

From: Murphy, Shane
To: [Dukelow, Victor](#); [Smith, Alan](#)
Subject: RE: Non-Domestic Renewable Heat Incentive
Date: 04 November 2016 16:23:00
Attachments: [image001.png](#)
[image002.gif](#)

Victor,

In relation to this I think this shows just how much the actual use of RHI diverged from the assumed use of RHI (and hence the load factor). The load factor assumption was pretty much based upon heating people in their work place where as the actual uses seem much more in the space of using heating within an industrial process (often Intensive Poultry Farming). So one of the key reasons why the load factor is so much high than the projected load factor is that the envisaged use of the heat turned out to be much different compared to what was assumed at the start (so load factors in reality were 3 or 4 times that assumed).

In terms of the 50kw boiler assumption this only underscores the extent to which the assumed typical heat load was off beam. The assumption was a 50kw boiler running 17% of the time, the reality tended to be a 99kw boiler running 50/60/70% of the time. So while the actual load factor might have been 3 or 4 times that assumed, the actual heat demand was 6 or 8 times that envisaged in the assumption.

I know I go on a lot about load factor, but this just shows to me just how much the actual uses diverged from the expected use – in a nutshell heat loads were off beam by a factor of 6 to 8.

Shane

Shane Murphy

Analytical Services
Department for the Economy
Adelaide House
39-49 Adelaide Street
Belfast, BT2 8FD
Tel: 028 9052 6951 (ext: 26951)
Mob: Personal information redacted by the RHI Inquiry
TextRelay: 18001 028 9052 6951
Web: www.economy-ni.gov.uk



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From: Dukelow, Victor
Sent: 04 November 2016 16:09
To: Murphy, Shane; Smith, Alan

Subject: FW: Non-Domestic Renewable Heat Incentive

Shane, Alan,

Grateful for your thoughts before I go back and would be good to touch base on the Cockburn e-mail too

Thanks

V

From: McCormick, Andrew (DFE)
Sent: 04 November 2016 15:58
To: Dukelow, Victor
Cc: Stewart, Chris (DFE); Cousins, Heather; Smith, Alan; Murphy, Shane; McCann, Brendan; Woods, Michael (DFE); McFarlane, Iain; Wightman, Stuart; Marten, Lucy; Coyne, Terence; McCoy, Laura
Subject: FW: Non-Domestic Renewable Heat Incentive

What light does this shed?

Many thanks.

From: Mark Cockburn [<mailto:mark.cockburn@cepa.co.uk>]
Sent: 04 November 2016 15:37
To: McCormick, Andrew (DFE)
Subject: Fwd: Non-Domestic Renewable Heat Incentive

Sent from my iPhone

Begin forwarded message:

From: "Abu-ebid, Mahmoud" <Mahmoud.Abu-ebid@ricardo.com>
Date: 4 November 2016 at 16:32:55 CET
To: Mark Cockburn <mark.cockburn@cepa.co.uk>, "Haydock, Heather" <Heather.Haydock@ricardo.com>
Subject: RE: Non-Domestic Renewable Heat Incentive

Dear Mark,

From Andrew McCormick's letter of 26 October to you, there appear to be two issues on which you are seeking details of the underlying rationale:

1. The assumption of a 17% load factor
2. The use of a 50kW boiler size as being representative for the 20-100 kW tariff band

Unfortunately, Oliver Edberg and Nick Barker are no longer with Ricardo and so we

have had to go back over internal communications, spreadsheets and reports to determine how the assumptions were developed.

17% load factor

For the 2011 report, the total heat consumption for each sector in NI was calculated based on the 2010 AECOM report 'Assessment of the Potential Development of Renewable Heat in Northern Ireland: Final Report', Table 7 together with IDBR and public building stock data obtained from the Northern Ireland Statistics and Research Agency. We defined the smallest 98% of service sector buildings as being 'small' and estimated an average heat consumption for small service sector buildings of 29,961 kWh/yr. The load factor depends on the size of boiler assumed, but from our experience of biomass boilers we knew that a load factor of around 20% was typical. This is also in line with the typical number of hours during the year when heating is needed in commercial and administrative types of building. The smallest common standard boiler size required to give a load factor at around 20% for the annual heat consumption of 29,961 kWh/yr is 20kW, giving a load factor of 17%.

50 kW boiler size

Following the consultation, feedback on the split of tariff bands at 45kW set out in the 2011 report, we reviewed the assumed average boiler sizing and increased it to 50kW for the proposed 20 to 100 kW band. As explained in the footnote under Table 3.1 in the 2012 report, we concluded that 20kWt was too small for a typical 'small' biomass boiler application in non-domestic properties. At this scale we saw no reason to adjust the load factor, so the 17% was maintained for a building with a higher annual heat consumption in proportion with the increase in assumed boiler size.

I hope this provides a clear picture of the rationale we followed at the time.

Best regards
Mahmoud

From: Mark Cockburn [<mailto:mark.cockburn@cepa.co.uk>]

Sent: 27 October 2016 14:50

To: Abu-ebid, Mahmoud <Mahmoud.Abu-ebid@ricardo.com>; Haydock, Heather <Heather.Haydock@ricardo.com>

Subject: FW: Non-Domestic Renewable Heat Incentive

Dear Mahmoud and Heather

Please see attached the letter I received yesterday. Amongst the questions they raise a couple are engineering related, for instance on why 50kw was chosen as the reference boiler. I'd be grateful if you could take a look. I'm trying to get back with the information by Nov 4th.

Thanks

Mark

From: McCoy, Laura [<mailto:Laura.McCoy@economy-ni.gov.uk>] **On Behalf Of** McCormick, Andrew (DFE)
Sent: 26 October 2016 11:16
To: Mark Cockburn <mark.cockburn@cepa.co.uk>
Cc: Cousins, Heather <Heather.Cousins@economy-ni.gov.uk>; Dukelow, Victor <Victor.Dukelow@economy-ni.gov.uk>; McCann, Brendan <Brendan.McCann@economy-ni.gov.uk>; Woods, Michael (DFE) <Michael.Woods@economy-ni.gov.uk>; Stewart, Chris (DFE) <Chris.Stewart@economy-ni.gov.uk>; Wightman, Stuart <Stuart.Wightman@economy-ni.gov.uk>; Marten, Lucy <Lucy.Marten@economy-ni.gov.uk>; Murphy, Shane <Shane.Murphy@economy-ni.gov.uk>; Smith, Alan <Alan.Smith@economy-ni.gov.uk>
Subject: Non-Domestic Renewable Heat Incentive

Mark

Please see attached correspondence from Andrew McCormick.

Regards,

Laura McCoy

Permanent Secretarys Office
Department for the Economy
Netherleigh
Massey Avenue
Belfast, BT4 2JP
Tel: 028 9052 9200 (ext: 29200)
TextRelay: 18001 028 9052 9200
Web: www.economy-ni.gov.uk



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