# Meters – Contributing to FWACV calculation - RIIO

UK

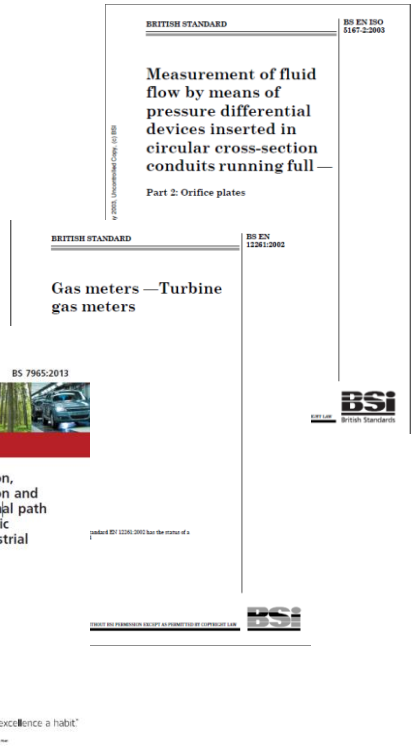
*June 2016*

**UK GAS DISTRIBUTION**

# Offtake Meters – Number & technology

- Five networks - 3 technology types
  - Orifice plate
  - Turbine
  - Ultrasonic

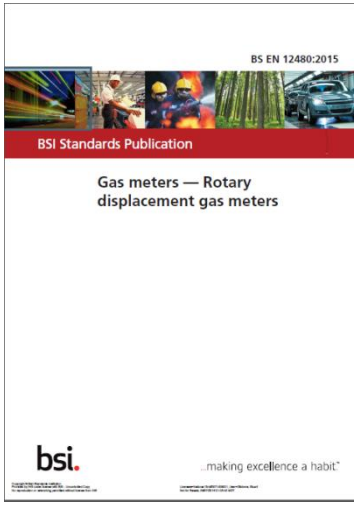
| Meter Type | Standards | Number |
|---|---|---|
| Orifice Plate | BS EN ISO 5167 | 48 |
| Turbine | BS 7834 (ISO 9951), BS EN 12261 | 23 |
| Ultrasonic | BS 7965, BS ISO/TR 12765, AGA 9 | 5 |
| | | |
| Total Number of Meters | | 76 |




# Bio Meters – Number & technology

- Biomethane sites - 2 technology types
  - Rotary displacement
  - turbine

| Meter Type | Standards | Number |
|---|---|---|
| Rotary Displacement | BS EN 12480 | 20 |
| Ultrasonic | BS 7965, BS ISO/TR 12765, AGA 9 | 2 |
| | | |
| Total Number of Meters | | 22 |




# Meters – Throughput and error magnitude 2013-2016

| LDZ - GWh 13/14 | NT | EA | EM | WM | NW | UKD |
|---|---|---|---|---|---|---|
| Total Energy (GWh) | 50753.2 | 38545.7 | 56333.0 | 44301.6 | 67243.2 | 257176.6 |
| Abs error (GWh) | 0.00 | 1.60 | 0.00 | 0.00 | 0.00 | 1.60 |
| % err | 0.0000% | 0.0041% | 0.0000% | 0.0000% | 0.0000% | 0.0006% |
| RIIO | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

| LDZ - GWh - 14/15 | NT | EA | EM | WM | NW | UKD |
|---|---|---|---|---|---|---|
| Total Energy (GWh) | 50229.4 | 41484.2 | 55911.8 | 43852.7 | 67096.3 | 258574.4 |
| Abs error (GWh) | 8.70 | 0.65 | 0.27 | 0.00 | 0.00 | 9.62 |
| % err | 0.0173% | 0.0016% | 0.0005% | 0.0000% | 0.0000% | 0.0037% |
| RIIO | 99.98% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

| LDZ - GWh - 15/16 | NT | EA | EM | WM | NW | UKD |
|---|---|---|---|---|---|---|
| Total Energy (GWh) | 48735.3 | 40293.1 | 54891.0 | 42807.1 | 65363.8 | 252090.3 |
| Abs error (GWh) | 0.00 | 0.54 | 0.25 | 0.00 | 1.81 | 2.60 |
| % err | 0.0000% | 0.0013% | 0.0005% | 0.0000% | 0.0028% | 0.0010% |
| RIIO | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

# Meters – Errors reconciled from 2013

- 8 Reconciled errors
  - 2 Human factors
  - 6 equipment failure

| Start Date | End Date | Days | Site | Error (Mscm) | Error direction | Cause of meter error |
|---|---|---|---|---|---|---|
| 28/05/2013 | 04/08/2013 | 68 | Bacton MRD | 0.151354 | under | Error in the temperature measurement caused by a poor connection on the probe. |
| 07/04/2014 | 10/10/2014 | 186 | Bacton MRD | 0.059382 | under | Intermittent loss of turbine meter pulses |
| 03/12/2014 | 04/12/2014 | 2 | Deanshanger | 0.0252 | under | Failure of turbine meter |
| 06/05/2014 | 09/06/2014 | 35 | Peters Green | 0.799456 | over | Temperature Tx fail |
| 25/07/2015 | 29/07/2015 | 5 | Gosberton | 0.022682 | over | Low DP Failure |
| 08/07/2014 | 25/06/2015 | 353 | Whitwell | 0.213934 | over | Low DP Failure |
| 20/04/2015 | 14/07/2015 | 86 | Mickle Trafford MTA | 0.16542 | under | Low DP Failure |
| 03/05/2016 | 06/05/2016 | 4 | Thornton Curtis | 2.44 | over | Viscosity error |

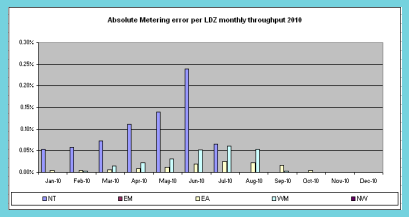
# MINIMISE High Pressure Metering errors – MEETING RIIO Targets

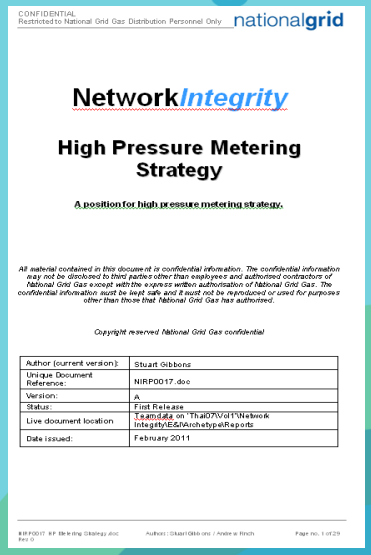
Through strategy management of high pressure metering systems minimise metering errors throughout Distribution network to meet RIIO incentives.

•Undertaken at Tx – Dn interface

## Starting Position

•76 high pressure meters
  – Orifice plate -48
  – Turbine - 23
  – Ultrasonic - 5
•Complex process
•Error → £25m
•Inputs into FWACV calculation
•Requirements in UNC → OAD
•Increasing Ofgem & Shipper exposure





CONFIDENTIAL
Restricted to National Grid Gas Distribution Personnel Only

nationalgrid

**NetworkIntegrity**

**High Pressure Metering Strategy**

A position for high pressure metering strategy.

All material contained in this document is confidential information. The confidential information may not be disclosed to third parties other than employees and authorised contractors of National Grid Gas except with the express written authorisation of National Grid Gas. The confidential information must be kept safe and it must not be reproduced or used for purposes other than those that National Grid Gas has authorised.

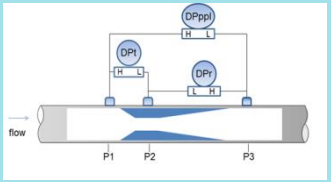
Copyright reserved National Grid Gas confidential

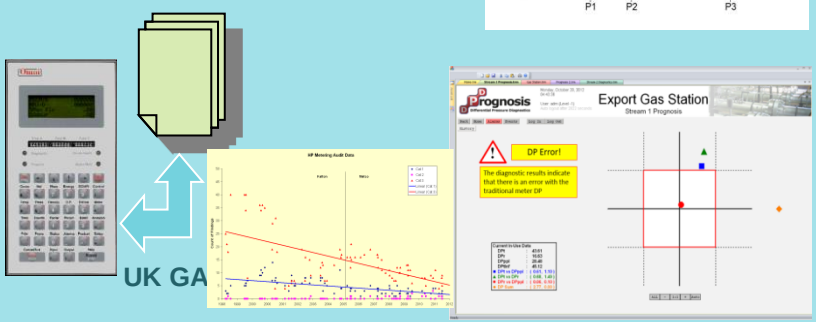
| | |
|---|---|
| Author (current version): | Stuart Gibbons |
| Unique Document Reference: | NIRP0017.doc |
| Version: | A |
| Status: | First Release |
| Live document location | Teamdata on 'Thal07\Vol1\Network Integrity\HES\Archetype\Reports |
| Date issued: | February 2011 |

NIRP0017 HP Metering Strategy.doc Author: Stuart Gibbons / Andrew Finch Page No. 1 of 29
Rev 0

## Delivery

•HPMIS update
•Diagnostic tools
•Performance measures monitored
•Data publically available




## The Journey

•Number of control measures in place
•Increased diagnostic coverage – real time
•Audit framework

| | Outstanding issues | | | | | Number of tests | | | | | Test pass rate | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CP tests | EA | EM | NT | NW | WM | EA | EM | NT | NW | WM | EA | EM | NT | NW | WM | Total |
| CP1A | 0 | 1 | 0 | 0 | 0 | 13 | 10 | 8 | 11 | 12 | 100.0% | 90.0% | 100.0% | 100.0% | 100.0% | 98.1% |
| CP1B | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 1 | 1 | 7 | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| CP2A | 1 | 1 | 0 | 0 | 0 | 9 | 8 | 9 | 11 | 12 | 88.9% | 87.5% | 100.0% | 100.0% | 100.0% | 95.9% |
| CP2B | 0 | 1 | 0 | 0 | 0 | 6 | 9 | 0 | 1 | 6 | 100.0% | 88.9% | | 100.0% | 100.0% | 95.5% |
| CP2D | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | | 100.0% | | | 100.0% | 100.0% |
| CP3A | 0 | 0 | 0 | 0 | 0 | 8 | 8 | 7 | 11 | 10 | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| CP3B | 3 | 7 | 0 | 1 | 1 | 5 | 9 | 0 | 1 | 4 | 40.0% | 22.2% | | 0.0% | 75.0% | 36.8% |
| CP4A | 0 | 1 | 0 | 0 | 0 | 16 | 19 | 9 | 12 | 20 | 100.0% | 94.7% | 100.0% | 100.0% | 100.0% | 98.7% |
| CP4B | 0 | 1 | 0 | 0 | 0 | 9 | 8 | 9 | 11 | 12 | 100.0% | 87.5% | 100.0% | 100.0% | 100.0% | 98.0% |
| CP4C | 0 | 1 | 0 | 0 | 0 | 9 | 8 | 9 | 11 | 12 | 100.0% | 87.5% | 100.0% | 100.0% | 100.0% | 98.0% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 98.0% |
| | | | | | | | | | | | | | 100.0% | | 100.0% | 100.0% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 98.0% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 98.2% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 96.4% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 98.0% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 98.0% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 98.0% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 95.5% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 100.0% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 98.3% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 96.7% | 97.3% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 98.0% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 98.0% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 97.9% |
| | | | | | | | | | | | | | 100.0% | | 100.0% | 96.2% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 98.7% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 100.0% | 91.8% |
| | | | | | | | | | | | | | 100.0% | 100.0% | 75.0% | 90.9% |
| | | | | | | | | | | | | | | 100.0% | 33.3% | 50.0% |
| | | | | | | | | | | | | | 100.0% | | 100.0% | 81.9% |
| | | | | | | | | | | | | | 99.4% | 99.2% | 97.0% | |

# Meters – Strategy for RIIO period

- Incremental approach – RIIO
  - HPMIS replacement
  - Flow computer improvement
    - New computer processor
    - Ethernet card
    - New template
  - Increased diagnostics coverage

# Meters – Framework

- Audit framework
  - Ofgem audit by external auditor – 8 sites per annum
  - Gas examiner check – 3 monthly site visit
  - Independent upstream party visits
- Ofgem web site
  - Response to meter queries
- ME2 validation
  - Classified as regulatory in scheduling system
  - Upstream party review