White Paper

MITSUBISHI ELECTRIC

Mitsubishi Electric Guide to the

Public Sector Decarbonisation Grant Scheme

White Paper

Time to switch to low carbon heating

At the end of September 2020, the UK Government introduced a range of grants and schemes to make schools, hospitals and homes 'greener and cheaper to run'. It has been described as the biggest upgrade of the nation's buildings in a generation. The funding has since reached it's 4th Phase.

One of the programmes included in this push is the Public Sector Decarbonisation Scheme (PSDS). The Government has set aside £1.17 billion for universities, schools, local government, central government departments and NHS Trusts.

The money is available to allow these organisations to install energy efficiency measures and low carbon heating technologies. Since heating can make up almost 50% of the operational costs of a building, switching to a more efficient approach not only reduces the nation's carbon emissions, it can also significantly reduce energy bills.

The scheme is administered for the Department for Business, Energy and Industrial Strategy (BEIS) by Salix Finance. See the end of this document for useful website links and sources of information.

Why the focus on heat?

The UK has set itself a target of net zero carbon emissions by 2050. One of the most significant areas to address is our reliance on fossil fuels such as gas for heating our buildings and producing hot water. Together, these account for 40% of the UK's carbon emissions.

That must change if we are to achieve our carbon objective. In its report Clean Growth: Transforming Heating, the Department for Business, Energy and Industrial Strategy (BEIS), states:

"Heat is the largest energy-consuming sector in the UK today. Whilst progress has been made to reduce demand for heat, and further reductions will be delivered through improvements to the energy efficiency of our buildings and industrial processes, remaining heat demand must be met by low carbon sources if we are to meet our legally binding emissions reduction commitment."

Gas heating and hot water systems have a long history in the UK. For decades, we have relied on gas-fired boilers as source of space heating and domestic hot water in our schools, universities and hospitals (as well as in our homes and workplaces).

But in the past few years, the UK's energy profile has changed. The growing use of renewables such as wind solar and biomass mean that electricity is an increasingly low-carbon energy. At one point in 2020, renewables were providing almost 70% of the country's electricity, making it one of the 'cleanest' energy years on record for the UK.

So, it makes sense to look at ways to use electricity to provide heating and hot water, and to shift away from fossil-fuel based systems wherever possible. Changing to new approaches can be challenging, but there are technologies on the market that make switching away from gas very much easier.

And the Public Sector Decarbonisation Scheme offers financial support to eligible organisations to help them make the change.

40%

of the UK's carbon emissions are produced by using fossil fuels such as gas for heating & hot water

The grant scheme - what is on offer?

The Public Sector Decarbonisation Scheme supports capital energy efficiency and heat decarbonisation projects.

It focuses on buildings in the public sector (local and central government departments) and what it describes as 'arm's length' bodies in England.

There is no minimum or maximum grant on offer as long as applicants can contribute the cost for a like-for-like replacement of the existing fossil fuel heating plant at a minimum of 12% of total project costs.

A secondary element of the scheme is the Public Sector Low Carbon Skills Fund. This is available for organisations that need support to develop applications and deliver projects that are funded by the grant. The aim is that no organisation is prevented from accessing the scheme due to lack of in-house know-how or resources.

A grant will cover any external consultancy and management fees associated with a project, as well as the capital costs. But it does not cover the costs for existing employees.

Who can apply?

Eligible organisations are:

- **Central government departments and their arm's length bodies**
- **Emergency services**
- **Institutions of further and higher education**
- **Local authorities**
- **Maintained schools within the state education system, including academies, multi-academy Trusts and free schools**
- **Nursery schools maintained by a local authority**
- **NHS Trusts and Foundation Trusts**
- **Non-departmental public bodies**

Public bodies may apply jointly, with an agreed 'lead applicant'.

An important point is that energy savings from the PSDS must benefit the applicant. For example, take a university that outsources its estate management to a company which pays the organisation's energy bills. In this case, the university would not be eligible for the grant since it would not benefit directly from the energy savings.

Organisations which are not eligible for the grant include public corporations; registered charities; social housing and private organisations.

White Paper

Projects - what does the grant scheme support?

The focus of the grant scheme is to make public sector buildings more energy efficient and to encourage a move towards low carbon heating technologies.

Energy efficiency measures can include installation of better insulation and glazing, for example. A project might involve adding better heating controls; or it could involve the removal of a gas boiler for replacement with a heat pump.

The most important criterion for a project is that it must cost no more than £510 to save 1 tonne of carbon (CO_2e) over the lifetime of the project. There is a Phase 4 PSDS Salix Cost Breakdown Tool available on their website.

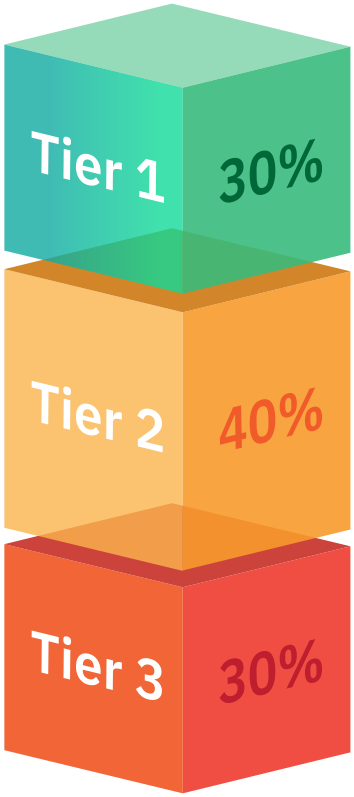
In terms of project costs, 'reasonable enabling and ancillary works' may be included in the application to the scheme. They will be reviewed for 'value for money'.

Unlike previous phases, funding for Phase 4 will be allocated via a targeted allocation as opposed to a first come first serve basis. The aim behind this change is for the most cost effective carbon-saving projects to access the funding first.

Once the application window has closed, each application will be sorted into different tiers.

Based on the grant carbon cost, applications will be split into the following tiers:

The top 30% of application will be placed in tier 1, the middle 40% in tier 2 and bottom 30% in tier 3.



Applications placed in the top tier are prioritised over the middle and bottom tiers, and therefore it may be difficult for applications in the bottom tier to receive funding. The introduction of the targeted allocation method makes it important for projects to produce a competitive application by reducing their grant carbon cost.

The grant carbon cost calculator within the application will allow applicants to adjust their inputs and chosen technologies to arrive at a more competitive grant carbon cost. Factors such as how much of the project is self-funded, which technologies are used and how effective those technologies are in direct carbon savings will all affect the grant carbon cost and which tier the application is placed in.

For further information on the grant carbon cost calculator, please refer to the following video:

Phase 4: Carbon cost calculations explained

White Paper

Applying for a grant under the PSDS

The application process starts from the Salix website. The form itself is a spreadsheet that requires a description of the project along with cost break-downs and expected carbon savings.

The scheme assumes that any partners or contractors working with the applicant are competent and fully responsible. Contractors on a project will also be required to complete a 'contact and consent' form so that BEIS (or its agents) can evaluate the scheme in the future.

As with all grant scheme applications, ensuring that all paperwork is in place is key. Salix recommends having supporting information to hand as well. This could include:

- **Supporting calculations such as energy saving models which explain kilowatt hour savings figures provided**
- **Evidence of costs**
- **Project delivery plan**
- **Heat loss calculations**

Projects will be assessed on three main areas:	
Assessment area	**Examples of information**
Technical case	Feasibility; energy and carbon savings; energy monitoring plans; future resilience.
Financial case	Breakdown of project costs; operating and maintenance costs; evidence of firm pricing and any financial savings.
Project governance	Risks and mitigations; project planning and scheduling; previous experience; procurement and delivery within the grant funding window.

Any documentation that can provide proof that the proposed project has decarbonisation as its key goal, and that the technology installed will save energy, will help to achieve a positive application outcome. There are a number of important dates that applicants must bear in mind, particularly as some deadlines fall in the next few months.

Scheme open to applications	9th October 2024
Closing date for all applications from all applicants.	25th November 2024

Low carbon heating and hot water

In Phase 4, project categories have been replaced with a targeted allocation system. The scheme now prioritises projects that best demonstrate carbon cost effectiveness and carbon reduction potential. Heat pumps offer a highly effective solution for heating and hot water in buildings.

What's more heat pumps are available in a wide range of sizes and outputs - and there are experienced installers across the country readily available to ensure successful project delivery.

The key characteristic of heat pumps is that they amplify energy from the atmosphere many times to create heat, using minimal amounts of electricity.

A number of organisations, such as the Building Research Establishment (BRE) and Building Services Research and Information Association (BSRIA) have tested heat pump technology.

Research confirms that at point of use, for every 1 kilowatt of energy put into a heat pump, 3.2 kilowatts of heat is produced. This means that, for the same heat output, heat pumps use less primary energy than direct electric heating, gas or oil boilers.

This is important because although switching to electric heating is more sustainable, we still need to manage use of that resource as effectively as possible, particularly as the UK moves over to renewable sources of energy.

Heat pumps make the transition more achievable, while providing reliable outputs for buildings and their occupants. As a proven technology, heat pump manufacturers and installers are well-placed to offer clear carbon - and energy-saving projections for your proposed project. This also makes for predictable outcomes in terms of energy savings and investment payback for the organisation.

Making the most of heat pumps - where do heat pumps work best?

Heat pump technology has advanced over the past two decades, and the latest products can be applied in projects in a number of ways. And with a focus on heating and hot water production without fossil fuels, today's heat pumps can completely replace gas boilers, electric water heaters or CHP - even in high-demand buildings.

Modern heat pumps can achieve temperatures of up to 90ºC, so there is no requirement for backup gas boilers to provide extra hot water.

Fossil-fuel based heating system can now be completely replaced with a heat pump that meets all heating and hot water needs.

This means that heat pumps can work in projects even where demand for hot water is high, such as hospitals.

On a modern university campus, for example, it's possible to find a range of buildings from leisure centres to student accommodation. Heat pumps can meet the needs of heating and hot water for these projects too.

White Paper

Successful deployment of heat pumps - hints and tips

Heat pumps are a well-established technology, so there is a lot of experience in the market that can support their correct application and operation.

The design of heat pumps has also advanced in recent years, with some models now able to provide temperatures of up to 90ºC. This means that whatever your project or building type, there is likely to be a heat pump that can help to meet your requirements.

Physical location

Location of the air source heat pump on your site is vital for its optimal operation. Spacing around the unit needs to be correct in order to ensure that the unit has enough air moving across the heat exchanger.

Heating load

It is important to calculate your heating load as accurately as possible. This will allow the air source heat pump to be correctly sized. This in turn will ensure the heating demands of the building are met. The recommended design heating load is determined for a particular winter design ambient temperature, which varies according to location in the UK.

Design flow temperature

This will depend on what type of heat emitters are used - radiators, underfloor heating, or perhaps fan coils. The lower the design flow temperature, the more efficient your heat pump will be. Underfloor heating flow temperatures are typically around 34ºC to 45ºC. Radiators require a higher flow temperature of 50ºC and above.

Hot water load and usage

There are a few factors to consider when thinking about using a heat pump to supply your hot water needs. Firstly, it's important to understand what temperatures you need to achieve and secondly what volume of water will be required at that temperature. With modern heat pumps, it is possible to achieve high water temperatures, but you may wish to consider use of a storage tank if you face peaks in demand (for example in a leisure centre at busy times of the day).

Control of your heat pump and ancillary components

There are a few different ways to control an air source heat pump. It can be run on a fixed flow temperature. The heat pump will send water at a pre-set temperature to the heat emitters all-year round - regardless of ambient outdoor temperatures.

However, it may be sensible to consider weather compensation in order to avoid overheating in warmer months. It's also possible to link your air source heat pump to your building management system which would allow for control of pumps and safety switches.

Useful links

Salix website for the Public Sector Decarbonisation Scheme (PSDS):
www.salixfinance.co.uk/schemes/phase-4-public-sector-decarbonisation-scheme

Phase 4 Public Sector Decarbonisation Scheme (PSDS) Guidance:
www.salixfinance.co.uk/sites/default/files/2024-10/Guidance%20Notes%20%282%29.pdf

Phase 4 Public Sector Decarbonisation Scheme (PSDS) Salix Cost Breakdown Tool:
www.salixfinance.co.uk/sites/default/files/2024-09/Phase%204%20PSDS%20Salix%20cost%20breakdown%20tool_0.xlsx

MITSUBISHI ELECTRIC

Changes for the Better

Telephone: 01707 282880

email: **air.conditioning@meuk.mee.com**

website: les.mitsubishielectric.co.uk

@meuk_les
@green_gateway

Mitsubishi Electric Living Environmental Systems UK

Mitsubishi Electric Cooling and Heating UK

mitsubishielectricuk_les

Mitsubishi Electric Living Environmental Systems UK

BLOG thehub.mitsubishielectric.co.uk

UNITED KINGDOM Mitsubishi Electric Europe Living Environmental Systems Division
Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, England. Telephone: 01707 282880

IRELAND Mitsubishi Electric Europe
Plunkett House, Grange Castle Business Park, Nangor Road, Dublin 22, Ireland. Telephone: (00353) 1 4198800 Email: sales.info@meir.mee.com
Web: les.mitsubishielectric.ie

Country of origin: United Kingdom – Japan – Thailand – Malaysia. ©Mitsubishi Electric Europe 2024. Mitsubishi and Mitsubishi Electric are trademarks of Mitsubishi Electric Europe B.V. The company reserves the right to make any variation in technical specification to the equipment described, or to withdraw or replace products without prior notification or public announcement. Mitsubishi Electric is constantly developing and improving its products. All descriptions, illustrations, drawings and specifications in this publication present only general particulars and shall not form part of any contract. All goods are supplied subject to the Company's General Conditions of Sale, a copy of which is available on request. Third-party product and brand names may be trademarks or registered trademarks of their respective owners.

Note: The fuse rating is for guidance only and please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R290 (GWP:3), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R454C (GWP:148), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

Green Gateway

www.greengateway.mitsubishielectric.co.uk

Mitsubishi Electric UK's commitment to the environment

Effective as of October 2024