

Guide to Meat Charging Discount System
September 2016

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REVISED MEAT CHARGING DISCOUNT SYSTEM

Principles

The current revised Meat Charging Discount Model (MCDM) is based on the following principles:

- The 2016/17 discount pot for England & Wales (referred to as GB in the model for simplicity) is hypothecated at £21.4m and the discount pot for Northern Ireland is hypothecated at £2m. These levels are commensurate with previous levels at current prices, i.e. there is no net gain or loss to the UK meat industry as a whole; essentially a zero sum game.
- The discount system is based on a regime similar to that of a progressive income tax system; where there will be single tiered discount bands based on usage of FSA inspection hours i.e. the level of discount reduces with each band as more hours of FSA resource are used. A graduated banding system would be adopted where only marginal hours are charged at a lower discount rate; avoiding a “cliff-edge” effect and ensures close competitors are treated equitably.
- In each slaughtering sector (red meat, poultry and game), the thresholds have been set so that the smallest 10% of plants (as measured by their use of inspector hours) receive the highest marginal discount rate, and the largest 10% of plants receive the lowest marginal discount rate. In each sector, each of the bandings contains 20% of the plants. The discount rate reduces between each band by the same amount and the gap between discount rates is set so that the entirety of the discount pot is used.
- Competitors comparable in type and volume should require similar levels of official controls and under the proposed system would have similar levels of discount.
- All Food Business Operators (FBOs) of slaughtering premises receive discounted hours, subject to compliance with EU minimum charging legislation. The FSA bears a portion of the cost of inspections and so there is an incentive for both the FSA and FBOs to make efficient use of resources.

BAND CALCULATIONS

Box 1:

The bandings are calculated using total hours:

$$OV\ Hours + MHI\ Hours + PIA\ Hours$$

Bands are calculated so the smallest 10% of plants fall into the first band, the largest 10% of plants fall into the last band, and 20% of plants fall into each of the bands in between.

The process is repeated 6 times for each of the 6 bands, starting from the first percentile that is the 10th percentile, then 30th percentile, 50th percentile, 70th percentile, 90th percentile and finishing with the maximum. This is done separately for each sector because each sector has its own sector specific set of bands – i.e. based on sector hours.

SETTING DISCOUNT RATES

Discount rates will need recalculating when the raw data is updated because one of the underlying conditions of the discount modelling is that 100% of the available discount pot is distributed as discount. So if the inspection hours in the industry change, the discount rates will need to be recalculated to ensure the aforementioned condition is met. The Steering Group on Meat Charging agreed the discount bands would be revalorised before each new financial year or when the hourly charge rates change.

DISCOUNT HIERARCHY

It was agreed during development of this system that hours would be discounted according to the below hierarchy (see table 1). The hierarchy order matters because discounts are applied progressively, with the first hours receiving the highest discount rate and marginal hours receiving a progressively lower discount rate as they reach higher bands, and each grade has a different hourly rate. Therefore, if higher cost hours are discounted first the value of the discount will be higher and vice versa for lower cost hours.

Table 1

GB Hierarchy		NI Hierarchy	
1st.	OV single time	1st.	OV single time
2nd.	OV time and half	2nd.	OV time and half
3rd.	OV double time	3rd.	OV double time
4th.	MHI single time	4th.	SMI single time
5th.	MHI time and half	5th.	SMI time and half
6th.	MHI double time	6th.	SMI double time
		7th.	PMI single time
		8th.	PMI time and half
		9th.	PMI double time
		10th.	MI single time
		11th.	MI time and half
		12th.	MI double time

INVOICE FORMULAS

Box 2: OV single time Invoice

Just as a progressive income tax works by accumulating a person's income and charging a tax rate on each pound depending on what tax bracket that pound falls into. The model accumulates each plant's hours and applies the appropriate discount rate to each hour depending on which band that hour is in. This is done under one formula but it can be separated into two parts:

Part 1 calculates the plant's discounted hours in the lower bands, i.e. if the total of a plant's hours reaches band 3 it will calculate the discounted hours in bands 1 and 2 by working out the effective chargeable hours up to the lower band (LB), calculated as follows:

$$\text{Band 1} = 0$$

$$\text{Band 2: } 100 \times (1 - 0.9) + 0 = 10$$

$$\text{Band 3: } 100 \times (1 - 0.8) + 10 = 30$$

In this example the effective chargeable hours for band 3 would equal 30 hours, i.e. the discounted hours in LB.

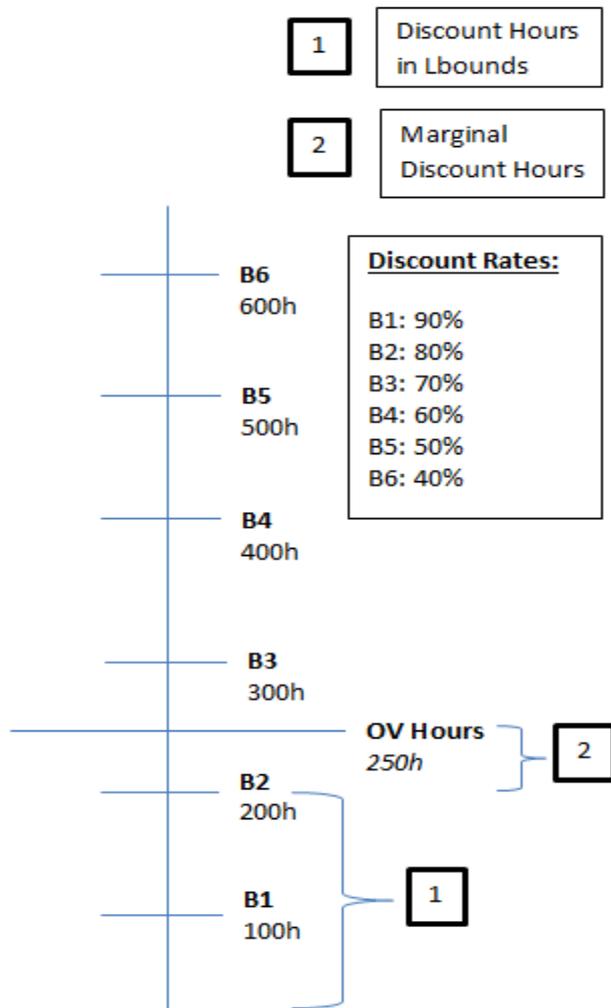
Part 2 will calculate the marginal discount hours in the highest band by taking the total OV single hours, subtracting all the hours up to the LB and discounting the remainder (marginal hours) at the appropriate rate. In Figure 1 the model would take the total 250 hours and subtract the 200 hours in the LBs, then discount the marginal 50 hours at B3's discount rate of 70% and return 35.

The formula then multiplies the total discounted OV Single hours by the OV Single rate.

The hourly rate is different for Northern Ireland and Great Britain.

Note: The hours calculated are "discount hours" i.e. hours discounted at the appropriate rate, this way the total discount hours can be multiplied by the hourly rate to calculate the invoice. This method is applied instead of calculating an invoice and then subtracting the discount.

Figure 1 Discount Bands – OV Hours



Note: for simplicity of illustration, graduated bands in figure 1 do not have multiple rates (single time, time and half and double time) and discount rates are illustrative and not actual rates.

All Other Invoices

For all the other invoice calculations there are 3 separate formulas:

1. $H1 B = H0 B$
2. $H1 B > H0 B$
3. $H1$ Invoice

Where $H1$ denotes the grade and rate for which an invoice is being calculated and $H0$ the grade and rate for the previous hours, i.e. the hours for which an invoice was just calculated. For example, based on the grade hierarchy, when calculating an invoice for MHI Single time: $H1$ = MHI Single time and $H0$ = OV Double time. The terminology CH1/CH0 is also used below, which denotes the total cumulative hours to that respective grade/rate, i.e. including the total hours of all those grades/rates below in the hierarchy.

Formula 1 is used when *H1* fall into the same band as *H0*. Formula 2 is used when *H1* fall into a higher band than *H0*. Formula 3 then just multiplies the relevant discounted hours (as calculated by either formula 1 or 2) by the relevant hourly rate. Each grade/rate is assigned its own discount band and has a separate invoice calculation formula to allow the model to treat each grade/rate separately and calculate invoices in line with the hierarchy (see glossary for explanations of the abbreviations used in the below box).

Box 3: Other Invoices

Formula (1) checks if *H1* band and *H0* band are the same, in which case *H1* fall into the same band as *CH0* and are simply discounted at the appropriate discount rate. As Figure 2 displays: the *MHI* hours and *OV* Hours are in the same band, so formula (1) will simply calculate:

$$H1 \times (1 - RH1) = H1 \text{ Discounted Hours}$$

For example in Figure 2 the calculation would be:

$$25 \times (1 - 0.7) = 7.5$$

If *H1* accumulate into a higher band than *CH0*, i.e. *H1* Band > *H0* Band, formula 2 is used to calculate the discounted hours.

Formula (2) calculates:

$$\begin{aligned} \text{Cum Pay } H1 - [\text{Cum Pay } H0 + (CH0 - LBH0) * RH0] + (CH1 - LBH1) \\ * RH1 = H1 \text{ Discounted Hours} \end{aligned}$$

For the example in figure 3, using the area numbers, the calculations would be:

$$2 - [3 + 4] + 1 = H1 \text{ Discounted Hours}$$

Where the areas correspond to:

2 = Cumulative Pay *H1*

3 = Cumulative Pay *H0*

4 = (*CH0* - *LBH0*) * *RH0* = marginal discounted hours *H0*

1 = (*CH1*-*LBH1*) * *RH1* = marginal discounted hours *H1*

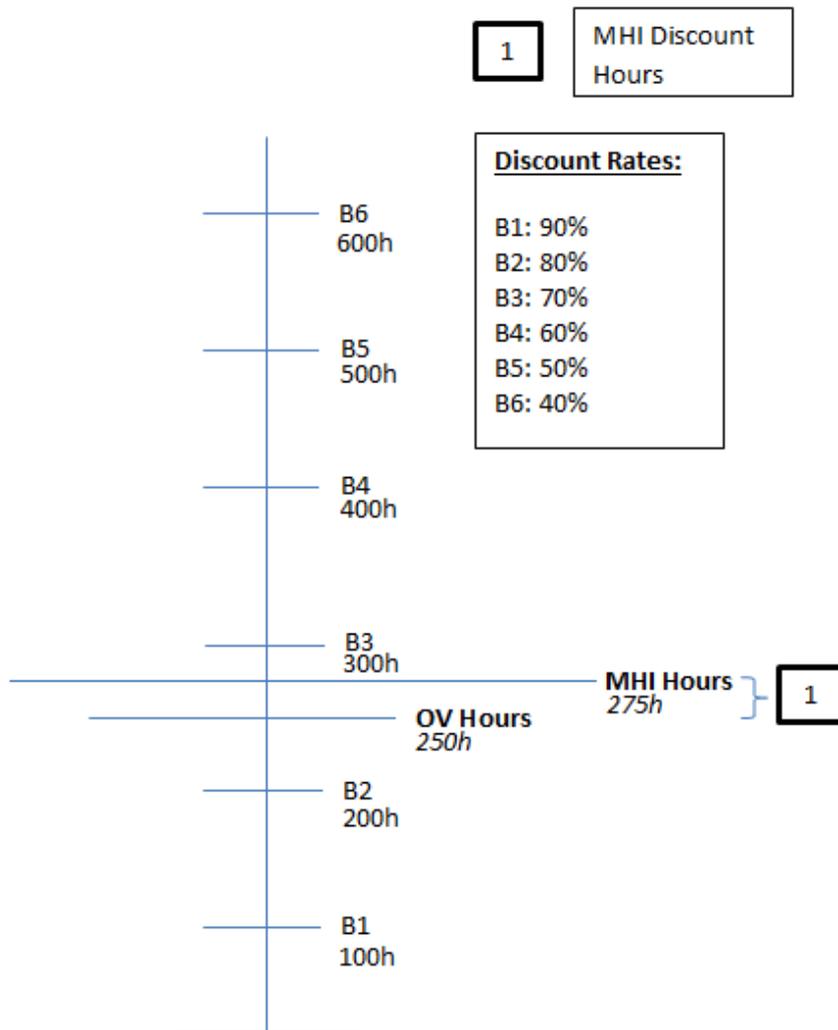
6 = 2 - (3 + 4) = discounted hours in lower bounds *H1*

Formula (3) again checks if *H1* band and *H0* band are the same and depending on the answer will multiply the relevant discounted hours (those calculated by either Formula 1 or Formula 2) by the relevant hourly rate.

$$\text{Discounted Hours} * \text{Hourly Rate}$$

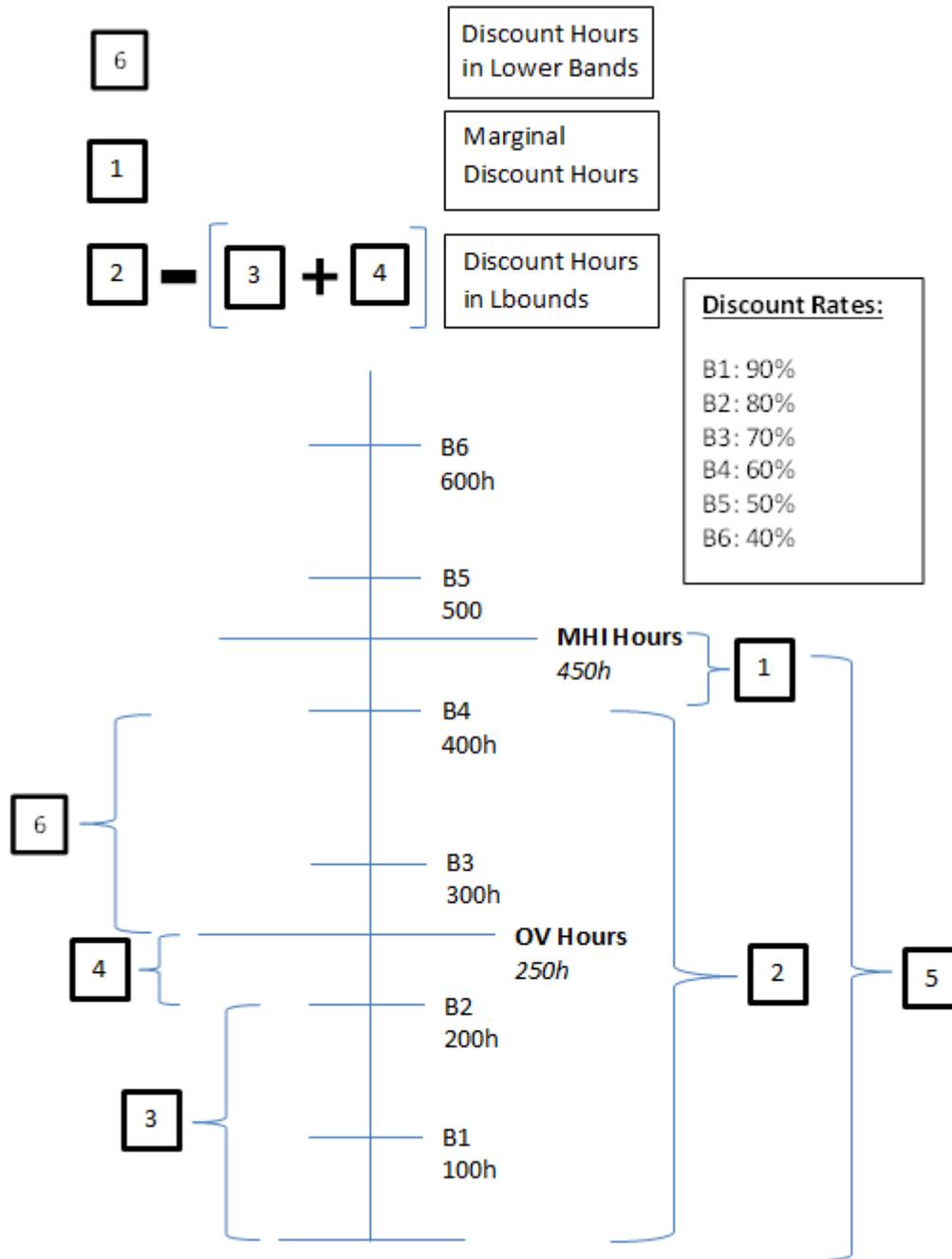
The above process is repeated for every invoice calculation above OV Single – this is because the same method can be applied so that grade/rate hours are discounted in line with the hierarchy.

Figure 2 Discount bands MHI Hours



Note: for simplicity of illustration, graduated bands in figure 2 do not have multiple rates (single time, time and half and double time) and discount rates are illustrative and not actual rates.

Figure 3 Discount bands MHI and OV Hours



Note: for simplicity of illustration, graduated bands in figure 1 do not have multiple rates (single time, time and half and double time) and discount rates are illustrative and not actual rates.

Plant Inspection Assistant (PIA) Support

PIA support is only relevant to poultry and rabbit slaughter houses. The hourly support offered to each PIA employed by the FBO is calculated so that it equalises the hourly rate of a discounted MHI and the PIA hourly rate (PIAHR). The discounted MHI rate in this case is calculated by treating each plant's PIA hours as MHI hours and discounting them accordingly within the discount system, which involves discounting them at the end of the respective hierarchy (GB or NI) and adding the invoice value onto the total inspector invoice (all grades/rates of inspector, i.e. everything not OV/VOs) – this produces a “Non-OV hypothetical invoice” (NOVHI). In GB the PIA hours are treated as MHI Single time and in NI the PIA hours are treated as PMI Single time – to calculate the NOVHI.

$$\textit{Total MHI Invoice} + \textit{Hypothetical PIA Invoice} = \textit{NOVHI}$$

The NOVHI is then divided by the total number of Non-OV hours (inspector hours + PIA hours) to calculate the “implicit discounted MHI rate” (IDMHIR).

$$\textit{NOVHI} \div \textit{Non - OV Hours} = \textit{IDMHIR}$$

The hourly PIA support is then calculated as the differential between the IDMHIR and the PIAHR. However, there can be two types of PIA in a plant. A “Normal PIA”, which is employed by the plant under plant determined terms and conditions and a “TUPE PIA”, which is a previous MHI (employed by the FSA) that has been transferred to a PIA (employed by the FBO) and will keep the same terms and conditions of employment, including hourly wage, as when they were an MHI. So the PIA support offered to each type of PIA will be different because they will have two different hourly rates. Therefore, the hourly PIA support must be calculated for each type of PIA, as follows:

$$\textit{IDMHIR} - \textit{Normal PIAHR} = \textit{Support for Normal PIAs (per hour)}$$

$$\textit{IDMHIR} - \textit{TUPE PIAHR} = \textit{Support for TUPE PIAs (per hour)}$$

The hourly support for each type of PIA is then multiplied by the respective number of PIA hours for each type of PIA to give total support for normal PIAs and total support for TUPE PIAs, which is done as follows:

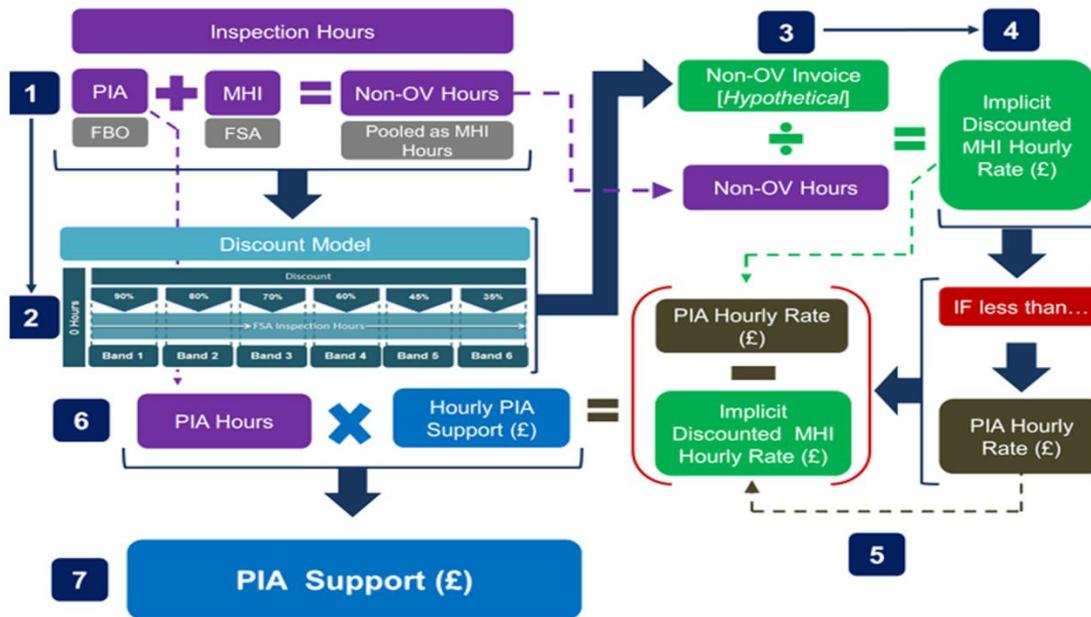
$$\begin{aligned} \textit{Support for Normal PIAs (per hour)} \times \textit{Normal PIA Hours} \\ = \textit{Total support for normal PIAs} \end{aligned}$$

$$\begin{aligned} \textit{Support for TUPE PIAs (per hour)} \times \textit{TUPE PIA Hours} \\ = \textit{Total support for TUPE PIAs} \end{aligned}$$

The two total supports for each type of PIA are then added together to provide total PIA support:

$$\textit{Total support for normal PIAs} + \textit{Total support for TUPE PIAs} = \textit{Total PIA support}$$

Figure 4 PIA Formula Process Map



Stage	Process
1	'PIA hours' are added to 'MHI hours' to calculate total 'Non-OV hours'
2	Total 'Non-OV hours' are discounted through the proposed system as if they were all MHI hours
3	This produces the 'Non-OV Invoice [Hypothetical]' (hypothetical because we have assumed PIA hours are MHI hours and this invoice is NOT charged, it is only used to calculate PIA support). The 'Non-OV Invoice [Hypothetical]' is divided by total 'Non-OV Hours' to calculate the 'Implicit Discounted MHI Hourly Rate (£)'
4	The 'Implicit Discounted MHI Hourly Rate (£)' is then compared to the 'PIA Hourly Rate (£)' and if the 'Implicit Discounted MHI Hourly Rate (£)' is lower: the FBO is due a supplementary PIA discount. <i>Note:</i> If the 'Implicit Discounted MHI Hourly Rate (£)' is higher than the 'PIA Hourly Rate (£)' the FBO is not due any supplementary PIA discount. This is because it is already paying a lower hourly rate for PIAs than it would do if it were employing MHIs.
5	Assuming the FBO is due a supplementary PIA discount: the 'Implicit Discounted MHI Hourly Rate (£)' is subtracted from the 'PIA Hourly Rate (£)' to calculate the 'Hourly PIA Support (£)'
6	The 'Hourly PIA Support (£)' is multiplied by the total number of 'PIA Hours' to calculate total 'PIA Support (£)'
7	Total 'PIA support (£)'

Glossary

- **OV:** Official Veterinarian
- **VO:** Veterinarian Officer
- **MHI:** Meat Hygiene Inspector
- **SMI:** Senior Meat Inspector
- **PMI:** Poultry Meat Inspector
- **MI:** Meat Inspector
- **PIA:** Plant Inspection Assistant
- **CH:** cumulative hours i.e. total of all hours up to the relevant grade/rate.
- **LB/L Bound/Lower Bound:** the hour threshold between the current band and the band below, e.g. if calculating an invoice for hours falling into band 4 the lower bound would be the hours threshold separating band 4 and band 3. For example in figure 1 Band 3 LB = 200h.
- **Cum Pay/CP:** short for “cumulative pay”, which is essentially the cumulative discounted hours up to the lower bound. For example in figure 1 CP Band 3 = $(100h * (1-0.9)) + (100h * (1-0.8)) = 30h$
- **RH:** R stands for discount rate – RH denotes the relevant discount rate for the highest band that the hours fall into. For example in figure 1: R OV Hours = 70%.
- **FBO:** Food Business Operator