

## 1. INTRODUCTION

This short note sets out CEPA and AEA's proposal to DETI for additional work on the Renewable Heat Incentive, following Peter Hutchinson's email to Iain Morrow of 9 November. It includes our understanding of what is required and how we propose to deliver that. It also includes an assessment of the time and cost required. To allow DETI to prioritise, we have shown separate cost and time estimates for each of the major pieces of work.

## 2. UNDERSTANDING OF REQUIREMENTS

Our broad understanding is that the main task would be to update our assumptions on the costs of biomass, bioliquids and other technologies and show the implications for tariffs and overall costs. DETI has received around half a dozen consultation responses that challenge our existing assumptions, and we would need to consider these, alongside our own review of current costs in Northern Ireland, and update our cost assumptions as appropriate.

The full list of tasks is:

1. Review consultation responses and other new evidence on biomass costs and update assumptions. This should take into account the recent revision of the GB RHI large biomass tariff. Introduce new tariff band, splitting the >45kW band into two. We understand there are no more than five pieces of evidence to review.
2. Consider the existing banding for Ground Source Heat Pumps and, as above, the splitting of the >45kW band into two.
3. Review the two new submissions received, and other new evidence available to AEA, on bioliquids costs and update assumptions.
4. As (3) for geothermal (up to four new submissions).
5. As (3) for the one new submission on biomethane.
6. Re-run the DETI RHI model using the updated assumptions for all technologies, (including the updated banding and tariffs) and delaying the Air Source Heat Pump (ASHP) and bioliquids tariffs until 2013. Show the overall impact on costs, benefits and uptake.
7. Consider (at a high level, mostly qualitative) the possible implications for gas demand of the updated tariffs. It is difficult to accurately predict the actions of a very small number of industrial sites with any accuracy, so this work would have to be based on a number of uptake scenarios and would likely be off-model. These would include scenarios such as "renewables taken up by all sites where they would be economic", "renewables are taken up only by sites where they would be economic and where the site is not on or near the gas network". The results would include an estimate of cost (annual renewable heat from those sites, times the tariff) and of the impact on the gas network (gas demand assumed to reduce by the volume of renewable heat produced).
8. For each tariff, develop tables (see Annex A for example), showing how the tariff is calculated. This is for the purpose of explaining the tariff calculations to stakeholders.

9. Present the high level impact of the NI RHI in terms of renewable heat delivered, carbon emissions displaced, technologies deployed and expected associated costs (see Annex B for example).
10. Deal with any comments from DETI on the draft results from tasks 1-9.

### 3. PROPOSED WORKPLAN

The table below shows an estimate of the number of days required for each task.

Table 1: Estimate of number of days per task

Task	AEA		CEPA	
	Mahmoud	Oliver	Iain	Kaylyn
1 – Biomass (technology assumptions and banding)	0.5	2	0.5	
2 – GSHP (banding only)	0.25	1	0.5	
3 – Bioliquids		1.		
4 – Geothermal (tariff development)	0.25	2		
5 - Biomethane	0.25	1		
6 – Rerun model to get impacts			0.5	2
7 – Implications for gas	0.25	2	0.5	1
8 – Tariff tables		0.5	0.5	2
9 – High level impact	0.25	0.5	1	1.75
10 – Respond to comments	1	1	1	
<b>TOTAL</b>	2.75	11	4.5	6.75

Tasks 1-5 are to a large extent independent of one another, and so we would not have to do them all if DETI did not want us to. Tasks 6 and 7 require more or less the same effort whichever technology assumptions are updated. For task 8, we have assumed that DETI wishes us to prepare tariff tables for all tariff bands, even those where the underlying assumptions have not been updated. For task 10, we have assumed that the comments are purely about the work set out here, and that they do not require anything in addition.

### 4. COSTS AND TIMINGS

Daily rates for each person are shown in Table 2 below.

Table 2: Daily rates

Person	Daily rate (£)
Mahmoud Abu-Ebid	Sensitive commercial information redacted by the RHI Inquiry
Oliver Edberg	
Iain Morrow	
Kaylyn Fraser	

Combining these daily rates with the number of days required from table 1 gives an estimate of total costs as in Table 3 below.

Table 3: Estimate of costs per task

Task	Cost (£)
1 – Biomass	Sensitive commercial information redacted by the RHI Inquiry
2 – GSHP	
3 – Bioliquids	
4 – Geothermal	
5 - Biomethane	
6 – Rerun model to get impacts	
7 – Implications for gas	
8 – Tariff tables	
9 – High level impact	
10 – Deal with comments	
<b>TOTAL</b>	

Our total estimated cost for this piece of work is therefore £[REDACTED]. We would submit a single invoice with the final report.

As far as timing is concerned, we propose that CEPA would modify the model to allow new tariff bands for biomass and GSHPs (part of tasks 1 and 2) and to allow the model to calculate the results for tasks 6, 7, 8 and 9 in the first half of December. AEA would then update the inputs in January. These would be inserted into the updated model and the results presented to DETI in the week commencing 16 January. We have allowed around a day each of Iain, Mahmoud and Oliver in the week of 23 January to deal with any comments from DETI.

As agreed with DETI, we will do the work at our offices, and have meetings by teleconference. We therefore do not expect to incur any expenses. If we did because of a specific request from DETI (for example, a request for us to make a day trip to Belfast to present the results in person) we would charge these expenses to DETI at cost. If additional time was required for such trips, this would be at the daily rates in Table 2 above.

**ANNEX A: EXAMPLE TARIFF TABLE**

	CAPEX £/kW	OPEX £/kW/year	Efficiency %	Load Factor %	Size kW	Life time Years	Fuel cost £/MWh	Upfront barrier costs (including admin costs) £	Ongoing barrier costs (including admin costs) £/year
Renewable technology									
Oil									

	Annuitised Capital cost at 12% rate £	Annual operating costs £	Annual fuel costs £	Annuitised Upfront barrier costs £	Ongoing barrier costs £
Renewable					
Oil					
Difference					
Renewable technology Resource costs	(sum of difference row)				

Tariff design

Subsidy on annualised capital costs is xxp/KWh

Subsidy on operating costs is xxp/KWh (may be a negative)

Subsidy on barrier costs is xxp/KWh +

**TARIFF IS XXp/KWh**

**ANNEX B – HIGH LEVEL IMPACT OF POLICY. EXAMPLE TABLE**

<b>Year</b>	<b>Total CO2 emissions displaced</b>	<b>Additional renewable heat resource</b>	<b>Number of installations</b>	<b>Subsidies paid (2011 prices)</b>
2012				4m
2013				7m
2014				12m
2015				Then profile required budget
to go to 2040	Will peak in 2020 and fall.	Will peak in 2020 and fall.	No new installations post 2020 and then drop off from 2031 as early installers are no longer incentivised.	From 2021-2030 the subsidy paid will remain constant as no new applications taken.  Post 2031 subsidy will fall as early installers finish 20 yr payment profile.