

Christopher Osborne

From: Hutchinson, Peter <Peter.Hutchinson@detini.gov.uk>
Sent: 16 March 2010 09:21
To: Christopher Osborne
Subject: FW: Renewable Heat Oversight Group - Project Assumptions v2 for your comment [Scanned]
Attachments: 100129 AECOM Renewable Heat Study Assumptions - V02a.pdf; renewable heat interim report.pdf; Renewable Heat - DECC RHI.PPT

Chris,

Caroline Bermingham has asked that I forward you this email in regards to DETI's Renewable Heat work.

I will add you to the circulation list for any further correspondence.

Many thanks,

Peter

Peter Hutchinson

1

Sustainable Energy
Department of Enterprise, Trade & Investment
Netherleigh
Massey Avenue
Belfast, BT4 2JP
Tel: 028 9052 9532 (ext: 29532)
Textphone: 028 9052 9304
Web: www.detini.gov.uk

From: Caroline Bermingham [<mailto:caroline@ufuhq.com>]
Sent: 16 March 2010 09:08
To: Hutchinson, Peter
Subject: RE: Renewable Heat Oversight Group - Project Assumptions v2 for your comment [Scanned]

Peter,
Can you please add UFU Policy Officer Chris Osborne to your mailing list? cosborne@ufuhq.com
Thanks,
Caroline

Caroline Bermingham
PA to CE & Officebearers
Ulster Farmers' Union

T - 028 9037 0222

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F - 028 9037 1231

From: Hutchinson, Peter [mailto:Peter.Hutchinson@detini.gov.uk]**Sent:** 15 March 2010 17:02**To:** Sinton, Dan; Maitland, Alan; Rutherford, Joyce; Earls, Garth; 'David Bell'; 'Geoff Smyth'; 'Michael Doran'; Graham Furey; John Martin; jcmartin@biomassenergyni.com; DAMIENMCDONNELL@^{Personal}_{information}^{redacted by the}; 'Elaine Groom'; 'Hewitt Neil'**Cc:** Clydesdale, Alison; Fitzsimons, Seamus; McKibben, Liam; Scott, Peter; Reay, Derek; Hill, Olive (InvestNI); Donagh.Moorehead@CarbonTrust.co.uk; 'Leanne Rice'; Caroline Bermingham; McKeown, Bernard; c.prunty@qub.ac.uk**Subject:** Renewable Heat Oversight Group - Project Assumptions v2 for your comment [Scanned]

Folks,

Following on from Thursday's Renewable Heat Oversight Group I now attach, as promised, the revised project assumptions. This document includes the following changes:

- Some modifications of existing assumptions based on feedback so far
- Additional information on barrier costs, finance costs, and efficiency improvements

I would be grateful if you would consider the attached revised assumptions and provide comments back to me by **10am on Thursday, 18th March**. Apologies for the short deadline however due to the deadlines involved in this project it is essential that these assumptions are finalised as soon as possible. Where no comments are offered, I will assume that you are content with what AECOM have set out in this document. **If you have any queries on these assumptions Andrew Turton, AECOM (Tel: 01223 551822) and Gareth Davies, Poyry (Tel: 01865 812204) are happy to discuss.**

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I have also attached for your information, the presentation by AECOM from last Thursday and the slides on the GB Renewable Heat Incentive. As the RHI element of the agenda was rushed I am happy to discuss further if you have any questions on this matter. The full DECC consultation document can be accessed using the link below.

<http://www.decc.gov.uk/en/content/cms/consultations/rhi/rhi.aspx>

The next meeting of the Oversight Group is likely to take place w/c 19 April 2010. I will be in touch shortly regarding a specific time and date.

Many thanks for your co-operation on these matters.

Peter

Peter Hutchinson

Sustainable Energy

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For more information about the services we provide please visit our web site at www.ufuni.org

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Christopher Osborne

From: Caroline Bermingham
Sent: 16 March 2010 09:09
To: Christopher Osborne
Subject: FW: Renewable Heat Oversight Group - Project Assumptions v2 for your comment [Scanned]
Attachments: 100129 AECOM Renewable Heat Study Assumptions - V02a.pdf; renewable heat interim report.pdf; Renewable Heat - DECC RHI.PPT

Caroline Bermingham
 PA to CE & Officebearers
 Ulster Farmers' Union

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The next meeting of the Oversight Group is likely to take place w/c 19 April 2010. I will be in touch shortly regarding a specific time and date.

Many thanks for your co-operation on these matters.

Peter

10.30 - 1pm 26/4/10

Peter Hutchinson
Sustainable Energy
Department of Enterprise, Trade & Investment
Netherleigh
Massey Avenue
Belfast, BT4 2JP
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Textphone: 028 9052 9304
Web: www.detini.gov.uk

Renewable Heat

26 April → 10.30

further consultation on next steps

Energy Act 2008 (EAB) multi-developed in NI

RHI →

1/4/11

DECC - orderly transition
1/7/09 - eligible in GB only
Installation

retrospective method (retrospective approach)

with new plans.

Capital Grant scheme?

Uran Lee / retrospective application?

NI could start

Renewable Heat Oversight Group

11 March 2010

DECC Consultation on the proposed RHI financial support scheme



Overview

- DECC published their consultation on the proposed RHI financial support scheme on 1st February
- The GB Renewable Energy Strategy sets a target of 15% of overall energy consumption by renewable sources by 2020
- Currently 1% of heat in GB comes from renewable sources, the target for 2020 is 12%
- Main drivers for the RHI
 - Reduce carbon
 - Reduce dependency on foreign fuels
 - Economic opportunities
 - Legal obligation (EU Renewable Energy Directive)




Key aspects of the RHI

- Will support a range of technologies
- Payment will be claimed by, and made to, the owner of the equipment
- For small and medium sized installation, the installers and the equipment need to be MCS accredited
- Payments will be over a number of years, annually for microgen and quarterly basis for installations over 45kW
- Mixture of heat metering and deemed payments
- Open to new projects in 2020
- OFGEM to administer the scheme



Eligibility


- New equipment from 15 July 2009
 - Increase in capacity
 - Replacement
- Heat used for generating electricity or produced by AD for use in the plant not eligible
- Wood burning stoves, air heaters, open fires and similar applications are excluded
- Bioenergy standards
 - Bioliqids - greenhouse gas emissions
 - Biomass - European Commission standard
- Basic minimum level of energy efficiency
 - 125mm loft insulation
 - Cavity filled wall where appropriate



Tariffs

Small installations

Technology	Scale Proposed	tariff (pence/kWh)	Deemed or metered	Tariff lifetime (years)
Solid biomass	Up to 45 kW	9	Deemed	15
Bioliqids	Up to 45 kW	6.5	Deemed	15
Biogas on-site combustion	Up to 45 kW	5.5	Deemed	10
Ground source heat pumps	Up to 45 kW	7	Deemed	20
Air source heat pumps	Up to 45 kW	7.5	Deemed	18
Solar thermal	Up to 20 kW	18	Deemed	20




find manually

Tariffs

Medium installations

Technology	Scale Proposed	tariff (pence/kWh)	Deemed or metered	Tariff lifetime (years)
Solid biomass	45-500 kW	6.5	Deemed	15
		2 (fuel tariff)	Optional: for metered kWh above deemed number of kWh	15
Biogas on-site combustion	45-200 kW	5.5	Deemed	10
Ground source heat pumps	45-350kW	5.5	Deemed	20
Air source heat pumps	45-350kW	2	Deemed	20
Solar thermal	20-100kW	17	Deemed	20



find quarterly


Further work required

- Tariffs for large installations need more consideration
- Innovative technologies
 - Water source heat pumps
 - Deep Geothermal
- Support for district heating and up front capital costs
- Impact on fuel poverty
- Third party ownership




Issues

- Deeming v Metering
 - Paying for heat installations that may not be used
 - Lack of data collection
- Administration
 - OFGEM
 - Validation
 - MCS ability to install
 - Negative impact on the industry
- Higher standard of Energy Efficiency
 - Only basic requirements
 - RHI tariffs to encourage EE?
 - DECC do not wish to create barriers



Next Steps

- Details of method of funding included in Chancellor's Budget
- Consultation closes on 26th April
- Consultation on Regulations in Autumn 2010
- Debated in House of Commons and House of Lords December 2010/January 2011
- Legislation enacted 1st April 2011
- First review of the RHI scheduled for 2013



Irrelevant Information redacted by the RHI Inquiry

Kedco Trip to Munich: Chairman, Secretary, CAFRE and DARD visited Munich on a Kedco-led trip to view projects using alternative digestion systems. The trip looked at two sites, one site in Munich, which handles municipal biodegradable waste. The other site was in Kussel, handling grass silage, slurry and grain by-products. As well as selling the electricity generated, they use the heat generated to dry wood chip on-site.

BIOPROS Training:

Irrelevant Information redacted by the RHI Inquiry

AFBI Open Day 14 January 2009 – Hillsborough : Chairman and Secretary attended the opening of the Environment and Renewable Energy Centre at AFBI, Hillsborough. The new centre incorporates a wide range of renewal energy technologies; Anaerobic Digestion of manures, SRC Willow biomass production, electricity and heat generation from biomass.

Planning Policy Statement 18 (PPS 18):

Irrelevant Information redacted by the RHI Inquiry

Consultation Responses in 2008/2009:

Irrelevant Information redacted by the RHI Inquiry

CHAIRMAN: MICHAEL HARNETT
SECRETARY: COLIN SMITH/CHRIS OSBORNE

SEEDS & CEREALS POLICY COMMITTEE

The Seeds and Cereals Policy Committee have met eight times since the Union's AGM in April 2008 and also participated in wider commodity and sub-group policy meetings.

Main issues discussed by the Committee were:

Research for Cereal Sector:

Irrelevant Information redacted by the RHI Inquiry

Distribution of Modulation:

Irrelevant Information redacted by the RHI Inquiry

Other Funding Sources:

Irrelevant Information redacted by the RHI Inquiry

Monitoring Committees:

Irrelevant Information redacted by the RHI Inquiry

Northern Ireland Rural Network (NIRN):

Irrelevant Information redacted by the RHI Inquiry

Rural White Paper Working Group:

Irrelevant Information redacted by the RHI Inquiry

CHAIRMAN:

WILBERT MAYNE

SECRETARY:

COLIN SMITH/AILEEN LAWSON

RURAL ENTERPRISE POLICY COMMITTEE

The Rural Enterprise Committee has met on 3 occasions during the 2008/09.

Main issues discussed by the Committee were:

Agricultural Stakeholders Forum Renewable Energy (ASFRE):

Irrelevant Information redacted by the RHI Inquiry

NNFCC Conference:

Irrelevant Information redacted by the RHI Inquiry

Terry Piper
Alvin Chydoroblo
Neil Hewitt, Jordanstown
Glenn Broom OWS
Damian McDonald.

Michael Doran A Res.
Geoff Smyth - Carbon Trust
Dempsey AECOM
Graham Davis POYRY
Tuxton AECOM

Andrew Green
Andrew M'Green

Invert NS.

Dermota Crony
Joyce Kelleher
Peter Scott
Self

DARD

DARD Climate Change Unit.

John Martin

Pete Hutchins DETI

Alan Mitchell OMFDEM

Assessment of the Potential for Renewable Heat in Northern Ireland

Project Steering Group

19th January 2010

No govt. policy as yet to Renewable HEAT.

Overview of project team

Use of heat in N. Ire.

How can we meet heat demand in N. Ire.

Uptake a relationship to targets (10%)?

AECOM

AECOM is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government.

Europe:
4,500 employees
19 countries
50+ locations

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POYRY AECOM

AECOM Sustainable Development Group

AECOM's Sustainable Development Group

1980

2001

2007

2009

Pöyry Energy Consulting

- Europe's leading specialist energy management consultancy.
- Offering expert advice from strategy to implementation on policy, regulation, business operations, financing and valuation and sustainability.
- Providing in-depth market intelligence across Europe.
- Over 250 energy market experts in 15 offices across Europe:
 - Copenhagen – Düsseldorf – Helsinki
 - London – Madrid – Milan
 - Moscow – Oslo – Oxford
 - Paris – Stockholm
 - Stavanger – Vienna – Villach – Zurich

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Pöyry Energy Consulting

Strategy

We help our clients to build stronger, more competitive, long-term positions throughout the energy value-chain, by focusing on the goals and activities that generate value.

Business Operation

We improve the performance and competitive position of our clients by developing and implementing innovative energy market solutions.

Valuation & Financing

We apply our extensive expertise, projections and models to the valuation of businesses, projects and contracts to assist in the financing of our clients' energy market activities.

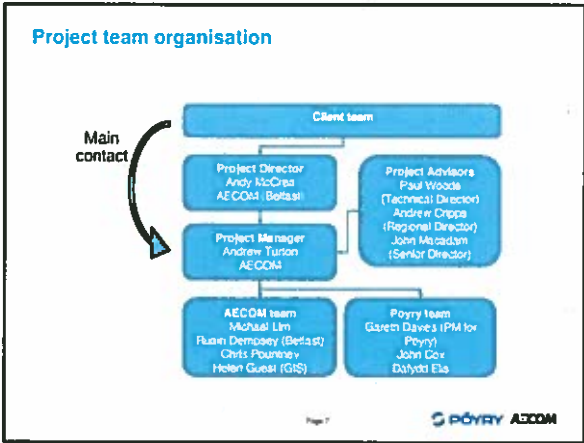
Sustainability

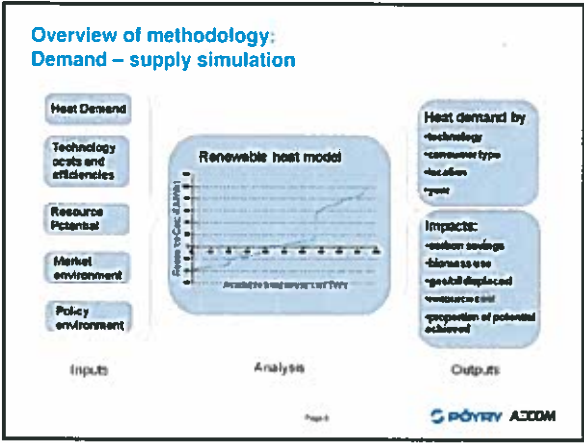
Delivering long term success increasingly requires companies to demonstrate environmental competence and social responsibility in their actions. Our experience helps us to find sustainable solutions for business and the wider environment.

Clients

- Utilities
- Generating Companies
- Wholesalers
- Traders
- Distribution Companies
- Shippers
- Retailers
- Market Operators
- Independent System Operators
- Transmission Companies
- Governments
- Large Consumer
- Regulators
- Non-Governmental Organizations
- Financial Institutions
- Trade Associations
- Manufacturing Companies

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Overview of project:

Stage 1 – Data collection and Heat Mapping

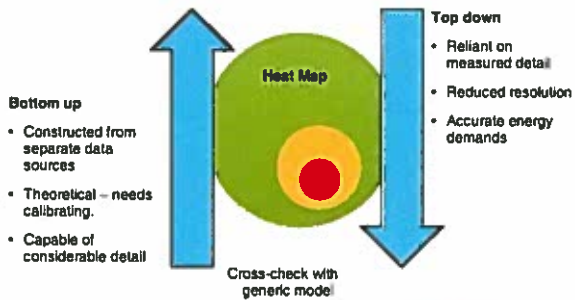
Data collection and heat mapping

- "Mapping heat":
 - A geographic understanding of heat demand and use
 - A detailed understanding of consumers, suppliers, and volumes
- Important to consider:
 - Resolution of heat maps required
 - Availability of consumption data and cooperation of energy suppliers
- Using existing research into resource availability
- Development of assumptions databases and sign off with steering group

January 18 2016

Page 11

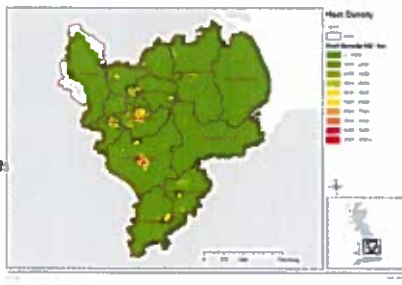
Heat mapping – our approach



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Heat mapping – high level

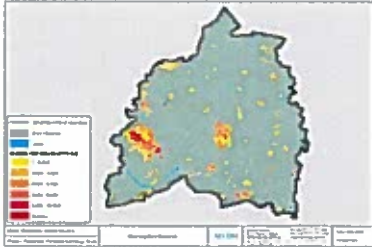
- East Midlands example:
- DECC Utility data
- Middle layer resolution
- Identification of major heat load and sites



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Heat mapping – high level

- Baseline example:
- Census data - domestic
- VOA data - commercial
- Public buildings – utility data
- Allows detailed assessment of heat density and annual demand.



Overview of project:

Stage 2 – Assessment of Renewable Heat Potential

Assessment of renewable heat potential

- Resource potential (supply and demand):
 - Theoretical (resource / demand availability)
 - Practical (supply chains)
 - Commercial potential (effect of incentives etc)
- Practical opportunities and constraints
- Mapping of technologies / fuels onto customer groups
- Review of other countries
 - Aims of research for DETI
 - Applicability to NI

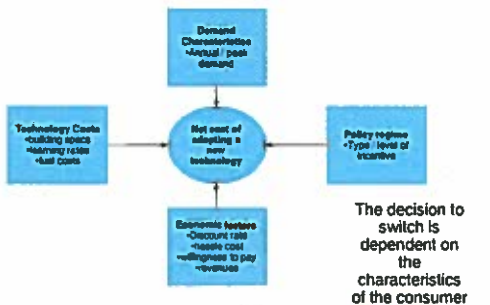
Economic modelling

Based on the technical data we will be able to calculate several cost metrics:

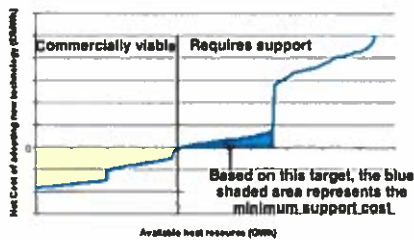
- an effective heat tariff (levelised cost of each technology):
 - the implied tariff that would cover the lifetime costs of installing and operating the technology
- implied resource cost:
 - this is the additional cost of installing the technology over and above the cost of the existing counterfactual technology
 - Indicates whether the technology is commercially viable and the potential policy support
- cost of carbon abatement:
 - reports the £/tCO₂ saved by switching to the new technology
 - this will identify the most efficient technologies (and sectors) for achieving carbon savings

Consumer uptake model

- Each consumer must decide which technology to adopt and when to adopt it based on the actual and perceived cost of changing technology



The unconstrained Renewable Heat supply curve



- The cost of switching to any feasible technology is calculated for each consumer group
- The implied volume of heat is based on the heat demand mapping

Deriving feasible consumer uptake trajectories

- The unconstrained curve does not account for several limitations on technology deployment, for example
 - consumers can (generally) only choose one alternative technology
 - not all consumers can realistically switch simultaneously
 - views on limits to 'take-up' (e.g. linked to natural turnover rates)
 - there will be finite resource availability (e.g. biomass)
 - competition between consumers
 - efficient allocation of resource
 - supply chain capability to produce or install technologies (skill base)
- Superimposing these constraints on the supply curve enables consistent trajectories to be simulated
 - identifies key technologies and consumer groups enabling more efficient targeting of support

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Overview of project:

Stage 3 – Developing targets for Renewable Heat

Targets and projections

- A need to develop challenging, but practical targets which can be monitored
- Targets assessed through:
 - Modelling of incentives and policies
 - Sensitivity analysis of technology opportunities and constraints
 - Review of best practice from other EU countries
- Impacts of targets:
 - On consumers in terms of cost of heat
 - On CO2 emissions
 - On other sectors and existing markets

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Assumptions

125,000 have to get 10% into renewable heat.

Cons of population & role of agri. & agri-food sector to economy of N.Ire.

Food processing sector is ripe to take on some of renewable heat technologies.

Assumptions:
New growth

10,000 houses/year.

- Regional development strategy growth rates
- New development treated outside of main model.
- Assumptions on future building regulations – similar to GB levels.



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Assumptions:
Existing Consumers

- Domestic
 - House condition survey combined with SAP calculations
 - Census information on location and type
 - Efficiency changes over time – impact on % RH.
- Non domestic
 - Valuation office agency data
 - Public building data
 - EU ETS information

→ energy efficiency also need to be looked at.

Greenium Trading Scheme BTS

January 11, 2015

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**Assumptions:
Technologies**

- **Baseline technologies:** Gas, oil, electricity, and solid fuel heating,
- **Microgeneration:** Heat pumps, biomass heating, solar water heating
- **Combined Heat and Power:** Biomass, AD, Waste heat
- **Community scale:** Geothermal, AD (including biogas injection)

Assumptions database being developed for issue to steering group

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**Assumptions:
Community and district systems**

- **District heating**
 - Potential areas identified from heat mapping
 - GH technologies and schemes assessed for communities
- **Renewable electricity derived heat**
 - Future renewable electricity scenarios based on RE targets work
 - Low CO₂ grid electricity scenarios simulated with electric heating technologies
- **Community schemes**
 - Non-building schemes assessed separately to main model
 - Biogas injection simulated through gas grid CO₂ scenarios

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**Assumptions:
Technology Applicability**

- **Technology uptake limited by a range of metrics:**
- **Location**
 - Heat density, rural / urban, geothermal capability
- **Existing heating type**
 - Cost of RH technology can depend on existing heating infrastructure (for example, heat pumps require low temperature heating system, biomass boilers require wet heating system)
- **Building type**
 - Technologies limited to certain house types and non-domestic building types due to energy loads and practical considerations (eg biomass boilers in individual flats)

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Data collection

Data collection – current status

- Data collection to date has focused primarily on the following information categories:
 - Fossil fuel import figures and annual consumption values
 - Biomass production, importation and consumption
 - Housing stock condition and age
 - Distribution of fuel and heat resources (where available)
 - Several key organisations and individuals have provided data



Data collection – further information required

- Role for the steering group in assisting with data provision:
 - Reports, data, information relating to study.
- Further resolution in housing condition information
- Supply chain considerations relating to current constraints and expansion opportunities (training and education)
- Information from energy suppliers (continuation of current dialogue)
- Information relating to the commercial sector and public sector (currently being investigated by DETI).



Thank You

andrew.turton@aecom.com

gareth.davies@poyry.com

Time scale end-March
