchester County High School for Girls. Air source heat pumps will be installed at both schools and double-glazed windows and roof insulation will be upgraded at Manningtree High School.

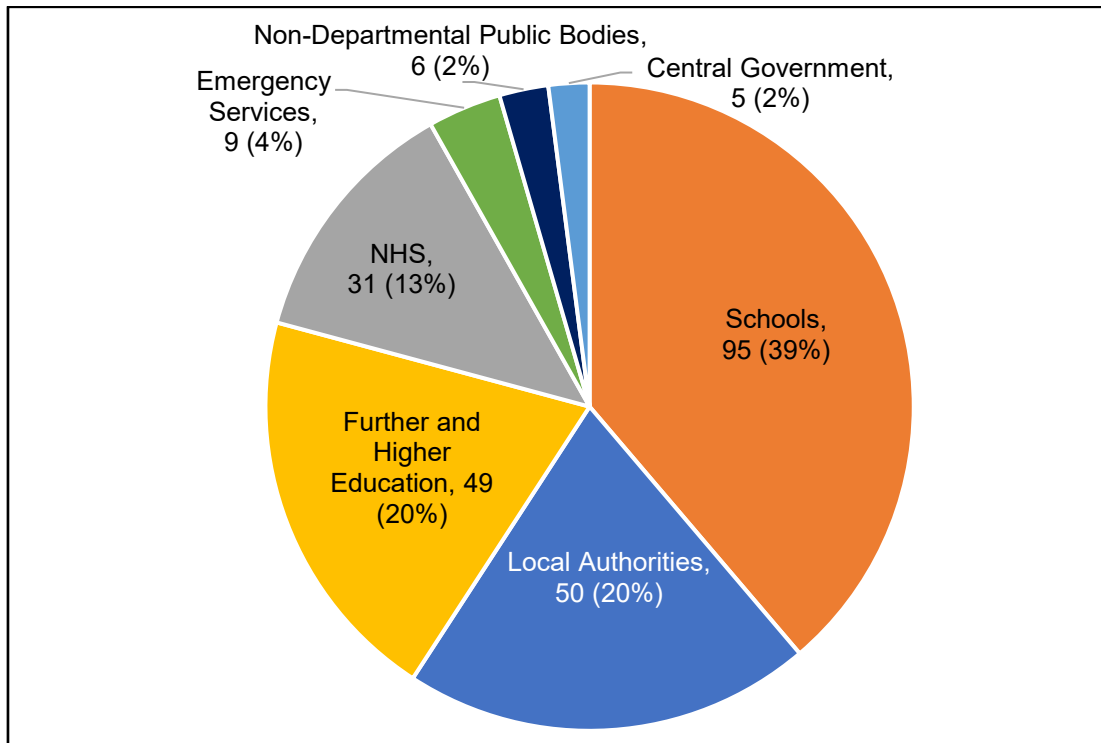
Headteacher Mrs Sally Morris said:

*“We are very pleased to have been able to reduce the carbon footprint of the school. Our core business is creating a better future for our young people and so this project has made ethical, as well as economic sense.”*

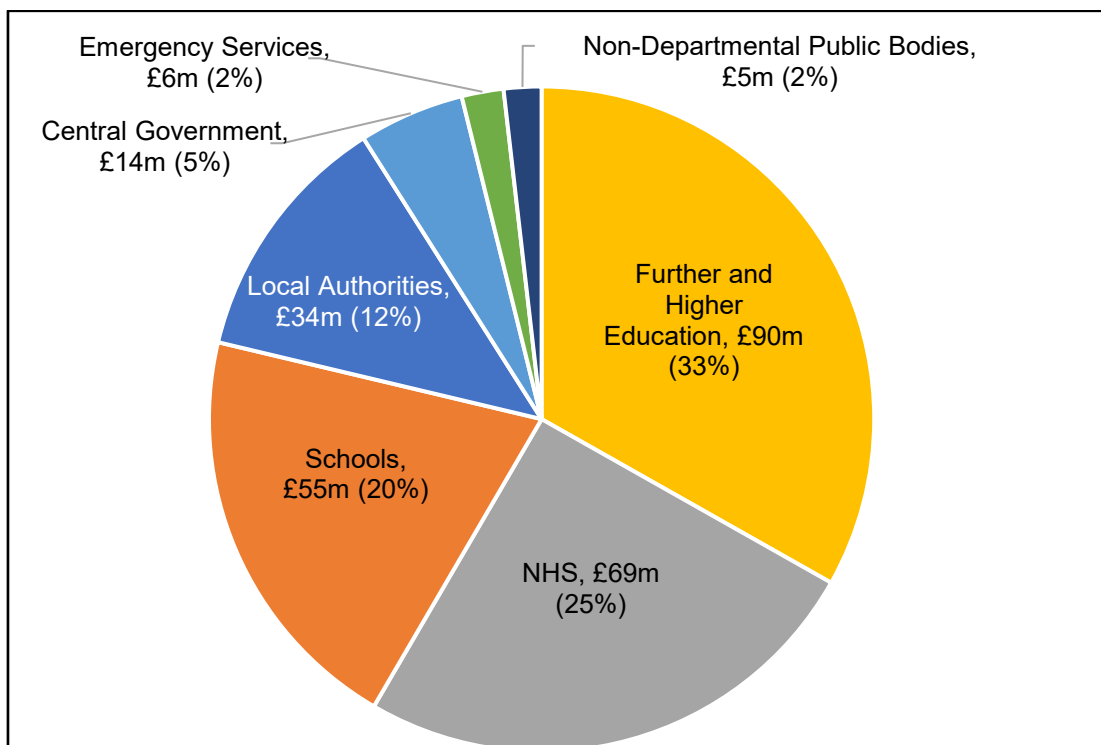
*Image by: Peter Rawson Briar Consultants*



**Figure 3: Number of applications by type of public sector organisation**



**Figure 4: Combined value of applications by type of public sector organisation**



## 2.3 Applications by region

The scheme was open to public sector bodies in England. Central government departments operating in areas of reserved policy (i.e., not devolved to Scottish or Welsh Governments or the Northern Ireland Executive) were also eligible to apply for funding for estates located anywhere within the UK. As a result, one application was from outside England. This was an application in Scotland.

Table 1 shows the total number and value of applications across English regions and Scotland.

**Table 1: Number and value of applications across English regions and Scotland**

Region	Number of applications	Value of applications
North East	20	£17,102,610
Yorkshire and the Humber	21	£23,477,291
North West	30	£32,529,827
East Midlands	27	£23,998,112
West Midlands	21	£37,347,814
East of England	18	£19,715,794
South East	31	£43,081,510
South West	38	£31,475,296
Greater London	38	£43,393,189
Scotland	1	£589,392
Total	245	£272,710,835

## 3. Grants awarded

Phase 2 of the Public Sector Decarbonisation Scheme has allocated £74.6 million in grants. These grants were awarded to 54 projects, to be delivered by 49 different organisations.

### 3.1 Grants by value

32 of the 54 grants were for less than £1 million. These make up 59 percent of grants awarded, but just 14 percent of all funding. Five grants are for £4 million or more, making up 9 percent of grants awarded but 33 percent of all funding. The median value of all grants is £558,513 and the average (mean) grant value is £1,382,298.

Figure 5 below shows the number of grants by value band and Figure 6 shows the distribution of the overall values of grants by value band.

#### **Croydon Health Services NHS Trust**

Croydon Health Services NHS Trust has been awarded £570,081 to decarbonise their estates buildings. The end-of-life gas boiler will be replaced with an air source heat pump, thereby enabling the gas connection to be removed. Energy efficiency will also be improved through installing double glazed window replacements, LED lighting, roof insulation, building management system upgrades and an air handling unit to improve ventilation.



*Image by: Croydon Health Services NHS Trust*

Figure 5: Number of grants by value band

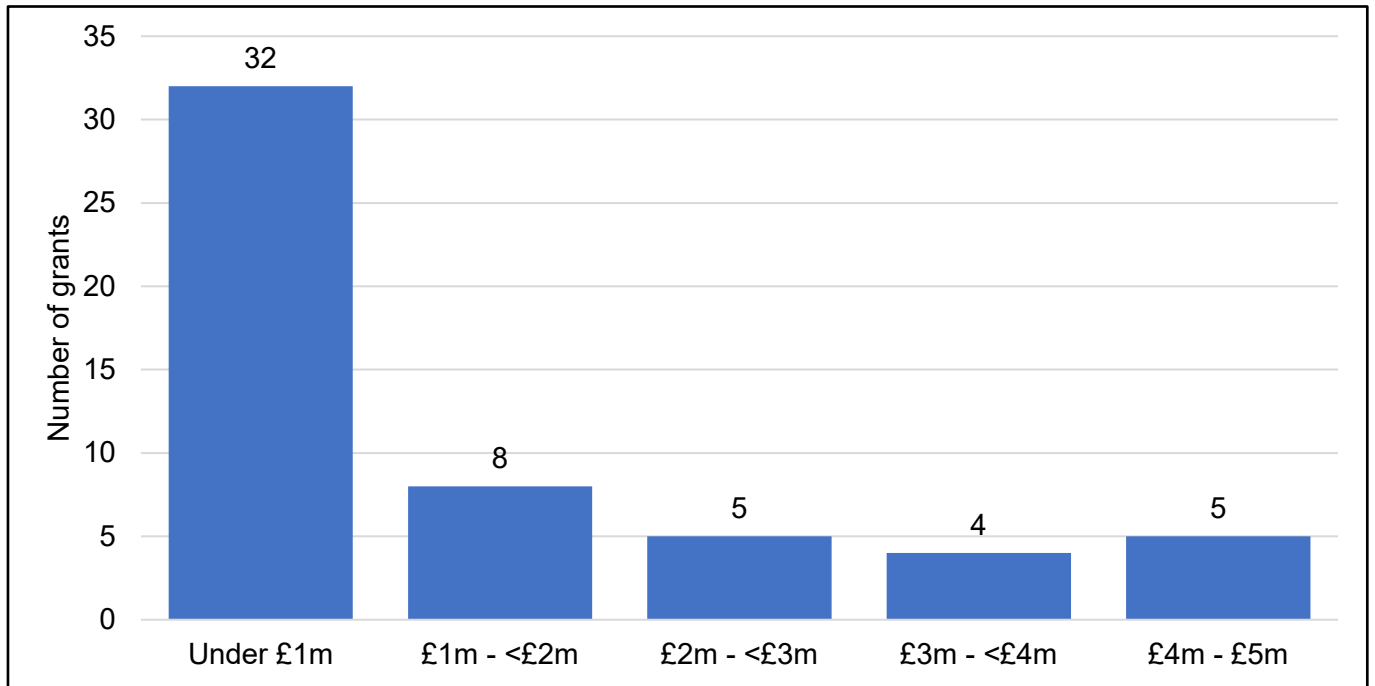
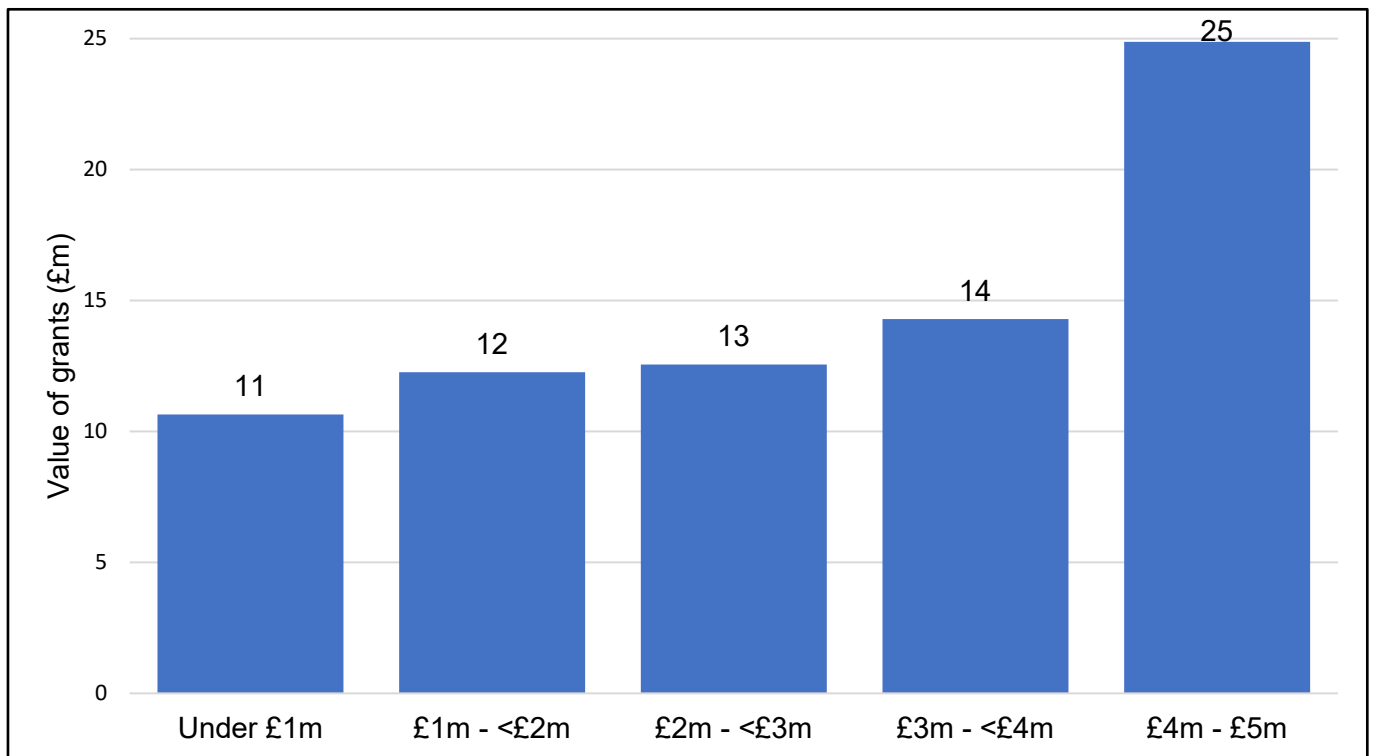


Figure 6: Total value of grants by value band



## 3.2 Grants by sector

Further and higher education institutions received the largest number of grants, making up 20 of the 54 grants. Further and higher education institutions also received the largest proportion of funding, with £39 million being invested through these 20 institutions.

It should be noted that local authorities are investing funds across a wide range of buildings, including schools managed by the local authority. The total investment in schools is therefore higher than the amount of funding awarded directly to schools as grant recipients. The figures below reflect the organisations that are the grant recipients rather than the organisations benefitting from the investment through the grants (i.e., the local authority rather than the schools in which a local authority will invest the grant funding).

Figure 7 shows the combined number of grants awarded for each type of public sector organisation. Figure 8 shows the combined value of grants awarded for each type of public sector organisation.

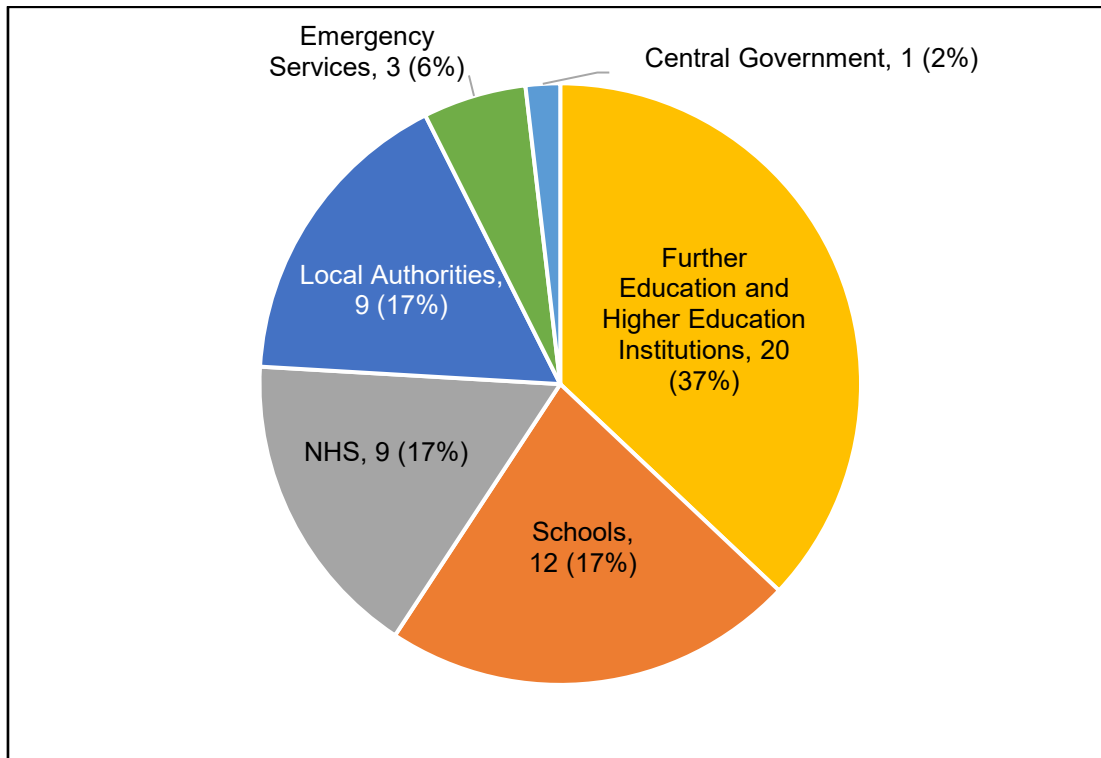
### **Derby College Group**

Derby College Group has been awarded £3,643,553 to install heat decarbonisation and energy efficiency measures in three buildings: the listed Broomfield Hall, Edale House residential block, and the Horticultural Centre educational facility. An air source heat pump system and a new centralised plant and distribution pipework will be installed to provide the buildings with low carbon heating and hot water. LED lighting, insulation and new controls will also be installed to improve energy efficiency in all three buildings.

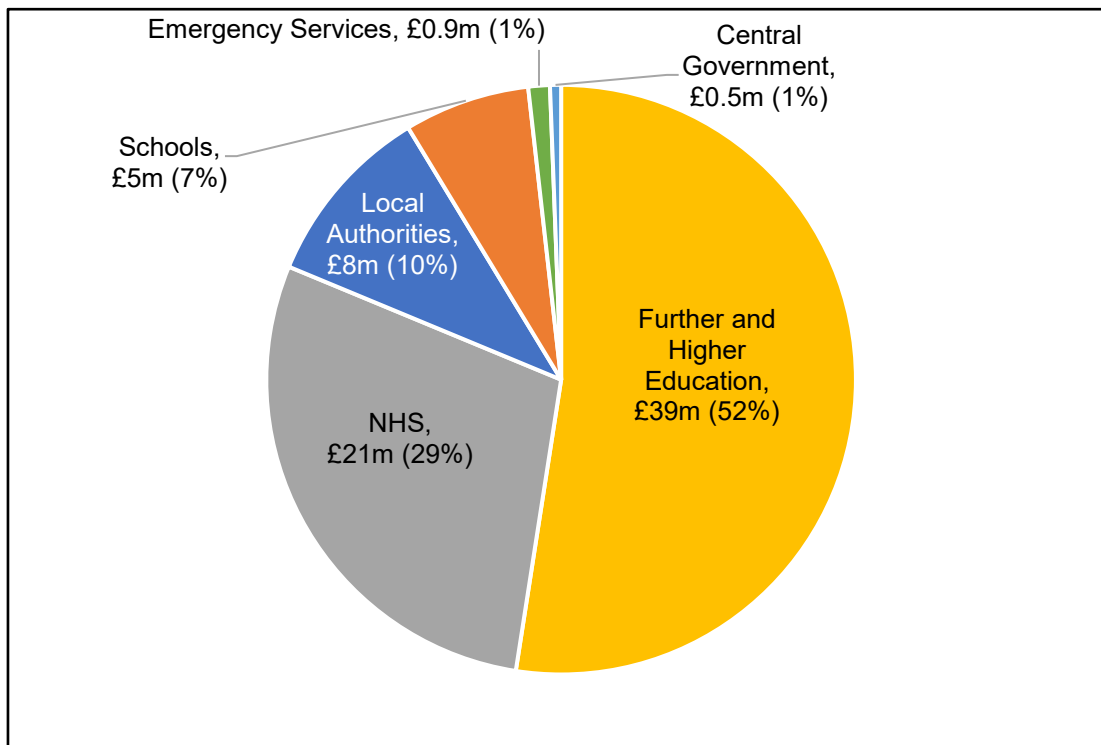
*Image by: Derby College Group*



**Figure 7: Number of grants awarded by type of public sector organisation**



**Figure 8: Value of grants awarded by type of public sector organisation**





### 3.3 Grants by region

Table 2 shows how many grants were awarded, with the combined value of these grants, for each English region. No grants were awarded outside England.

**Table 2: Number and value of grants awarded across English regions**

Region	Number of grants	Value of grants
North East	6	£7,295,767
Yorkshire and the Humber	4	£3,332,816
North West	5	£4,658,108
East Midlands	2	£5,197,723
West Midlands	9	£15,868,939
East of England	7	£7,603,562
South East	9	£10,607,040
South West	4	£9,949,044
Greater London	8	£10,131,086
Total	54	£74,644,085

## 3.4 Technologies

A wide range of technologies were eligible for funding through Phase 2 of the Public Sector Decarbonisation Scheme. Eligible heat decarbonisation measures included heat pumps, electric heating and connections to low carbon heat networks. Technologies which support future heat decarbonisation were also eligible, including upgrading electrical infrastructure, metering and battery storage. A wide range of energy efficiency measures were eligible for funding, including LED lighting, insulation, glazing, ventilation and building management systems.

Figure 9 below shows the number of projects installing each technology type. This data covers the numbers of projects installing one or more of each measure, rather than the overall number of measures installed. Projects may be installing multiple technologies.

### **Windsor Academy Trust: Great Wyrley Academy, Walsall**

Windsor Academy Trust has been awarded £456,019 to replace the gas-fired heating system at Great Wyrley Academy in Walsall with an air source heat pump.

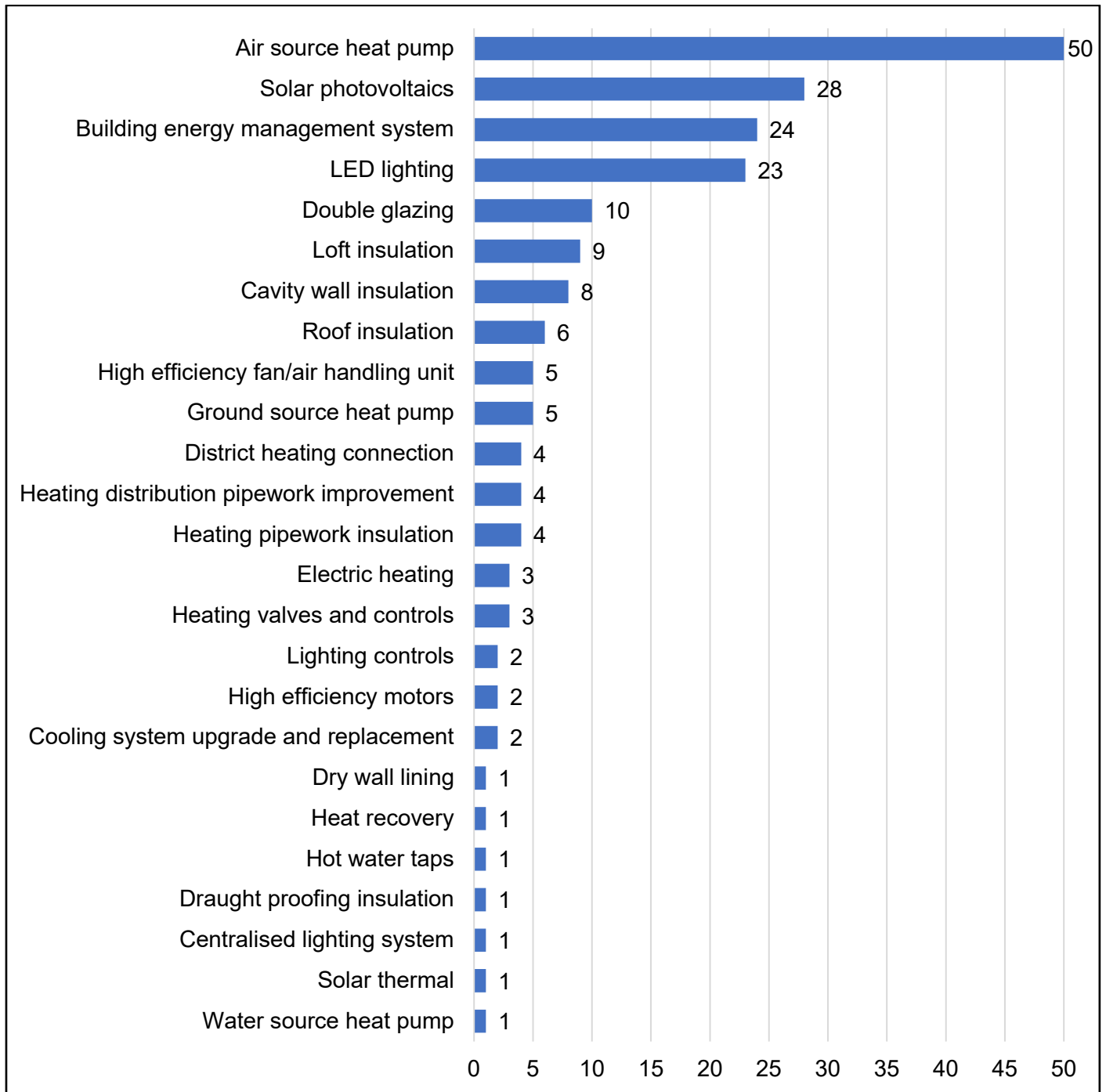
Windsor Academy Trust CEO, Dawn Haywood, said:

*"The improvements that have taken place through Phase 2 of the Public Sector Decarbonisation Scheme will go a significant way in helping us achieve our goals and reach net zero by 2030. I am proud of the work that continues to take place across the Windsor Academy Trust family to leave the world in a better place for future generations."*

*Image by: Windsor Academy Trust*



Figure 9: Number of projects installing one or more of each technology



Commonly installed technologies through the scheme are heat pumps, solar panels, insulation, and LED lighting. Further information on these technologies is included below.

### Heat Pumps

Heat pumps transfer heat from a renewable source to another location such as the heating system of a building. Heat pumps are categorised by the heat source they use, which can be air, ground or water. Heat pumps obtain heat through pipes embedded in the source, where the heat is absorbed into a fluid. This is passed through a compressor to increase the temperature, and then transferred to the heating and hot water systems of the building.

Heat pumps are a very efficient replacement for traditional fossil fuel boilers. However, they produce heat at a lower temperature than traditional boilers and therefore work best when installed in buildings which are well insulated. Heat pumps installed through the Public Sector Decarbonisation Scheme have often been combined with energy efficiency measures to improve the insulation of the building, and with solar panels to provide a renewable source of electricity to power the heat pump.

#### **Air source heat pumps**

Air source heat pumps obtain heat from outdoor air, and from the heat extracted from water vapour in the air. Many air source heat pumps are reversible units, capable of both heating and cooling buildings.

#### **Ground source heat pumps**

Ground source heat pumps extract heat from the ground using pipes buried under the ground outside. The ground remains at an almost constant temperature throughout the year, so the ground is an effective and constant source of heat. Ground source heat pumps require ground suitable for digging and space underground to install the pipes. If space is limited then a borehole can be used to install the pipes vertically, but this increases the cost of installation.

#### **Water source heat pumps**

Water source heat pumps extract heat from a body of water, such as a lake, river or stream, through pipes submerged in the body of water. To use a water source heat pump, the building must be near the water source, and the water source must be large enough to produce enough heat for the building. The efficiency of ground and water source heat pumps tends to be more consistent through the winter compared to air source heat pumps. This is because unlike air temperature, ground and water temperatures are not significantly impacted by day-to-day changes in the weather.

### Solar Panels

Solar panels convert the sun's energy into electricity, providing a renewable source of electricity which can be used to power buildings. Solar panels are made from layers of semi-conducting material, which create a flow of electricity when light shines on the material. They

do not need direct sunlight to produce electricity, although the brighter the sunlight, the more electricity is generated.

Solar panels are often installed on the roofs of buildings, but they can also be free standing. Solar panels increase the generation of renewable electricity, reducing reliance on electricity produced through fossil fuels. They have often been installed alongside heat pumps, to provide a renewable source of electricity to power them.

### Insulation

Insulating buildings helps minimise heat loss through the walls, windows, roofs, doors and floors when it is cold outside. This means that less energy is required to heat them in winter, improving their energy efficiency. The resulting lower electricity usage leads to a reduction in indirect carbon emissions and can also provide cost savings for organisations which can then be re-invested into decarbonisation technologies. Insulation is often installed alongside heat pumps to ensure the building is kept at an appropriate temperature, as heat pumps produce heat at lower temperatures than traditional boilers.

### LED lighting

LED lighting is more efficient at converting electricity into light than traditional fluorescent lighting, thereby improving the energy efficiency of a building. LED lighting also has a range of additional benefits, including a long life, ease of control and maintenance, and high light quality.

Switching to LED lighting will reduce the energy consumption of a building. Saving energy reduces carbon emissions from electricity production while electricity is still produced from fossil fuels. In addition to this, the reduction in energy usage can provide cost savings for organisations which can then be re-invested into decarbonisation technologies.

## 4. Conclusion

Phase 2 of the Public Sector Decarbonisation Scheme has allocated £74.6 million in grants, awarding 54 grants to 49 different organisations. This builds on the progress made in decarbonising the public sector through Phase 1 of the scheme and paves the way for further decarbonisation of the sector.

Phase 3 will build on Phases 1 and 2, with £1.425 billion of funding to invest from April 2022 to March 2025. This will support the Government's aim of reducing direct emissions from public sector buildings by 75 percent by 2037.

### **Wolfson College, University of Oxford**

Wolfson College at the University of Oxford has been awarded £4,999,999 to deliver heat decarbonisation and energy efficiency measures in the college's main building, which was built in the 1970s. Air source heat pumps will be installed, removing gas as a source of energy from the site. The interior walls will also be insulated, and the existing windows will be replaced with double glazing.



Wolfson President, Sir Tim Hitchens, said

*“Thanks to the support of the Government, commitment of the College and expertise of architectural and engineering consultants, we can turn a 1960s building into a place fit for the 21st century. This project shows that the tide can be turned on climate change. One of Oxford's biggest emitters can become net zero and inspire others across higher education and the public sector.”*

*Image by: Vortex Drone Company*

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