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Gas SO Incentives
Initial Consultation Workshop



Elexon

13 July 2011

Welcome…..

- Housekeeping
- Objective of Workshop
  - To enable customers to understand and respond to the Initial Consultation document
- Golden Rules
  - Keep session interactive
  - Keep to scope of review
    - Use RIIO ‘Park’
    - Discussion in proportion to incentive

Agenda

1. Introduction
   - Scope of Initial Consultation & Workshop
   - Timetable of Rollover process
   - What are SO Incentives?

2. Topics
   - Shrinkage
   - UAG
   - Residual Balancing
   - Demand Forecasting
   - Data Publication

3. Wrap up & Next Steps

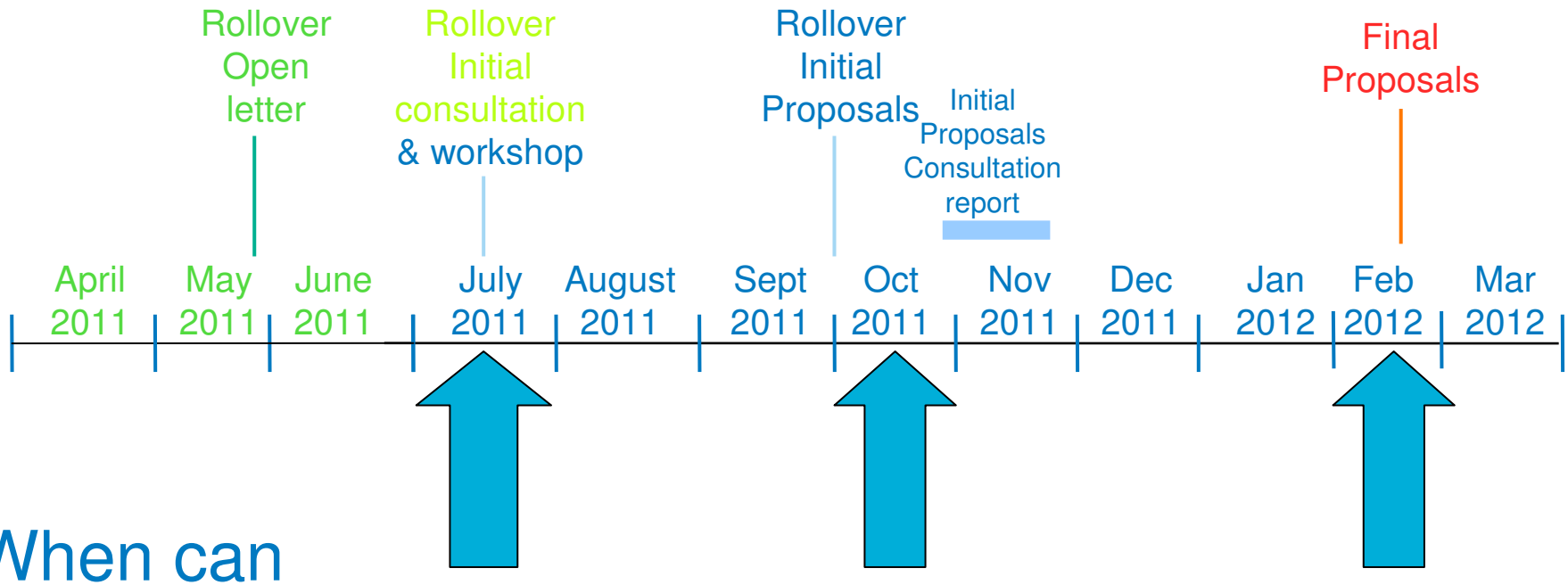
Introduction

- Five of the existing SO Incentive schemes are due to expire March 2012

- Ofgem Open Letter on Rollover of SO Incentives included:
  - Proposed one year roll over (as far as possible)
  - Ofgem initial views on scope of rollover
  - Expectation that NGG will develop Initial Proposals

- Initial Consultation published 7th July 2011
  - We need customers to tell us we are heading in right direction in developing Initial Proposals

Rollover timescales 2011/12



When can you get involved?

Initial Consultation responses due by 4 August 2011

Initial Proposals Consultation expected October 2011

Final Proposals Consultation expected February 2012

Rollover Incentive Schemes

Scheme	Length of current scheme	Current scheme expires	Purpose of incentive
NTS Shrinkage	3 years	31 March 2012	Minimise cost of purchasing gas & electricity for shrinkage
NTS Unaccounted for Gas	3 years	31 March 2012	Reduce volumes of unaccounted for gas
Residual Gas Balancing	2 years	31 March 2012	Minimising daily change in linepack to promote cost targeting whilst minimising the impact of its trades on the market
Demand Forecasting	2 years	31 March 2012	Minimise the error in NGG's D-1 13:00 demand forecast
Data Publication	2 years	31 March 2012	Encourage the timeliness and availability of published information

Relative Value & Magnitude of Incentivised activities (1)

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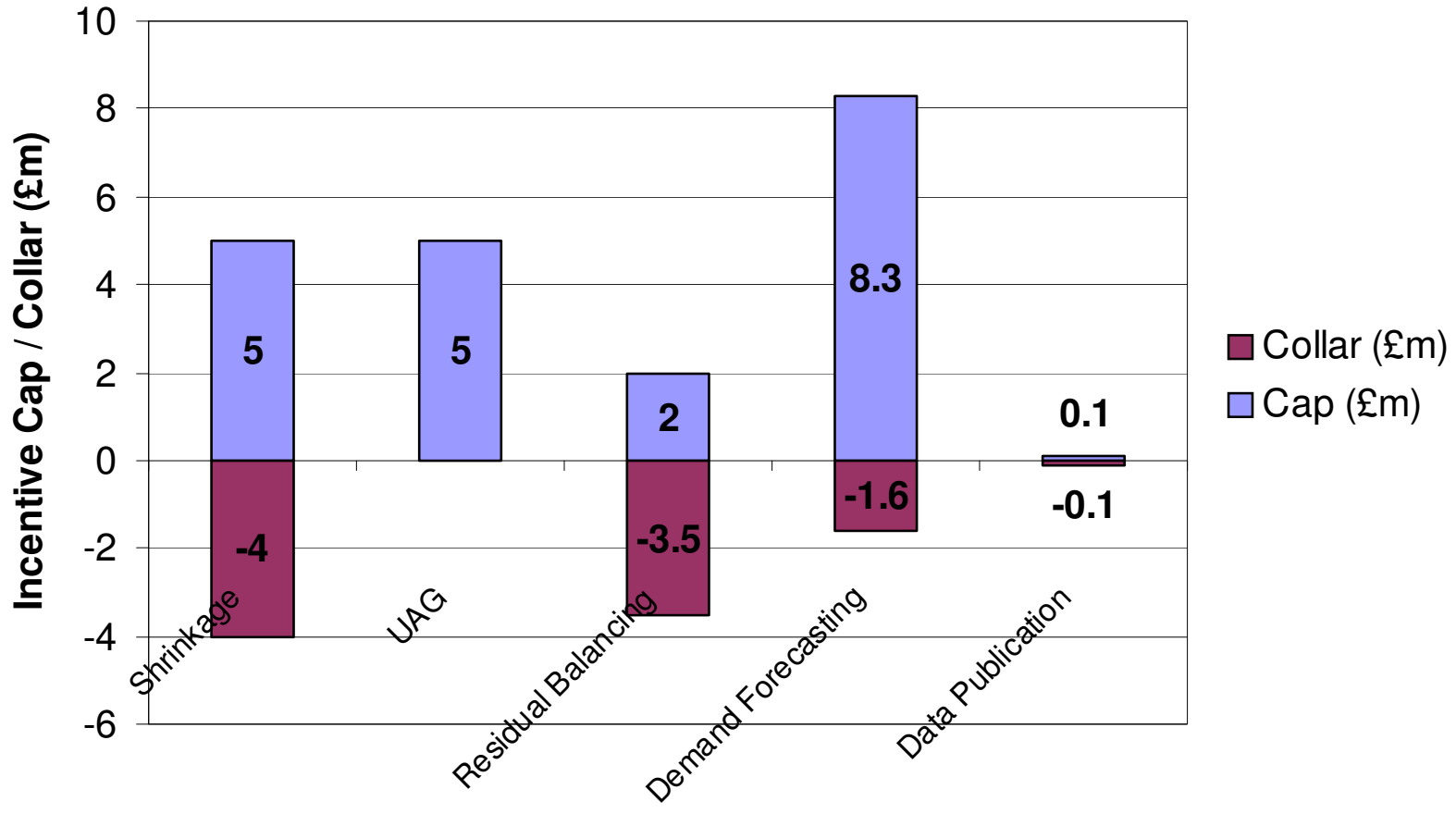
- Caps & Collars 2011/12



Relative Value & Magnitude of Incentivised activities (2)

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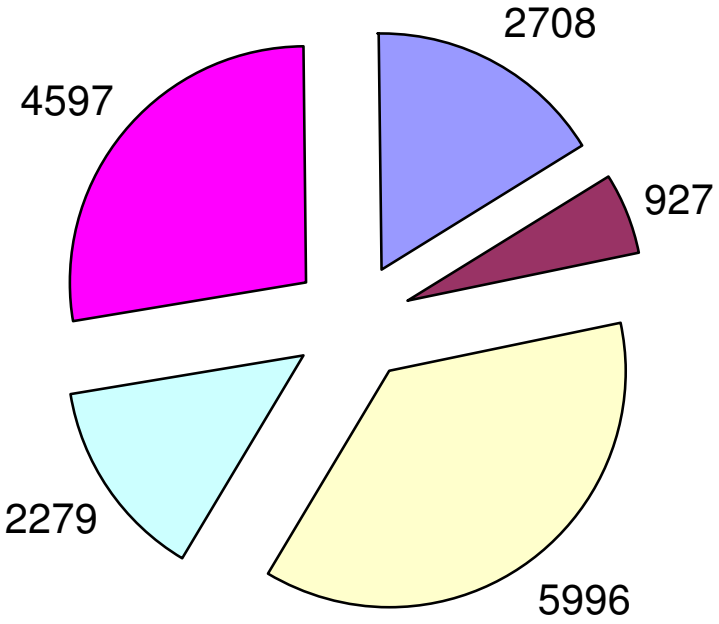
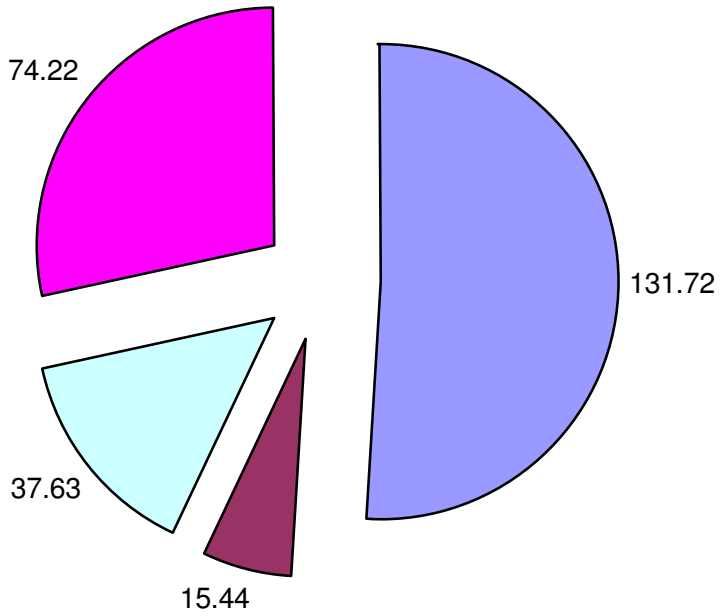
Wholesale Gas Volumes (GWh) associated with SO Incentives (FY 2010/11)



- Shrinkage Quantity Purchased excl UAG
- Shrinkage Quantity Sold excl UAG
- Net UAG
- Residual Balancing Quantity Purchased
- Residual Balancing Quantity Sold

Wholesale Gas Costs & Revenues (£m) associated with SO Incentives (FY 2010/11)



- Shrinkage Purchase Cost
- Shrinkage Sell Revenue
- Residual Balancing Purchase cost
- Residual Balancing Sell revenue

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Shrinkage

Andy Bailey – Shrinkage and Emissions Manager

Shrinkage: Components

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- Compressor Fuel Use (CFU)
  - Electric Compressor Energy (ECE) and Gas Compressor Energy (OUG)
- Calorific Value Shrinkage (CVS)
  - CV capping unbilled energy
- Unaccounted for Gas (UAG) – after discounting
  - Measured inputs and outputs from the NTS
  - Own Use Gas consumption
  - CV shrinkage
  - Change in NTS linepack

Shrinkage Incentive: Factors and Aims

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- Target made up of volume and price targets
  - Gas Cost Reference Price x Gas Volume Target
  - Electricity Cost Reference Price x Electricity Volume Target
  - Shadow Price of Carbon Adjustment
  - Electricity Use of System Charges
- Scheme incentivises cost minimisation. Achieved by:
  - Reducing shrinkage volumes, or
  - Efficient energy procurement
- 3 year scheme (April 2009 – March 2012)

Shrinkage Incentive: 2010/11 Scheme

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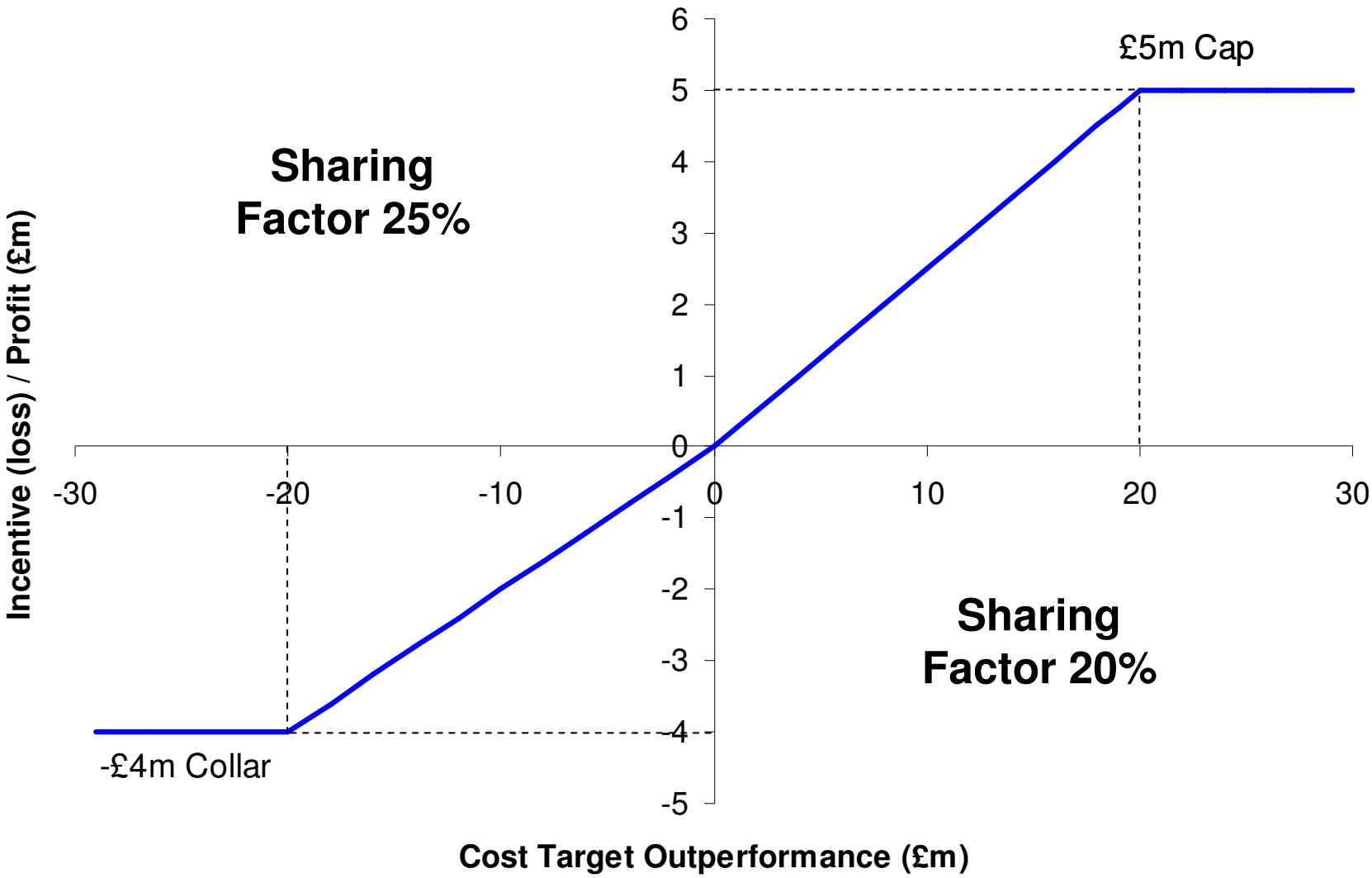
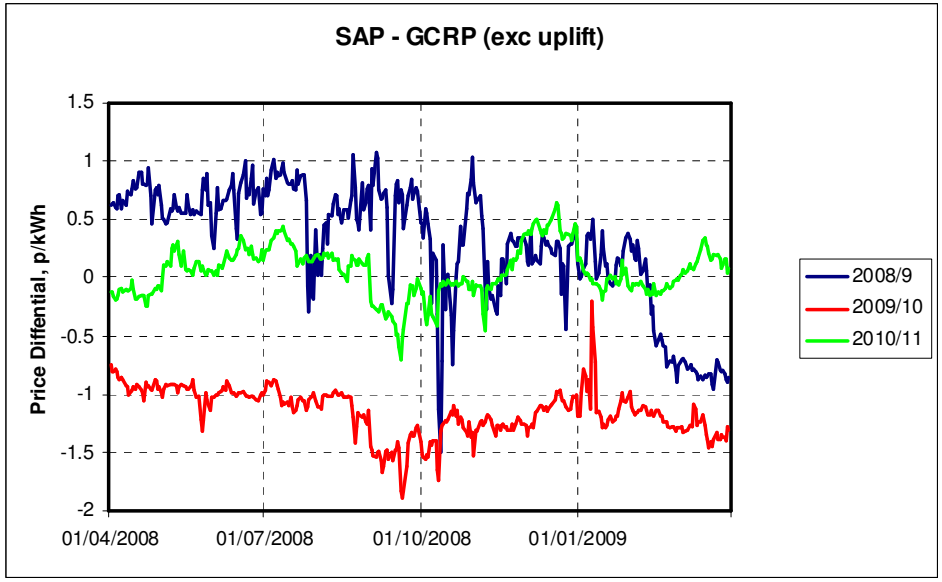


Shrinkage Performance

Incentive Year	Incentive Target	Performance	Out-performance	Incentive performance
2009/10	£246.4m	£139.4m	£106.9m	£5m
2010/11	£139.3m	£114.1m	£25.2m	£5m

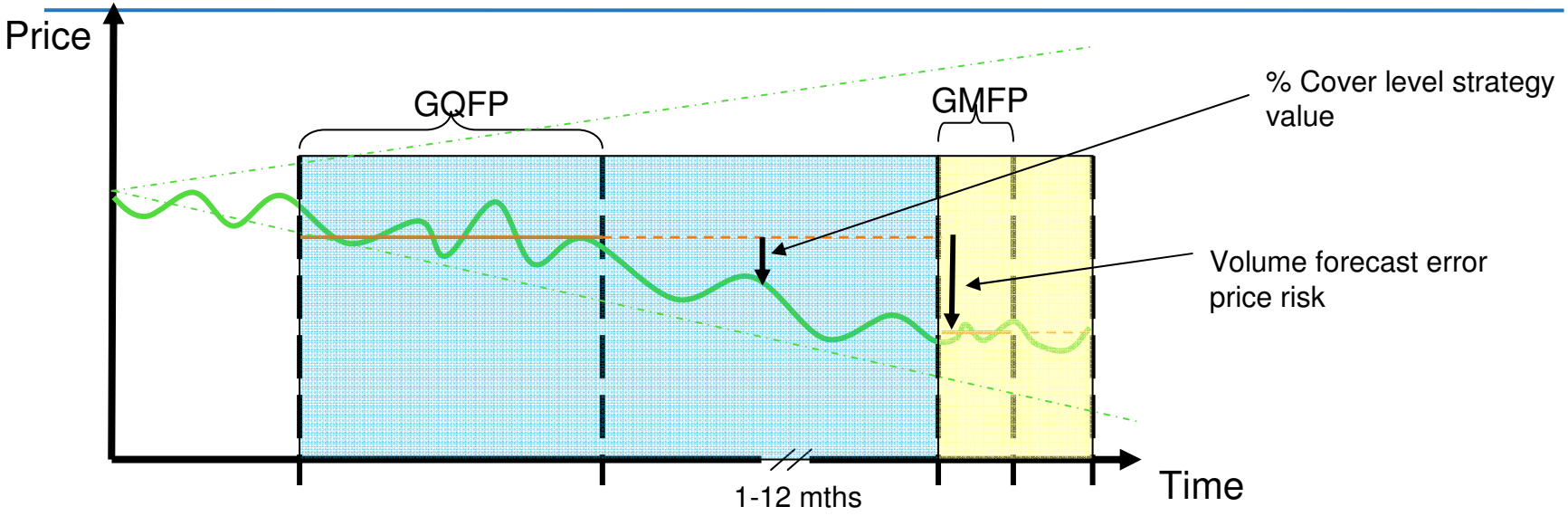
Managing Shrinkage Performance

- Volume efficiency
  - CVS – relatively negligible volumes
  - UAG – limited control
  - CFU – 5% volume efficiency gives £1.8m cost reduction



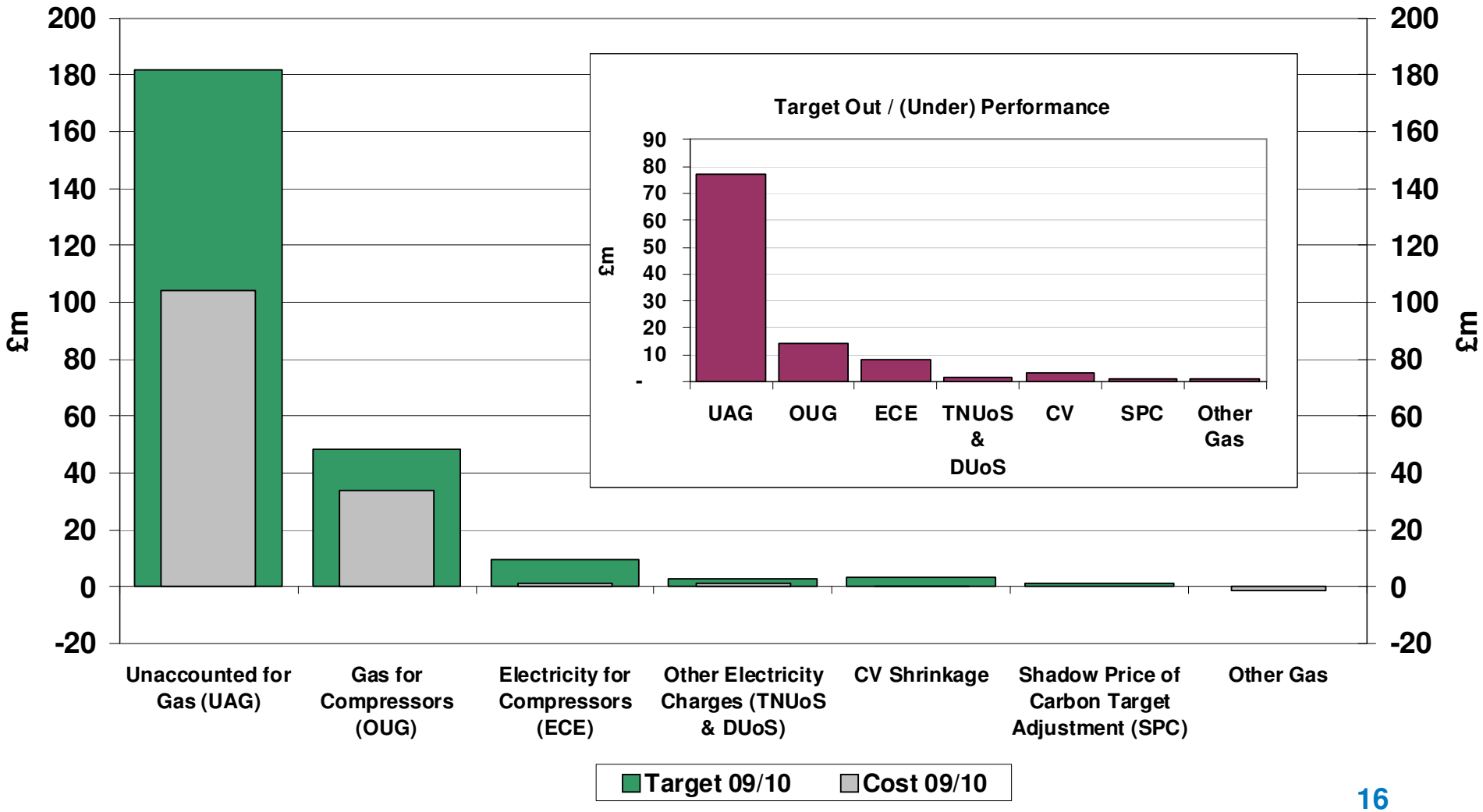
- To deliver incentive profit & material value to customers NG must identify & execute trading opportunities & manage the incremental risk of moving away from the reference benchmark procurement schedule
- GCRP = 0.75 * GQFP + 0.25 * GMFP + Swing allowance
- GMFP (and ECRP) close to delivery – limited risk/opportunity

Managing Shrinkage Performance

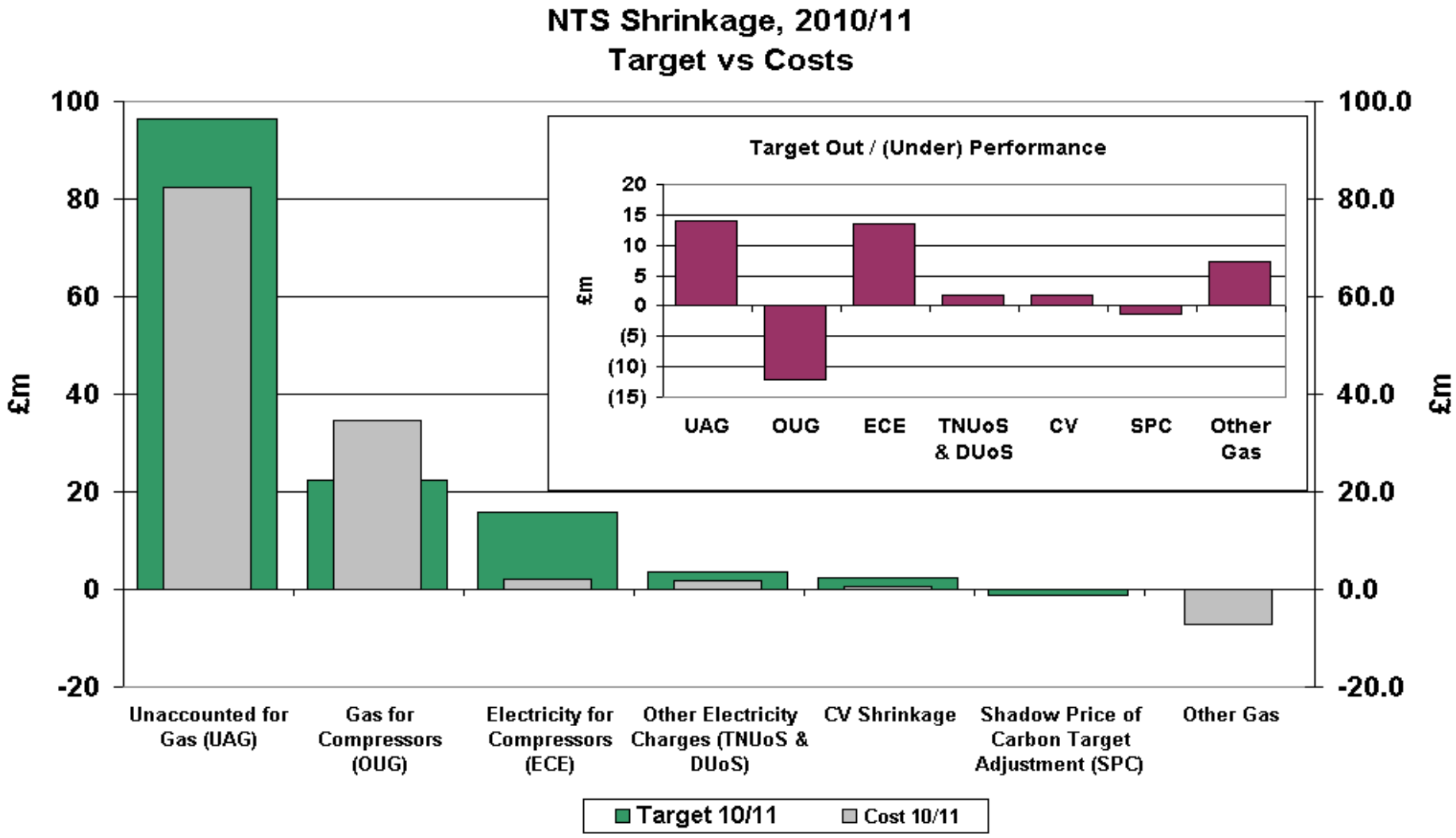


- GQFP % cover strategy to achieve £20m value/risk (2010/11 volumes)
  - 30% GQFP cover requires 0.55p/kWh price opportunity
  - 70% GQFP cover requires 1.26p/kWh price opportunity
- Need to balance '% cover strategy' against GQFP over/under procurement risk
  - What volume forecast 1-2 years forward ?
  - Target adjusted with benefit of hindsight

2009/10 Performance



2010/11 Performance



Issues for 2012/13 Initial Consultation

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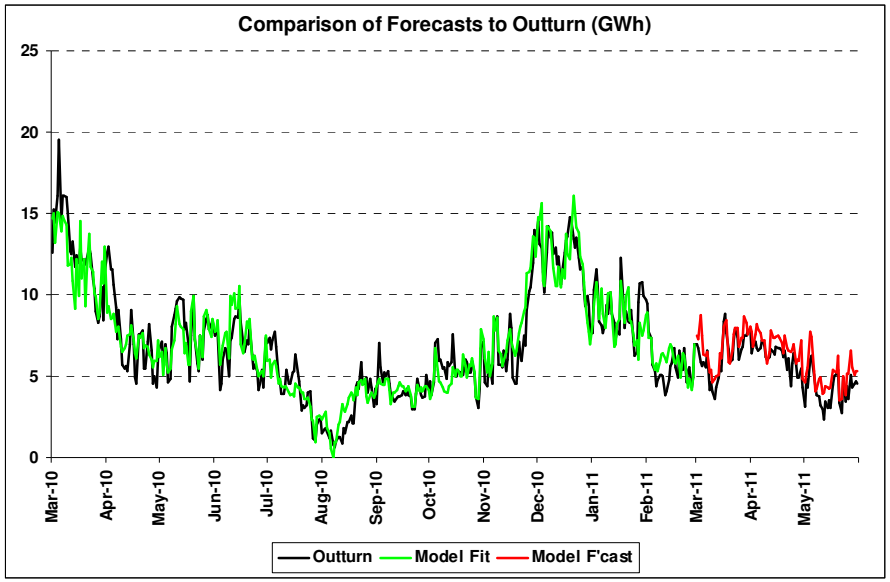
- CFU Target Volume
  - Influence of changing supply patterns and St. Fergus / Milford Haven flows
  - Delays to electric compressor installation
- Variability of UAG volumes
- CV shrinkage – excluded offtakes (Andy Lees to cover)
- Target Prices
  - GCRP swing (GCRP allowance)
  - Electricity Retail Contracts (ECRP Uplift)
- Environmental considerations

CFU Volume Target Model

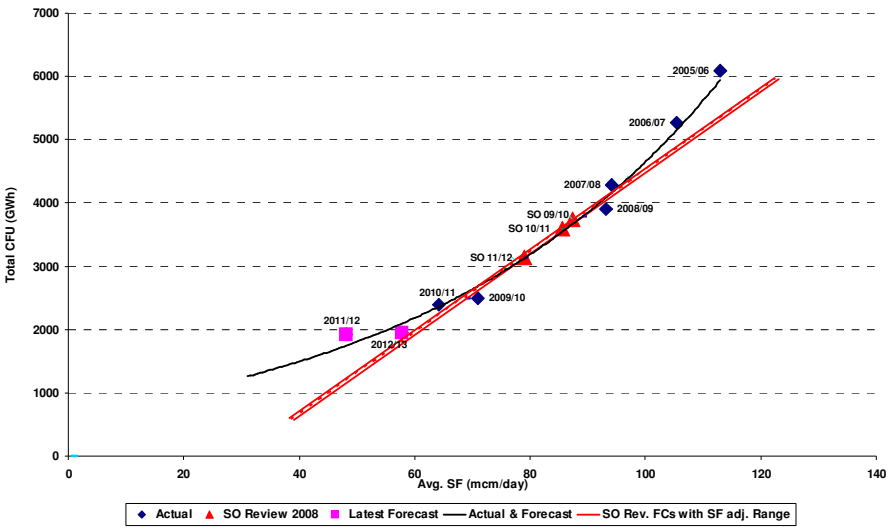
- Regression model – includes all significant supply drivers
  - St Fergus has been dominant driver
  - Milford Haven driver is included in the model
- Latest model captures non-linear relationship of CFU with supplies
- Good fit to daily CFU with low expected model error for quarterly CFU forecast, £0.5m cost variance per quarter



- **Is this model/technique fit for purpose for rollover year?**
- **What supply-demand scenario for baseline target setting – TBE?**

CFU Volume Target Adjuster

- Mitigate windfall gain/loss from supply forecast error
  - Need balance with 'hindsight trading' risk – forecast uncertainty at time of trade execution
- St Fergus adjuster mitigated 80 to 90% of 2009/10 and 2010/11 volume windfall
- Linear adjuster not appropriate over the 'extreme' supply scenarios observed/expected
  - Q211 target (adj) of 190GWh against 376GWh outturn
  - Q311 target (adj) of 0GWh against 237GWh forecast
- 2011/12 of £10.1m commodity cost plus £3.7m SPC impact



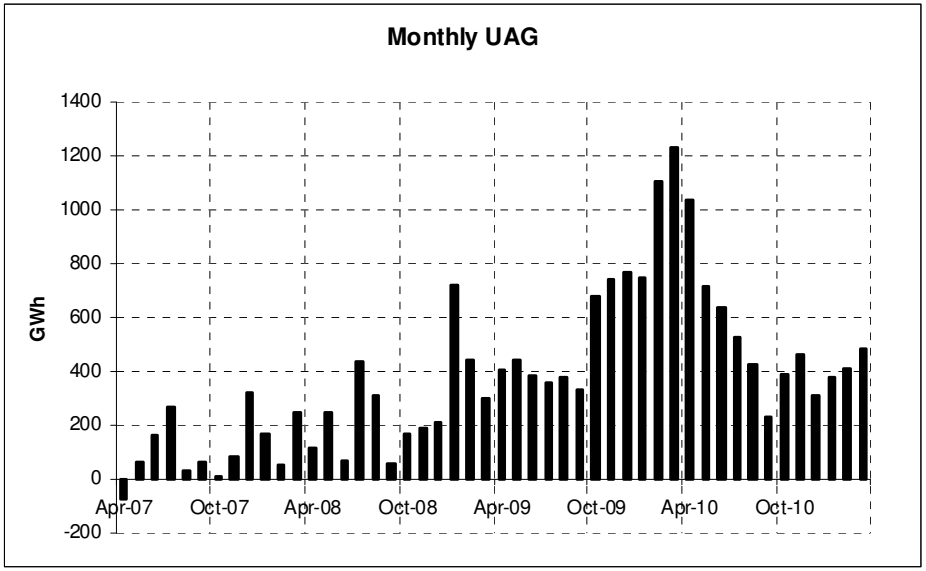
- **Review adjuster parameters and/or methodology?**

CFU Target Volume – OUG/ECE

- In its current form the incentive requires the disaggregation of CFU target into OUG and ECE volume targets based on:
  - Expected operational dates for electric drives
  - Relative efficiency of electric:gas operations (1:3)
- Experienced significant delays in electric drive commissioning
- The incentive target cost has been largely neutral to delays – minimal windfall gain or loss
  - Cost is 90% commodity with minimal difference between gas or electric cost
  - DUoS is largely a fixed availability charge with a 'pass through' allowance
- **Is the latest electric drive programme an appropriate basis for OUG/ECE volume target setting?**

UAG Procurement

- UAG remains very volatile, uncertain and NG have limited control/influence.
- UAG volume target based on net outturn to mitigate windfall gains or losses of a fixed volume target
- Cost target derived from GCRP methodology
- Forward procurement strategy is based on prevailing UAG forecast (GCRP bias for year ahead) and thus price risk of over/under volume cover
- A 200 GWh/month forecast error gives £8m cost risk per 0.34p/KWh (10p/th) price movement between forward trade and on the day balance



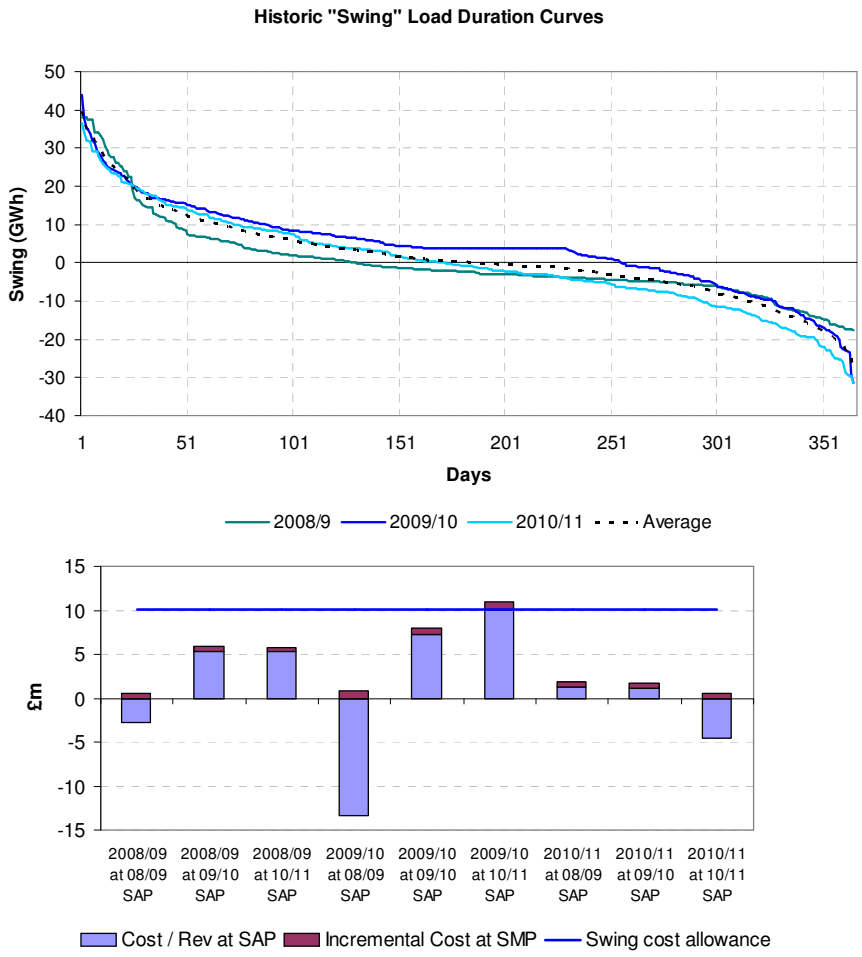
- **What would be appropriate target for UAG procurement?**

Target Price – Swing Cost

- GQFP and GMFP allow a market price for delivery of a flat daily quantity
- Uplift is a cost allowance for the incremental cost of balancing the daily volume swing
- 2008 consultation concluded an ex-ante market based cost allowance was appropriate
- Operational requirement to manage swing across the year - no robust driver/profile for UAG and CVS (70% 2010/11 load)
- Current swing allowance is based on Rough storage service

GCRP Swing Allowance

- The historic magnitude & shape of swing is expected to continue for 2012/13
- Analysis for the potential range ex-post costs captures the ex-ante market benchmark set in 2008
- Recalculation for recent Rough SBU prices would have set a £7.0m ex-ante benchmark
- In its current form the GCRP uplift is applied on a p/KWh basis
- **What would be an appropriate benchmark for the 2012/13 Rollover Year?**



Target Price - ECRP

- Retail consumer – standard supplier contracts
- ECRP = market wholesale benchmark + retail uplift
- Market wholesale benchmark:
  - Average forward price over month ahead of delivery quarter – recognition of commissioning uncertainties
  - Flexible contract – enable risk management of wholesale baseload cost
- **Is a prompt bias for ECRP appropriate for rollover year?**

ECRP Retail Uplift

- 2008 benchmark analysis set 18% retail uplift
  - Supplier risk premiums and margin
  - Market charges
- Market developments
  - Tightening of volume tolerances
  - Only Index settled contracts (summer-10 tender)
- On equivalent basis recent retail uplift outturn at 40+ % (mark-to-market cost of £5.8m for 2011/12 target ECE volumes)
- **What is an appropriate basis for the ECRP Retail Uplift?**
  - Review fixed and variable components

Electricity System Charges

- Current form of incentive sets out a methodology by which Transmission (TNUoS) and Distribution (DUoS) cost targets are set for relevant compressors
- Relevant compressor sites currently in Licence are:
  - Lockerley, Peterstowe (decommissioned 2010/11), Wormington, Churchover, Felindre, St Fergus and Kirremuir
- TNUOS : 100% Compressor capacity x TNUOS Demand Tariff
  - Limited NG control over TRIAD periods
- DUoS : Levied Charges (Fixed + Consumption + Capacity components)
  - Cost pass through
- **What is an appropriate incentive treatment for TNUoS and DUOS costs?**

Environmental Considerations

- Shadow Price of Carbon Adjustment (SPCA) – Bespoke target adjuster for the NTS Shrinkage incentive which encourages NGG to factor in environmental impacts into decision making on compressor fleet use.
- For each incentive quarter, the SPCA is calculated as
  - (CFU Volume Target – Actual CFU volumes) x $SPCU_t$) /100
  - Shadow Price of Carbon Uplift ($SPCU_t$) rate set in the Licence has increased from 0.573 p/kWh in 2009/10 to 0.621 p/kWh in 2011/12.
  - Materiality to date : 2009/10 +£1.0m, 2010/11 (-£1.2m)
- UK govt's carbon valuation approach has subsequently changed (the traded carbon price)
- Potential to duplicate more recent environmental legislation put in place to drive appropriate energy consumption behaviours
  - For example, no specific target allowance exists for CRCEES.
  - 551 GWh (2011/12 volume target) would incur £3.6m in CRCEES charges
- **What is the appropriate environmental dimension for the NTS Shrinkage incentive to have for the 2012/13 Rollover Year?**

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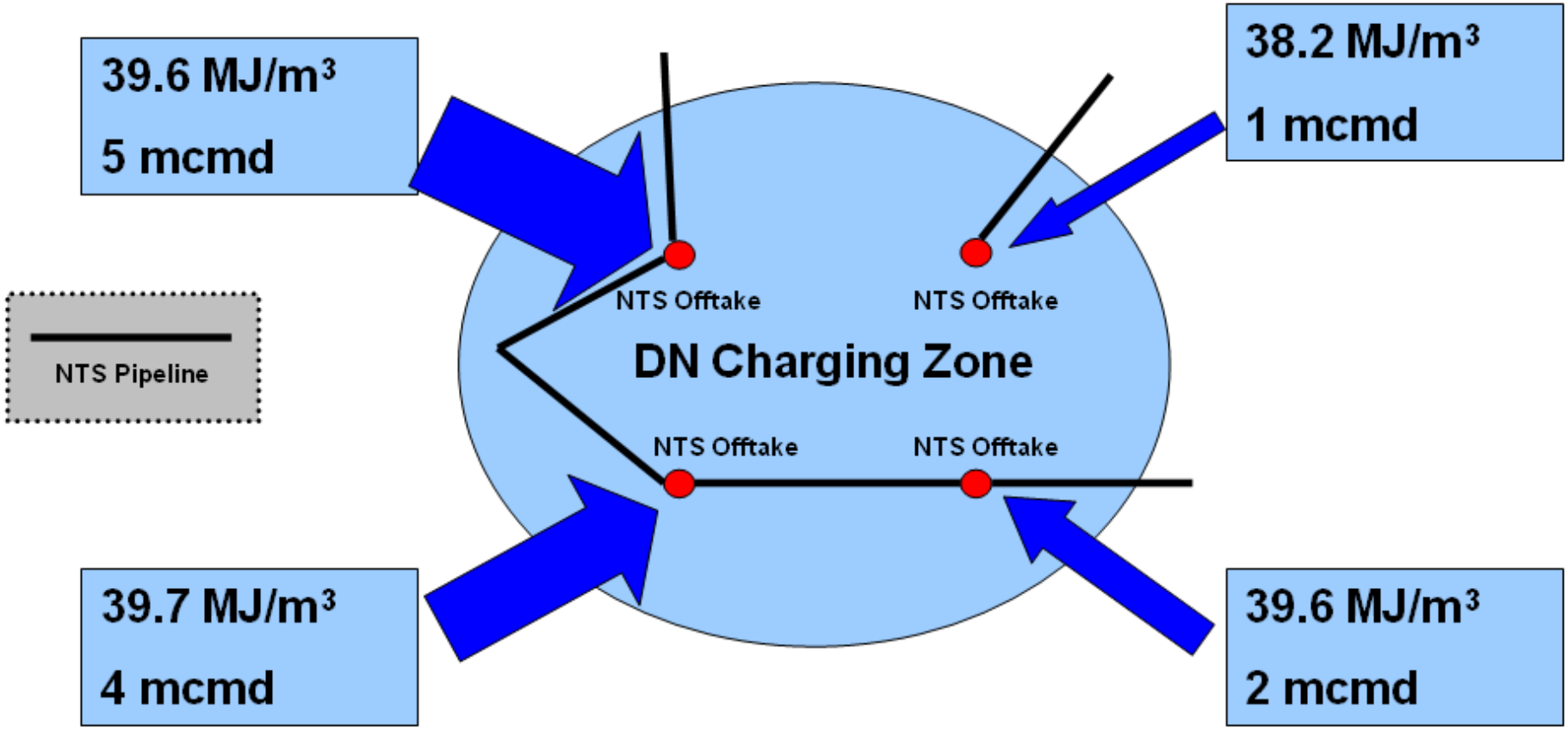
CV Shrinkage

Andy Lees – Technical Requirements Manager

CV Shrinkage

- Results from the difference between measured energy and billable energy arising from the Flow Weighted Average CV process
- Most commonly arises due to ‘capping’
- National Grid NTS may be able to mitigate the effects by changing operation of the network

CV Shrinkage



$$\text{FWACV} = \frac{(39.6 \times 5) + (39.6 \times 2) + (38.2 \times 1) + (39.7 \times 4)}{(5 + 2 + 1 + 4)} = 39.5 \text{ MJ/m}^3$$

CV Shrinkage

- A cap is applied to the average CV of not greater than 1 MJ/m^3 greater than the lowest source
  - In the previous example, this would be 39.2 MJ/m^3
- For the incentive, certain exclusions are allowed
  - Cowpen Bewley
  - Dyffryn Clydach, Ross
  - Direct DN entry points
  - This reflects the inability of National Grid to mitigate for these sites by operation of the NTS

Question

- Should the existing exclusion mechanism remain within the incentive?

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Unaccounted for Gas

Andy Lees – Technical Requirements Manager

Unaccounted for Gas (UAG): Components

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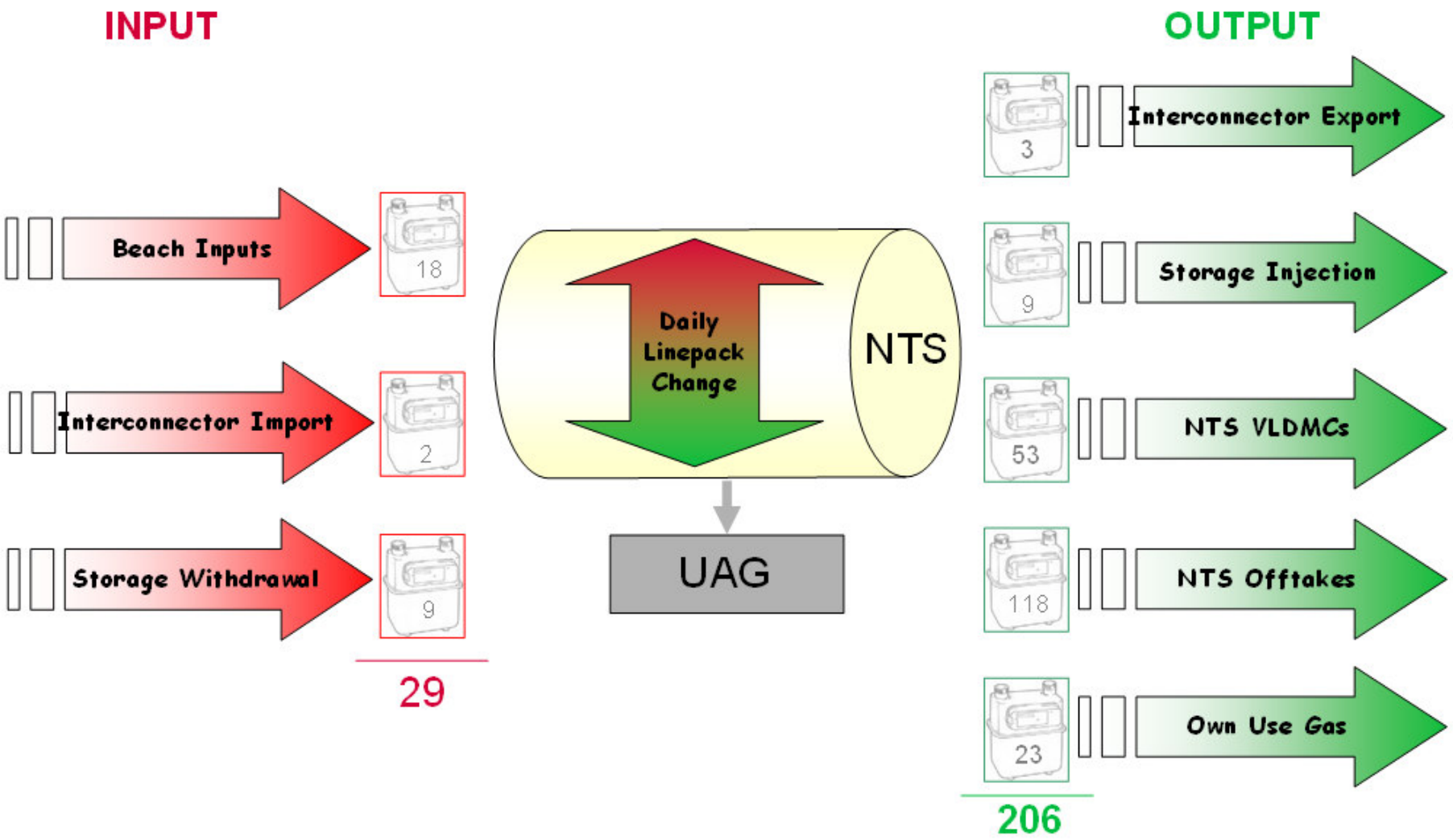
- UAG is that energy which remains unallocated after accounting for:
  - Measured inputs and outputs from the NTS
  - Own Use Gas consumption
  - CV shrinkage
  - Change in NTS linepack.
- Incentive to reduce the absolute (as opposed to net) volume of UAG (can be positive or negative)
- Primary cause is believed to be the inherent metering tolerances associated with entry and exit meters.

UAG Components



UAG = (Input – Output) ± Linepack Change

Unaccounted for Gas (UAG): 2011/12 Scheme

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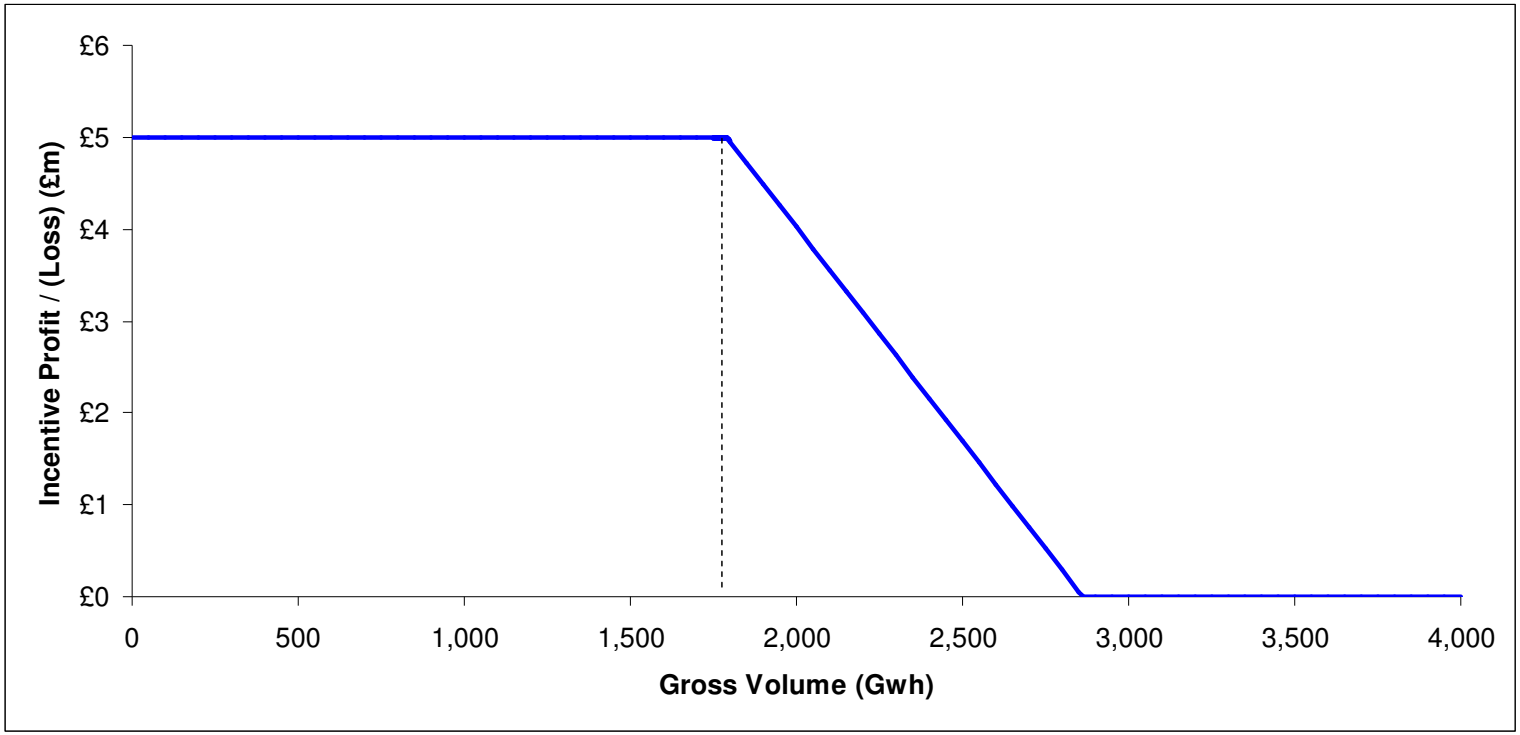
- Incentive payment of £4.67k for every GWh below target
- Increasing cap over 3 years from £2m (2009/10) to £5m (2011/12)
- Sharing Factor 33%



Unaccounted for Gas (UAG) Performance

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Incentive Year	Incentive Target	Performance	Incentive performance
2009/10	2,862GWh	7,716GWh	£0m
2010/11	2,862GWh	6,313GWh	£0m

Incentive Structure

- Determination of UAG is based on close out dates for volumes in UNC
  - M+15 at entry
  - D+5 at exit
- Single annual target
- In recent years, the target has been exceeded well before the end of the year
  - In theory, could limit focus during remaining months

Current UAG Incentive and National Grid

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- In 2009, National Grid accepted that it was best placed to act to reduce UAG
- Upside only incentive although we have incurred costs as a result of our efforts in this area
  - Increased witnessing of meter validations
  - Data mining & statistical analysis
  - Address issues with data quality
- National Grid has issued a letter regarding UAG to the industry: http://www.nationalgrid.com/NR/rdonlyres/07E7A1E2-7982-48FE-9A5D-F6ACB634F49D/47329/UAGIndustryUpdateJune2011.pdf

Issues for 2012/13 Initial Consultation

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- Who should be incentivised?
  - If National Grid, what is an appropriate form of incentive?
    - Absolute volume of UAG?
    - Annual or monthly?
- Alternatively, should National Grid have a funded Licence obligation?

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Residual Balancing

Darren Lond – Balancing & Reserve Manager

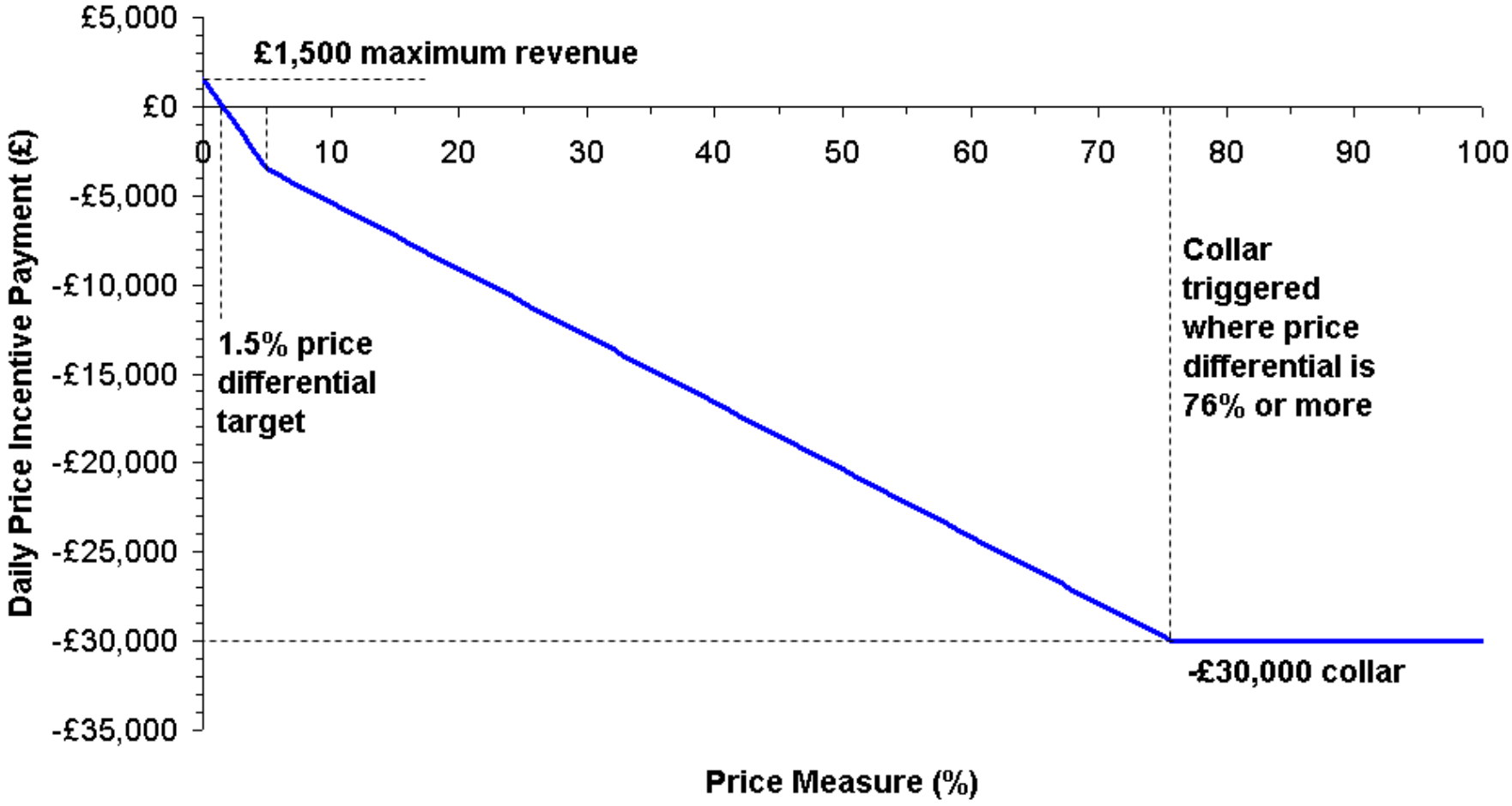
Residual Balancing

- Purpose: To incentivise the daily balancing of supply and demand whilst minimising the impact of any actions on market prices.

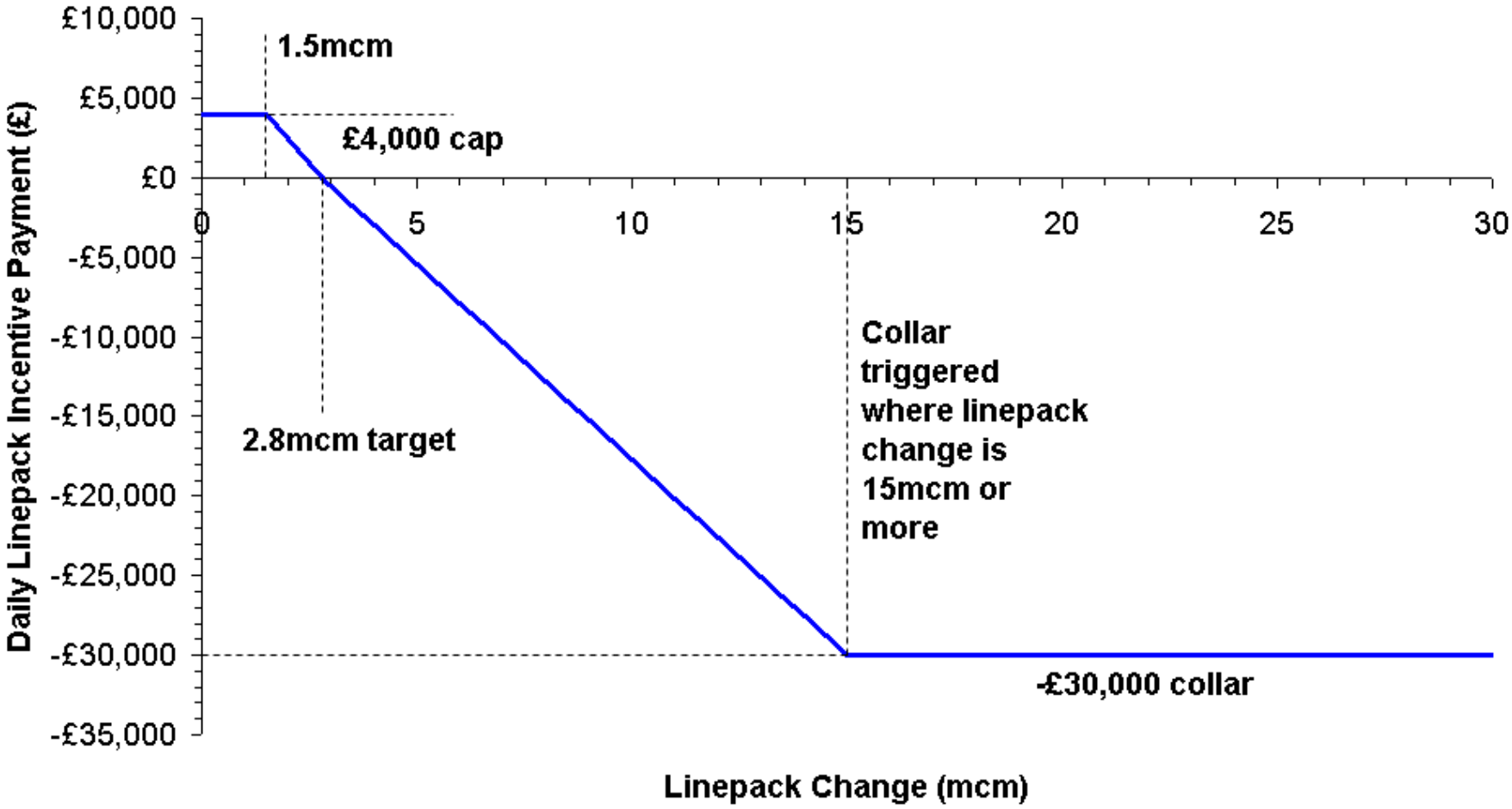
- Price Performance Measure (PPM)
  - Incentivises NGG to take residual balancing trades at prices that are in a small range compared to System Average Price (SAP)
  - PPM = (Highest - Lowest NGG trades each day) divided by SAP
  - Target for 2011/12 is a price spread of 1.5% of SAP

- Linepack Performance Measure (LPM).
  - Incentivises NGG to minimise any changes between starting and closing NTS linepack over a gas day
  - The target for 2011/12 is a linepack change of 2.8mcm.

Residual Balancing - PPM



Residual Balancing - LPM



Residual Balancing

- Historic Performance

Incentive Year	Incentive Target (daily)		Performance (average, all days in year)		Incentive Performance
	Price	Linepack	Price	Linepack	
2008/09	10%	2.4 mcm	2.22%	2.41 mcm	£1.54m
2009/10	5%	2.8 mcm	2.90%	1.97 mcm	£1.63m
2010/11	2.5%	2.8 mcm	1.58%	2.05 mcm	£0.95m

Residual Balancing – Rollover considerations

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- Our initial view is to
  - Review PPM
  - Keep current structure as is with both a PPM and LPM
- Interested to hear views on whether current LPM is fit for purpose?
- The areas that we expect the PPM Review to consider are discussed in the following slides.

PPM Review – Gas Pricing

- The PPM target has reduced down from 10% to 1.5% over the last 4 years.
- The PPM is influenced by a number of factors:

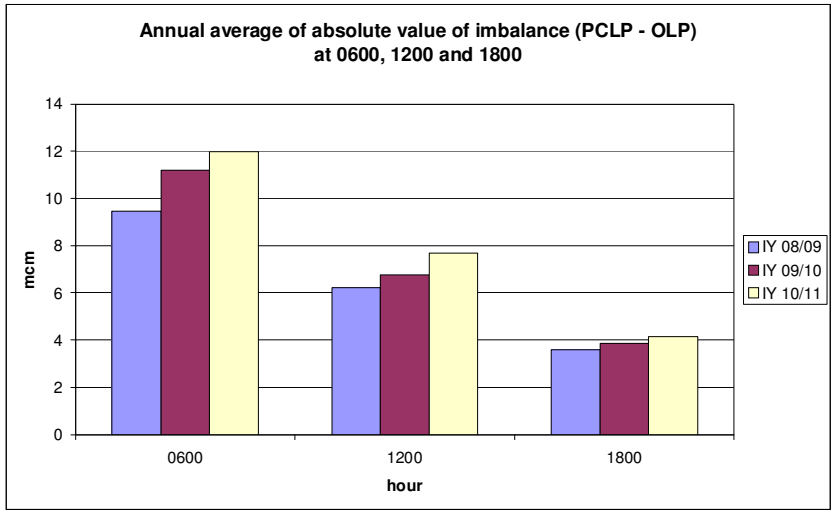
Market price
Market Volatility
Shipper Imbalance
Balancing Efficiency

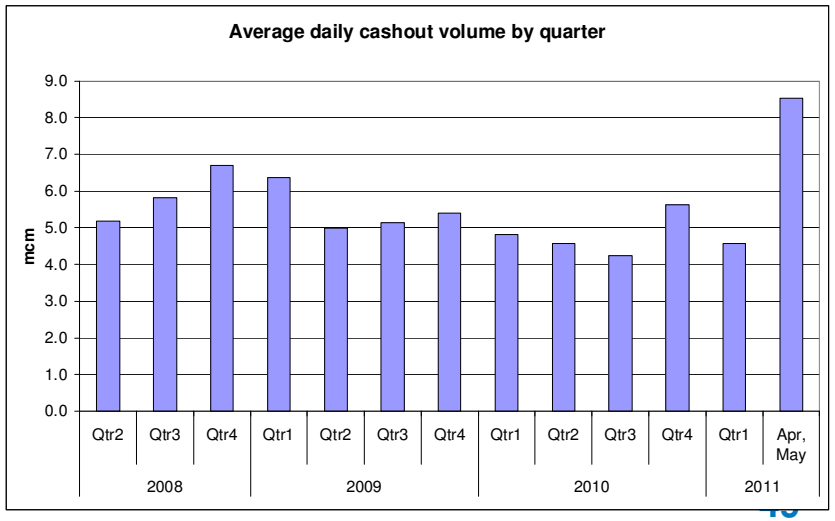
- Do changes in daily wholesale gas price spread movement significantly impact the PPM?

PPM Review – Balancing Behaviours

- Are there any changes to Shipper Balancing behaviour throughout or at the end of a day?

- Could shipper balancing behaviour be impacted following the implementation of Mod 0333A (new default cashout prices)
  - Do these factors have an impact on the level of PPM?





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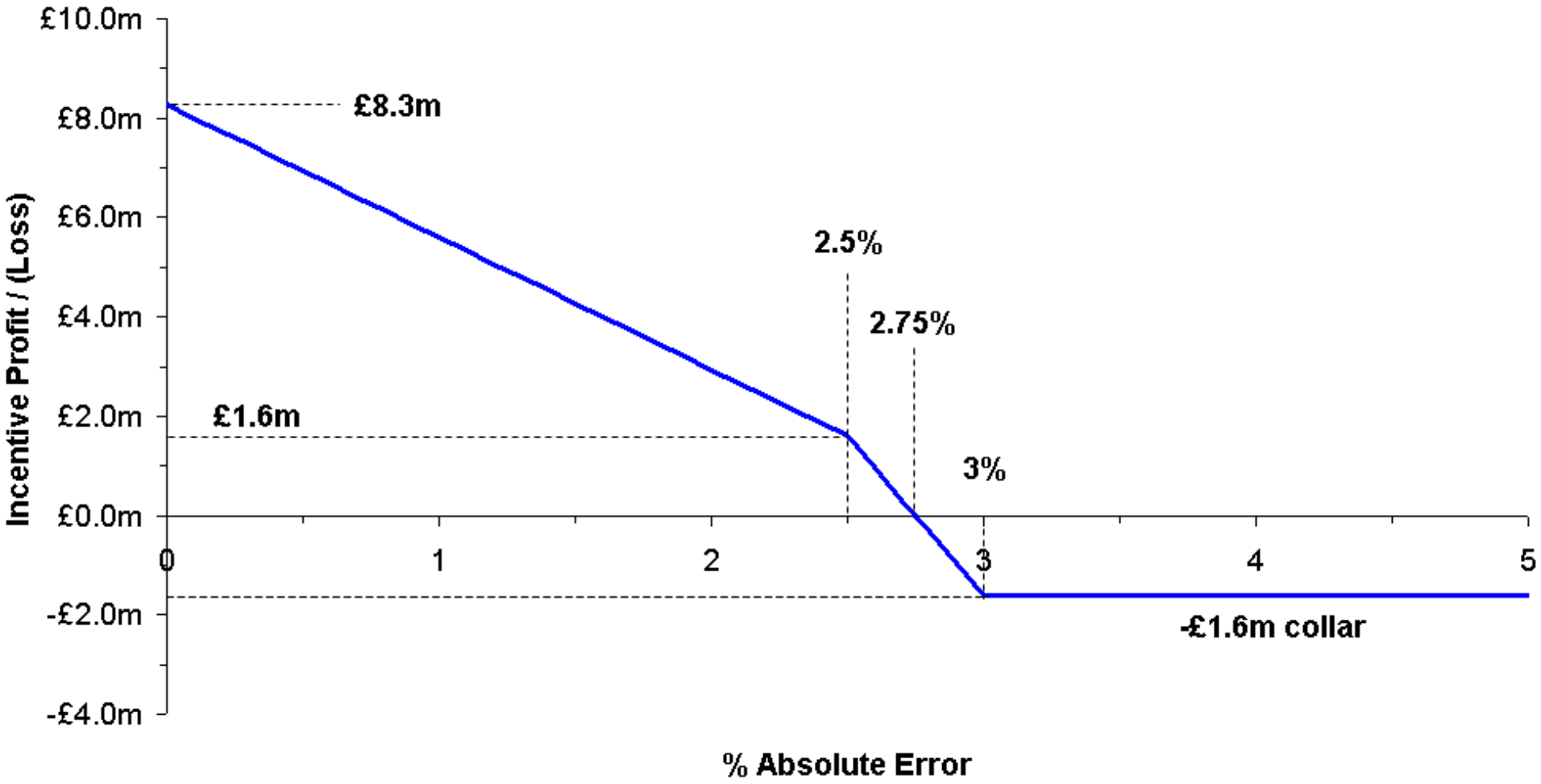
Demand Forecasting

Darren Lond – Balancing & Reserve Manager

Demand Forecasting

- Purpose: To incentivise improvements in the accuracy of our day ahead Demand Forecasts
- Since Winter 2006/07, the accuracy of the forecast published day ahead at 13:00 has been incentivised
- The demand forecast error is calculated as the sum of each day's absolute error divided by the sum of each day's actual demand over a one year time period
- For 2011/12 National Grid has an incentive target of a forecast error of 2.75%
  - 2010/11 Outturn was 2.754%

Demand Forecasting



Demand Forecasting

- Historic Performance

Incentive Year	Incentive Target	Performance	Incentive Performance
2008/09	3.5%	2.65%	£3.14m
2009/10	3.0%	2.66%	£2.1m
2010/11	2.85%	2.75%	£1.02m

Demand Forecasting – Rollover considerations

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- Our initial view is to
  - Review annual % error target for 13:00 D-1 incentive
  - Keep current incentive structure for 13:00 D-1 forecast as is

- 13:00 D-1 Review to consider;
  - How volatile will demand be in 2012/13?
  - Improvements, if any, that can be made to the forecast process.
  - The impacts, if any, of these improvements for customers.

Day-to-day demand volatility & D-1 13:00 forecast error (2008-2011)

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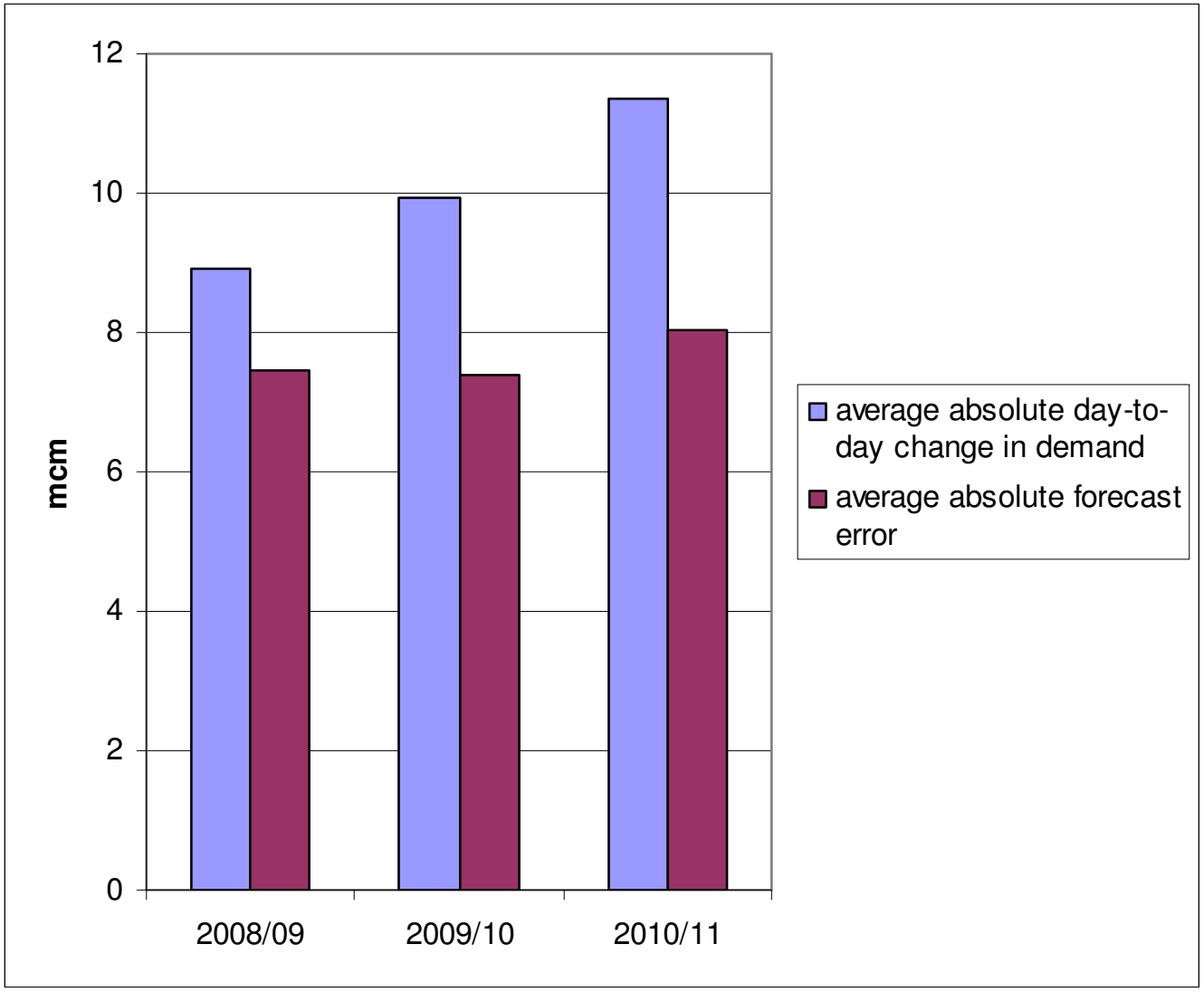

Demand Forecasting – Further development

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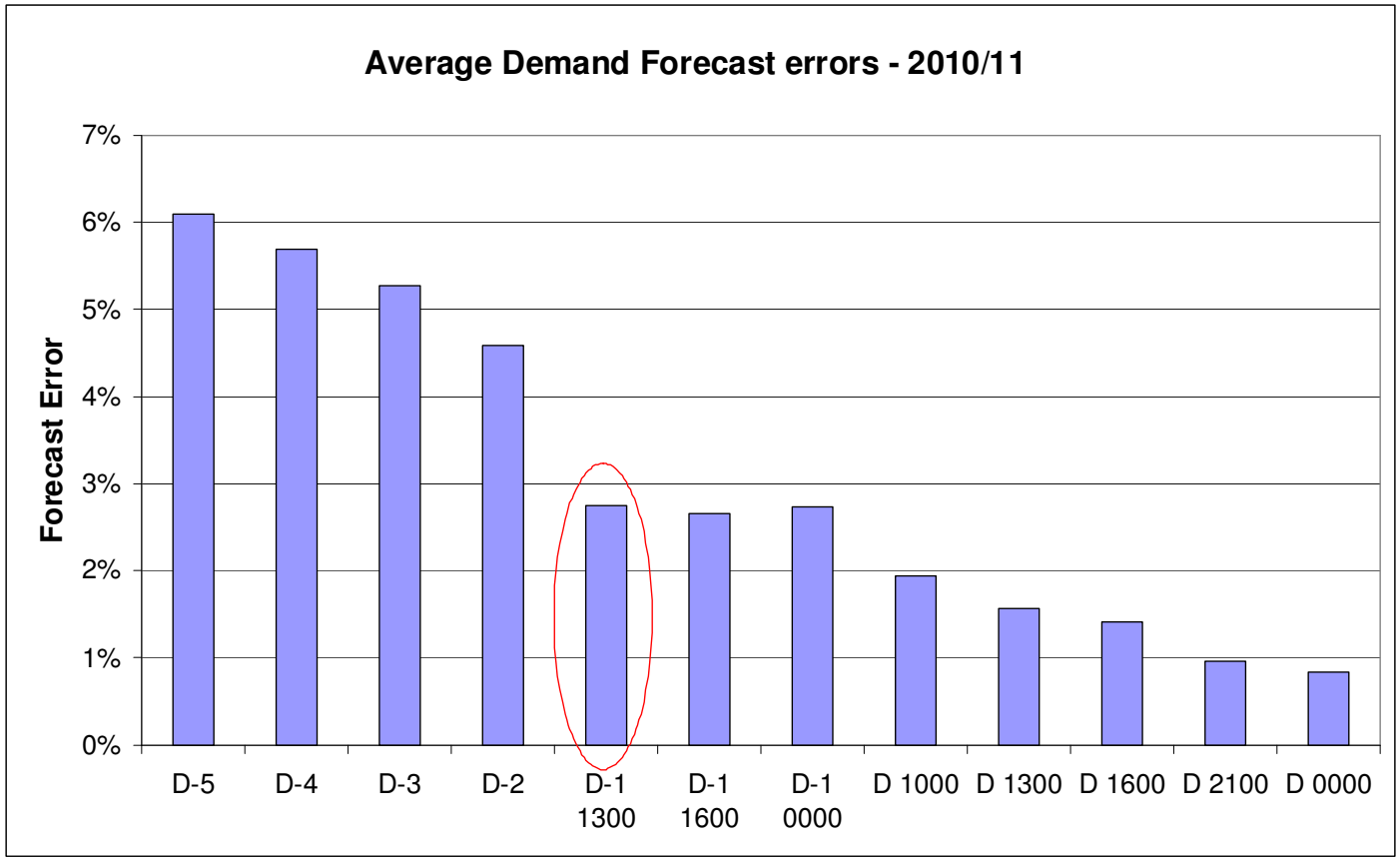
- Interested to hear views on the value to customers of forecasts other than 13:00 D-1?



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Data Publication

Nigel Bradbury

Data Publication – Rollover Considerations

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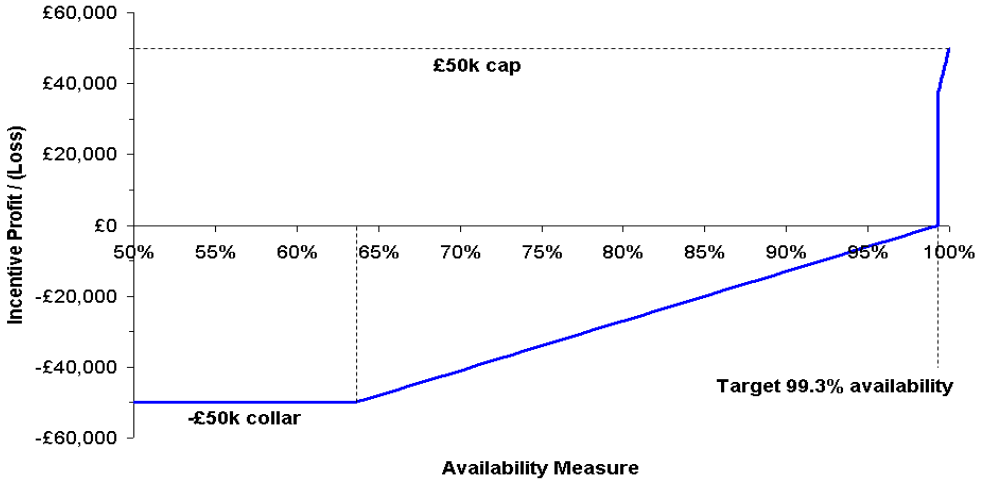
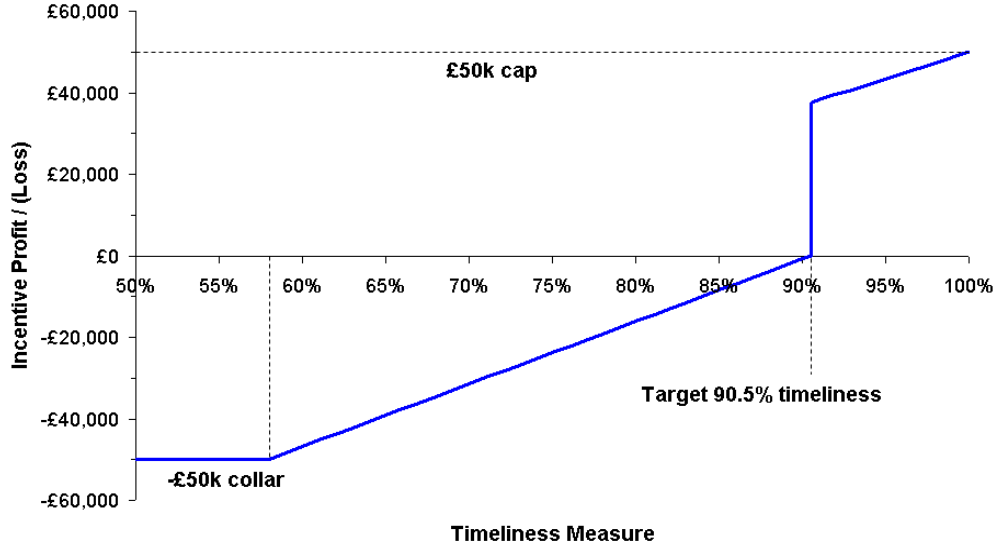
- Our initial view is to;
  - Keep current structure as is
  - Mini review of performance levels
- Mini review of performance to consider;
  - Any performance improvements possible in 2012/13
  - Value of current dataset to customers
- Do you agree with the above?
- Do you believe we should include anything else?

Data Publication

- Purpose: Incentivise prompt and reliable publication of key data on the National Grid website.
- System Availability
  - Target of 99.3% availability for 3 key screens
- Timieliness
  - Publish 90.5% of the hourly updates for 4 key data items within 10 mins of the hour bar
- 100% Availability & 100% Timeliness = £100k
  - Target Performance = £75k
- 3rd Party spend & dedicated business resources to deliver target performance

Availability & Timeliness





- Data Availability
  - Target of 99.3% availability
  - Availability below 99.3% = loss
  - £50k annual Cap/Collar
- Timeliness
  - Publish 90.5% of the hourly updates for four key data items within 10 mins of the hour bar.
  - Timeliness below 90.5% = loss
  - £50k annual Cap/Collar
- £100k max payment if availability & timeliness = 100%

Data Publication

- Recent Performance

Incentive Year	Incentive Target		Performance		Incentive Performance
	Availability	Timeliness	Availability	Timeliness	
2008/09	99.3%	90.5%	99.9%	88.9%	£0.06m
2009/10	99.3%	90.5%	99.7%	87.8%	£0.05m
2010/11	99.3%	90.5%	99.7%	91.6%	£0.06m

- 2011/12 Performance

Incentive Year	Performance		Performance		Incentive Performance	Max Performance
	Availability	Timeliness	Availability	Timeliness		
2011/12 (Apr – Jun)	99.3%	90.5%	98.9%	90.3	£6.5k	£25k

Data Publication – Rollover Considerations

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- Our initial view is to;
  - Keep current structure
  - Mini Review of performance levels

- Mini Review of performance to consider;
  - Any performance improvements possible in 2012/13
  - Value of current dataset to customers
  - Value of data Vs value of website screens
  - Value of 3rd party support arrangements

- Do you agree with the above?

- Do you believe we should include anything else?

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Wrap Up & Next Steps

Wrap-Up

- Thank you for your input today
- Your feedback will influence & shape the Initial Proposals we produce later this year
- We will keep you informed at each step

Next Steps

- Initial Consultation – Close out for responses 4 August
- Incorporate responses & workshop output into Initial Proposal
- Initial Proposals published early October 2011

- Talk to us:
  - Juliana.Urdal@uk.ngrid.com 01926 656195
  - soincentives@uk.ngrid.com

Useful information

- Initial Consultation
  - http://www.nationalgrid.com/uk/Gas/soincentives/docs
- Ofgem Open Letter
  - http://www.ofgem.gov.uk/MARKETS/WHLMKTS/EFFSYSTEMOPS/SYSTOPINCENT/Documents1/Open%20letter%20rolloverB.pdf
- National Grid Gas System Operator Incentive Info
  - http://www.nationalgrid.com/uk/Gas/soincentives/