

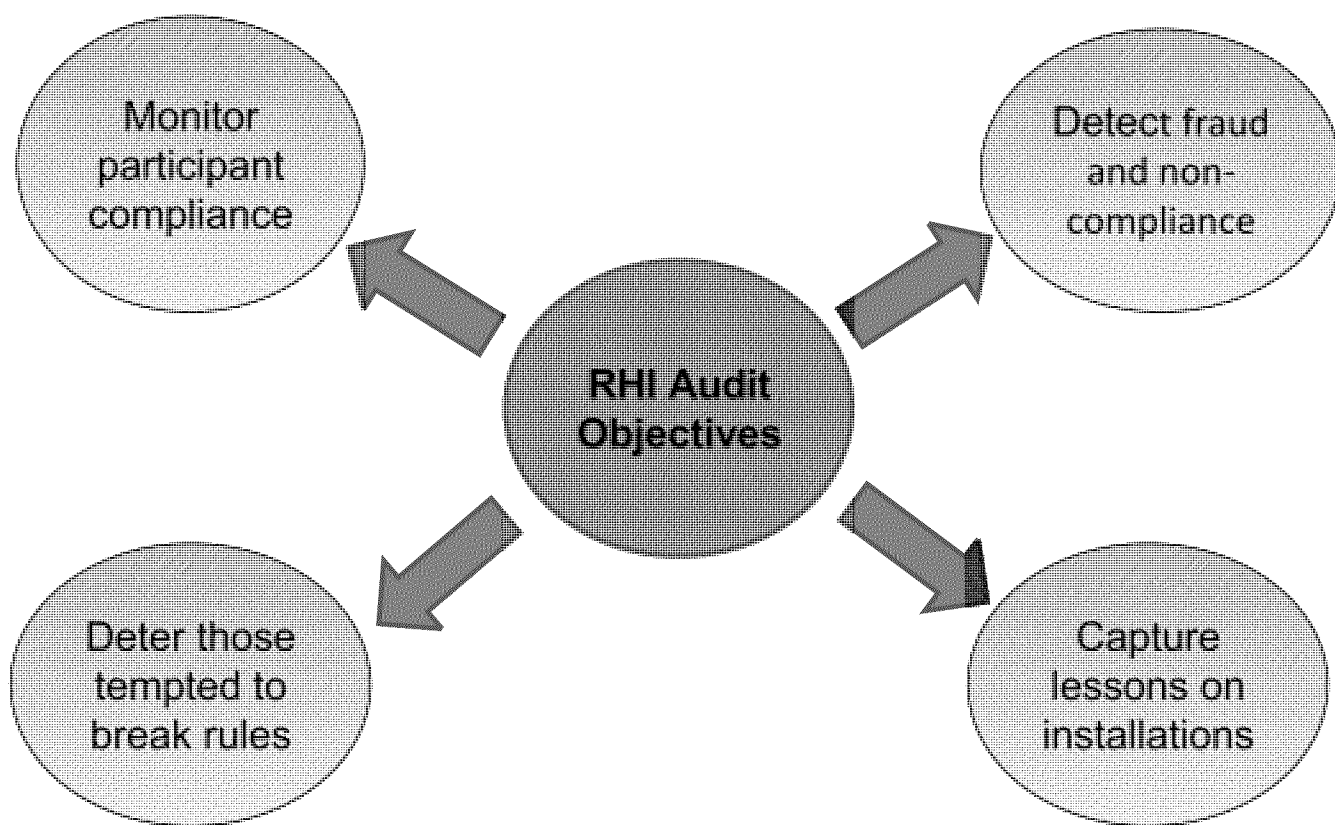
**ofgem e-serve** Making a positive difference  
for energy consumers

**Non Domestic RHI Site Audits**

Supplier Open Day

**Rob Reid – NDRHI Audit Manager**  
16/12/2013

ofgem



## Background

- Audit programme commenced in April 2012
- Visual inspection of installations to verify compliance and identify instances of non compliance
- Audit sample size based on 7.5% of new applications received per annum
- Over 300 site audits carried out to date with up to 900 audits planned over the next three years

# Audit process

## Undertake Site Selection

- Apply Deloitte monetary unit sampling
- Identify key risks from audit findings
- Review suggestions from RHI Team
- Agree audited installations

## Prepare Audit Packs

- Collate application details, periodic data submissions and relevant correspondence from IT systems
- Send securely to Contractor (site audits only)

## Carry out Audit

- Send notification letter to participants
- Verify documents against information in IT systems
- Carry out physical inspection (site audits only)
- Write audit report

## Review Audit Report

- Populate coversheet with comments and remedial actions
- Review with RHI Team as required
- Respond to Contractor (site audits only)

## Approve Audit Report

- Sign-off by Audit Manager
- Refer outstanding actions to relevant RHI Team
- Send audit closure to participant
- Update management information

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# Map of all sites selected for audit 2012-14

## Technology Size

Installation Size	Peak Installed Capacity
Small	≤45kWth
Medium	46-999kWth
Large	>1MWth



## Technology Type

Current Eligible Technologies	Proposed Eligible Technologies
Ground Source Heat Pump	Air to Water Heat Pump
Geothermal (<200kWth)	Biogas (>200kWth)
Biogas (<200kWth)	CHP – Biomass
Solid Biomass	Commercial Waste
Municipal Solid Waste	Industrial Waste
Water Source Heat Pump	Biomethane Production
Biomethane Injection	Deep Geothermal Heat
Solar Thermal	

# Eligibility Checks

- **Plant Overview:**
  - Review information in the audit pack including Independent Report on Metering Arrangements (where applicable) confirming whether details are consistent with the installation found on site.
- **Eligible Heat Use:**
  - Plant walkdown to review distribution system connecting heat generating plant to heat uses
- **Schematic and metering inspection:**
  - Inspection of the schematic - focusing on heat metering components and accuracy compared to site



## Eligibility checks (2)

- **Heat Meters:**
  - Confirm all heat metering instrumentation has been designed and manufactured to MID Class 2 (or equivalent) accuracy requirements.
- **Heat meter readings:**
  - Take on site meter readings and compare with submitted readings
- **Heat Loss Calculations (where applicable):**
  - Confirm heat loss calculations accurately resemble situation on site
- **Heat transfer fluid composition:**
  - Check that meters are calibrated appropriately for use with heat transfer fluid compositions

## Eligibility checks (3)

- **Technology specific checks:**
  - Technology dependent
- **Vents (where applicable):**
  - Check vents question answers submitted at accreditation match the situation on site
- **Pipework:**
  - Check that external pipework declared as properly insulated complies with RHI requirements.
- **Air Quality Standards:**
  - Check fuel used on site matches emissions certificate

## Contractor Capabilities

Capabilities	
Auditing	Steam system operations and metering
Energy and mass balances	Anaerobic digestion technologies and the principles of gasification / pyrolysis
Data handling	Statistics
Comparing records	Process engineering
Understanding of eligible heat use	Interpreting system schematics
Understanding of hot liquid metering	Practical experience of optimising energy using systems
Recognised engineering qualification in a relevant mechanical engineering discipline	Demonstrable experience with RHI technologies



[Reference No]

RHI Audit Report  
RESTRICTED COMMERCIAL

[Site Name]



### RHI Audit Report

Site: [Site Name]  
Reference No: [Reference No]  
Date: [Audit Date]  
Technology: Solid Biomass

#### Executive Summary

A site audit was carried out by Ricardo-AEA on [Audit Date] at the Renewable Heat scheme installed at [Site Name], in [Location]. RHI Reference number for the installation is [Reference No].

The Renewable Heat Installation comprises... <give brief description of installation>

Ofgem wish to confirm... <cover any particular issues raised by Ofgem prior to the audit, include auditors comments in response to these issues>

Observations (including non-compliances) are summarised within the following table. Observations are highlighted within the body of the report for emphasis.

#### Summary of Auditor's Observations (including Non-compliances)

No	Auditors Observations	Does observation constitute non-compliance? [Yes/No]	What remedial work is recommended to rectify this issue?	Reference to Ofgem Guidance (volume and section)
1				
2				
3				

Heat metering for the site was confirmed as having been designed and manufactured to comply with MID Class 2 (or equivalent) standards and no installation issues were noted <Auditor to update if observations contradict this conclusion>

## Audit Assurance Categories

Assurance Rating	Description
Unsatisfactory	<p>General: Major issue with eligibility. OR Financial: Impact on scheme considered to be in excess of £50,000 or 5% of lifetime payments. OR Fraud: There are suspicions of abuse, misuse or fraud</p>
Weak	<p>General: Moderate issue with eligibility. OR Financial: Impact on scheme considered to be in excess of £1,000 or 2% of lifetime payments, but not exceeding £50,000 or 5% of lifetime payments.</p>
Satisfactory	<p>General: Minor issues found on site. OR Financial: Impact on scheme considered to be less than £1,000 or 2% of lifetime payments.</p>
Good	N/A

# Project Management

- **Twice monthly progress meetings:**
  - Teleconference/Videoconference/Face-to-face
- **Weekly project update:**
  - audit programme summary
  - audit status for individual installations, costs and ratings
- **Six monthly lessons learnt report:**
  - Summary of RHI audit programme to date
  - Summary of reporting period
  - Recommendations on the RHI programme



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Notes Summary:

Slide 2: 'We have been running an audit programme since January 2012. We use the audits to monitor participant compliance, detect fraud and non-compliance and deter those tempted to break the rules We use the audits to assess the quality of system design, installation and operation

We commenced site audits of accredited installations in April 2012. We use Ricardo-AEA to carry out the site audits on our behalf. Ricardo-AEA carry out physical inspections of RHI installations and report back to us on the findings

We commenced desktop audits in April 2013. We review documentary evidence submitted by the participant against application responses and ongoing obligations We are currently verifying the accuracy of initial meter readings for unaccredited applications'

## Notes Summary:

### Slide 4: 'Site Selection:

We select largest installations that have the potential to receive the greatest payments

We select a significant number of small installations as they cumulatively receive the greatest total amount

We select installations due to trends and key risks emerging from audit findings.

These include complexity of metering, commissioning date and boiler type RHI team have provided suggestions where there have been concerns during or after accreditation that require a site inspection. This includes installations where IRMA providers have been added to a watch list RHI team actively engaged in selecting installations for audit.

We have created a suggested sites log that is reviewed when sample selection occurs.

We rely on the IRMA blacklist and suggestions from the RHI Team to identify high risk IRMA providers for audit.

### Prepare Audit Packs:

FTP Upload

#### Notes Summary:

All info on RHI Register and CRM case files,  
Any correspondence generation team have had with participant

#### Carry Out Audit

Send out notification letter and carry out audit  
Opportunity for OSP team to attend site visits

#### Audit Report Review:

Ricardo-AEA have 15 days to write the audit report and send it through to  
Audit team

Audit team then review the first draft report within 7 days and send back  
with our comments

We discuss any technical issues with Generation Team and PDS team

R-AEA review and make changes that we have asked for and send back to Audit  
Team within 8 working days

Audit team then have a further 5 working days to approve the report

#### Audit Report Approval

Once approved and we notify Fraud and Compliance of any non-compliances and  
the generation team of any eligibility issues raised

Notes Summary:

Send out closure email to participant with audit findings and ask them to send in any remedial action to the audit inbox.'

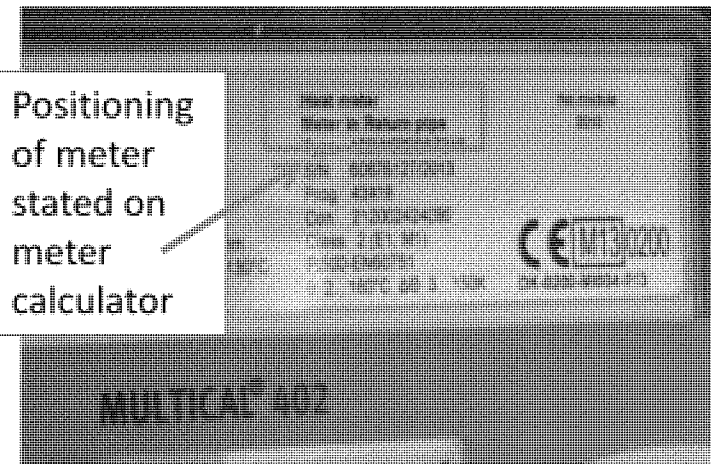
Slide 5: 'Ricardo-AEA have auditors based in England, Scotland and Wales

We consider the cost effectiveness of the audit, in particular in remote locations

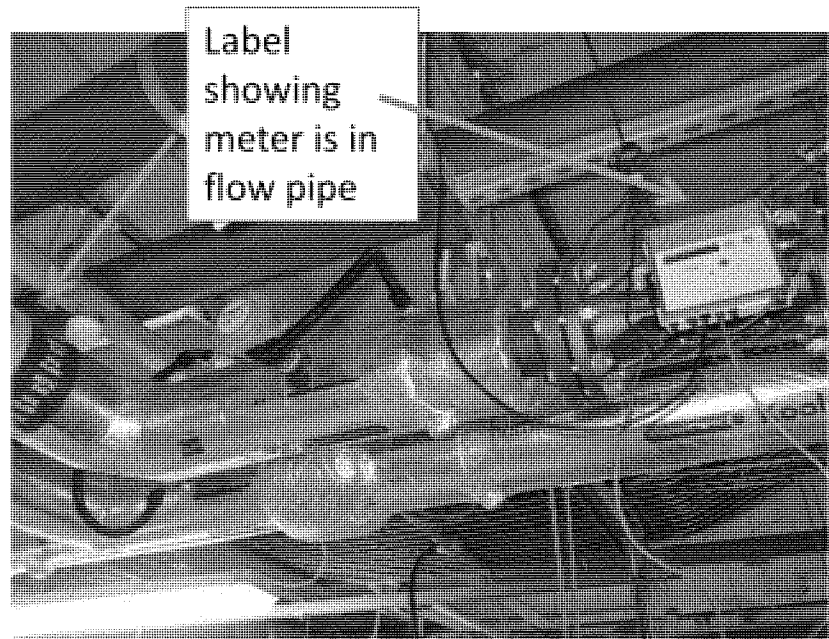
We select installations for audit every 6 months. This enables us to cluster audits

We instruct Ricardo-AEA to carry out ad-hoc audits where an urgent need arises'

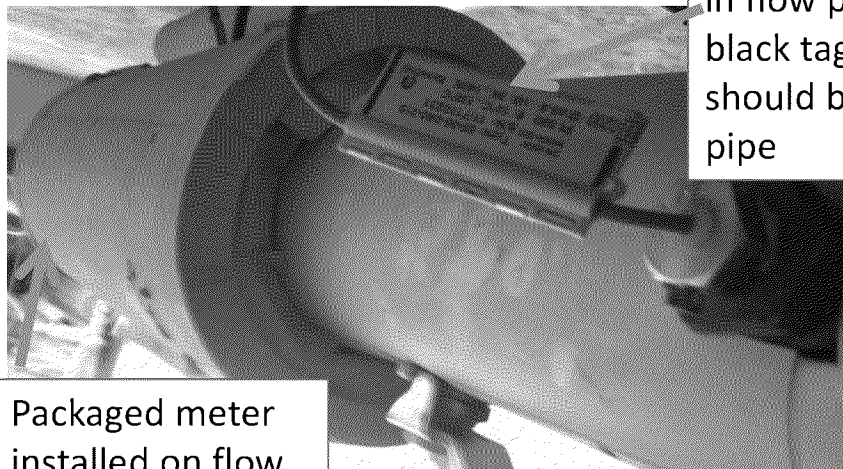
- Second most common non-compliance identified at audit (28%) relates to metering equipment not being installed in accordance with manufacturers requirements.
  - flow meter installed in the flow or return pipe when the meter stated that it should be installed in the opposite pipe;
  - flow meter orientated facing upwards (90°) on a horizontal pipe when manufacturer's guidelines state it should be installed at +/- 45°; or
  - temperature probes inverted (cold probe in pipe from generating plant and vice versa).
- All of these non-compliances should be identified by an IRMA author and recommendations made to rectify the issues prior to accreditation.



**Meter installed in wrong pipe**



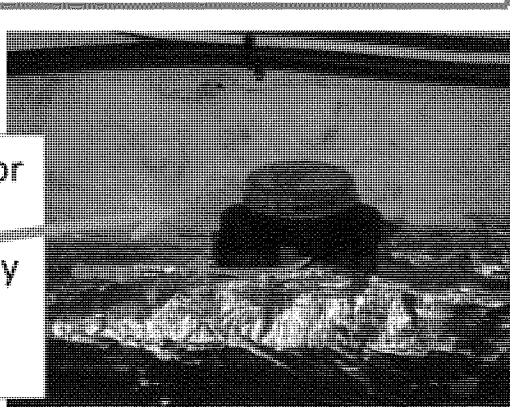
**Temperature sensor inverted:**



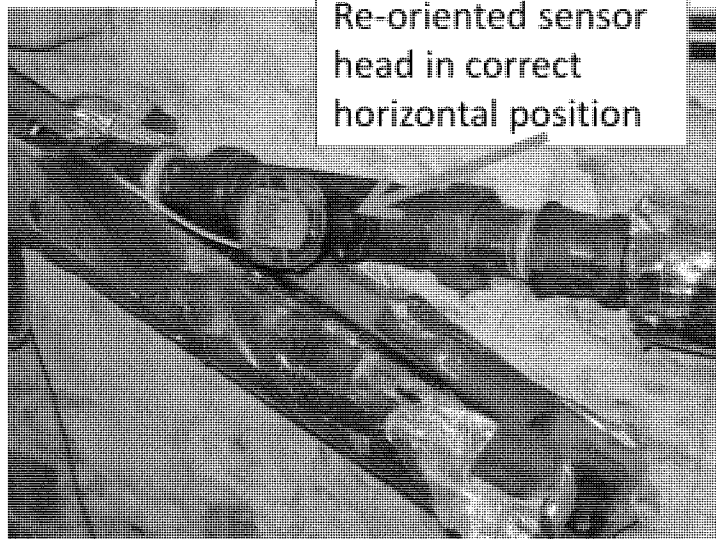
Temperature sensor in flow pipe with black tag indicating it should be in return pipe

Packaged meter installed on flow pipe

The sensor head is incorrectly oriented vertically



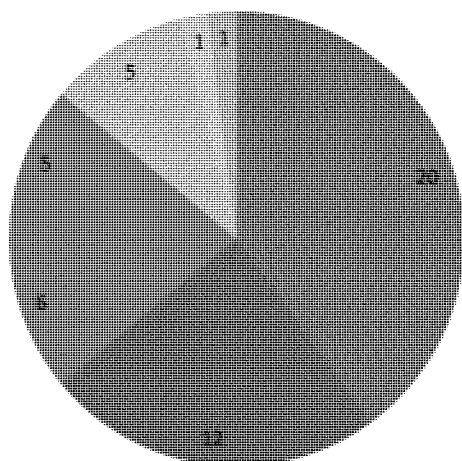
**Meter orientated incorrectly :**



Re-oriented sensor head in correct horizontal position

- 47% of metering non-compliances are not identified by IRMA authors
- Auditors have found that IRMA's are often inconsistent with other documentation or demonstrate a lack of understanding of RHI eligibility requirements.

### IRMA Errors 2012-14



- IRMA author declared installation correctly installed at installation with Non-Compliances
- IRMA has incorrect meter positioning/labelling
- IRMA gives different capacity to application/nameplate
- IRMA author wrongly declared schematic was accurate representation of installation
- IRMA/Application discrepancy (excluding capacity discrepancies)
- IRMA meter readings do not correlate with periodic data submissions
- Multiple errors in IRMA

- Proposed actions to increase quality of IRMA and reduce metering non-compliance rate:
  - Raising awareness of audit findings with IRMA providers
  - Building competence by collaborating with IRMA training providers
  - Raising awareness amongst participants



Notes Summary:

No speaker notes are contained in this presentation.