

**From:** [Iain Morrow](#)  
**To:** [Hutchinson, Peter](#)  
**Subject:** RE: first draft of updated tariffs  
**Date:** 23 January 2012 11:39:49  
**Attachments:** [image001.png](#)

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Peter

Thanks. In response to your points below:

- We could do either 0-20 and 0-100 or 0-20 and 20-100 on the banding. I think the difference in practice is marginal, since only the very smallest commercial boilers will be under 20, and only the largest homes will need more than 20. In terms of our model, there would be no difference in the results. I'll change the banding and text to refer to 0-20 and 20-100.
- I will double check what it is for the larger boiler size. But I'm afraid the reference installation is set automatically by the approach we take (which follows the GB approach) so we can't change it to chips if it isn't already.
- Our message will be that there's a drop of 0.5% because of removing 2011 installations and delaying ASHP and bioliquids to 2013. There is also a 1% drop because of the changes to tariffs and banding. It's pretty unlikely, if we adjust the tariffs and banding, that the results will be exactly the same, and 1% is well within the margin of uncertainty in our results anyway. In other words, I'd say that our model shows more or less the same results before and after the changes, so focusing on explanations for a 1% change might not tell you very much.
- It would be 7.5p/kWh up to 1314 hours, and 4.8p afterwards. The figure quoted in our table is an average (this will be clear in the final report).
- Let me check with the AEA guys on ongoing costs, and get back to you.

Regards

Iain

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**From:** Hutchinson, Peter [mailto:[Peter.Hutchinson@detini.gov.uk](mailto:Peter.Hutchinson@detini.gov.uk)]  
**Sent:** 23 January 2012 11:25  
**To:** Iain Morrow  
**Subject:** RE: first draft of updated tariffs

Iain,

Thanks very much for sending these through, am sure I'll have more questions/comments when the draft report is through but just wanted to check a couple of things at this stage;

- In terms of banding, you have it set at 0-20 and 0-100 with a differential for sectors. I had assumed that the tariffs would be 0-20 and then 20-100, i.e. for biomass 0-20 = 4.9 and 20-100 = 3.1. Could this be reflected in the draft or are there issues preventing this?
- We talked briefly about the biomass tariff reference installation being wood pellet rather than wood chip, I assume this is still the case? What would the impact be on changing the ref installation to wood chip, primarily for larger boilers (100kw up?), speaking to stakeholders during the consultation process it seemed that wood chip was the fuel being used in majority of larger installations.

- From your email you say the level of renewable heat and cost of the scheme drops with the new tariffs, can you explain this in your draft report?
- In terms of the GSHP tiered tariff what would the tariff drop to? Assume it would be after 1314 hours?
- I noticed that DECC has an 'ongoing barrier cost' calculated into the GB tariffs however we only have the upfront barriers costs. I think this was discussed previously but could you remind me why this is the case.

I think that's all I have for now and will await the draft report before making any comments or raising questions.

Do you know when this report might be available?

Thanks,

Peter

## **Peter Hutchinson**

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

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**From:** Iain Morrow [<mailto:Iain.Morrow@cepa.co.uk>]

**Sent:** 20 January 2012 18:03

**To:** Hutchinson, Peter

**Subject:** first draft of updated tariffs

Peter

An unchecked draft, with not all the figures completed, but I hope it will give you an indication of what our results are likely to be. Please note this is very much a draft and I expect the numbers will shift to some degree.

In terms of overall impact, the model runs I have done suggest it is very small. Renewable heat is now 10.94% of demand, rather than 11.14%, and the total cost drops from £334m to £323m. I'd say, given the uncertainties in our projections, that this is basically no change.

As far as the tariffs are concerned, the changes are too small (under 100kW) biomass and GSHP. I've highlighted these in yellow in the attached.

## **Biomass**

Biomass tariffs have shifted slightly because of inflation, changes in the reference installation and changes in banding.

Domestic biomass gets a little bit more than before (4.8p vs 4.5p).

The new “small commercial” tariff is about half way between the old sub-45kW and over-45kW tariffs. So installations of 45-100kW will get more than under the old tariffs (3.1p vs 1.3p), but commercial ones of 0-45kW will get less (3.1p vs 4.5p). There aren't many of the latter, we don't think.

## **GSHP**

For GSHP, the big change is with the new “domestic, 0-20kW” band. This now gets 6.9p, rather than 4p. In fact we are likely to suggest tiered tariffs. The reason is that the previous reference installation for tariffs was in 2011, but of course that's no longer sensible. The new reference installation is significantly more expensive (urban, with a lower load factor).

Commercial GSHP in the range 45-100 do a bit better than before, getting 1.5p rather than 0.9p as under the old tariffs.

## **Other tariffs**

As you'll see, the biogas and geothermal tariffs aren't there yet. The AEA guys are rechecking the biogas numbers, and we may need to update our assumptions on for example gate fees for waste. I also need to run their new geothermal numbers.

I hope this is some help – I must emphasise it's an unchecked draft so CEPA can't stand behind the numbers yet. Happy to talk through on Monday if that's helpful.

Regards

## **Iain Morrow**

Managing Consultant

### **Cambridge Economic Policy Associates**

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Web [www.cepa.co.uk](http://www.cepa.co.uk)

**From:** [Iain Morrow](#)  
**To:** [Hutchinson, Peter](#)  
**Subject:** RE: RHI Follow Up Report  
**Date:** 25 January 2012 09:47:47  
**Attachments:** [image001.png](#)

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Peter

I'm sorry for the continuing delay. I'm finalising some technology assumptions with the AEA guys today, and hope to get you a cleared draft final version (for comments) tomorrow. The basic results have not changed from the tariff table I sent you last week. On specific issues:

1. Woodchip vs. pellet boilers and reference cases. As I mentioned in our previous message, we base our tariff for biomass boilers on the additional cost of installing a pellet boiler compared to an oil boiler. You'd asked about changing this to the additional cost of a woodchip boiler. AEA have revised the woodchip prices up, based on the consultation responses, but crucially they are still lower than the prices for pellets. In other words, the additional cost of a pellet boiler is more than the additional cost of a woodchip boiler. This means that even if we could move to setting the tariffs based on a woodchip boiler, that would *reduce* them.
2. Geothermal. We now have an indicative tariff in there, but it is low (0.6p). You will see more in the report, but basically the AEA guys think that the heat from geothermal in NI is too low temperature for industrial use, and so it would have to be for domestic or small commercial heating. This means that we need to set the tariff based on the cost of installing geothermal (and the associated district heating network) to replace domestic or small commercial heating. In GB, they assumed that geothermal would be used for industrial heat. Domestic heating is more expensive than industrial, so the cost of geothermal is only a little more than the cost of domestic, whereas it is quite a bit more than the cost of industrial.

Regards

Iain

---

**From:** Hutchinson, Peter [mailto:Peter.Hutchinson@detini.gov.uk]  
**Sent:** 25 January 2012 09:35  
**To:** Iain Morrow  
**Subject:** RHI Follow Up Report

Iain,

Just wanted to check when the draft report will be ready? Grateful if you would advise.

Obviously I'm keen to see it asap, if you have anything more ready that could be sent through uncleared that would be appreciated.

Thanks,

Peter

**Peter Hutchinson**

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**From:** [Iain Morrow](#)  
**To:** [Hutchinson, Peter](#)  
**Subject:** RE: RHI Follow Up Report  
**Date:** 25 January 2012 10:52:21  
**Attachments:** [image001.png](#)  
[comparing\\_GSHP\\_and\\_Geothermal\\_tariffs.docx](#)

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Peter

It's true that geothermal capex is higher than GSHP, but the fuel costs are lower. For geothermal, our assumption (based on experience in Germany) is that its efficiency is 1500%. That is, for each unit of electricity to run the pumps, you get 15 units of heat out. The corresponding figure for GSHP is 360%. With NI's high electricity prices, that higher efficiency makes a very big difference.

The attached document includes the technology parameters, resource costs and tables showing how the tariff splits between capex, opex and fuel.

Regards

Iain

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**From:** Hutchinson, Peter [mailto:[Peter.Hutchinson@detini.gov.uk](mailto:Peter.Hutchinson@detini.gov.uk)]  
**Sent:** 25 January 2012 10:34  
**To:** Iain Morrow  
**Subject:** RE: RHI Follow Up Report

Thanks for this Iain – will be good to see the report.

Accept the point re woodchip v pellets. Will just need to see how this works out and then make an assessment, concerned that the higher price of woodchip in NI will be a barrier to uptake and the RHI (when based against pellet) will not provide a sufficient financial incentive. Will look again once final report is through.

Probably more concerned about the geothermal tariff – agree that it seems low, especially as we said GSHP tariff would not be sufficient given increased capital expenditure involved in deep geothermal, the 0.6p tariff would end up lower than large GSHP. Are the geothermal conditions in NI not as good as GB, i.e. lower heat temperature/gradient? As the geothermal tariff is outside of the model is it easier to look an alternative tariff, eg a tariff with the same assumptions as GB re industrial heating? Happy for you to suggest the lower 0.6p tariff but think we would need to see what the tariff would be based on GB assumptions.

Thanks,

Peter

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

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**From:** Iain Morrow [<mailto:Iain.Morrow@cepa.co.uk>]  
**Sent:** 25 January 2012 09:48  
**To:** Hutchinson, Peter  
**Subject:** RE: RHI Follow Up Report

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1. Woodchip vs. pellet boilers and reference cases. As I mentioned in our previous message, we base our tariff for biomass boilers on the additional cost of installing a pellet boiler compared to an oil boiler. You'd asked about changing this to the additional cost of a woodchip boiler. AEA have revised the woodchip prices up, based on the consultation responses, but crucially they are still lower than the prices for pellets. In other words, the additional cost of a pellet boiler is more than the additional cost of a woodchip boiler. This means that even if we could move to setting the tariffs based on a woodchip boiler, that would *reduce* them.
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Regards

Iain

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**From:** Hutchinson, Peter [<mailto:Peter.Hutchinson@detini.gov.uk>]  
**Sent:** 25 January 2012 09:35  
**To:** Iain Morrow  
**Subject:** RHI Follow Up Report

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Table: Comparing GSHP (larger commercial) with Geothermal - tariff breakdown, in pence per kWh

Annualised capital and barrier costs	2.5	6.4
Operating costs	-0.1	-1.0
Fuel costs	-1.6	-4.8
<b>TOTAL</b>	<b>0.9</b>	<b>0.6</b>

### Ground Source Heat Pumps – larger commercial

Table B.1: Ground Source Heat Pumps (larger commercial) – technology parameters

	Capex (£/kW)	Opex (£/kW/year)	Efficiency (%)	Load Factor (%)	Size (kW)	Lifetime (years)	Fuel cost (p/kWh)	Upfront barrier costs (£)
<b>Ground Source Heat Pump</b>	900.00	1.05	360%	36%	200	20	13.73	3,950.62
<b>Oil</b>	67.99	1.47	89%	20%	360	15	5.05	0

Table B.2: Ground Source Heat Pumps (larger commercial) – technology resource costs in £, per year

<b>Ground Source Heat Pump</b>	24,098.18	209.19	24,059.06	528.90
<b>Oil</b>	3,593.92	529.29	35,826.96	-
<b>Difference</b>	20,504.26	-320.10	-11,767.91	528.90
<b>Sum of difference</b>	8,945.15			

## Geothermal

Table B.3: Geothermal – technology parameters

	Capex (£/kW)	Opex (£/kW/year)	Efficiency (%)	Load Factor (%)	Size (kW)	Lifetime (years)	Fuel cost (p/kWh)	Upfront barrier costs (£)
<b>Geothermal</b>	3,415	39	1,500%	55%	5,000	30	13.8	0
<b>Oil</b>	183.04	9.41	93%	10%	26,251	15	5.1	

Table B.4: Geothermal – technology resource costs in £, per year

<b>Geothermal</b>	2,119,753	195,000	221,634	98,591
<b>Oil</b>	705,490	247,114	1,317,802	-
<b>Difference</b>	1,414,263	-52,114	-1,096,167	98,591
<b>Sum of difference</b>	364,572			