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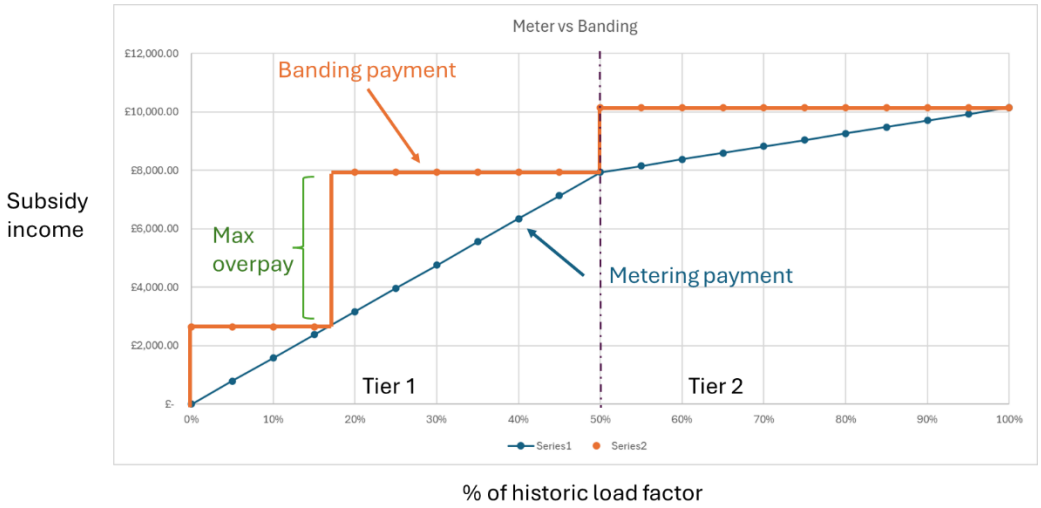
Additional banding notes

The figure below shows the difference between metering and banding for a 99kW boiler operating with a historic load factor of 30%.

The metering payment has two distinct areas the first up to 50% and the second up to the 100% value. The reason for this is the proposed tier 1 and 2 tariff rates (6.1 and 1.7 p/kWh respectively) where the tariff rate 1 cut off is 15% of the maximum for the technology. Since this boiler operates with a load factor of 30%, the15% (cap) is effectively half of that i.e. the switch from tier 1 to tier 2 happens at the 50% mark in the figure (as 50% of 30% is 15%). Hence the left of the 50% mark is tier 1 while the right side is the lower tier 2.



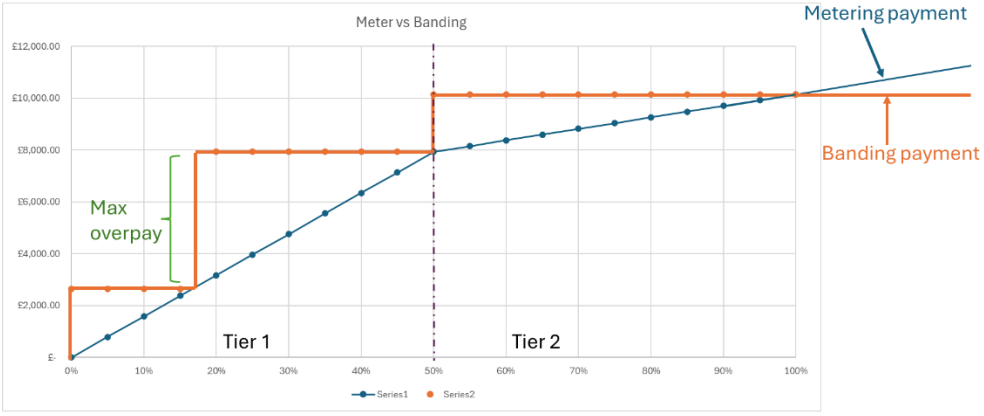
The orange steps represent the banding payments. In this case the boiler owner receives 100% of the original payment down to 50% of their historic load. This drops to a payment equivalent to 50% of the historic load down to the De Minimis payment which is equivalent to 438 hours of operation.

As this boiler only delivers 30% of its maximum output the total output equates to 2,628 hours x 99kW = 260,172 kWh heat output per year meaning that 438 hours x 99kW = 43,362 kWh output is equivalent to 16.7% of the maximum. Together this results in three steps, 0-16.7%, 16.8%-49.9% and 50%-100%.

The difference between the blue and orange lines gives the overpayment relative to metering. It is clear from the figure that in this case if a boiler owner chose to maximise their income whilst minimising heat they would operate in the limited band. The owner would then run the system so that it qualifies for the larger limited band (16.8%) payment and not the De Minimis band (16.7%). Hence, they would receive an income of £7,935 instead of the De Minimis £2,645, i.e. an overpayment of £5,290 in that year.

This results in three possible payment values namely the budgeted payment, the actual payment and metered payment. The budgeted payment is that which was used to inform the overall business case and represents the maximum payment if the boiler was operating at its historic load (£10,147), the actual payment received through the banding model (£7,935) and the equivalent metered payment (£2,645).

Note that a boiler can only claim up to the maximum historic load even if the participant increased their heat output (i.e. load >30% in this case). This is shown in the figure below whereby metering payments beyond 100% of the historic load would exceed the financial business case for the scheme and hence the scheme must be caped at 100% of the historic load.



% of historic load factor

In this scenario the taxpayer supported a payment of £7,935 instead of the expected £10,147 i.e. £2,212 less than the budgeted amount, but £5,290 more than what would be required through metering for the minimised heat output.

The spreadsheet provided calculates the maximum over payment using the three-banding model for 1,296 boilers where the historic load factor was estimated using DfE data.

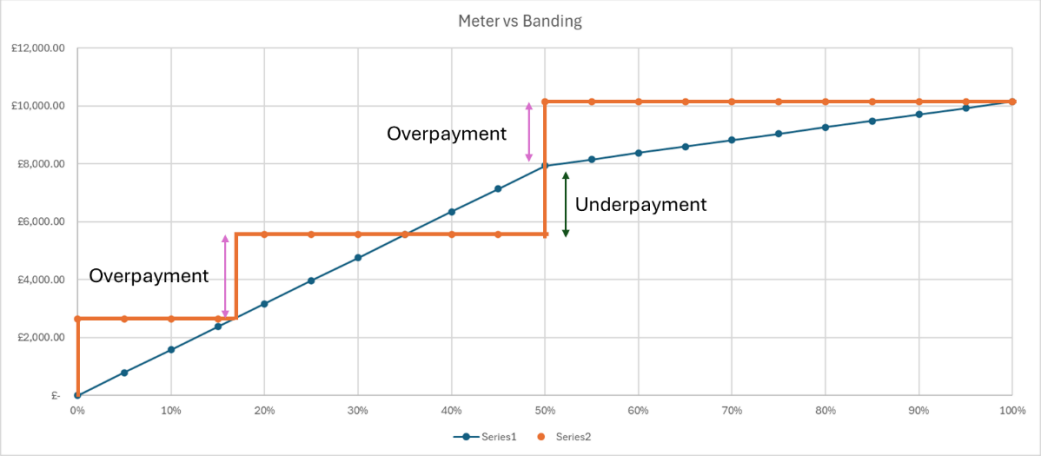
The resulting values for the year are summarised as follows:

Maximum (budgeted) pay	£13,386,734.46
Actual Payment	£10,426,247.45
Metering Payment	£3,860,146.29
Maximum overpayment	£6,711,993.02
Saving on budget	£2,960,487.00

This analysis also shows that the limited band is where most of the boilers would operate to achieve maximum income at minimal heat (996 boilers or 77%). 19% would operate in the top band while the remainder receive a De Minimis payment.

Option 1: Reduction of band payment

One option to reduce overpayment in the limited band is to lower the income received within the band from 50% of historic to, for example 35%. The result of this is shown in the figure below. Here boilers operating between 35% and 49.9% of historic load are underpaid relative to metering, while those operating between 16.8% and 34.9% receive an overpayment.



The impact of this is summarised in the data below.

Maximum (budgeted) pay	£13,386,734.46
Actual Payment	£9,126,137.30
Metering Payment	£4,845,606.08
Maximum overpayment	£5,217,762.52
Saving on budget	£4,260,597.16

Boilers: 27% (top band), 62% (limited band) and 11% (De Minimis)

Here the maximum overpayment drops from £6.7 to £5.2m and savings on the business case budget increase from £2.96m to £4.26m per annum. The limited band is reduced as more boilers are encouraged to move to the top and De Minimis bands. This results in a higher heat output as seen be the increase in metering payments (directly correlated to heat output) from £3.86m to £4.85m).

Underpaying participants relative to metering is unlikely to be acceptable to participants.

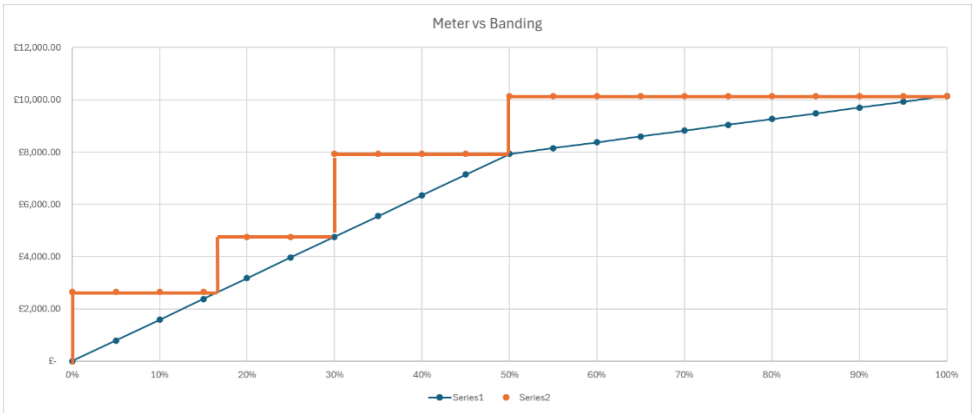
Option 2: Additional banding.

The splitting of the medium band into an upper and lower limited band is shown with results summarised below.

Maximum (budgeted) pay	£13,386,734.46
Actual Payment	£9,478,384.92
Metering Payment	£4,888,349.12
Maximum overpayment	£4,735,927.66
Saving on budget	£3,908,349.54

As expected, the introduction of a 4th band therefore encourages more users to move to higher usage with the maximum overpayments decreasing from £6.7m to £4.7m.

The likely difficulties with a 4th band are in the clear communication of this to participants as the kWh for each of these will vary based on historic loads.



Boilers: 26% (top band), 26% (upper limited), 44% (lower limited), 4% (De Minimis).

Metering additional points

Based on the calculations metering can only reduce the payments to participants and not increase these due to the historic cap. This historic cap is a key control feature of the closure model as it sets the maximum payments used to define the approved business case.

Meters are required to be compliant and have a limited lifespan. Hence approximately £1.3m would need to be spent by owners over the remaining period.

Unless absorbed by the existing DEL operating costs increased DEL would be required to act on the metering data. The extent of these costs was not considered as part of the model.

Conclusion:

The modelling shows that if participants chose to increase their income and minimise heat production then banding would encourage that behaviour relative to metering.

However, in doing so participants would reduce their overall income and negatively impact the rate of return (IRR) i.e. the £6.7m overspend on AME relative to metering equate to a £6.7 income loss to participants if metering was mandated. The IRR value is also dependent on the cost of fuel relative to the counterfactual. Given that biomass is predicted to remain cheaper than LPG during the closure period the driver is therefore to maximise heat output.

If only 5% of participants chose to exploit banding the projected savings over 10 years relative to metering is £3.3m which would need to be offset by approximately £1.3m in the installation of new meters as well as increased DEL to act on the DEL.

It is my opinion that at present the economic drivers are therefore towards heat maximisation and not minimisation. Interventions such as additional banding or band payment reduction can have an impact but are likely to cause confusion and hence are not recommended at this stage given the difference relative to the three band model.