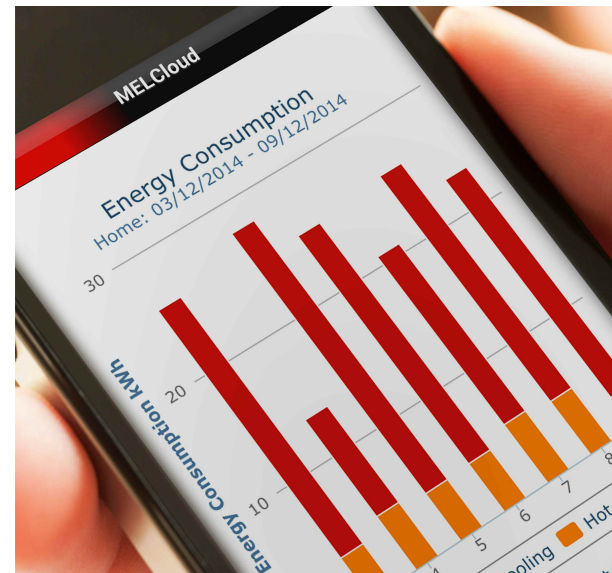


The Renewable Solutions Provider
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Mitsubishi Electric Guide to Metering and Monitoring for the Domestic RHI



Information Guide

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Air Conditioning | Heating
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Mitsubishi Electric Guide to Metering and Monitoring for the Domestic RHI



This is an independent guide produced by Mitsubishi Electric to enhance the knowledge of its customers and provide a view of the key issues facing our industry today.

This guide accompanies a series of seminars, all of which are CPD certified.

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About the RHI - a quick overview

The Renewable Heat Incentive (RHI) was introduced in the UK at the end of 2011. It is a government financial incentive designed to support greater uptake of renewable heating technologies in both domestic and non-domestic buildings. The scheme is overseen by Ofgem.

There are different criteria and tariffs for homes, businesses and public buildings taking part in the RHI, but the principle is the same: the RHI is a financial incentive to move the UK away from dependence on fossil fuels. This Guide will concentrate on requirements that apply to the Domestic Renewable Heat Incentive (DRHI).



The Domestic RHI

Government makes quarterly payments to property owners for every kWh of renewable heat energy produced by eligible types of renewable equipment.

The payments last for a period of seven years. The scheme has a number of requirements for eligibility, and those who join the scheme must adhere to its rules in order to receive these payments over the entire seven years.

Eligibility

The Domestic RHI is open to anyone who can meet the joining requirements, whether their home is on or off the gas-grid.

Applicants may be private homeowners or landlords, or social landlords such as housing associations. New homes built by large developers are not eligible for RHI, but it is available to self-builders where an individual funds the construction.

Eligible heating systems in the domestic RHI are:

Biomass only boilers and biomass pellet stoves

Air source heat pumps

Ground source heat pumps

Flat plate and evacuated tube solar thermal panels

For heat pumps, the system must provide space heating or space and water heating. Space heating must be delivered by a liquid medium such as radiator. Hot water heating is for domestic purposes only.

Products must appear on the RHI's Product Eligibility List (PEL). An accredited installer who is a member of the Microgeneration Certification Scheme (MCS) must carry out the installation - an MCS certificate for both product and installation is required in order to claim the RHI.





The Domestic RHI

Tariffs

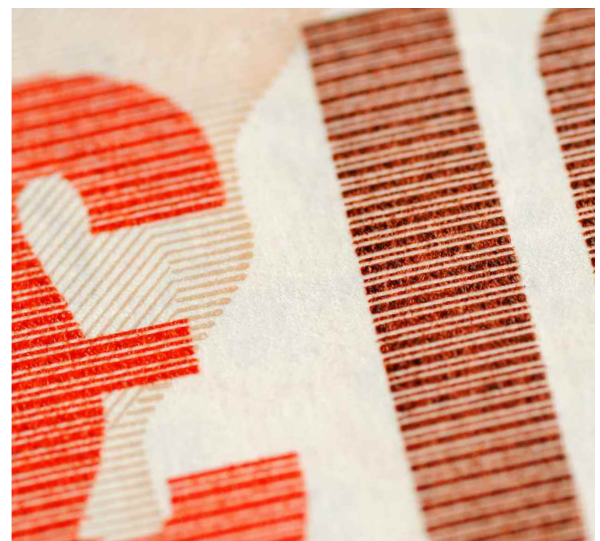
To join the RHI scheme and receive regular payments, a property owner needs to be able to supply a number of supporting documents. These include the Energy Performance Certificate (EPC) for the property.

The EPC shows Ofgem (who manage the RHI scheme) that the property is assessed as 'domestic'. This also helps to assess the 'heat demand' from the house. Self-builders who have constructed their property to the latest building regulations are exempt from having to provide these proofs.

For air source or ground source heat pumps, when householders apply for the domestic RHI payments, Ofgem uses the efficiency figures from the MCS (Microgeneration Certification Scheme) certificate calculated by the installer, so this will also be required.

The energy efficiency of a heat pump is measured as the Seasonal Performance Factor (SPF). Since September 2015, all new heat pumps entering the market must comply with the Ecodesign of Energy Related Products Directive or ErP. This sets minimum performance criteria and provides a standard methodology for comparing the efficiency of heat pumps (*please see the Mitsubishi Electric Guide to the ErP for full details*).

It is very important to ensure that the heat pump being installed adheres to the rules of the ErP. The RHI favours products and systems that give the highest efficiency for the building.



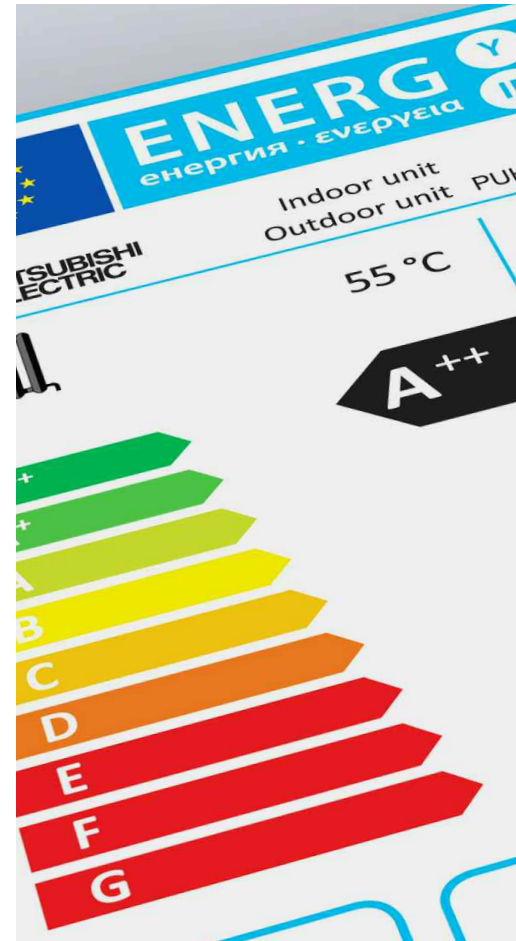
Another important influence on what payments are received through the RHI is the level of payments per kilowatt hour (kWh) that the Government sets. A number of factors are taken into account to calculate tariffs. For example, the time when the installation is registered for the scheme.

During the seven-year period of membership of the RHI, the Retail Price Index will affect the level of payments received. These will be recalculated in April of each year.

For example, the tariff for air source heat pumps installed after 1st April 2018 is 10.49p per kilowatt hour of renewable heat produced.

(Capped at 20,000 kWh per annum)

BEIS has to keep the RHI scheme within budget. This means that intermittently the tariff will be lowered for new entrants if overall RHI scheme payments have been higher than a set threshold. This is known as depression. It only affects those applying after the depression date.





Metering and the RHI

Heat meters are used to measure the amount of heat a renewable heating system produces.

A number of renewable heating systems will not be required to have metering installed under the rules of the Domestic Renewable Heat Incentive. In this case, the heat produced is estimated, using a calculation which is based on an estimate of the dwelling's heat demand (from the EPC) and information on the efficiency of the heat pump that is installed.

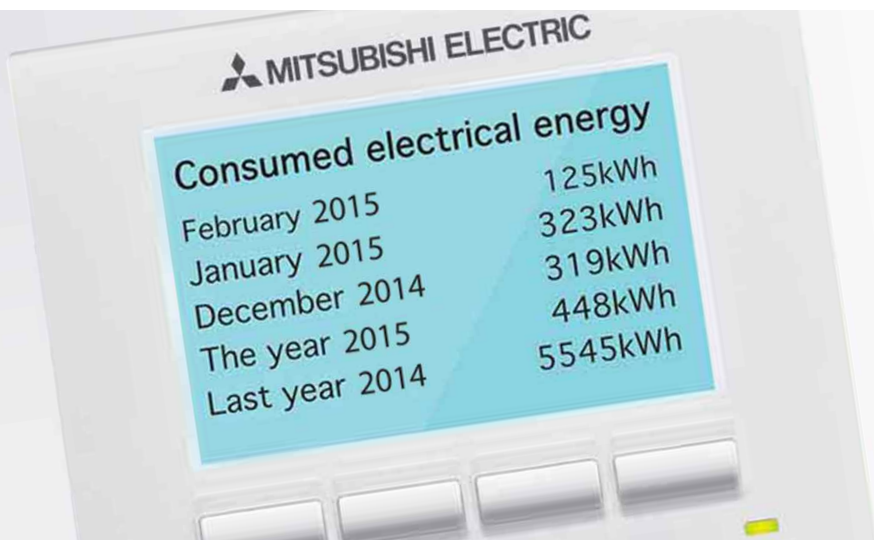
However, there are circumstances where heat metering is compulsory:

If the renewable heating is supported by a fossil fuel system

If a hybrid heat pump is used
(this is a combination of heat pump and a fossil fuel boiler in one 'box')

Where two different types of renewable heating system are installed in one property

Metering is also compulsory if the property is occupied for less than half of the year.



Accurate metering

To further enhance the Renewable Heat Incentive (RHI) scheme, the UK Government currently offers householders installing a heat pump an additional £1610 when purchasing and installing a Metering and Monitoring Service Package (MMSP).

An initial lump sum payment of £805 (50%) is provided alongside the first quarterly RHI payment. The outstanding balance, equating to £115pa, is subsequently divided equally across the householder's accredited Domestic-RHI term (7 years) and paid on a quarterly basis.

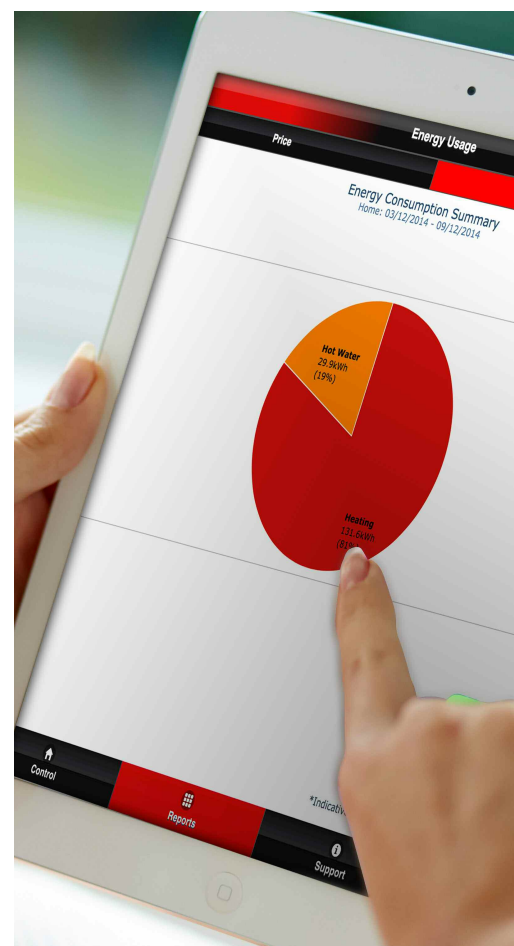
The annual metering payments continue until the end of the RHI seven-year period. For example, if you applied for your MMSP alongside your Domestic RHI application, you would get the maximum of seven years' payments. If metering is applied later then fewer annual metering payments will be received.

There are good reasons for Domestic RHI scheme members to voluntarily install metering on their heat pump system, beyond this annual payment. It is extremely useful if householders want to analyse how their renewable heating system is working. It is also very useful for landlords such as housing associations who want to check on heat output and energy use for residents.

In some cases, social landlords have used the small but significant extra annual payment to reinvest in services such as broadband for their residents.

The Government is encouraging the uptake of installing advanced control packages because they provide accurate feedback on how effective renewable heating technology is. The goal is to gather information on long-term performance of renewables with a view to encouraging greater use.

Good metering data also shows how well the RHI scheme is supporting the national drive to reduce carbon emissions from fossil fuel use.





Metering and Monitoring Service Packages - MMSPs

An MMSP is a type of service contract. They are very different from the obligatory metering that is required for installations. Customers with a heat pump that is eligible for the Domestic RHI may arrange for an MMSP at the same time as the installation.

This is a good approach to voluntary metering, as the relationship between the installer and customer is very important in an MMSP. It is a formal agreement (designed by Ofgem) whereby the installer supplies ongoing support, whilst also agreeing to ensure that data is not shared with anyone but the customer and Ofgem (or BEIS). For example, the installer is responsible for ensuring that the customer can access and view data in the correct way as required by MMSP rules.

The MMSP can be bought or leased from an MCS-registered installer. The installer will fit a series of meters and sensors to the heating system along with a data logger to an online data platform to collect and analyse the data.

For a heat pump, an MCS installation company must measure the heat output from a renewable heating system along with electricity supply. Metering and Monitoring Services Packages (MMSPs) consist of energy and temperature meters logged on a two-minute basis.

There must also be a data-viewing platform that collates the data and presents it clearly for the user. The aim is to help customers and the wider renewables industry understand how well renewable heating systems work. Data being monitored also has to be viewable by the MCS installation company. The installer and customer need to see particular elements of information and these are set out in each MMSP agreement.

What the customer should see:

Energy output of the heat pump

Energy consumption of the heat pump

Internal temperature in any room where temperature is recorded

External temperature (if using an air source heat pump)

Efficiency of the heat pump system over the last 12 months

Estimate of the uncertainty of the efficiency measurement

It is an important point that data must be presented in a user-friendly way over a whole year, with information on completeness. If a year's data is not available, then all the data that has been produced must be available to the end-user. The display of information must show data collected in the preceding week, broken down by hour or smaller unit of time. Annual information should be shown by month or smaller unit of time.

The installer needs to be able to see:

All data captured over the minimum of one year (or, if the system has been operating for less than 12 months, from the start of the MMSP to at least a previous week)

Recorded data points, down to a two-minute time period

Data automatically stored, after a maximum delay of one week

Completeness of data over the most recent 12 month period as a percentage

The installer needs to be able to view the same data as the householder, plus these additional requirements. The installer should be able to identify any problems that may arise with a system - offering advice to the customer on how to optimise system performance. In fact, the installer must be able to provide an explanation of the data to the customer every three months, if this is requested.

An MMSP must also be capable of submitting data to Ofgem, BEIS or any other third party nominated by BEIS on a regular basis if requested. Provision may be automated where appropriate. There is a strong focus in an MMSP on the collection and presentation of data which ensures that end-users fully understand how their heat pump system is performing. It also ensures an on-going relationship with the installer which is not often seen with 'traditional' domestic heating technologies like boilers.

The information required by Ofgem is:

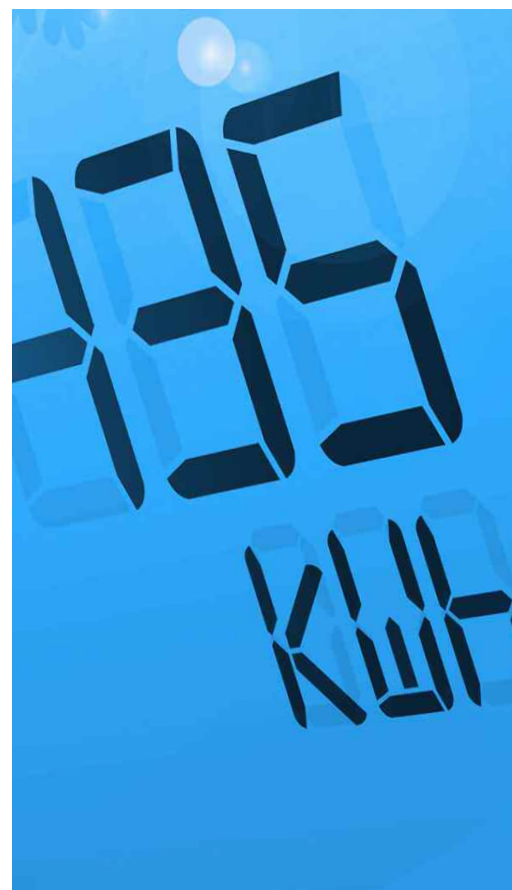
- Data completeness
- Seasonal Performance Factor (or efficiency)
- Internal and external temperature recordings

MMSP and advanced capabilities

Advances in Internet-enabled metering systems mean that there are MMSP packages available that will capture metering data and deliver it wirelessly to the Cloud.

This makes accessing the data simple for property occupants and installers. Data collected this way can be accessed from websites or even smart phones and hand-held tablets. The benefit to social landlords is that they can track heating produced and energy used by their residents without entering a property.

The latest MMSPs will offer advanced capabilities such as remote control of a heat pump system so that householders can adjust their heating and hot water production, or weekly schedules, from an app on a smart phone.





Conclusions

There are excellent reasons for householders and social landlords to consider the switch to renewable heat systems.

Technology such as heat pumps is now well-established and understood with robust and predictable performance. There are now numerous installers available to carry out work around the UK.

The RHI offers an excellent incentive to switch from fossil fuels, which are becoming increasingly expensive, so the long-term savings on energy bills increase every year as gas and electricity prices rise.

And the MMSPs offer further benefits in terms of extra income, as well as the ability to carefully track the performance of a domestic heating system. While gas-fired boilers have been the 'standard' system for homes, a heat pump combined with metering through an MMSP give householders and social landlords useful insights into exactly how well their heat pump is working.





To receive a CPD seminar on 'Metering and Monitoring for the Domestic RHI', you can call your Mitsubishi Electric Regional Sales Office to arrange an in-house presentation of this information.

If you would like to receive invitations to future CPD events, please email livingenvironmentalsystems@meuk.mee.com

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