

**From:** [McFarlane, Iain](#)  
**To:** [Linton, Rachel](#)  
**Subject:** FW: Business Case for Domestic RHI for DFP approval  
**Date:** 04 August 2014 09:46:21  
**Attachments:** [DFP cover note - RHI.DOC](#)  
[DFP Proforma - RHI.DOCX](#)  
[BUSINESS CASE FOR THE INTRODUCTION OF THE DOMESTIC RENEWABLE HEAT INCENTIVE - V3.DOCX](#)  
[NI RHI Phase 2 - final report.PDF](#)  
[Annex B - RHI Risk Register.PPT](#)

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Rachel,

Hi, can we get this one away first today?

Thanks

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**From:** McFarlane, Iain  
**Sent:** 01 August 2014 10:28  
**To:** Linton, Rachel  
**Subject:** FW: Business Case for Domestic RHI for DFP approval

Rachel,

Would you mind checking this one for me? Does it look ok given your knowledge of this project and what should go to DFP? I will submit to DFP instead of Trevor

Thanks

Iain

---

**From:** Cooper, Trevor  
**Sent:** 31 July 2014 16:29  
**To:** McFarlane, Iain; Hutchinson, Lee-Anne  
**Subject:** FW: Business Case for Domestic RHI for DFP approval

Iain

With apologies to Lee-Anne, I was not able to get to this – can you please consider and take forward.

Trevor

---

**From:** Hutchinson, Lee-Anne  
**Sent:** 23 July 2014 16:40  
**To:** Cooper, Trevor  
**Cc:** McFarlane, Iain; Linton, Rachel  
**Subject:** FW: Business Case for Domestic RHI for DFP approval

Trevor

Please find attached the RHI documents from energy division to be submitted to DFP. I have looked at previous emails and I identified that ACB need to prepare the DFP cover letter and DFP proforma which I have drafted and attached.

I am not sure if I have included enough information as I couldn't find many DFP subs from DETI HQ. I have taken the background information from the synopsis that the energy team sent for the casework committee. I spoke to Davina and think that the original business case was approved in 2012 which included the £25m for RHI domestic but I wasn't sure if this was

required to be included.

Please let me know if you want me to make any changes.

Thanks  
LA

**Lee-Anne Hutchinson**

Accountability & Casework  
Department of Enterprise, Trade & Investment  
Netherleigh  
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**Please consider the environment - do you really need to print this e-mail?**

**From:** McCay, Davina  
**Sent:** 23 July 2014 15:19  
**To:** Hutchinson, Lee-Anne  
**Cc:** Wightman, Stuart; Hughes, Seamus  
**Subject:** Business Case for Domestic RHI for DFP approval

Lee-Anne

As discussed, please find attached revised Business Case for Domestic RHI plus annexes to be forwarded to DFP for approval.

If you need anything further, please let me know.

Regards

Davina

**Davina McCay**

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



**From:** Trevor Cooper

**Date:** 23 July 2014

**To:** Michelle Scott

**Cc** Andrew McCormick  
Eugene Rooney  
Mike Thompson  
Iain McFarlane  
Rachel Linton  
Lee-Anne Hutchinson  
Sylvia Sands DFP  
Sarah Benton DFP

**DETI HQ – RENEWABLE HEAT INCENTIVE (DOMESTIC RHI)**

1. I attach the following papers relating to the business case for policy proposals for the second phase of the Northern Ireland Renewable Heat Incentive (RHI), primarily relating to the domestic market:

- DFP Cover Note
- DFP Proforma
- Business case
- NI RHI phase final report
- RHI Risk Register

**Background and Funding**

2. The Department of Energy and Climate Change (DECC) has indicated that renewable heat levels of around 12%, coupled with 30% renewable electricity consumption are required for the UK to meet its requirements under the EU Renewable Energy Directive. Subsequently, the Strategic Energy Framework (SEF) was agreed by the Northern Ireland Executive in September 2010 and a target of 10% renewable heat by 2020 was included; this is a challenging target given that the baseline level at that time was 1.7%.

3. Renewable heat technologies are currently unable to compete with existing fossil fuel alternatives, given the higher capital costs and also the lack of understanding and awareness amongst consumers of what are often seen as innovative technologies. In order to help develop this market and meet the targets, economic analysis has shown that financial incentives are required.
4. £860million has been made available from central Government funding to support the introduction of a RHI in GB over the period 2011-2015; HMT notified the Northern Ireland Executive that £25million of funding was available for a NI RHI over the same period.
5. DECC introduced a GB Renewable Heat Incentive for the non-domestic market in November 2011. Northern Ireland was not included within that scheme because of the marked difference in the two heat markets i.e. in GB the natural gas market accounts for 68.8% of heating demand with oil only accounting for 10% whereas in Northern Ireland oil accounts for around 77%. It was therefore considered appropriate to separately assess how the NI renewable heat market could be developed. Following an economic appraisal and public consultation, proposals for Phase 1 of the NI RHI (for non domestic installations) and for the RHPP (for domestic installations) were approved by DETI Casework, DFP and the Minister. It was made clear at that time that the Department intended to develop a second phase of the RHI which would extend it to include domestic installations.

### **Affordability**

6. Funding of £25m is available to 2015/16 for this scheme. HMT have already indicated that any spending commitments made via the initial NI RHI (i.e. through the £25m) will be met by ongoing RHI payments from HMT.
7. DECC has secured £430m for the GB RHI for 2015/16. The DECC Minister has indicated to Minister Foster that the Barnett consequential of this funding should be forthcoming to Northern Ireland.
8. DETI Finance Branch has advised that DFP has indicated that AME budgets are formulated using the information provided in AME forecasting exercises,

and there is no separate bidding process. Therefore, for RHI the current profile is £6.35m 2014/15, £9.5m 2015/16, £13.5m 2016/17, £18.5m 2017/18, £24.5m 2018/19 and £31.0m 2019/20.

**Process**

9. The RHI project was approved by the DETI casework committee.

**Value for Money Conclusion**

10. DETI is content to recommend this case formally to DFP for its consideration.

11. I am happy to discuss.

**TREVOR COOPER**

# DFP Supply Division Business Case Proforma

1. Name of Department: Department of Enterprise Trade & Investment

2. Name of Agency (if applicable): N/A

3. Name of NDPB (if applicable): N/A

4. Project Title: Domestic Renewable Heat Incentive for Northern Ireland

5. TRIM Container Reference:

6. Is this Case a Resubmission? Yes:  No:   
(Double click relevant box and select 'checked')

7. Departmental Contact Details:

Job Title:	Head of Branch
Branch:	Accountability and Casework Branch
Address:	DETI, Netherleigh, Massey Avenue, Belfast
Postcode:	BT2 4JP
Tel No:	02890529227

8. Type of Business Case:

Capital: <input type="checkbox"/>	IT: <input type="checkbox"/>	Consultancy: <input type="checkbox"/>	Policy: <input checked="" type="checkbox"/>	Other: <input type="checkbox"/>
--------------------------------------	---------------------------------	--	--	------------------------------------

(Double click relevant box and select 'checked')

9. Is the Business Case:

Standard <input checked="" type="checkbox"/>	Novel <input type="checkbox"/>	Contentious <input type="checkbox"/>	Setting a Precedent <input type="checkbox"/>
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(Double click relevant box and select 'checked')

10. Is this a PPP or PFI Project? Yes:  No:

(Double click relevant box and select 'checked')

10 (a). If a PPP or PFI Project is this the:

OBC: <input type="checkbox"/>	FBC: <input type="checkbox"/>
-------------------------------	-------------------------------

*(Double click relevant box and select 'checked')*

11. Costs Outlined in Business Case:

Capital Cost	
Resource Cost	

12. Estimated Project Start Date:

	Nov	2014
--	-----	------

13. Estimated Project Completion Date:

		2027
--	--	------

14. Post Project Evaluation (PPE) Due Date:

31	March	2022
----	-------	------

15. Please state the job title and

Stuart Wightman and Davina McCay
----------------------------------

/or name of body responsible for

Energy Branch
---------------

completing the evaluation:

Address:

DETI, Netherleigh, Massey Avenue, Belfast
---

Postcode:

BT2 4JP
---------

Tel No:

028 9029535
-------------

16. Has Business Case been cleared by Departmental Economists?

Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
---	-----------------------------

*(Double click relevant box and select 'checked')*

17. Has Business Case been approved by the Minister?

Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
------------------------------	--

*(Double click relevant box and select 'checked')*

19. Accounting Officer Declaration:

I am content with the regularity and propriety of this business case and that it represents value for money for the Department.

Signed:

On behalf of the Departmental Accounting Officer

Date:

## FOR SUPPLY USE ONLY

Date Received in Supply:

(Day)	(Month)	(Year)
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Date Entered on IMS:

(Day)	(Month)	(Year)
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TRIM Container Reference:

**Signed:**

**Date:**

**BUSINESS CASE FOR THE INTRODUCTION OF THE DOMESTIC RENEWABLE  
HEAT INCENTIVE**

**Prepared by Peter Hutchinson**

**Revised by Stuart Wightman (22/714)**

**Approved by: John Mills**

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## **Background**

This business case relates to policy proposals for the second phase of the Northern Ireland Renewable Heat Incentive (RHI), primarily relating to the domestic market.

The RHI scheme was launched in November 2012 as a measure to support the government's target of 10% of energy used for heating to come from renewable sources (from a 2010 baseline of 1.7%) in line with EU obligations and targets set in the Programme for Government and Strategic Energy Framework.

The RHI currently provides an ongoing financial incentive for non-domestic generators of renewable heat for the lifetime of the technology. A system of tariffs were introduced and payments made by multiplying the actual heat output by the relevant technology tariff. The tariffs are designed to ensure that the additional costs of the renewable technology are recovered and a rate of return of 12% applied. The domestic market was not included in the first phase of the RHI because of issues relating to measuring heat in this sector and the design of an appropriate tariff system.

Before the RHI scheme was introduced an economic appraisal was carried out, a public consultation held and a business case submitted and approved by DFP Supply. The scheme was also approved by the DETI Minister, the EU Commission (regarding State Aid guidelines) and a DETI Casework Committee. The proposals outlined within this business case are within the original funding envelope of Phase 1 of the scheme. A similar scheme applies in Great Britain, however, with different tariff levels.

Phase 1 of the scheme was limited to the non-domestic sector and for well established technologies (biomass, ground source heat pumps and solar thermal). Phase 2 of the scheme is therefore intended to extend the scheme to the domestic sector and expand the list of technologies / applications incentivised in the non-domestic sector. These proposals have been developed in conjunction with external consultants and been subject to a public consultation process.

This phasing mirrors the approach taken in GB. Phases 1 and 2 of the GB RHI schemes were launched in November 2011 and April 2014 respectively.

This business case has been informed by independent analysis carried out by Cambridge Economic Policy Associates (CEPA) and Ricardo-AEA. A copy of this report is attached at **Annex A**.

This business case seeks approval for areas relating to the domestic RHI only (the introduction of support for new technologies under the expansion of the non-domestic scheme will be dealt with separately in due course). There are two main areas;

1. The introduction of a domestic RHI for domestic properties in Northern Ireland;

2. The administration arrangements for this domestic scheme via the procurement of a bespoke system. (Whilst the procurement process is carried out in-house staff will administer the scheme).

## ***The Strategic Context***

### **The European requirement for renewable energy**

- 1.1 Through the European Directive 2009/28/EC<sup>1</sup> (the Renewable Energy Directive) the EU has committed itself to sourcing 20% of its energy needs from renewable sources by 2020. The Directive requires Member States to achieve mandatory overall targets, but allows this to be achieved in any combination across three sectors:
- energy from renewable sources for heating and cooling;
  - electricity from renewable energy sources; and
  - energy from renewable sources in transport.
- 1.2 The UK's overall target is set at 15%. While the Government has not committed to a particular sector mix, the "lead scenario" in DECC's Renewable Energy Strategy<sup>2</sup> envisages the overall target being met through renewables fulfilling:
- 12% of heating and cooling needs;
  - more than 30% of electricity demand (29% large and 2% small-scale electricity generation); and
  - 10% of transport energy needs.
- 1.3 The Renewable Energy Directive is not directly binding on devolved administrations but renewable deployment in all regions contributes equally to the requirements placed on the UK under the Renewable Energy Directive and each region will be expected to implement a plan for delivery.
- 1.4 In September 2010, DETI committed to achieving a renewable heat target of 10%<sup>3</sup> by 2020 in its Strategic Energy Framework<sup>4</sup>, subject to an economic appraisal and a decision on the best means of support.
- 1.5 While achieving the 2020 target will require a significant change in how our energy needs are met, it is only a small part of the way towards the target of reducing greenhouse gas emissions to 80% below 1990 levels by 2050, as required by the 2008 Climate Change Act.

### **The Northern Ireland Heat Market**

- 1.6 The Northern Ireland heat market is almost wholly dependent on imported fossil fuels. This has obvious implications for fuel security and carbon

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<sup>1</sup> Directive 2009/28/EC, on the promotion of the use of energy from renewable sources  
<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF>

<sup>2</sup> DECC, July 2009, Renewable Energy Strategy,  
[http://www.decc.gov.uk/en/content/cms/what\\_we\\_do/uk\\_supply/energy\\_mix/renewable/res/res.aspx](http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/res/res.aspx)

<sup>3</sup> While this target is two percentage points below that for the UK as a whole, the Northern Ireland commitment to 40 percent renewable electricity generation is ten percentage points higher than DECC's commitment for the UK as a whole.

<sup>4</sup> DETI, 2010, A Strategic Framework for Northern Ireland, <http://www.detini.gov.uk/deti-energy-index/deti-energystrategic-energy-framework.htm>

emissions as well as meaning that Northern Ireland consumers are subject to global price fluctuations beyond the control of DETI or the NI Executive. The total heat demand in Northern Ireland has been estimated at 17,362 GWh per year, this compares to 668,000 GWh per year in the United Kingdom as a whole and 64,534 GWh per year in the Republic of Ireland. Of this total, only 1.7% or 300 GWh comes from renewable sources, with the majority from biomass boilers.

- 1.7 The main heating fuel in Northern Ireland is heating oil. Refined oil products account for around 77% of heat demand overall. This is a very different situation to Great Britain where the natural gas market is prevalent and accounts for 68.8% of heating demand with heating oil only accounting for 10%. The natural gas market in Northern Ireland is still developing and therefore only accounts for 17% of overall demand. The remaining heat demand in Northern Ireland is met by electricity or *Economy 7* (1.2%), coal (3.2%) and renewables (1.7%)<sup>5</sup>.

Fuel / Energy type	Domestic (GWh)	Industrial, Commercial and Public (GWh)	Total (GWh)	Percentage of total
Oil	9,241	4,103	13,444	77%
Gas	973	1,991	2,964	17%
Economy 7 Electricity	176	41	217	1.2%
Renewables	No information on split		290	1.7%
Coal	110	438	547	3.1%
<b>Total</b>			<b>17,362</b>	

- 1.8 Looking towards 2020, analysis undertaken<sup>6</sup> indicates that Northern Ireland's overall heat demand is predicted to fall from 17.4 TWh per year to 16.7 TWh with rises in demand from new development being outweighed by reductions in demand and energy efficiency improvements.

Sector	2010 heat demand (GWh)	Additional heat demand by 2020 (GWh)	Reduction in heat demand through energy efficiency (GWh)	Net 2020 heat demand (GWh)
Domestic	10,644	621	1,048	10,217
Commercial	2,148	97	189	2,056
Industrial (EU-	3,828	274	382	3,720

<sup>5</sup> Study into the potential development of the renewable heat market in Northern Ireland, AECOM Ltd and Pöyry Energy Consulting, 2010

<sup>6</sup> Study into the potential development of the renewable heat market in Northern Ireland, AECOM Ltd and Pöyry Energy Consulting, 2010

ETS sites)				
Public (not housing)	742	34	65	711
<b>TOTAL</b>	<b>17,362</b>	<b>1,026</b>	<b>1,684</b>	<b>16,704</b>

### The domestic market and the Renewable Heat Premium Payment (RHPP)

1.9 The domestic sector represents the largest heat demand for Northern Ireland at 61% of the total demand; this is higher than the total UK figure of 55% heat demand for domestic heating. Around 3,828 GWh or 22% of Northern Ireland's heat demand is accounted for by large industrial users, defined as those covered by the European Union Emissions Trading Scheme (EU-ETS), of which there are only 17 sites<sup>7</sup>. The commercial sector and public sector account for 12% and 4% of the total demand respectively. The heating demand by sector is detailed below.

Sector	Heat demand (GWh)	% total
Domestic	10,644	61%
Commercial	2,148	12%
Industrial (EU-ETS sites)	3,828	22%
Public (not housing)	742	4%
<b>TOTAL</b>	<b>17,362</b>	<b>100%</b>

1.10 As the RHI, when launched in November 2012, did not cover the domestic market DETI put in place an interim scheme called the Renewable Heat Premium Payment (RHPP) that provided up-front support for domestic consumers wishing to install a renewable heat technology. Domestic households were not included in Phase 1 of the RHI as further analysis was required on the appropriate method of incentivisation and administration.

1.11 The RHPP launched in May 2012 and provided support ranging from £320 - £3500 depending on the technology installed. The scheme was administered by DETI.

<sup>7</sup> DETI understands that only 16 of these sites may now be operating however for the purposes of the original analysis it was assumed that all 17 were in operation.

1.12 The performance of the scheme (at 07/05/14) is detailed below;

Technology	Applications		Vouchers redeemed	
<b>Air Source Heat Pump</b>	194	12%	96	10%
<b>Biomass</b>	816	50%	429	45%
<b>Ground Source Heat Pump</b>	150	9%	98	10%
<b>Solar Thermal</b>	477	29%	326	35%
<b>Totals</b>	1637		949	

1.13 As at 07/05/14, DETI had supported 797 technologies at a cost of £1.44m. The total capacity of the new renewable heat technologies is in the order of 13.9 MW.

1.14 The scheme was launched as an interim measure before a domestic RHI scheme could be designed, appraised and implemented. When launching the RHPP it was made clear that applicants would remain eligible to apply for a domestic RHI scheme when in place. This was in line with proposals in GB where a RHPP scheme was launched in 31 March 2012 and the domestic RHI came into effect on 8 April 2014.

### Targets for Renewable Heat

1.15 In 2010, the DETI Minister committed the Department to achieving a level of 10% renewable heat by 2020. This target is included in the Strategic Energy Framework. An interim target of 4% by 2015 is included in the Programme for Government.

1.16 Taking into account the 300 GWh of renewable heat already present in Northern Ireland, a target of 10% for 2020 equates to an additional 1300 GWh of renewable heat. The 4% target equates to roughly an additional 385 GWh (assuming a heat demand of around 17.1 TWh in 2015).

1.17 These are challenging targets, in order to demonstrate the scale it is useful to note that for 10% renewable heat to be achieved solely through installations within the domestic sector; around 16% of the existing housing stock would be required to switch to renewable heat technologies. This would mean modifying around 11,800 homes per year. This is far in excess of the current uptake of the RHPP. It is estimated currently that around 7% of boilers are replaced on a yearly basis.

1.18 The total heat capacity incentivised under the RHPP and the RHI to date is 31MW. In addition, DETI is aware of a large renewable combined heat and power plant to be commissioned in the North West in 2015 that will contribute a further 8.3MW of heat capacity. Accounting for this planned development, the installations incentivised to date by DETI and existing renewable pre 2010 the estimated current level of renewable heat is estimated at around 2.5%.

**The GB RHI**

- 1.19 The non-domestic RHI scheme has been in place in England, Scotland and Wales since November 2011. The scheme has many similarities to the NI scheme however the tariffs in GB tend to be higher than those offered in NI; this is largely due to the fact that it is assumed that GB consumers will be switching to renewables from natural gas, whereas NI consumers are moving from oil. As oil is more expensive there is less of a gap in terms of the costs of switching to renewables and therefore less incentive is required.
- 1.20 Northern Ireland was not included in the GB RHI scheme as it was not covered by the primary legislation that underpinned the scheme. Also as the energy markets are very different in GB and NI it was determined that a separate approach be taken.
- 1.21 DECC has made clear plans to introduce a domestic RHI scheme in England, Scotland and Wales from March 2014. The tariffs will be paid for 7 years and those who availed of the RHPP in GB remain eligible to apply. By introducing a similar scheme in NI, DETI would be ensuring there is parity and equality of opportunity for consumers.

## ***The need for expenditure***

### **Key drivers**

- 2.1 The two key drivers at a European level are the need to reduce greenhouse gas emissions and the binding targets for renewable energy imposed on each European Member State.
- 2.2 There are other drivers for renewable heat which relate to security and diversity of energy supply. Northern Ireland is highly dependent on imported oil for heating (and to a lesser extent imported gas). Increasing the proportion of renewable heat will lessen this dependence. While there will be some increase in dependence on imported biomass, the increased diversity of fuel supply should improve security.
- 2.3 An additional consideration, and risk associated with limited DETI intervention, is the fact that GB is already in the process of introducing long term support for the domestic sector. If DETI were not to do likewise in NI, there would be significant public disapproval, arguments of disadvantage and the benefits associated with renewable heat that are available in GB, would not be recognised in NI.

### **Need for a specific approach**

- 2.4 The heat market in Northern Ireland is very different to the market in GB. Northern Ireland is largely dependent on oil with a developing natural gas market, whereas in GB the gas market is well established and is the predominant fuel source.
- 2.5 There are also differences in fuel prices between GB and Northern Ireland and the amount of our income that goes towards heating our homes and businesses, as a consequence the levels of fuel poverty tend to be higher. Finally, the geography of Northern Ireland is very different to GB, with Northern Ireland being more rural with fewer larger cities and therefore has a very different heat density. These factors meant that it was appropriate for a separate scheme to be introduced in Northern Ireland to specifically incentivise the local market.

### **Failure to meet 10% target**

- 2.6 The 10% renewable heat target is included in the Strategic Energy Framework, with an interim target of 4% by 2015 included in the Programme for Government. The achievement of these targets will contribute to wider energy goals of increased security of supply, reduced carbon emissions and opportunities for 'green jobs'.
- 2.7 The failure to achieve the target could ultimately lead to the UK as a whole failing to meet targets set under the RED. Whilst Northern Ireland is not a

member state of the EU it is expected to contribute to UK targets. The failure of the UK to meet RED targets would lead to infringement fines that would be apportioned by DECC on those administrations that have not contributed to the target. In addition, failure to achieve these public targets would lead to criticism of DETI by stakeholders. DETI must therefore demonstrate that levels of renewable heat have increased significantly by 2020.

### **Need to support the domestic sector**

- 2.8 The domestic sector is the largest sector in terms of heat demand and therefore for the target to be met and for renewable heat to become a well-established and understood form of heating it is important that domestic applications are supported as well as commercial applications.
- 2.9 The domestic sector also faces the biggest barriers in terms of up-front capital cost in relation to renewable heat and therefore Government intervention is required to encourage domestic customers to switch to renewable technologies. Renewable heating solutions (such as community heating) could provide opportunities for more efficient heating systems and lower heating bills.
- 2.10 In addition, the Minister has previously committed the Department to introducing a domestic RHI scheme and those availing of the RHPP scheme have done so on the basis that they would remain eligible to apply for the ongoing incentive when it became available. Not introducing the scheme would go against this commitment.

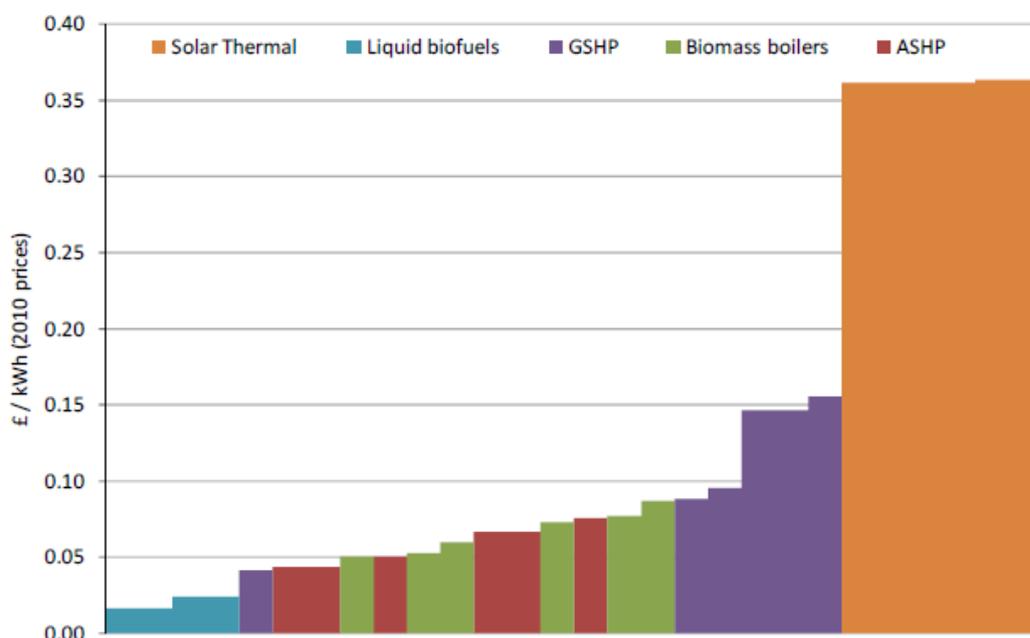
### **Need for appropriate administration arrangements**

- 2.11 For any scheme to be successful it will be imperative to have appropriate administration arrangements in place. Given the potential complexities in awarding money for renewable heat output and the deeming of certain technologies eligible and ineligible, these systems will need to be robust, fully tested and fit-for-purpose. Without appropriate administration arrangements and systems to manage applications and accreditation the scheme would be unsuccessful.
- 2.12 It could be expected that the administrators would have to cope with between 700-800 applications per year. As payments continue for a number of years, in 2020 the administrators could be dealing with over 6,000 accredited installations.

### **Cost of renewable heating technologies**

- 2.13 The 2010 level of renewable heat in Northern Ireland was estimated at 1.7% of total heat demand; this was broadly in line with GB levels (1.5-2%) but lower than existing levels in the Republic of Ireland (4%) where there was a history of grants/incentives.

- 2.14 A major contributory factor to the historical lack of uptake in comparison to other heating technologies (oil at 77% or gas at 17%) is the large upfront capital cost of the technologies. Depending on the type of technology and the application (domestic, commercial or industrial) the capital cost of the renewable heat technology can be over 5 times that of the alternative.
- 2.15 The graph below demonstrates the cost differential in the domestic sector by detailing the levelised cost of renewable heat in comparison to conventional oil heating i.e. comparing the counterfactual (oil) with renewable heating. In essence showing how much more expensive renewable heat is compared to oil when considering the cost of a single unit of heat over the lifetime.



- 2.16 Given the differences in cost of renewables in comparison to existing fossil fuel systems it is difficult to foresee how the required level of deployment could be achieved without financial incentives.

### Current status of the heat market in Northern Ireland

- 2.17 Currently, the Northern Ireland heating market is almost completely reliant on imported fossil fuels, with only 1.7% of demand being met by indigenous renewable sources. In addition, one fuel source is dominant within the heating market with oil meeting over 75% of overall heating demand. This leaves Northern Ireland consumers vulnerable to price fluctuations outside of its control and has led to higher levels of fuel poverty in comparison to other UK regions. This is especially true in areas outside the gas network where there is reduced choice in terms of fuel supply.
- 2.18 The further development of the renewable heat market will ensure a more diverse, sustainable and secure heat market with significant opportunities for reduced carbon emissions and 'green jobs'. In addition, the growth of

renewable heat will provide greater choice for consumers that are currently on solid fossil fuel.

## ***The objectives and constraints***

### **Objectives**

- 3.1 The overall objective is to deliver the target of 10% renewable heat by 2020, but this has to be delivered in a way that is consistent with other DETI policies and objectives and presents value for money.
- 3.2 Listed below are directional objectives and expected outcomes.

<b>Primary Objective</b>		
<b>Area</b>	<b>Direction</b>	<b>Interim target for 2015</b>
Levels of renewable heat	Increase uptake of renewable heat to 10% of market share	Reach 4% market share
<b>Secondary Objectives</b>		
<b>Area</b>	<b>Direction</b>	<b>Interim target for 2015<sup>8</sup></b>
Carbon emissions	Reduce emissions against counterfactual	Emissions reduced by 40,000 tonnes
Oil imports	Reduce oil imports against counterfactual	Imports reduced by 50,000 barrels
Gas use	Minimal reduction against counterfactual	No reduction against current projections

- 3.3 All these objectives will be achieved to the greatest extent when renewable heat displaces oil, rather than current or future gas consumption. This is clearly true for the oil imports and gas use objectives, and is true for the carbon emissions objective because oil produces more carbon dioxide per unit than gas.
- 3.4 In addition, supporting the domestic sector in this way has the added benefit of increasing consumer choice in terms of heating supplier. This is especially true of areas of Northern Ireland with no access to natural gas. Also, whilst the up-front capital costs of these technologies are higher than fossil fuel the ongoing costs tend to be lower, therefore consumers have more affordable energy bills once the up-front costs are covered.

<sup>8</sup> Based on the expected levels under the recommended policy option, rounded to one significant digit. These figures should only be taken as indicative rather than as firm targets, and as inputs to the first review of any RHI.

## Constraints

### *Scheme funding*

- 3.5 The appropriate RHI for NI must be developed with the available funding in mind. At present, DETI has secured £25m from the Treasury for renewable heat promotion. The money is allocated for the period 2011/12-2014/15 and cannot be used for any other purpose than renewable heat in Northern Ireland.
- 3.6 Communications between DETI, DECC Finance Team and HM Treasury indicates that that funding beyond 2014/15 will be available for those installations that are installed within the Spending Review period (i.e. up to 2014/15).
- 3.7 DECC has secured £430m for the GB RHI for 2015/16. DECC Minister Gregory Barker indicated to Minister Foster in a letter dated 7<sup>th</sup> February 2014 that the Barnett consequential of this funding should be forthcoming to Northern Ireland however this is yet to be confirmed by DFP. It could be estimated that this funding would be in the order of £10.8m – 12.9m.
- 3.8 The relative populations of NI and GB (1.8m<sup>9</sup> and 60m<sup>10</sup> respectively, in mid 2009) were applied to the figures in Table 5 of the GB RHI Impact Assessment<sup>11</sup>, which shows a present value of subsidy to 2020 of £5.4 billion, and a lifetime present value of subsidy of £22 billion. Pro-rating these by the respective population sizes, gives corresponding subsidy figures for NI of £162m and £660m respectively.
- 3.9 The GB impact assessment also demonstrates an expected subsidy cost of £1.4 billion in 2020, NI's pro rata share of this expected subsidy would be £42m. The policies relating to the RHI have therefore been developed using a funding constraint of £42m in 2020 and it is expected that the funding levels will not be exceeded.

### *Skills*

- 3.10 The renewable heat sector is still an emerging market and therefore appropriate skills in terms of supply and installation of technologies are still being developed.
- 3.11 Under the RHPP 51 different installers have been responsible for a least one installation. This is in excess of the 26 Microgeneration Certification Scheme (MCS) installers that were certified in Northern Ireland in March 2011 and demonstrates a significant increase in the skills capacity in the sector.

<sup>9</sup> Source: NI Statistics and Research Agency.

<sup>10</sup> National Statistics figure for UK, less figure given above for Northern Ireland.

<sup>11</sup> DECC, 2011, Impact Assessment for Renewable Heat Incentive, <http://www.decc.gov.uk/assets/decc/What%20we%20do/UK%20energy%20supply/Energy%20mix/Renewable%20energy/policy/renewableheat/1381-renewable-heat-incentive-ia.pdf>

However, more installers and suppliers will be required if confidence in this sector is to increase and if the required levels of uptake satisfied.

### *Market knowledge*

- 3.12 A significant constraint on achieving the set objectives and securing sufficient levels of deployment is consumer's attitudes towards renewable heat technologies. There remains a general lack of awareness amongst consumers about the reality of renewable energy technologies and how they could be deployed in householders. Renewable heat technologies are less well established or understood than renewable electricity technologies that have received Government subsidy since 2004.
- 3.13 This lack awareness is somewhat demonstrated by the fact that whilst the RHPP has received 1650 applications since May 2012, the boiler scrappage scheme (for replacement fossil fuel systems) run by DSD has received in excess of 10,000 applications in a shorter time period. This is despite the fact that the RHPP grants are higher than those offered by DSD. In addition, Bryson Energy offered 400 homes the chance for either a new oil boiler or a new biomass boiler free of charge. Only 8 houses selected biomass ahead of oil, despite it being explained that biomass fuel was cheaper than oil. This highlights that consumers remain committed to installing fossil fuel technologies despite the benefits of renewable alternatives. This places a constraint on the level of uptake.

### *Access to finance*

- 3.14 A contributory factor to the lack of uptake in comparison to the fossil fuel systems detailed above is the lack of capital finance for the costs of the system. Despite the domestic RHI designed to provide sufficient incentive to cover all the additional costs incurred in installing and running renewable systems there still remains a significant capital outlay at the beginning of the project. For primary heat technologies this can range between £6000 (small air source heat pump or small biomass) to £12000+ (large ground source heat pump or biomass).
- 3.15 Therefore without appropriate access to finance, either through savings or loans, the level of uptake could be significantly constrained. The table below sourced from the 2010/11 NI Family resources survey<sup>12</sup> demonstrates the level of Northern Ireland household savings.

<b>Amount of savings and investments</b>	<b>% households</b>
No savings	52
Less than £1,500	10
£1,500 but less than £3,000	9
£3,000 but less than £8,000	13
£8,000 but less than £10,000	2

<sup>12</sup> [http://www.dsdni.gov.uk/frs\\_2010-11.pdf](http://www.dsdni.gov.uk/frs_2010-11.pdf)

£10,000 but less than £16,000	4
£16,000 but less than £20,000	2
£20,000 or more	8
Total	100

- 3.16 Based on the table above, it can be estimated that less than 28% of the population would have adequate savings to install a renewable heat technology in their home.

## ***Options***

4.1 In developing the structure for the support a number of different options were considered for both the level/nature of support and the means of administering the scheme. It should be noted that all support options deliver the same level of funding for installations.

- Option 1 - No support given;
- Option 2 – Full expected technology life support (20 years);
- Option 3 – Support upfront as a grant (single payments made on the installation of the technology);
- Option 4 – Seven-year flat tariff support (DECC approach);
- Option 5 – Combination of RHPP level support and on-going payments for years; and
- Option 6 – Combination of varying grant plus ongoing payments for either 7 or 20 years.

## Calculated rates

- 4.2 The calculated rates for each of the potential tariff structure options are detailed below, along with the confirmed rates for the equivalent GB scheme (paid over 7 years).
- 4.3 The basic premise is the appropriate tariff is calculated for the asset life i.e. how much more expensive is the renewable compared to oil. Then for options that have grant or 7 yr (or both) the appropriate tariff is calculated to ensure that the same level of subsidy is paid (npv) as that under the asset life tariff. DECC's approach is to pay 20 yr of subsidy over 7 yr. Our approach is similar but we provide an element straight away – this is deducted from ongoing tariff.

Technology		Tariff structure							DECC figures for GB RHI (p/kWh)	
		Option 2	Option 3	Option 4	Option 5		Option 6			
					RHPP plus 7 year		Upfront plus ongoing			
	Asset life (20 year) (p/kWh)	Upfront grant (p/kWh)	Flat 7 year (p/kWh)	Initial payment <sup>13</sup> (£)	Ongoing (p/kWh)	Upfront payment (p/kWh in year 1)	Ongoing asset life tariff (p/kWh)	Ongoing seven year tariff (p/kWh)		
Solar Thermal	Calculated	26.04	285.38	50.12	320	13.05	285.38	-	-	19.2
	Cap <sup>14</sup>	8.54	93.54	16.43			93.54	-	-	
Biomass boiler		4.08	44.75	7.86	2500	5.53	28.95	1.44	2.77	12.2
Bioliquids		1.97	18.66	3.28	500	2.7	12.11	0.69	1.15	n/a
Ground Source Heat Pump		6.73	73.76	12.96	3500	8.04	73.76	-	-	18.8
Air to Water Heat Pump		4.22	46.27	8.13	1700	3.44	46.27	-	-	7.3

<sup>13</sup> These upfront payments are set in line with the support offered under the RHPP; this makes the scheme administratively simple in that RHPP applicants receive the ongoing tariff only. For bioliquids, where no RHPP has been provided, up front support of £500 has been proposed.

<sup>14</sup> In line with the non-domestic RHI calculations for solar thermal, a cap is placed on more expensive technologies at 17.3p/kWh for the seven year tariff.

4.4 The tariff values for each option have been calculated to provide the same net present value of subsidy (at an assumed discount rate of 7.5%). Therefore no particular option should be seen as providing more or less “incentive” to a household on this basis alone.

4.5 In essence the lifetime tariff is calculated, this is the figure that demonstrates how much more expensive the renewable technology is in comparison to the fossil fuel counterfactual over the lifetime of the technology. The subsidy to be paid to the consumer addresses this additional cost. When calculating tariffs that are for a shorter time period, include an element of initial support or both, the overall subsidy remains the same in NPV terms.

### Policy option selection

4.6 In selecting the preferred policy option a number of considerations were made, these included;

- Amount of renewable heat delivered in GWh to 2020.
- Cost-effectiveness of the policy in terms of £ per tonne of carbon saved.
- Ease of administration.
- Views of stakeholders.

4.7 In terms of the amount of heat delivered, the costs / benefits of each option and the cost-effectiveness, the following table outlines the high – level results.

		Renewable heat delivered (with capital constraint applied)	Quantifiable benefits (£m, present value to 2040)	Quantifiable costs (£m, present value to 2040)	Benefits / Cost (£m, present value to 2040)	Cost-effectiveness (£ per tonne of carbon saved)
Option 1	Do nothing	726 GWh <sup>15</sup>	-	-	-	£30.30
Option 2	Asset life tariff	726 GWh	-	-	-	-
Option 3	Upfront grant	983 GWh	£22m	£148m	£-127m	£107.79
Option 4	Flat 7 year tariff	726 GWh	-	-	-	-
Option 5	RHPP plus 7 year	858 GWh	£36m	£92m	£-56m	£66.31
Option 6	Grant + lifetime tariff	994 GWh	£22m	£161m	£-140m	£114.72
	Grant + 7 year tariff	990 GWh	£22m	£155m	£-133m	£111.36

4.8 All of the options under analysis are NPV negative implying that the cost of subsidising renewable heat is greater than the benefits achieved through

<sup>15</sup> This “do nothing” figure includes domestic and non-domestic installations.

carbon price offsets. This table only shows the renewable heat savings from the support for the **domestic** sector under Phase 2 of the RHI.

- 4.9 Under the do nothing option the cost effectiveness of £30.30 reflects the cost of saving carbon under Phase 1 of the scheme. The cost effectiveness of all of the options considered under Phase 2 are higher than this, reflecting the fact that it is more efficient to utilise renewable heat with larger non-domestic users.
- 4.10 The difference in the cost / benefit profiles of each of the option reflects two different factors. The first factor is the mix of technologies which will be delivered under each option and the second factor is the different profile/timing of costs and benefits.
- 4.11 The predicted renewable heat savings for each option have been calculated with a capital constraint applied to reflect the ability of households to afford large upfront costs of installation. This affects the performance of options 2 and 4 where no upfront capital support is available to address the barrier of the upfront costs to households, and the tariffs won't be able to incentivise them to install renewable heating. Only the options with initial support elements can start to break the affordability barrier, increase deployment and provide additional renewable resource.
- 4.12 The options that include an element of grant all deliver additional renewable heat resource by 2020, the most heat being delivered by option 6 where a varying level of grant and ongoing tariff for 20 years is provided. While option 6b delivers more renewable heat than option 5, it offsets a higher proportion of gas. Option 5 will offset more oil usage and therefore has a greater impact in terms of carbon savings. In addition when the phase 2 commercial and industrial installations are added to these figures the most renewable heat deployed is delivered by option 5. Option 5 is both the least costly overall and the most cost effective in terms of £ per tonne/CO<sub>2</sub>. The net present cost of this policy option is £56m to 2040, compared to a range of £127m - £140m for the other options.
- 4.13 A public consultation on the proposals was held between July – October 2013. Whilst option 5 was proposed as the preferred option stakeholders were asked their views on other potential options. The consultation received 50 responses, with the vast majority preferring an incentive system that paid tariffs over 7 years but included an element of initial support.

### Non-viable options

- 4.14 A number of options have been ruled out and will not be taken forward.
- Option 1 – do nothing: this is not a viable option as from a policy perspective it would be difficult to exclude the domestic sector from

incentives given previous Ministerial commitments on the matter. In addition, the development of the renewable heat sector is intended to give consumers greater choice over energy issues, not providing support in this sector would leave many domestic consumers with no choice other than home heating oil or coal. Finally, analysis demonstrated that the costs of renewable heat, especially in the microgeneration sector, mean that without financial incentives the level of uptake would be insufficient to achieve the targets of 4% by 2015 and 10% by 2020 in line with Executive commitments.

- Option 2 – asset life tariff. This option has been discounted for various reasons. DECC are delivering a 7 year programme and as Northern Ireland's funding is based on 3% of the available HMT funding it would be difficult to secure funding past 7 years. This option is akin to the existing commercial RHI however this support model is less well suited to the domestic market as homeowners tend to move house with greater frequency than businesses might change premises. In addition, introducing an asset life support mechanism would require administrative procedures to be in place until 2040/41.
- Option 3 – upfront grant. On paper this option delivers a high level of renewable heat, largely because the grant would cover both the installation and running/maintenance costs. While this is obviously appealing to customers, an upfront grant would provide a disproportionately high level of funding at the time of installation and doesn't provide an ongoing incentive to select the most efficient technology or ensure optimum installation and ongoing operation. Policies which provide long term incentives for the use of renewable heat may also be more effective in giving long term signals to the renewable heat market. In addition, the funding profile from HMT would not support this level of upfront payment. An upfront grant scheme puts pressure on short-term government budgets and thus may constrain the scale of support that can be offered in the short term.
- Option 6(a) – grant plus lifetime tariff. This option has been discounted for the reasons stated above – a lifetime tariff is too long to appeal to domestic customers plus a 20 year funding profile would not be available from HMT.

### Options to take forward

4.15 Options which have been taken forward are:

- Option 4 – Seven-year flat tariff support: This is the approach to be implemented by DECC under the GB RHI, whereby the total required

subsidy is paid out in equal increments over 7 years. The 7 year tariff structure is appropriate insofar as it reduces the concerns of homeowners who wish to install technologies but would be put off if they planned to move home within the next 5-10 years. It also ensures that technologies supported under the scheme will still be supported by 2020 and therefore guaranteed to be in place and contribute to the renewable heat target.

Analysis has shown however that this option would deliver the lowest level of renewable heat, largely due to capital constraint. As highlighted earlier in this document only 28% of Northern Ireland households are likely to have adequate savings to afford the initial outlay to install a renewable heat technology. This is very much a barrier to uptake and would impact on the levels of renewable heat achieved in Northern Ireland.

- Option 5 – Combination of RHPP level support an on-going payments for 7 years. This option provides an initial payment equal to the current RHPP payment plus an ongoing payment per kWh for seven years. The RHPP values have proven successful in removing the initial cost barrier for some consumers however uptake is still below the required level to achieve the set targets. By retaining this level of support and introducing ongoing payments for the operation, maintenance and use of the technology, there is the benefit of reducing some of the upfront barriers for consumers in terms of capital costs, hassle costs and potential finance costs, as well as providing an ongoing incentive to ensure use and spread Government costs.

This option also has the advantage of a more streamlined administration process. Existing RHPP customers will be eligible for the annual tariff payments once the domestic RHI is introduced. Providing upfront support at the same level as existing RHPP payments means that only one tariff is required for each technology.

Finally, it should also be considered that CEPA considered the projected heat output of each support option in the context of the wider Phase 2 RHI which will include new technologies in the non-domestic sector. This analysis found that Option 5, when combined with Phase 2 non-domestic, delivered the highest level of renewable heat.

- Option 6(b) – Varying grant plus ongoing payments for 7 years. This option adjusts the profile of the subsidy depending on the technology to align with that specific technology. For instance, some technologies might be more expensive up front but cheaper to operate, therefore an

initial payment would be more important than an ongoing tariff. On the other hand a technology could be cheaper to install but more expensive to run, therefore no upfront payment would be required but a tariff to aid with operating costs would be vital. The type of subsidy would therefore differ depending on the technology, as per table below.

		Upfront cost	
		Lower	Higher
Ongoing cost	Lower	No subsidy	Upfront grant
	Higher	Annual payment	Upfront and annual payments

Based on the technologies proposed to be supported under the domestic RHI the following subsidy profiles would be required.

		Upfront cost	
		Lower	Higher
Ongoing cost	Lower	<u>No subsidy</u> None	<u>Upfront grant</u> Solar thermal Ground Source Heat Pump Air Source Heat Pump Biomass chip boilers
	Higher	<u>Annual payment</u> None	<u>Upfront and annual payments</u> Biomass pellet boilers Bioliqid boilers

This option would be administratively difficult to deliver - a fixed level of grant would be more easily administered than an option where the level of grant varies depending on the technology and the application. Considering there are already existing fixed payments (RHPP), the inclusion of additional varying grants and tariffs rates makes this option very difficult to operate. Option 6(b) is also significantly less cost-effective than option 5.

### Preferred option - Rationale

- 4.16 The preferred option is therefore option 5.
- 4.17 This proposal includes up-front support for new installations at the level set under the RHPP. The experience of the RHPP has demonstrated that up-front capital support is important for technologies that remain expensive to purchase and install. DETI is conscious that the capital outlay involved in renewable heat installations could remain to be significant barrier to deployment, as detailed in the section on *Constraints*.
- 4.18 The capital element of the proposed support mechanism will increase the accessibility and reduce the costs of any financing required. The proposed set figure of support remains in line with the grant already available under the RHPP – this level of support has proven to be attractive for investors and has created a high level of interest. Using these figures also simplifies the administration arrangements for those who have already received the grant. For bioliquids, where no RHPP support has previously been offered, initial support of £500 is proposed should the decision be taken to include bioliquids in the scheme.

### **Administration Options**

- 5.1 No matter what funding support option is selected in terms of policy an appropriate administration system will be required. The administrator will be responsible for receiving applications, enforcing eligibility standards, making payments and monitoring compliance. Three different administration options have been considered for the delivering the preferred tariff structure above (option 5):
- In house delivery within DETI Energy Division;
  - outsource to external provider through competitive tender process; and
  - extend existing contract with Ofgem for non-domestic RHI administration.
- 5.2 Under each administrative option it is assumed that the existing Renewable Heat Policy Grade 7 and DP will continue to manage and oversee the in house staff / external contract. In terms of predicted workload, it is estimated that there will be in the region of 60-70 applications per month. This is based on the current uptake in the RHPP scheme which has averaged at 70 applications a month, with a high of 98. Interest in the RHI scheme should continue as it is expanded into the domestic sector. However, it is expected that there will be natural limits on the level of interest given the constraints discussed previously such as market knowledge and access to finance. Total costs for the three administrative options have been compared for the first 6 years whilst the scheme is open to new applications.

### **Option 1 - In house delivery within DETI Energy Division**

- 5.3 DETI could choose to run the domestic RHI in-house. The RHPP scheme (the forerunner to the domestic RHI) is currently administered by Renewable Heat Branch within Energy Division. This involves receiving applications, advising on eligibility, carrying out site visits and making payments. The day to day running of the scheme is carried out by 1 EOI, 1 EOII with 1 part-time DP responsible for checking and authorising payments. The payments are made by existing staff (SO & AO) in Energy Division co-ordination branch. The administration arrangements are underpinned by a simple database system that records application details.
- 5.4 The RHPP will terminate once the domestic RHI is finalised to avoid any overlap in administration. The domestic RHI will however be more complex to administer than the RHPP and will require more detailed information from applicants, a higher level of technical expertise and an ongoing relationship with applicants. It would therefore require a more robust record management system and an online application tool.
- 5.5 Administering the domestic RHI in house would allow an immediate start for the scheme as the skills developed by staff during the RHPP could be utilised. However, a significant update to the IT systems will be needed to allow additional information to be recorded, the relevant prompts for annual compliance checks / audits and the processes for annual payments. IT Branch estimate that this IT update would cost in the region of £30-50k.

- 5.6 The existing RHPP staff resource and estimate requirements for the domestic RHI are set out in the tables below. Taking account of the more complex administration arrangements and allowing for 60-70 applications per month it is estimated that an additional staff resource of 2 SO's and 1AO will be needed. Using the Ready Reckoner these additional staff resources equate to £116k per year.

In-house Admin	Existing RHPP Scheme	Domestic RHI Scheme	Additional Resource	
Processing Applications	½ DP	½ DP	1 SO	To manage and monitor applications process and carry out site visits.
	1 EO1	1 EO1		
	1 EO2	1 EO2		
Payments	¼ SO	1 SO	¾ SO	To process increasing number of payments - existing SO and AO have other duties.
	¼ AO	1 AO	¾ AO	
Annual Costs	£133k	£249k	£116k	Based on Ready Reckoner.

Year	14/15	15/16	16/17	17/18	18/19	19/20	6 Yr Total
<b>Admin Costs</b>	£133k	£249k	£249k	£249k	£249k	£249k	£1.4m

- 5.7 The total staff costs for the first 6 years of the scheme are estimated to be £1.4m which includes an additional staff resources of £600k on top of the existing RHPP staff resources (£800k). This should allow for a short-term increase in application numbers in any given month but if interest in the scheme were to increase significantly (caused by greater understanding of renewables, a decrease in their cost or an increase in cost of fossil fuels) then additional resources may be required to deal with demand. However, providing the administration in house provides DETI with the flexibility to increase or decrease resources according to demand. In addition, once these administration arrangements are in place there may be scope in the future for also administering the non-domestic RHI scheme in house to reduce future resource costs.

### Option 2 - Outsource to external provider via competitive tender process

- 5.8 Another potential option for DETI would be to appoint an external service provider via a competitive tender process. This would ensure that a permanent administrator could be appointed and a new bespoke IT system developed specifically for the domestic RHI. DETI staff already working on the RHPP would be in a position to work with the appointed service provider in the first instance, sharing their knowledge and skills, to ensure the developed system was appropriate and fit for purpose. In addition, by

awarding the contract via a competitive tender process DETI could be content that the market had been appropriately tested and that the contract was value for money.

- 5.9 One significant drawback with this approach is the length of time required to carry out the tender process and for the bespoke system to be developed. An optimistic estimate would be that this process would take between 6-9 months, however it could take longer. This would hold up the launch of the domestic RHI, create uncertainty in the market, bring criticism upon the Department and Minister and could negatively impact on the achievement of the renewable heat target.
- 5.10 The costs of outsourcing to an external provider are estimated to be between £2.6m - £7.6m during the first six years of the scheme. This assumes an average cost of between £600 and £1000 per application and initial development costs of £100k. It also includes a reduction of £133k per year to cover the savings associated with no longer needing the existing RHPP resources.

Year	14/15	15/16	16/17	17/18	18/19	19/20	6 Yr Total
<b>Admin Costs (estimated range)</b>	£947k - £2.56m	£350k - £1.07M	£317k - £992k	£317k - £992k	£317k - £992k	£317k - £992k	£2.6m - £7.6m

- 5.11 Ofgem currently administers both the GB and Northern Ireland non-domestic RHI schemes. The Northern Ireland contract was given to Ofgem as the most cost-effective method of administration to avail of synergies given the fact that they were administering the GB scheme. However, if DETI were to procure a system to administer the domestic RHI consideration could also be given to extending the procurement to cover both RHI schemes. This could be used to assess whether Ofgem should continue to run the commercial scheme or whether another, more cost-effective, administrator could be appointed.

### Contract variation with Ofgem

- 5.12 As previously stated, DETI currently has a service level agreement in place with Ofgem (the GB energy regulator) to administer the non-domestic RHI. In addition, Ofgem is already administering the domestic RHI in GB. Whilst the NI domestic RHI is different to both the non-domestic scheme and the GB domestic scheme, Ofgem would be well placed to learn from the two schemes to administer the NI domestic RHI. Ofgem could be given responsibility for the domestic RHI via a variation to the existing agreement and would be content to administer the scheme if asked. In terms of timing, Ofgem would require some time to scope and develop the appropriate administration requirements but could exploit synergies with the GB scheme where they

existed. This option would certainly be more time-effective than a competitive tender.

- 5.13 Feedback from stakeholders regarding Ofgem’s administration on the non-domestic scheme has been mixed and there have been difficulties encountered relating to the sharing of information and forecasting administration costs. In addition, experience from the RHPP is that domestic customers may require more information and therefore having a local presence has been helpful and would be helpful in the future domestic RHI. Finally, if the domestic RHI is to be administered by an external provider best practice would be to award the contract via competitive tender, this would not be an option for Ofgem.
- 5.14 The total costs of administering the domestic RHI through Ofgem are estimated to be £2.7m for the first six years of the scheme. This is based on Ofgem’s existing administration costs for the non-domestic RHI scheme which work out as £600 per application. It also includes £160k of development costs and a reduction of £133k per year to cover the savings associated with no longer needing the existing RHPP resources.

Year	14/15	15/16	16/17	17/18	18/19	19/20	6 Yr Total
<b>Admin Costs</b>	£1.1m	£347k	£317k	£317k	£317k	£317k	£2.7m

### Preferred Administrative Option

- 5.15 The costs and benefits of each of the three administrative options are set out in the table below. It is clear that in house administration is the most cost effective option and provides DETI with appropriate controls to vary the staffing resource according to demand. The estimated administrative costs of £1.4m for the first six years of the scheme are significantly lower than the Ofgem (£2.7m) or external outsource (£2.6m-£7.6m).
- 5.16 Administering the scheme in house also has the benefit of an immediate start date for the scheme and will utilise the skills and expertise within the branch. To ensure this can happen some minor IT requirements are needed and new guidance documentation will be developed. Having the scheme administered by DETI also ensures consistency with the RHPP.
- 5.17 IT colleagues have indicated that they can develop an appropriate database in-house with an externally provided IT upgrade required to deliver the annual payments.

5.18 The expected costs / resources of each administration system are summarised in the table below.

Option	Staffing resources required	Potential costs	Benefits	Risks / Issues
<p><b>1. In-house administration</b></p>	<p>Same staffing levels as currently in place for RHPP. This includes:</p> <ul style="list-style-type: none"> <li>• Oversight and management (1G7 &amp; 1DP).</li> <li>• Applications (1 EOI, 1 EOII &amp; 1 part-time DP)</li> <li>• Payments (1/4 SO &amp; 1/4AO)</li> </ul> <p>Support from IT colleagues would also be required.</p>	<p>Additional annual funding of around £116k would be needed in years 2 or 3 to cover additional staff (2 SOs &amp; 1AO).</p> <p>A significant IT upgrade will be needed – estimated to cost in the region of £30-50k.</p> <p>Total costs to administer scheme in-house are estimated to be approximately £1.4m up to 2020. This includes the existing RHPP staff resources (£800k).</p>	<p>Utilises existing staff and experience and can be introduced quickly. DETI retains control of standards.</p> <p>Consumers deal with DETI directly.</p> <p>This is the lowest cost option with increased costs of around £116k /yr.</p> <p>Flexibility - staffing resources can be increased / decreased according to demand.</p> <p>Provides scope for also administering the non-domestic RHI scheme in house to reduce future resource costs.</p>	<p>High demand means existing team cannot administer scheme effectively.</p> <p>Technical expertise may be required.</p> <p>IT system not fit for purpose.</p> <p>Data protection issues.</p>
<p><b>2. External Service Provider</b></p>	<p>The key internal element would be the staff time for procurement and ongoing management.</p>	<p>Costs would relate to an external provider developing IT systems and then administering the</p>	<ul style="list-style-type: none"> <li>• Bespoke system can be developed by experts.</li> <li>• Requirements such as technical support, site</li> </ul>	<p>Long lead in time for procurement and development.</p> <p>Necessary budget may not</p>

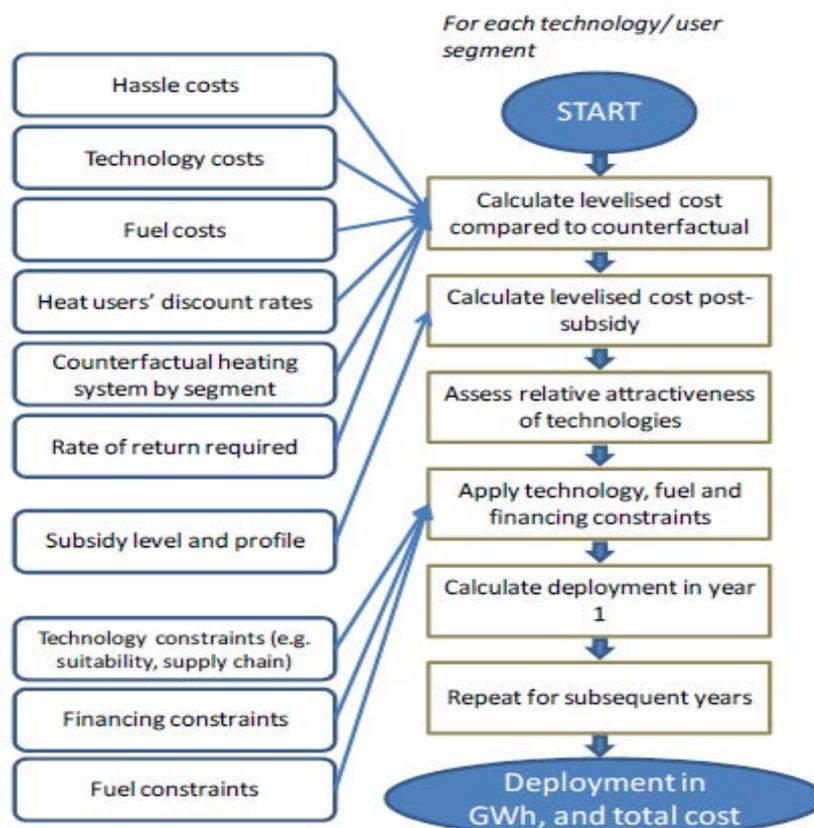
Option	Staffing resources required	Potential costs	Benefits	Risks / Issues
	Likely that this would be primarily led by DP and oversight from G7.	<p>scheme.</p> <p>Development costs are estimated at £100k and ongoing costs are estimated to be between £600 and £1000 per application.</p> <p>Exact costs would not be known until procurement exercise, however estimates are in the region of £2.6m - 7.6m to deliver the scheme over the first 6 years. This is much more costly than option 1 (£1.4m).</p>	<p>audits, payments can be dealt with by provider.</p> <ul style="list-style-type: none"> <li>Competitive tender would allow the best priced system to be developed.</li> </ul>	<p>be secured.</p> <p>Low uptake means system is obsolete.</p> <p>Under-utilising existing staff.</p> <p>Difficult to vary or change arrangements.</p> <p>Limited scope for future cost reduction.</p> <p>Difficult to audit/assure arrangements.</p>
<b>3. Contract variation with Ofgem</b>	The key internal element would be the management of the ongoing relationship with Ofgem. From experience, this would	Ofgem would require a feasibility study to be carried out to explore how their existing systems could be utilised to administer the scheme.	<ul style="list-style-type: none"> <li>Experience of administering GB system utilised.</li> <li>Track record of delivery.</li> <li>Shorter lead in time compared to competitive</li> </ul>	Differences in NI and GB scheme could lead to confusion in operations (as experience in commercial scheme).

Option	Staffing resources required	Potential costs	Benefits	Risks / Issues
	involve G7 and DP time and some oversight from G5.	<p>This is likely to cost between £40-60k.</p> <p>Development costs are likely to be in excess of £100k and ongoing costs charged at 3% of the GB scheme. Ofgem's cost per application under the commercial scheme is in the region of £600.</p> <p>Using these figures, total administration costs for the domestic RHI are estimated to be in the region of £2.7m over the first 6 years. This is much more costly than option 1 (£1.4m).</p>	tender.	<p>Previous experience of lack of information shared and difficulty in budget management.</p> <p>DETI would not know if this was best value as no competitive tender process.</p> <p>Necessary budget may not be secured.</p> <p>Low uptake means system is obsolete.</p> <p>Difficult to vary or change arrangements.</p> <p>Limited scope for future cost reduction.</p> <p>Difficult to audit/assure arrangements.</p>

## Quantify the monetary costs and benefits

### Economic Model

- 6.1 In order to assess the impact of any subsidies on consumer decisions, CEPA and Ricardo AEA developed a detailed economic model. This model considers the expected impact of different levels and profiles of subsidy on consumers' decisions about heating. It incorporates constraints such as on deployment and the availability of resources such as bioliquids, and looks at consumers at a relatively granular level, to capture the differences between, for example, rural and urban domestic consumers.
- 6.2 The model outputs profile the expected uptake of renewable heat, by customer segment, and looks at the displacement of oil and gas that this implies. Carbon and oil savings are also calculated, with carbon savings being monetised. The model outputs form the basis of our quantitative assessment of the options and of our cost-benefit analysis (CBA). The schematic below details all of the inputs that are considered within the model.



### Monetary Costs and Benefits

- 6.3 It is assumed by CEPA that without any additional support in either the domestic sector or the commercial sector that around 726GWh of renewable heat will be deployed by 2020. This represents the level of cost-effective

renewable heating that could go ahead by 2020 without any Government subsidy. This is well short of the assumed level of 1600GWh that is required to achieve the 10% target.

- 6.4 Based on current experience and trends, this figure of 726GWh for the “do nothing” appears optimistic. DETI has supported commercial and domestic renewable heat since May 2012 and since then it is estimated that around 60-80GWh has been incentivised. That means, currently, there is around 360-380GWh deployed. It is therefore perhaps optimistic to think that this figure could be doubled by 2020 without any new means of support.
- 6.5 The preferred option of a grant (based at the level of the RHPP) plus an ongoing tariff for 7 years has been determined as the most cost-effective option. The modelling suggests that this option will assist in delivering 858GWh of renewable heat in 2020 at a cost of £92m, present value to 2040. The quantifiable benefits are calculated at £36m, present value to 2040. The quantifiable benefits relate to the value of carbon emissions. There might be further benefits in terms of investment in the renewable heat sector, for example for every £1 spent under the RHPP it has generated £3.21 for suppliers and installers – this does not include the benefits to fuel suppliers. The quantifiable cost of the policy is therefore calculated at £56m, present value to 2040.
- 6.6 It should be noted that the option selected does not deliver the most domestic renewable heat by 2020, although as already noted, when combined with phase 2 industrial and commercial installation, this option will in fact deliver the highest amount of renewable heat. Other potential policy options (such as 20 year tariffs, increased grant or grant plus 20 years) could deliver as much as 983 - 994GWh of domestic renewable heat however this is at a significant cost. The costs of other policy options range £148m - £161m, present value to 2040, and in terms of net cost/benefits these policies have a net cost of £127m-140m.
- 6.7 Therefore to select the policy option we have considered the cost-effectiveness of each option. This is calculated considering the cost of the carbon saved. The selected approach costs £66.31 per tonne of carbon saved compared to a range of £107.79 - £114.72 per tonne of carbon saved. As a frame of reference the cost of off-shore wind is assessed as between £80-90 per tonne of carbon saved.
- 6.8 Therefore the most cost-effective option has been selected.

## **Risks**

- 7.1 Given the uncertainties associated with the take-up of renewable heat, it is appropriate to assess the potential risks associated with any policy, and how they might be avoided or mitigated.
- 7.2 Identified risks have been recorded in the Renewable Heat Risk Register attached at **Annex B**.

### **Risk of incorrect subsidy level**

- 7.3 Probably the most obvious risk is that the subsidy levels proposed for the scheme are either too high or too low. In the former case, those installing renewable heat will be over-subsidised and less heat will be delivered per pound than under more optimal subsidy levels. In the latter, renewable heat will not be deployed to the extent expected.
- 7.4 Both high up take and low up take would cause problems. If incentive levels are over generous then the number of applications could be at a level where administrative systems are unable to cope and the scheme's administrators receive a bad reputation from stakeholders. In addition, if tariffs are too high there could be greater displacement of natural gas. It is currently assumed that heating oil will be displaced on most occasions as the tariffs are designed to make renewables as attractive as oil. If the incentive levels are too generous natural gas customers could begin switching to renewables and this would impact on Departmental plans to extend and expand the gas network.
- 7.5 If tariffs are insufficient to generate required interest then the possibility of achieving the set targets will reduce.
- 7.6 The normal method of dealing with this risk is firstly to have carefully analysed and researched data in developing the tariffs. The tariffs have been developed by CEPA and AEA Technologies, subject to a public consultation and reviewed by Energy Division.
- 7.7 However, tariffs could become inappropriate over time if fuel prices change radically. The tariffs are calculated using a number of variables such as the capital, operating and fuel costs of renewable technologies and fossil fuels. Changes in these costs will require the tariffs to be reviewed. It is planned to have regular, planned, reviews of subsidy levels after a number of years of experience with the subsidy. This will provide an opportunity to amend tariffs if required and ensure they remain appropriate given potential changing market conditions. DETI will also retain the right for 'emergency' reviews as required.

### **Risk of failure in administration of RHI**

- 7.8 The success of the delivery of the domestic RHI scheme is reliant on the administration system. An appropriate system is required for applications to

be received and checked, queries raised where necessary, accreditations made and payments processed. In addition, the administration team need to be able to deal with queries and provide appropriate guidance.

- 7.9 There is the potential for delays in dealing with applications, accreditations and payments for the NI RHI scheme which would lead to stakeholders complaining about application process. This could be as a result of difficulties in IT systems or the administration system not being able to cope with high numbers of applications. A failure in administration could discredit the scheme and reduce consumer confidence.
- 7.10 In order to mitigate this risk, Energy Division will develop operating procedures for the administration of the scheme and utilise expertise gained by administering the RHPP scheme. In addition, work will be carried out with IT colleagues to develop a robust system for recording applications and registering accredited technologies

### **Risk of attempted fraud**

- 7.11 As with any scheme where money is provided to reward or incentivise an action instances of attempted fraud are possible. These could include duplicate or false applications, installation of ineligible equipment, applications not adhering to the conditions of the scheme, unusual meter readings (too high for expected output), lack of information being provided to the administrator and using unregistered installers.
- 7.12 The administration of the RHPP has proven successful in discovering a number of suspected instances of fraud. These have been reported to the appropriate channels. Examples of which include, non-accredited installers carrying out installations or non-accredited products being installed and incorrect certificates being provided to the Department.
- 7.13 The Department has put in place measure to counteract instances of fraud including:
- Clear guidance for applicants;
  - Assessment of applications and verification of installations and meter readings;
  - Liaison with administrator on instances of suspected fraud;
  - Site audits / checks;
  - Requirements of detailed information for each installation;
  - Use of MCS under 45kw installations;
  - Meter readings assessed against expected output;
  - Requirement for ongoing statements of compliance; and
  - Withholding the right to suspend and/or recover payments.
- 7.14 Where there are instances of suspected fraud, the participant will be informed and payments will be stopped whilst an investigation can be carried out. DETI will also retain the power to recover payments.

**Risk of failure of renewable heat supply**

- 7.15 Just as supplies of conventional fuels may be disrupted, there is a risk that supplies of renewable fuel (i.e. biomass and bioliquids) will be disrupted. Bioliquids, since locally sourced by assumption, should be less risky than biomass, much of which will be imported. This suggests that the biomass supply chain, and the security of biomass imports, will be an important factor in the actual or perceived riskiness of renewable heat.
- 7.16 The presence of Balcas (a major pellet provider) in Enniskillen adds a level of security to the supply chain. This has been supplemented by smaller suppliers entering the market in recent years. In some instances, biomass users might 'self-supply' from their own land. This risk will also be minimised by the increased use of imported biomass fuel and the presence of large industrial users who will import fuel for themselves and supply to others.

## ***Non-monetary costs and benefits***

8.1 This section covers the costs and benefits that are not monetised. While they have not been monetised, it is noted that in many cases the size of the benefits is likely to be proportional to the extent of renewable heat deployed.

### **Employment and capacity building, particularly in green sectors**

8.2 DECC has estimated<sup>16</sup> that there are 150,000 jobs in the heating industry in Great Britain. Prorating by population size suggests that there are around 3,750 jobs in this sector in NI. Under the RHPP 51 different installers have been responsible for a least one installation. This is in excess of the 26 MCS installers that were certified in Northern Ireland in March 2011 and demonstrates a significant increase in the skills capacity in the sector.

8.3 Investment in renewable energy is likely to create direct jobs as well as indirect jobs across the entire supply chain of the renewable industry including:

- environmental monitoring;
- development design;
- commissioning and procurement;
- manufacturing;
- installation;
- project management;
- transport and delivery and operations; and
- maintenance.

8.4 A number of studies have found a positive net impact on jobs as a result of substitution to renewable sources of energy. This is mainly due to longer and diversified supply chains, higher labour intensity and higher net-profit margins for renewable energy compared to non-renewable energy generation. Increased spending attributed to net new jobs would lead to additional output thus creating a ripple effect in the economy.

8.5 A 2007 European Commission study<sup>17</sup> found that, overall, a 10% substitution towards renewable energy sources compared to non-renewable sources has a positive impact on jobs.

8.6 A study by NERA/AEA<sup>18</sup> reports that four man days by plumbers are required per solar thermal installation. The time required for installation will also be comparable for domestic heat pumps and biomass boilers. As part of the overall modelling for the NI it is estimated that over 20,000 additional renewable heat installations will be required by 2020. In the year 2020 over

<sup>16</sup> [http://www.decc.gov.uk/en/content/cms/news/pn2011\\_023/pn2011\\_023.aspx](http://www.decc.gov.uk/en/content/cms/news/pn2011_023/pn2011_023.aspx)

<sup>17</sup> European Commission (2007), DG Environment: Links between the environment, economy and jobs.

<sup>18</sup> [http://webarchive.nationalarchives.gov.uk/20110123082441/http://www.decc.gov.uk/en/content/cms/what\\_we\\_do/uk\\_supply/energy\\_mix/renewable/policy/renewable\\_heat/incentive/supply\\_curve/supply\\_curve.aspx](http://webarchive.nationalarchives.gov.uk/20110123082441/http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/policy/renewable_heat/incentive/supply_curve/supply_curve.aspx)

4,150 installations a year are required, this would equate to roughly 16,000 man days by skilled plumbers. Assuming 220 working days per year this would equate to over 75 specialist plumbers installing renewable heat technologies in the domestic sector. These new skilled jobs cover only one component of the eight areas listed on the previous page. Further research would be required to accurately estimate the full job creation potential of renewable heat.

### **Job displacement**

- 8.7 Whilst new skills are required for the installation of renewables this would displace work that would have otherwise been undertaken on installing the counterfactual technology. If one assumes that two<sup>19</sup> man days are required for the installation of an oil boiler (excluding the fuel tank) then this would halve the number of additional jobs that may be created – that is, a net increase of 37 jobs. The current market developments are that traditional heating companies are developing teams and up skilling staff with expertise in renewable heat technologies.
- 8.8 In summary renewable heat will lead to job creation but this will be partly offset by job displaced from fossil fuel heating jobs.

### **Open to all (special consideration to fuel poor)**

- 8.9 The evidence suggests that the barriers to take-up of renewable heat by the fuel poor include a lack of capital or ability to borrow, and a lack of awareness. However, intermediaries, such as those that have arisen in GB for the domestic renewable electricity market or in the Republic of Ireland for renewable heat, could help overcome both barriers.
- 8.10 It will be important to specifically engage with potential Energy Service Company's (ESCO's) to highlight to them the potential opportunities in the NI renewable heat market.

### **Reduction in oil imports**

- 8.11 Analysis suggests that the majority of the fuel displaced will be oil, which is as expected since nearly 80% of heating in NI is from oil.
- 8.12 NI's current demand for oil is around 17, 558 GWh/ year<sup>20</sup>, which is around 10.3 million barrels<sup>21</sup>. The NI RHI is expected to displace around 1.1 million barrels (11% of oil imports). This reduction in oil imports would reduce NI's exposure to the price of oil and to the risk of disruptions in oil supplies. However, there would be a countervailing increase in the exposure to the

<sup>19</sup> The oil boiler would generally be a direct replacement for an existing oil boiler. Renewable heat equipment would be a new installation and would require additional work to install/modify controls and ancillary works, which leads to the estimate of four man days.

<sup>20</sup> AECOM/ Pöyry, 2010, op. cit.

<sup>21</sup> Assuming 1 barrel of oil =6.119GJ, source: Energy Information Agency [www.eia.gov](http://www.eia.gov)

global price of biomass and the biomass supply chain. On balance, though, the increased diversity of fuel supply should be beneficial for security.

### Impact on the gas network

- 8.13 As detailed in the SEF, it is a stated policy objective for DETI to extend the gas grid in NI. Renewable heat, as an alternative source of heat, has the potential to impact on this, possibly negatively. The size of the impact can be measured through estimating the impact on the revenue of gas supply companies of renewable heat. The issue here is not simply with the RHI but with virtually any support mechanism for renewable heat. In other words, part of the impact is due to the fact of having a renewable heat target at all, and the remainder is due to the way that it is delivered.
- 8.14 Analysis done on the feasibility of extending the gas network assumes that 80% of potential commercial loads switch to gas, which is consistent with a 10% switch to renewable heat. Sensitivity analysis using the economic model suggests that shifts in gas prices relative to oil should not lead to any RHI causing more displacement. This is because subsidy levels have been set based on the amount needed to cover the cost difference between oil and renewable heat – in effect, making renewable heat as economically attractive as oil.
- 8.15 There are two scenarios to be considered on the relative price of oil and gas: gas becomes relatively cheap compared to oil (and so renewable heat), and gas becomes relatively expensive compared to oil (and so renewable heat). In the first scenario, consumers currently on oil and looking to switch are unlikely to choose the relatively expensive renewable heat option over the cheaper gas option. In the second, consumers on oil are unlikely to switch to the relatively expensive gas option in any case – whether or not renewable heat is subsidised – the sensitivity analysis shows a significant drop in gas connections in this case. So in neither case is renewable heat providing a significant disincentive to switching to gas.
- 8.16 It is also important to note that the switch to or from gas is not driven simply by economics. Gas, unlike many renewable heat technologies, is relatively well-understood and established and these benefits may sway consumers' decisions in favour of gas. All that said, a key risk is the extent to which we have set the subsidy levels at just the right level to preferentially displace oil rather than gas (or potential gas) customers.
- 8.17 In any case, the economics of the gas network (both the existing network and the proposed extension) is driven by large commercial loads. The domestic RHI, that supports domestic customers switching to renewables, will therefore have minimal impact. The RHPP has demonstrated that renewable heat is displacing oil nearly 98% of the time. Where gas is displaced it is normally by solar thermal, which only provides some hot water heating.

8.18 In summary, it is difficult to see that domestic renewable heat should make a material difference to decisions about any roll-out of the gas network.

### **Displacement effects in other sectors**

8.19 Leaving aside the impact on the gas network and on oil imports, the other significant displacement impacts are likely to be focused on the oil sector, and are largely an inevitable consequence of a move away from the current level of oil use for heating; we would expect these to be proportional to the level of reduction in oil imports. The impacts could include:

- A reduction in the need for the oil network, as a result of falling oil demand. This could be offset by the deployment of bioliquids, that will be supported under the domestic RHI.
- Less of a need for expertise in oil boiler installation (although this will be offset by increased need for expertise in renewable heating installation).

### **Air quality**

8.20 There could be air quality impacts from widespread take-up of biomass heating, particularly if this is in urban areas. However, the relative impact will depend significantly on the fuel displaced. The impact assessment for the GB RHI<sup>22</sup> notes that where renewable heat displaces oil, the “[air quality] impacts can be positive”, whereas displacement of gas tends to worsen air quality. As it can be assumed that renewables will predominantly displace oil there should be a positive impact on air quality.

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<sup>22</sup> DECC, 2011, Renewable Heat Incentive Impact Assessment

## ***Calculate net present values and assess uncertainty***

### **Net Present Values**

- 9.1 All the potential options considered for the domestic RHI scheme, purely on the basis of monetised costs and benefits, have a negative net monetised cost benefit. This of course takes no account of non-monetised costs and benefits. This was also the case when the commercial RHI was approved in April 2012.
- 9.2 In monetised cost-benefit terms; however, the option selected for the domestic RHI is both the most preferable in terms of NPV and the most cost effective in terms of the cost of carbon saved. The NPV for the domestic RHI is calculated at £-56m. This is in comparison to NPV rates of £-127m to -140m for the other options considered.
- 9.3 In addition, the option selected is the most cost effective with it estimated that a tonne of carbon will be saved for £66.31. This compares to a tonne of carbon saved for £107.79 - £114.72 for other options. This also compares favourably in terms of the cost of offshore wind which is assessed at £80-90 per tonne of carbon saved.

### **Uncertainties and constraints**

- 9.4 The focus here is on the uncertainty over domestic consumer take-up rates. These will be driven by three factors: consumers' discount rate, their awareness of renewable heat technologies and their ability to borrow (or rely on ESCOs) to finance upfront capital costs.
- 9.5 Analysis carried out in 2011 suggested that the impact of the domestic consumer's discount rate being higher than accounted for (i.e. higher than 7.5%) was much less in comparison to a lack of awareness of renewable heat leading to only 50% of potential technologies being installed. This could indicate that rates are sufficient enough to generate required uptake. It is also indicative that where a constraint applies across the board, such as a lack of awareness, it has a greater affect. The impact of a high level of consumer misunderstanding or unawareness was that 130GWh less renewable heat would be delivered.
- 9.6 There is also uncertainty in terms of the possible impact of consumers being capital constrained – in other words, being unable to afford the upfront cost of a renewable heat installation, even if it would be profitable for them in the longer term.
- 9.7 When assessing options a capital constraint was imposed on households with the assumption that households would not spend much more on a renewable heat installation than a new oil or gas boiler (assumed £3,500). This is a tight constraint but not unreasonable considering the following;

- The low levels of savings in NI, with figures suggesting over 70% of NI households have less than £3000 in savings.
- The experience of the RHI and RHPP to date has shown that the domestic scheme has been more popular, with over 1500 domestic applications in comparison to over 100 in the commercial scheme. This is also borne out in comparison with GB where the RHI uptake is around 6-7% of GB, whereas the NI RHPP is 10%+ of GB uptake. This demonstrates that the grant based RHPP is more attractive despite the RHI being more rewarding in the long term.
- The importance of heat compared to electricity. The confidence required in the renewable heat technology needs to be higher than renewable electricity technologies for the fact that the heat technology will be, in the majority of cases, a primary technology. If the biomass boiler or heat pump fails the householder will be without heat. Renewable electricity technologies (PV, wind etc) are generally used to supplement existing power supply and if the technology fails the householder does not suffer power cuts. Householders are therefore assumed to be much more cautious in deciding on renewable heat and are unwilling to pay a premium.

9.8 When analysis is carried out with no spending constraint a lifetime (20 year) domestic tariff performs best. The figures for options that include a level of grant do not vary greatly, suggesting that the outcome from these options is not hugely dependent on the level of constraint, whereby the success of the lifetime tariff options are dependent on assumptions on capital constraints.

9.9 Previous analysis carried out on this issue demonstrated that by providing an element subsidy up front the impact of the capital constraint is reduced significantly. Therefore an option whereby the tariff is paid over a shorter period of time (7 years) with an element up front is less sensitive to assumptions on capital constraints.

***Assess affordability and record arrangements for funding, management, procurement, marketing, benefits realisation, monitoring & ex-post evaluation***

**Affordability**

- 10.1 As previously stated, funding of £25m is available to 2015/16 for this scheme, following that DETI will need to secure additional funding from DECC to continue the scheme to 2020. DECC has indicated that the GB scheme will be open to new entrants to 2020 and in the GB State Aid application noted that the expected subsidies paid in 2020 in the GB RHI to be in the order of £2.3bn, a 3% pro-rata share of these subsidies is £70m. It is therefore assumed that DETI will receive additional funding post 2016 as a pro-rata share of DECC budget for the RHI.
- 10.2 In developing the NI RHI, CEPA assumed a funding profile of £2m/£4m/£7m/£12 and then an additional £5m per annum to 2020, i.e. £17m/£22m/£27m. This developed from impact assessments published by DECC and is less than an incremental 3% share of GB expected spend. The tariffs are designed with an overall budget constraint within these parameters.
- 10.3 DECC has secured £430m for the GB RHI for 2015/16. DECC Minister Gregory Barker indicated to Minister Foster in a letter dated 7<sup>th</sup> February 2014 that the Barnett consequentials of this funding should be forthcoming to Northern Ireland however this is yet to be confirmed. It could be estimated that this funding would be in the order of £10.8m – 12.9m.
- 10.4 The relative populations of NI and GB (1.8m<sup>23</sup> and 60m<sup>24</sup> respectively, in mid 2009) were applied to the figures in Table 5 of the GB RHI Impact Assessment<sup>25</sup>, which shows a present value of subsidy to 2020 of £5.4 billion, and a lifetime present value of subsidy of £22 billion. Pro-rating these by the respective population sizes, gives corresponding subsidy figures for NI of £162m and £660m respectively.
- 10.5 The policies relating to the RHI have therefore been developed using a funding constraint of £42m in 2020 and it is expected that the funding levels will not be exceeded.
- 10.6 HMT has indicated that any spending commitments made via the initial NI RHI (i.e. through the £25m) will be met by ongoing RHI payments from HMT.

<sup>23</sup> Source: NI Statistics and Research Agency.

<sup>24</sup> National Statistics figure for UK, less figure given above for Northern Ireland.

<sup>25</sup> DECC, 2011, Impact Assessment for Renewable Heat Incentive, <http://www.decc.gov.uk/assets/decc/What%20we%20do/UK%20energy%20supply/Energy%20mix/Renewable%20energy/policy/renewableheat/1381-renewable-heat-incentive-ia.pdf>

10.7 DETI is therefore content that the scheme is affordable under the current funding profile and the expected available budget post 2015/16.

### **Marketing**

10.8 Energy Division has carried out advertising campaigns promoting sustainable energy in 2011/12, 2012/13 and 2013/14. The two most recent campaigns have solely focused on the promotion of renewable heat. These campaigns were funded via the European Research and Development Fund, as things stand there is no available budget in 2015/16 for future campaigns. If the budgetary position changes Energy Division will consider whether it is appropriate for further marketing campaigns. The domestic RHI will be promoted via appropriate PR activity.

### **Monitoring and benefits realisation**

10.9 DETI will monitor uptake, trends and policy impact from the beginning of the scheme. The level of renewable heat delivered by the scheme will be assessed and recorded against the 10% renewable heat target.

### **First review**

10.10 The first formal review of the commercial RHI will begin in early 2015 with necessary changes implemented in 2016. The primary focus of this review will be the level of tariffs and the appropriate banding.

10.11 Given that the domestic RHI will only launch in 2014 it would be inappropriate to formally review the scheme so earlier. Therefore a formal review would take place in early 2016, with changes implemented in 2017. DETI holds the right to carry out emergency reviews if required and will informally review the scheme throughout.

### **Post project evaluations**

10.12 A final PPE will be carried out following the closure of the scheme to new entrants; this will be completed by 31<sup>st</sup> March 2022.

## ***Assess the balance of advantage between the options and present the results & conclusions***

### **Recommended Approach**

- 11.1 The recommended approach is that DETI implements a Domestic Renewable Heat Incentive for Northern Ireland, at tariff levels detailed below.
- 11.2 It is also recommended that DETI administer this scheme in-house by providing an additional £116k funding for staff resources (2SOs & 1AO).

### **Domestic RHI – Tariffs and technologies**

- 11.3 The proposed tariffs are outlined below, for ease of reference the equivalent tariffs in the GB scheme are also included. The NI tariffs are generally lower than the GB tariffs and whilst GB do not offer any up front support the overall subsidy paid in NI remains lower.

<b>Technology</b>	<b>Initial payment made on accreditation<sup>26</sup> (£)</b>	<b>Ongoing (p/kWh)</b>	<b>GB tariff levels (p/kWh)</b>	<b>Comparative NI tariffs with GB (p/kWh)</b>
<b>Solar Thermal</b>	320	13.05	19.2	16.4
<b>Biomass boiler</b>	2500	5.53	12.2	7.9
<b>Bioliqids</b>	500	2.7	n/a	-
<b>Ground Source Heat Pump</b>	3500	8.04	18.8	13
<b>Air to Water Heat Pump</b>	1700	3.44	7.3	8.1

- 11.4 The first payment will be made once the system is accredited by DETI i.e. all eligibility standards have been confirmed. The ongoing tariff based payments will then be made on an annual basis providing a statement of compliance has been completed by the applicant.
- 11.5 Domestic RHI payments will be made, for the most-part, on a deemed basis. This means DETI will estimate the heat requirements of the property at which the technology is installed and provide a fixed payment. Where a back up heat system is retained or where the property may not be occupied for the more than 6 months in the year the payments will be made on the metered heat output but capped at the deemed level.
- 11.6 It is expected that the domestic RHI will be open to new installations until 2020, meaning the final payment from the scheme will be in 2027.

<sup>26</sup> These upfront payments are set in line with the support offered under the RHPP; this makes the scheme administratively simple in that RHPP applicants receive the ongoing tariff only. For bioliqids, where no RHPP has been provided, up front support of £500 has been proposed.

## Administration

- 11.7 As previously discussed, it is proposed that the scheme will be administered in-house, using existing resource. Therefore no additional resource is required for the first year. Further resource is likely to be required from year 2/3 onwards as applications and numbers of payments increase. This increased resource is still the best value for money option.
- 11.8 Progress of the scheme will be regularly reviewed. If interest in the scheme reaches a level where the scheme cannot be managed in-house then remedial action will be required and consideration given to external support. If external support is required a separate business case would be prepared and an external procurement competition held.

## Legislation and State Aid

- 11.9 The primary power to enable DETI to make regulations for a scheme to encourage renewable heat was incorporated into the Energy Act 2011<sup>27</sup> which was given Royal Assent on 18 October 2011. The necessary secondary legislation has been drafted but cannot be finalised until the design of the scheme is finally specified; we will then proceed to lay the Domestic Renewable Heat Regulations through draft affirmative resolution procedure in the Assembly.
- 11.10 The scheme does not require full State Aid approval as it is primarily focussed on the incentivisation of domestic householders. However State Aid consideration may be required on the issue of provision of support to landlords (private and social) and ESCo's.

## Approvals

- 11.11 This business case has been considered by G7 economist within DETI Energy Division. He is content that this appraisal has been carried out in accordance with the NIGEAE guidance and that the approach adopted represents value for money and is the most effective way of allocating resources provided by HMT for the purpose of incentivising domestic renewable heat installations.
- 11.12 Whilst there is a significant cost associated with this policy, it will reduce carbon emissions and facilitate the development of a renewable heat sector within Northern Ireland. This, in turn, will help Northern Ireland to achieve its 10% renewable heat target by 2020.

## Recommendation

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<sup>27</sup> <http://www.legislation.gov.uk/ukpga/2011/16/part/3/crossheading/northern-ireland-renewable-heat-incentives>

**11.13 It is recommended that you approve the implementation of the Northern Ireland Domestic RHI**

***Annex A - Development of Phase II of the Northern Ireland  
Renewable Heat Incentive by Cambridge Economic Policy  
Associates and Ricardo-AEA (June 2013)***

**Attached separately**

***Annex B – Domestic RHI Risk Register***

**Attached separately**