



Department for the
Economy

Non-Domestic Northern Ireland Renewable Heat Incentive (NIRHI)

Guide to Calculation of Voluntary Buy Out Payment

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Introduction

This guide explains how the Department will calculate Voluntary Buy Out (VBO) payments under the VBO arrangements, in accordance with regulation 23B(2) of the Renewable Heat Incentive Scheme Regulations (Northern Ireland) 2012¹ (“the Principal Regulations”). Whilst the Department will calculate the appropriate VBO payment for individual installations by undertaking the necessary calculations on a quarterly basis in line with the quarterly periodic payments under the Scheme, this guide demonstrates the Department’s calculation on an annual basis for ease. It aims to assist applicants in the understanding of the application of the principles underlying the VBO arrangements to potential real life installations. The examples shown in this guide are not reflective of any specific installation, and the individual circumstances of each installation will be considered in determining the appropriate buy-out payment amount.

This guide should be read in conjunction with the Department’s Guide to Voluntary Buy-Out Arrangements and the Frequently Asked Questions document.

¹ Regulation 23B was inserted by section 4 of the Northern Ireland (Regional Rates and Energy) Act 2019 [2019 c13]

Calculation of VBO payments

On receipt of a valid request for a buy-out payment the Department will determine the appropriate buy-out offer according to the following calculation.

$$\begin{array}{rclcl} \text{Buy-out} & = & \text{Amount due to} & - & \text{Payments} \\ \text{Payment} & & \text{provide 12\%} & & \text{received to date}_3 \\ & & \text{internal rate of} & & \\ & & \text{return on "net} & & \\ & & \text{capital cost"} & & \\ & & \text{over} & & \\ & & \text{20 years}_2 & & \end{array}$$

Where the "net capital cost" is:

$$\begin{array}{rclcl} \text{Direct} & + & \text{Indirect} & - & \text{Counterfactual} \\ \text{capital cost} & & \text{costs} & & \text{capital cost} \end{array}$$

² Adjusted to reflect the one-off payment being received earlier than under an ongoing tariff using a rate of 12%

³ Reduced to include only the capital element of previous periodic payments and adjusted to apply a 12% interest rate to the amount of previous "excess payments". Excess payments defined as being the difference between the capital element of payments received and the quarterly amount that would have been required to deliver a 12% rate of return, the interest being applied to the period between receipt of overcompensation and the one-off payment being made.

Worked example

A 99kW boiler with eligible capital costs of £35,000, indirect costs of £850 and annual heat generation of 130MWh per annum, commissioned and accredited in 2015-16 (prior to 18 November 2015). The one-off payment is assumed to be made in 2019-20

A kerosene counterfactual capital cost of £11,286 (£114 x 99kW) is assumed.

Therefore the net capital cost is £24,564.

Determination of amount due to provide a 12% internal rate of return on “net capital cost” over 20 years

Firstly, the amount due to provide a 12% internal rate of return on the “net capital cost” over 20 years will be calculated.

Table 1 below shows discounted annual payments required to deliver a 12% internal rate of return over 20 years. (Future annual payments required to deliver a 12% internal rate of return need to be discounted using a 12% rate from the year that payment is expected to be made).

Table 1: Annual Required Payment

	Annual Required Payment (undiscounted)	Discount Factor	Annual Required Payment (discounted)
Year 1	3,289	1.000	3,289
Year 2	3,289	1.000	3,289
Year 3	3,289	1.000	3,289
Year 4	3,289	1.000	3,289
Year 5	3,289	1.000	3,289
Year 6	3,289	0.893	2,936
Year 7	3,289	0.797	2,622

Year 8	3,289	0.712	2,341
Year 9	3,289	0.636	2,090
Year 10	3,289	0.567	1,866
Year 11	3,289	0.507	1,666
Year 12	3,289	0.452	1,488
Year 13	3,289	0.404	1,328
Year 14	3,289	0.361	1,186
Year 15	3,289	0.322	1,059
Year 16	3,289	0.287	945
Year 17	3,289	0.257	844
Year 18	3,289	0.229	754
Year 19	3,289	0.205	673
Year 20	3,289	0.183	601
Total	65,780		38,844

Determination of relevant payments received to date

Secondly, the relevant capital element of payments received to date need calculated.

Assuming an annual usage of 130MWh the table below documents Tier 1 payments received to date. In the years 2015-16 and 2016-17 the Tier 1 tariff applied to all heat output. Following the introduction of the 2017 Regulations the Tier 1 tariff applied to the first 1314 hours of heat output in the year, i.e. the first 130,086kWh in our example installation.

Payments received to date need adjusted in order that only the capital element of tariff payments received to date are included in the calculation. The Department has determined that the original tariff set in 2012 of 5.9p/kWh included 4.5p/kWh to reflect the capital element. Therefore the relevant element of Tier 1 payments for use in this calculation is 76.3% (4.5/5.9).

A further adjustment is required to account for actual periodic payments received (capital element) being greater than the annual payment that would have been required to deliver

a 12% internal rate of return. The “excess payment” in each year needs to be uplifted by 12% per annum for the period of time between the periodic payment (capital element) and the one-off payment.

Table 2: Payments Received to Date

	Periodic Payments Received	Periodic Payments Received (capital element (76.3%))	Annual Required Payment	Excess Payment	Excess Payment uplifted by 12% p.a.	Adjustment for Previous Payment ⁴
Year 1	8,320	6,348	3,289	3,059	4,813	8,102
Year 2	8,450	6,447	3,289	3,158	4,437	7,726
Year 3	8,710	6,646	3,289	3,357	4,211	7,500
Year 4	9,100	6,943	3,289	3,654	4,092	7,381
Total						30,709

Combining these calculations results in a Buy-Out Payment of £8,135, i.e. £38,844 minus £30,709.

⁴ Annual required payment plus excess payment uplifted by 12% pa to date of payment

Demonstration of Return on Net Capital Investment of 12% (IRR)

The payments delivering a 12% internal rate of return (IRR) are presented in the table below:

Table 3: Demonstration of IRR Calculation

	Net Capital Investment	Periodic Payments (capital element)	One-off VBO Payment	Net Cashflow
Year 0	-24,564	0	0	-24,564
Year 1	0	6,348	0	6,348
Year 2	0	6,447	0	6,447
Year 3	0	6,646	0	6,646
Year 4	0	6,943	0	6,943
Year 5	0	0	8,135	8,135
Years 6-20	0	0	0	0
IRR				12.00%

Typical Examples

The following tables summarise the potential payments ‘typical’ installations may be offered under the VBO arrangements. The examples shown below are not reflective of any specific installation, and the individual circumstances of each installation will be considered in determining the appropriate buy-out payment amount.

Table 4: Small biomass installation (15-19kW)

	Early Adopter/ Typical Installation	Late Adopter/ Typical Installation	Low Cost/Low User Installation	Low Cost/ High User	High Cost/High User	High Cost/ Low User	Average Cost/ Average User
Accreditation date	01/11/2013	25/02/2016	01/11/2015	01/11/2015	01/11/2015	01/11/2015	01/11/2015
Installation capacity	15	15	19	19	19	19	17
Eligible capital costs	£10,245	£10,245	£4,500	£4,500	£20,000	£20,000	£10,000
Indirect costs	£450	£450	£450	£450	£1,500	£1,500	£1,150
Counterfactual cost	£3,225	£3,225	£4,085	£4,085	£4,085	£4,085	£3,655
Average annual heat output	20,000	20,000	15,000	80,000	80,000	15,000	30,000
Load factor (approx)	15%	15%	9%	48%	48%	9%	20%
Estimate of VBO payment	£9,100	£8,300	£0	£0	£18,700	£25,300	£7,000

Table 5: Medium biomass installation (40kW)

	Early Adopter/ Typical Installation	Late Adopter/ Typical Installation	Low Cost/Low User Installation	Low Cost/ High User	High Cost/High User	High Cost/ Low User	Average Cost/ Average User
Accreditation date	01/11/2013	01/11/2015	01/11/2015	01/11/2015	01/11/2015	01/11/2015	01/11/2015
Installation capacity	40	40	40	40	40	40	40
Eligible capital costs	£14,480	£14,480	£9,000	£9,000	£20,000	£20,000	£14,500
Indirect costs	£1,000	£1,000	£500	£500	£1,500	£1,500	£1,550
Counterfactual cost	£4,560	£4,560	£4,560	£4,560	£4,560	£4,560	£4,560
Average annual heat output	53,000	53,000	35,000	175,000	175,000	35,000	137,000
Load factor (approx)	15%	15%	10%	50%	50%	10%	39%
Estimate of VBO payment	£1,000	£5,400	£0	£0	£2,100	£19,300	£0

Table 6: Medium biomass installation (99kW)

	Early Adopter/ Typical Installation	Late Adopter/ Typical Installation	Low Cost/Low User Installation	Low Cost/ High User	High Cost/High User	High Cost/ Low User	Average Cost/ Average User	Average Cost/ Average User/Low Counterfactual
Accreditation date	01/11/2013	01/11/2015	01/11/2015	01/11/2015	01/11/2015	01/11/2015	01/11/2015	01/11/2015
Installation capacity	99	99	99	99	99	99	99	99
Eligible capital costs	£35,800	£35,800	£25,000	£25,000	£50,000	£50,000	£35,500	£35,500
Indirect costs	£1,000	£1,000	£500	£500	£1,500	£1,500	£1,250	£1,250
Counterfactual cost	£11,300	£11,300	£11,300	£11,300	£11,300	£11,300	£11,300	£4,000
Average annual heat output	130,000	130,000	85,000	430,000	430,000	85,000	330,000	330,000
Load factor (approx)	15%	15%	10%	50%	50%	10%	38%	37%
Estimate of VBO payment	£0	£11,000	£3,200	£0	£2,800	£45,200	£0	£900

Table 7: Medium biomass installation (199kW)

	Early Adopter/ Typical Installation	Late Adopter/ Typical Installation	Low Cost/Low User Installation	Low Cost/ High User	High Cost/High User	High Cost/ Low User	Average Cost/ Average User
Accreditation date	N/A	25/02/2016	25/02/2016	25/02/2016	25/02/2016	25/02/2016	25/02/2016
Installation capacity		199	199	199	199	199	199
Eligible capital costs		£48,000	£35,000	£35,000	£85,000	£85,000	£50,000
Indirect costs		£1,000	£500	£500	£1,500	£1,500	£4,500
Counterfactual cost		£15,920	£15,920	£15,920	£15,920	£15,920	£15,920
Average annual heat output		260,000	175,000	520,000	520,000	175,000	225,000
Load factor (approx)		15%	10%	30%	30%	10%	13%
Estimate of VBO payment		£0	£0	£0	£52,100	£74,800	£14,100