

**From:** [Woods, Michael \(DETI\)](#)  
**To:** [Mills, John \(DETI\)](#)  
**Cc:** [Wightman, Stuart](#); [Hughes, Seamus](#); [Cardwell, Mark](#); [Bagdonaite, Dovile](#); [Stewart, Chris \(DETI\)](#)  
**Subject:** RE: RHI Report for Review  
**Date:** 24 March 2016 10:18:55  
**Attachments:** [image001.gif](#)

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John

I agree with you comment at the end of your paper that it would be useful to seek feedback from those staff in the department who were involved with the early days of RHI. As Alison Clydesdale was involved at the early stage and is still part of Energy Division i would appreciate it if you could ask her for any comments she has on the issues raised in our discussion document. I would be happy to meet with her to discuss further. I will seek comments directly for Joanne McCutcheon but i appreciate it has been some time since she left the branch and no longer has access to relevant records.

Michael Woods  
DETI IAS  
Ext 29892

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**From:** McCoy, Laura **On Behalf Of** Mills, John (DETI)  
**Sent:** 23 March 2016 13:20  
**To:** Woods, Michael (DETI)  
**Cc:** Wightman, Stuart; Hughes, Seamus  
**Subject:** RHI Report for Review

Michael

Please see attached from John Mills.

Regards,

**Laura McCoy**

Personal Secretary  
Department of Enterprise, Trade & Investment  
Netherleigh  
Massey Avenue  
Belfast, BT4 2JP  
Tel: 028 9052 9200 (ext: 29200)  
TextRelay: 18001 028 9052 9200  
Web: [www.detini.gov.uk](http://www.detini.gov.uk)

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[NI Year of Food & Drink 2016](#)

**Please consider the environment - do you really need to print this e-mail?**

**From:** [Woods, Michael \(DETI\)](#)  
**To:** [McCutcheon, Joanne](#)  
**Cc:** [Cardwell, Mark](#); [Bagdonaite, Dovile](#)  
**Subject:** FW: RHI report for review  
**Date:** 24 March 2016 10:51:28  
**Attachments:** [Appendix 1.xls](#)  
[Appendix 2.xls](#)  
[Appendix 3.xls](#)  
[AME Forecast \(Jan2016\).XLSX](#)  
[Interim Conclusions - RHI \(non domestic\) review.DOCX](#)  
[image001.gif](#)

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Joanne

Further to our previous conversation on RHI. We sent the attached interim findings to Energy Division for comments. However, on some of the issues such as the initial business case and the decision to not follow changes introduced by GB in 2013 I would be grateful if you could consider and let me have any comments you can make based on your recollection of events. I appreciate you no longer have access to the relevant Trim containers, if you feel you need access to be able to respond let me know and i will arrange with energy. To stress the point i am simply seeking feedback on the accuracy of our preliminary findings and whether or not there are facts we have not taken into account.

I would be grateful if you could let me have any comments by 15<sup>th</sup> April 2016

Happy to Discuss

Michael Woods  
DETI IAS  
ext 29892

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**From:** Cardwell, Mark  
**Sent:** 24 March 2016 10:40  
**To:** Woods, Michael (DETI)  
**Subject:** FW: RHI report for review

**Mark Cardwell**  
Internal Audit  
Department of Enterprise, Trade & Investment  
Netherleigh  
Massey Avenue  
Belfast, BT4 2JP  
Tel: 028 9052 9477 (ext: 29477)

TextRelay: 18001 028 9052 9477

Web: [www.detini.gov.uk](http://www.detini.gov.uk)



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## **Please consider the environment - do you really need to print this e-mail?**

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**From:** Woods, Michael (DETI) [<mailto:Michael.Woods@detini.gov.uk>]

**Sent:** 26 February 2016 17:37

**Subject:** FW: RHI report for review

Stuart / John

In order to move the Internal Audit review forward i have attached a paper outlining our interim conclusions on objectives 1 & 2 of the audit. A further paper on governance of the scheme will issue early next week. The paper attached is an initial attempt to establish the main issues and i would be grateful if you could consider and reply in writing with any comments or information which you feel we have missed or should consider. I would also like to then meet to work through your comments. I would appreciate if you could let me have your initial feedback by the end of next week Friday 4<sup>th</sup> March 2016.

As stated we will also let you have sight of our initial views on governance issues next week. I have also asked the team to undertake some further work on the budgetary issues, particularly the genesis of our understanding of the absence of DFP cover for 2015/2016 and the response to this. The team will be in contact next week to meet and discuss and i would appreciate if you can make time available when requested.

As i said this is out initial thoughts and we may identify other issues and would be keen for any feedback on the initial set of issues. At the end of the review there will be a more formal draft report, to which management responses will be sought but this interim set of issues is intended to identify any information we may not have seen and facilitate the agreement of a final draft report

Happy to Discuss

Michael Woods

DETI IAS

Ext 29892

**Initial Synopsis of issues identified by Audit Review****Objective 1 – Scheme Design and Management****1 Planning and Design****1.1 Scheme not planned for the number of installations estimated by external consultants**

The original Business Case did not specify the number of installations that management are effectively forecasting for the SR (spending review) period 2011-2015. The business plan was predicated on the funding available not on the average value of an installation which could have been tracked or the projected number of installations that were indicated. The projections provided by two external reviews were not taken into consideration.

The two reviews carried out by external bodies (CEPA Review of NI RHI July 2011 and Ofgem Feasibility Study December 2011) included projections for the uptake of the scheme. CEPA report stated that in the year 2013/14 they expected the non domestic scheme to grow to 1,300 installations. The Ofgem Feasibility Study stated that it was difficult to predict the growth of the scheme; however, based on their experience with the GB scheme and assuming that NIRHI will be 3% of the size of the GB uptake they predicted 1,600 installations by the year 2015/16 and 2,200 in the year 2016/17.

The average payment expected per installation was also not established in the Business Case nor was a system introduced to track any increase in average payment (average annual payment per installation in 2013 - £4,000, 2014 – £10,000 and 2015 – £17,000).

In conclusion, the business case and business planning process lacked a clear analysis of the number of installations or average payment per installation per specific technology that were anticipated and what effect therefore that demand could have on the NIRHI budget. Such absence of proper planning for the growth of the scheme impacted on the budgeting for the annual increase in number of new applications and financial size of commitments entered. The impact of the growth in value of individual awards from £4000 in 2013 to £17,000 in 2015 does not appear to have been tracked or the impact of that growth, if the original projected number of installations materialised, considered as a future budgetary risk.

**1.2 Options for outsourcing the delivery of the scheme were not fully evaluated**

Ofgem was appointed via a DAC as the delivery agent for the scheme. The main reason for appointing Ofgem according to the business plans (scheme and DAC) were their expertise in running energy schemes for NI before and their experience in administering the GB RHI scheme. In addition management was also of the opinion that in accordance to the Energy Act 2011 Section 114 which says

“(1) GEMA and Northern Ireland Authority (NIA) may enter into arrangements for GEMA to act on behalf of NIA or in connection with, the carrying out of any functions that may be conferred

on the NIA under, or for the purposes of, any scheme that may be established, under section 113”,

the NIRHI scheme could only be legally managed by Ofgem, NIAUR or DETI, however at scheme planning stage this was not discussed. Internal Audit noted that the MOU between Ofgem and DETI allows for the relationship to be terminated with notice by either party.

Based on the above assumptions management commissioned Ofgem (via DAC at a cost of £78,590) to carry out a Feasibility Study and proposal of how NIRHI would be administered by Ofgem and what the estimate costs of administration were going to be.

Other options for the scheme administration were not comprehensively evaluated. Given the life of the scheme (20 years) and the funding involved (potentially over £500m during 20 years) there should have been a more comprehensive options analysis carried out and all possible scenarios sufficiently evaluated such as DETI Energy retaining the control of administration but outsourcing individual functions such as accreditation, inspections and etc. No consideration was also provided in relation to the resources DETI in-house needed to adequately oversee the scheme and ensure sufficient control of payments.

In terms cost and savings analysis, in their Feasibility Study Ofgem referenced to the savings that DETI is going to benefit from by employing them to administer the NIRHI scheme (page 24). The Feasibility Study does not actually state how they have arrived at the assumptions on how much other delivery agents might charge. Therefore there is no objective assessment of whether the costs and savings quoted by Ofgem are founded on evidence or assumptions. In addition, we noted that DETI has not carried out independent evaluation or obtained quotes from other organisations to be able to substantiate the comparative analysis.

### **1.3 Inaccurate assumptions and confusion over funding after the SR period 2011-15**

Funding offered to the NI by the HMT was £2/£4/£7/£12 (£25m) during the period from 2011 to 2015. The DETI Business Case under the section on Affordability (page 23 para. 2.60-2.62) presented an over optimistic assumption on the funding available for the scheme past the SR. IAS did not obtain any evidence to prove that the funding past the SR period quoted on the Business Case was officially offered to DETI.

The document bases its financial projections on GB's State Aid application which anticipates that the expected subsidies paid in 2020 in the GB RHI will be in order of £2.3bn, NI's 3% share of which would account for £70m. It also quotes the assumption in the CEPA report that the officially offered funding of £25m for that period would be supplemented in future years by an annual increase of £5m p/a until 2020, however it does not go on to say where CEPA obtained these figures.

The table on page 44 of the scheme business case describes funding available and provides estimation on 2 scenarios of funding after 2015/16 – (1) assuming an additional £5m p/a every year until 2020 and (2) the funding remaining static at £12m p/a after the end of year 4. The scenario of the funding remaining static would mean that the scheme would effectively have to be closed for new applications from 2015 and only the commitments entered in previous years of the scheme will be honoured.

Taking into consideration that funding beyond 2015/16 was not guaranteed, the scheme should have been planned on a more pessimistic scenario and allowed for a certain element of optimism bias. Similarly measures of effective budget management should have been built in the scheme management mechanism. This would have allowed for a better evaluation of the risk of over commitment of funding and for appropriate mitigation strategies to be built in the scheme.

#### **1.4 Benefits realisation plan and financial scheme performance projections not comprehensive**

The benefits realisation plan (business case page 100) alludes that in the year 2015 the Branch are anticipating in the region of 6880 installations (this figure includes domestic RHI) and the budget of £10m to cover the incentive payments. The latter installation and funding ratio allows for an average annual incentive of approx. £1,500 in comparison to the average actual incentive on the non-domestic RHI of nearly £17,000 as at 2015.

This raises two questions. Firstly the scheme performance and financial projections were incorrect at a start and secondly weaknesses in the monitoring of the scheme performance and long term financial planning have led for the opportunities missed to apply relevant measures such as degression and capping etc.

#### **1.5 Errors in the scheme Business Case referring to the year that the funding is guaranteed**

Page 94 of the Business Case section on Affordability provides ambiguous reference to funding of £25m being available to 2015/16. This could give an impression that the financial year of 15/16 is included in the funded period.

We understand that this ambiguity might have caused a certain level of confusion and may have had an influence on the date for DFP approval running out missed, however, the conditions of the DFP approval were absolutely clear about the length of financial cover provided.

#### **1.6 A signed and dated copy of the Business Case for the NIRHI scheme is not available.**

Internal Audit has been unable to obtain a signed and dated copy of the Business Case. Electronic versions only have been provided.

### **Project/Scheme Management and Monitoring**

#### **1.7 Project management of NIRHI Non-Domestic scheme**

DFP guidance says that a project is a set of agreed activities with a definite start, middle and end. Project management provides structure and control of the project environment so that the agreed activities will produce the right products or services and meet the objectives raised. Best practice dictates that common elements of project management include the following stages such as initiation, planning, execution and controlling, including monitoring and reporting, and closing. All of the stages must be appropriately controlled to keep track of the

progress, ensure that note is taken of the critical dates or events of the project and appropriate decision points.

The NIRHI scheme has not being treated as a project and controlled using a project management methodology, which, in IAS opinion has influenced the appearance of a number of issues highlighted in this report and resulted in a number of opportunities missed.

In addition, lack of appropriate the project management methodology and process over the NIRHI scheme and inadequacies in risk and control environment have resulted in confusion and reactive responses from management – ‘fire extinguishing’ rather than a proactive approach to controlling the scheme. This has also resulted in the number of risks materialising and opportunities missed.

### **1.8 Absence of appropriate risk management at a scheme level**

In accordance to the best practice in project management endorsed by the NICS PRINCE2, risk management is one of the major integral elements of the project management which enables the achievement of project specific objectives.

For the purposes of the Business Case drawn to appraise the NIRHI scheme, a scheme specific risk register was drawn to accompany the business case and the following scheme specific risks were identified:

- Incorrect tariff levels set (too low or too high)
- Low uptake
- Harm to other sectors
- Failure of renewable heat supply
- Insufficient budget secured for the RHI payments or for the administration of the scheme
- Failure to meet EU and Executive set targets
- Failure to receive State Aid approval
- Inadequate resource to deliver projects/separate key functions including staff
- Instances of fraud
- Failure in administration of RHI

Although there were a number of relevant risks identified at the scheme planning stage and a number of mitigation strategies considered, the risk management process was not continued through the life of the scheme leading to a few risks materialising. No formal risk mitigation strategy was developed and implemented for the NI scheme.

IAS notes that a divisional and corporate risk registers include reference to risk related to the NIRHI scheme however these registers are strategic and high level by nature and do not allow for the adequate operational risk management processes to be included and monitored.

### **1.9 PPE for the RHI scheme has not been carried out by August 2015**

DFP approval of funding letter for the period from 2012 to April 2015 indicated that the PPE for this part of the scheme is due at the end of August 2015. IAS understands this has not been carried out due to issues related to the scheme which took priority (such as revising of tariffs, getting approval for funding and introduction of the Domestic scheme).

If an evaluation of the scheme had been undertaken in 2014, early 2015 a number of issues such as budgetary cover, alignment of controls to those in the GB scheme, introduction of controls over demand and average award increases may have been identified and mitigation strategies could have been in place prior to the increase in demand in late 2015.

## Other potentially misses opportunities

### 1.10 DECC example of introducing tiered tariffs and degression was not followed by NIRHI scheme

DECC started introducing degression of their tariffs early in 2013. Certain conditions were imposed for the tariff reduction, the frequency of reduction and levels. Under DECC regulations where the conditions for tariff reduction are met, a relatively low level reduction, usually starting at 5% is applied. However the level of reduction can increase depending on:-

- How well the scheme is doing overall (DECC has regard to two total scheme triggers – 50% and 100%) and
- Levels of expenditure for each tariff category (DECC has regard to two triggers for each type of technology)

Simply put, the higher expenditure is forecast to be for the scheme as a whole and for one or more technologies, the more likely it is that one or more tariffs will be reduced. Conversely, where overall scheme expenditure is low (i.e. less than 50% of what was expected) there will be no reduction to any tariffs. The decision on tariffs in GB RHI is taken on a quarterly basis.

Before taking any decision in relation to change of their RHI scheme and introduced degression DECC consulted all their stakeholders including DETI. Nevertheless DETI did not take this opportunity to make an informed decision on mirroring the processes put in place in GB to control the NIRHI budget. IAS have not been presented with any evidence that any discussion or consultation took place in DETI at the time or that any formal analysis was undertaken which would enable management to have an informed decision in relation to tiering and degression of the NIRHI.

In the hindsight, DETI scheme management would have benefited from introduction of similar triggers of take up of the scheme. **Appendix 1** demonstrates research carried out by IAS on changes in tariffs in DECC and comparing these to NIRHI and **Appendix 2** shows the growth of the NIRHI scheme in terms of installations, technology and average annual payment. Although IAS have not made any calculations to provide the projections of funding needed should the triggering and tiering had been introduced earlier, it is quite clear that one type of technology was being very popular in NI and even with at the time when degression on these tariffs was introduced in NI the tariffs for the same type of technology in GB were significantly lower.

This conclusion is only strengthened by the fact Ofgem's Fraud Management Strategy acknowledges the risks in relation to over generation and gaming of the scheme and identifies mitigation/prevention strategy which is reduction of incentive to over generate by tiered tariffs. Unfortunately DETI has not demonstrated that the decision not to follow GB's lead on managing demand/budgetary/ gaming risk was as a result of having formally and adequately evaluated the options available.



### **1.11 Reactive introduction of NIRHI non domestic tariff tiering**

NIRHI non domestic tariff tiering was introduced from 18 November 2015. Management advised that this was done as a reaction to growth in installations accredited from May 2015 onwards. Because tariff tiering and degression triggering had not been inbuilt into NIRHI legislation at an earlier date it took management over 6 months to have necessary legislation brought forward during which time the number of applications received doubled.

In relation to the methodology behind the levels of the of the tiered tariffs introduced, IAS was not presented with a business case or other reference document which demonstrates how the tiered tariff levels were determined and what are the anticipated benefits to have these tariffs introduced and their impact on scheme budget. It needs to be confirmed that in setting these tariffs consideration was given to the current costs of the installations and the rate of return set at a level in line with state aid approval an only on a level necessary to incentivise the scheme. IAS consider that in setting these tariffs there should be a clear understand of whether as a result the risk of gaming or incentive to over generate heat is mitigated.

### **1.12 Review of the scheme has not been carried out in 2014**

As part of scheme monitoring exercise, the Business Case for the NIRHI scheme states that the review of the NIRHI would take place in 2014 and will assess scheme uptake effectiveness, VFM and progress against objectives.

IAS were advised that this review has not been carried out to date. Management explained that a similar review before introducing of Phase 2 (domestic) was carried out by CEPA. IAS is of the opinion that because this review was initiated before the NIRHI scheme started in late 2012 (report issued in final June 2013) and concentrates on inclusion of the domestic customers and more advanced technologies it does not provide an adequate basis for a evaluation of the RHI Non-domestic scheme. In addition, at this early stage of the scheme (7 applications received in 2012/13) it would have been too early to make any recommendations in relation to VFM or progress against objectives.

In hindsight, should this review been carried out it in 2014 it may have helped early identification of some current issues before they materialised. For example, in terms of biomass boilers (most popular in the scheme) the VFM study could have highlighted that due to improved return on investment and fall in wood pellet prices it became far easier to generate profit while generating excessive heating. IAS have carried out a speculative research exercise to establish what was the push of the market to encourage business to take up biomass heating - see **Appendix 3**.

## **Objective 2 BUDGET PLANNING, MONITORING AND PAYMENTS**

### **2.1 Budget Monitoring Committee has not been established**

Scheme management at the time of obtaining approvals for the scheme stated that a Budget Monitoring Committee would be established to militate against any budgetary risk however this has not happened to date.

### **2.2 Delayed approach in clarifying scheme funding beyond March 2015**

There has been a lot of confusion in relation to what funding will be available to NIRHI after March 2015. IAS had sight of correspondence from Energy Branch to the DECC in attempts to clarify the situation. A certain level of confusion was also noticed in the way the funding for NIRHI is calculated, i.e. application of the 2.98% formula.

This situation has caused delays in fully understanding and evaluating the impact of the funding available to the NIRHI scheme after from April 2015. However IAS believe that such confusion was totally unnecessary as the funding was known from the end of 2013 - the letter from G. Baker to A Foster (respective ministers of DECC and DETI at the time) of 29<sup>th</sup> November as part of stakeholder consultation on Publication of Government Response for the Non Domestic RHI Consultations and Domestic RHI Cost Control. Among other issues the letter advised on DECC Deployment of Non Domestic Budget Management Policy and it has indicated that £430 million will be available across GB for 2015/16 and that this will include both non domestic and domestic RHI. This equates at 3% to £12.9 for the NI scheme, less than the assumptions in the Business Case and therefore this should have triggered a reassessment of future budgetary needs.

The branch should have noted this funding available and should have made provisions accordingly.

### **2.3 Delays in obtaining DFP approval for the scheme**

The deadline for application to DFP to request for extended approval for funding for the NIRHI scheme was missed and this has resulted in irregular expenditure during the period when the cover was missing.

The DFP approval for the funding of the scheme covered expenditure to the end of March 2015 and was in line with the funding offered to NIRHI by HMT (£25m in 4 years). A new application should have been submitted to get DFP approval after the period ended, however this wasn't done until 27 October 2015. DFP subsequently approved funding from 29 October 2015 until 31<sup>st</sup> March 2016. A retrospective cover was not obtained from DFP meaning that expenditure which occurred between April 2015 and 29th October 2015 was to be deemed irregular. Unfortunately this was also the period during which significant growth in the numbers of new applications was witnessed (over 1200 new applications received) and the total irregular experience was quantified at £17.74 million in 2015/16 and £355 million across the 20 year life of the commitments entered (letter from E Morelli - DFP of 21 Dec 2015).

The issue of the absence of DFP cover has been identified by management in June and but it took until October to submit a formal Business Case to DFP which could result in potentially £355 million in irregular spending over 20 years.

### **2.4 Over- commitment of the scheme funding**

The NIRHI scheme has experienced an unprecedented spike in new applications prior to introduction of the cost control measures. In total 1283 new applications have been received for the non domestic scheme in the period from April to end November 2015 which represents an increase of 184% in comparison to the number of applications received throughout the life of the scheme since October 2012.

This situation results in the scheme being severely over-committed and may result in DETI pressure of £265 million over the 20 years additional to the funding which will be received from HMT. Appendix 4 – AME Forecast (received from management).

In response to this situation management have instigated closure of the NIRHI scheme for new applications from the end of February 2016 however further decisions will have to be made in relation to the existing commitments and scheme management until 2036. The absence of any in built controls in the scheme to allow the scheme to be suspended in the face of budgetary uncertainty has greatly limited the Department's ability to respond quickly to these events.

## **Scheme incentive payments and Ofgem operational costs**

### **2.5 Business case for Ofgem administration costs does not include 100% contingency required by Ofgem**

Business case and the DAC for employing Ofgem as delivery agent to administrate the scheme of behalf of DETI was presented as £386k for development and £136k, £157k, £198k and £249k to cover operational costs for 4 years. In total £1,126 million. Ofgem Feasibility Study which informed the Business Case of the funding necessary advised that they would recommend a 100% contingency to be applied for the development budget.

The Business Case should have included full costs of the contract including contingency which could then be revised down.

### **2.6 Business Case not changed to reflect material change**

This comes from point 2.5 above. The original business case was presented for CPD approval and appraised estimated a value of £1,126 million. However Ofgem requested for an amendment of the costs on 21 December 2012 – £433k for development and £140k for operational costs. In total £573k for the year 2012/13. Ofgem explained that the increase was due to delays with launching of the NIRHI scheme.

Ofgem also made changes to their estimated operational costs for the subsequent years – 13/14 £165k; 14/15 £224k and 15/16 £342k. Thus, due to the increase of actual and forecasted costs the total project (DAC) value increased to £1,304 million representing approx 23% increase of the value of the project appraised via DAC. This represents a material change in the project resources and in accordance to the best practice a project reappraisal and re-approval should have been sought from relevant levels of approval and delegation as per Departmental Financial Procedural Guidance.

### **2.7 Ofgem's proposed change of the methodology in calculating DETI's share of administration costs – evaluation has not been carried out**

In October 2014 Ofgem has sent a Change Control request to DETI requesting for the methodology of calculating operational costs to be changed to 3% of the total operational expenditure (NIRHI + GB RHI) from 2014/15. This request has been approved by DETI management on 31 October 2013, however IAS did not see any evidence of an evaluation being carried out to establish what effect this change would have on DETI resources and if such a change was VFM.

**2.8 Lack of challenge of the figures provided by Ofgem**

DETI are responsible for making payments to Ofgem in relation to covering of their share of operating costs and transferring of the funding to cover periodic incentive payments made by Ofgem to NIRHI generators.

IAS have carried out testing of both of the above and can conclude that we have seen some evidence of efforts by Energy finance staff in scrutinising payment information supplied by Ofgem. However the information on payments requested from DETI was not sufficiently backed up with assurances from Ofgem such as senior accounting officers' signature or other documentation to verify that it was accurate and complete.

Another example, payments in relation to operating costs were agreed to be calculated using a certain formula and always based on actual costs incurred by Ofgem. However no documentation was available to see how the costs presented for payment have been worked out. Overall the annual total cost requested from DETI was very close to the cost forecasted via feasibility study and had little relevance to the number of DETI applications dealt with (9 in 12/13; 136 in 13/14 and 694 in 14/15)

In addition, in relation to the periodic incentive payments, although there has been a certain system (excel spreadsheet based) established in Energy Finance for tracking and checking payments information, including providing estimates for reporting and budgeting including approvals, the function is understaffed and reliant on a single officer working part time. The understaffing of the function also resulted that the system itself has never been challenged to establish whether it is fit for purpose nor had there been any guidance or comprehensive processes drawn and approved in case of absence or change of critical staff.

## Tiering of tariffs in the GB Scheme

DECC released a public paper for Non Domestic Renewable Heat Incentive Scheme Degression Mechanism in November 2014 (to introduce changes to the degression mechanism) which tells how degression works.

It reminds that degression as means of controlling budget for the no-domestic scheme has been introduced since April 2013 and is expected to be in application until March 2016. The paper also explains how the tariffs are reduced when estimated expenditure thresholds or triggers are reached. Risk based approach is also applied i.e. expenditure is evaluated for the scheme as a whole and for one or more technologies.

The paper also provides details of how the GB scheme treats the applications in between the period of announcing the change (every quarter, giving 1 months notice). Monthly updates on scheme performance and progress toward expenditure thresholds are published on DECC website and is available to public.

### Analysis of DECC and NIRHI tariff changes for biomass boilers (99% of NIRHI installations are biomass boilers)

GB scheme		until Jan 13	after Jan 13	after Jul 13	May - Jul 14	Jul - Oct 14	Oct - Jan 15	Jan - Feb 15	Feb - Apr 15	Apr - Jul 15	Jul - Oct 15	Oct - Jan 16	after Jan 16
Boiler size small (up to 200 kW)	Tier 1	8.94	8.94	8.94	8.94	8.53	7.72	6.91	6.91	5.87	4.4	4.18	3.76
	Tier 2	2.34	2.34	2.34	2.34	2.24	2.03	1.83	1.83	1.56	1.17	1.11	1
medium (up to 1 MW)	Tier 1	5.49	5.49	5.18	5.18	5.18	5.18	5.18	5.18	5.18	5.18	5.18	5.18
	Tier 2	2.34	2.34	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24
large (from 1 MW)	Tier 1	1.02	2.03	2.24	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03
	Tier 2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

cf. Northern Ireland scheme 98% of biomass boilers would fall into the category for small in the GB scheme

### NI scheme

Boiler size	before 18 Nov 15	after Nov 15
less than 20 kW	6.7	Tier 1 6.7
		Tier 2 1.5
up to 100kW	6.4	Tier 1 6.4
		Tier 2 1.5
up to 1 MW	1.5	Tier 1 1.5
		Tier 2 n/a

In addition NIRHI introduced the annual cap of max 400,000 kW per annum

## Technology and payment analysis

## Tarrifs recommended by CEPA report in 2012

	tariff in pence*	number of live installations	average total payment in 2015
Biomass domestic less than 20kW	6.2	2	£3,466.00
Biomass small from 20 to 100 kW	5.9	737**	£17,000.00
Biomass medium from 100 to 1000 kW	1.5	13	£23,178.00
GSHP domestic less than 20 kW	8.4	3	£2,130.00
GSHP small from 20 to 100 kW	4.3	2	£4,345.00
GSHP large more than 100 kW	1.3	0	0.00
Solar Thermal All	8.5	2	£131.00

\* tariffs are subject to the annual RPI uplift

\*\* of which less than 45kW 63  
(This is the banding proposed by Ofgem cf. installations less than 45 kW MCS provides assurance)

## **IAS Research test**

IAS contacted one of the companies in Northern Ireland selling and installing biomass boilers (the company name is known to IAS) and pretending to be genuine business requested information on installing biomass boiler in a warehouse. The company advised that it would cost in the region of £30,000 to buy a medium size boiler plus installation costs and receive 6.4 p for each kWh generation for 20 years. At the same time the wood pellet fuel cost is roughly 3.6 p per generation of each kWh of heat.

So under the condition of the scheme prior to 18th November 2015 by installing 99 kWh boiler which is 90% efficient and which is run on 24/7 operation a business may expect to generate approx 2000 each day or 700000 kwh every year. This in turn would result in RHI of £44,800 paid on an annual basis and almost £900,000 throughout the 20 year life of the incentive. Assuming the capital cost of £60,000 and the fuel consumption to generate the same amount of heat the expenditure would be less than £600,000 throughout the life of the scheme thus resulting in over £300,000 in profit from generating heat.

We understand that this information gathered from suppliers should be allowed for certain element of optimism bias, however these figures sufficiently demonstrate how the NIRHI payments, before introduction of the cap and tariff tiering, was a very tempting option for businesses to add to profit.



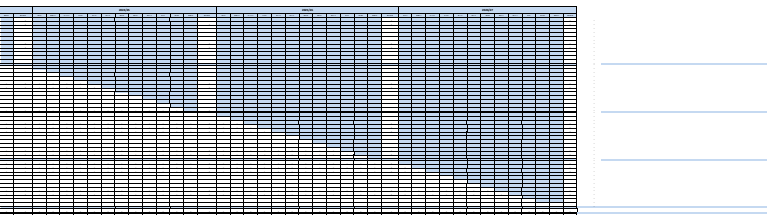
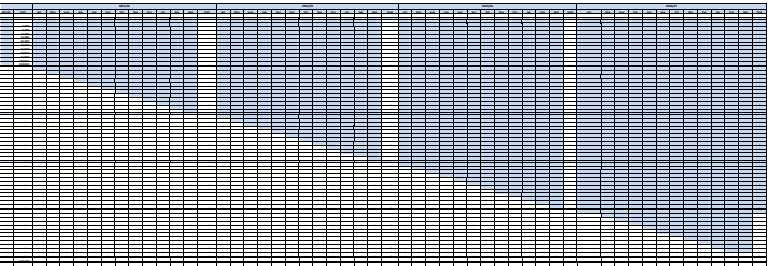


Line Item	Description	Quantity	Unit	Rate	Amount
1	...	...	...	...	...
2	...	...	...	...	...
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97	...	...	...	...	...
98	...	...	...	...	...
99	...	...	...	...	...
100	...	...	...	...	...

Line Item	Description	Quantity	Unit	Rate	Amount
1	...	...	...	...	...
2	...	...	...	...	...
3	...	...	...	...	...
4	...	...	...	...	...
5	...	...	...	...	...
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Small colored boxes (yellow, red, blue) and numerical values, possibly a legend or key.

Line Item	Description	Quantity	Unit	Rate	Amount
1	...	...	...	...	...
2	...	...	...	...	...
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4	...	...	...	...	...
5	...	...	...	...	...
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Detailed Summary of Performance Data (2016-2017)												
Year	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
2016	85	88	90	92	95	98	100	100	100	100	100	100
2017	88	90	92	95	98	100	100	100	100	100	100	100

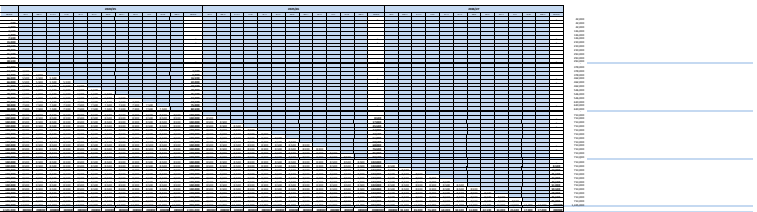
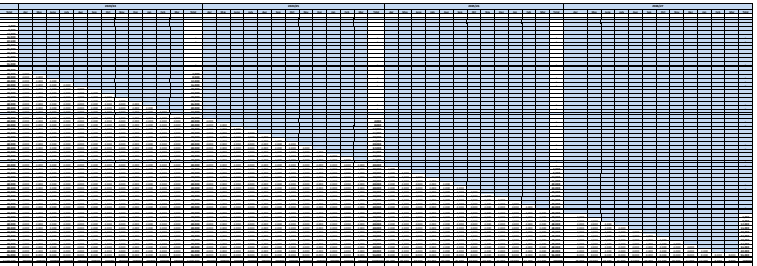
2016 Performance Report												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Q1 Avg	85	88	90									
Q2 Avg				92	95	98						
Q3 Avg							100	100				
Q4 Avg									100	100	100	100
Annual Total	85	88	90	92	95	98	100	100	100	100	100	100

**Legend**

- 85-90: Green
- 91-95: Yellow
- 96-100: Red
- 100+: Blue

2016 Performance Report

2017 Performance Report												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Q1 Avg	88	90	92									
Q2 Avg				95	98	100						
Q3 Avg							100	100				
Q4 Avg									100	100	100	100
Annual Total	88	90	92	95	98	100	100	100	100	100	100	100



Year		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Program Investment	2015-2016	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
	2020-2021																	
New Customer Spend (Net)	2015-2016	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
	2020-2021																	
Total	2015-2021	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000
	2020-2021																	

1,683,000

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Program Investment	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
New Customer Spend (Net)	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Total	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000

Year		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Program Investment	2015-2016	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
	2020-2021																	
New Customer Spend (Net)	2015-2016	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
	2020-2021																	
Total	2015-2021	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000	11,000,000
	2020-2021																	

Notes

- \* Additional spend for marketing/PR initiatives is currently being budgeted and will increase over spending on other non-essential.
- Non-essential spend is currently being budgeted and will increase over spending on other non-essential.

Year

2015-2021

2020-2021

2015-2016

2017-2018

2019-2020

2021-2022

2023-2024

2025-2026

2027-2028

2029-2030

2015-2030

A small data table grid located at the top left of the page. It contains approximately 10 columns and 15 rows. The grid features alternating red and green cells in a repeating pattern, with yellow cells interspersed at the top.

A large data table grid occupying the central portion of the page. It consists of many columns (likely representing time slots or categories) and approximately 40 rows. The grid is filled with a repeating pattern of red and green cells, with yellow cells at the top. The table is oriented vertically in the image.

Receiv  
Annot

A small data table grid at the top left, which is highlighted in yellow. It contains a few columns and rows.



The image shows a large grid of colored cells, likely representing a data table or a map. The grid is composed of many small squares, some of which are colored in shades of green, red, and purple. The grid is oriented vertically on the page.

Received  
Annotated