Supporting Information Provided by National Grid Gas (NTS)

Overview

This appendix has been prepared following a request from Ofgem for National Grid Gas to provide supporting information to assist Ofgem's review of the electricity and gas System Operator roles and incentives in respect of the NTS. The primary purpose of this appendix is to identify the key issues going forward which are likely drive both the nature and costs of NTS System Operation. We also outline the current incentives, and present some indicative requirements data relating to key incentive components.

This appendix is structured as follows:

1. SO incentive schemes
2. Key SO cost drivers going forward
3. Initial Information Relating to Future Shrinkage and OM Requirements
4. Summary

1. SO Incentive Schemes

1.1 Scope and Purpose

National Grid NTS is subject to a set of System Operator (SO) incentives which encourages it to efficiently manage the costs associated with the day to day management of its gas transportation system, and the performance and quality of its information provision services. It is also subject to a set of capacity investment incentives which encourage investment in the NTS where it is efficient to do so and in response to the changing needs of customers. A number of these incentives have been agreed for the next 5 years as part of National Grid's Price Control in respect of the NTS. However, those that we understand are of relevance to this part of the SO review are described below:

- System Balancing
- Residual Gas Balancing
- Quality of Information Incentive

System Balancing

System Balancing comprises two incentives: (i) gas costs and (ii) system reserve.

(i) Gas Costs

National Grid NTS undertakes the role of NTS Shrinkage Provider on behalf of the community and procures gas and electricity for this purpose. NTS Shrinkage covers the gas and electricity which is used for compression, gas that cannot be accounted for by measurement and energy that cannot be billed to end consumers. The Gas Cost component of the system balancing incentive encourages National Grid NTS to minimise the overall cost of procuring gas and electricity to cover Shrinkage components. In summary there are three elements of NTS Shrinkage:

- Own Use Gas (OUG) and electric compressor energy (ECE) – that energy used to run compressors to transport gas through the NTS
- Calorific Value Shrinkage (CV Shrinkage) – that energy which cannot be billed due to CV capping under application of the Gas (Calculation of Thermal Energy) Regulations 1996 and subsequently amended in 1997.
- Unaccounted For Gas (UAG) – that quantity of gas which remains after taking into account all measured inputs and outputs from the system, own use gas consumption, CV Shrinkage and the daily change in NTS linepack.

A Gas Cost Reference Price (GCRP) has been used in the incentive scheme to derive an incentive cost target for Shrinkage costs. The methodology for calculating GCRP for the incentive year, y, has used forward quarterly NBP gas prices taken over a reference period from the year (y-1), volume weighted by total shipper net flows into the NTS from the year (y-2).

(ii) System Reserve (Operating Margins)

Operating Margins (OM) services are purchased by National Grid NTS on an annual basis in line with both the requirements of the UNC and obligations placed on it through its safety case. Primarily, OM gas is used in the period immediately following operational stresses and is used to provide within-day support to maintain system pressures while other remedial actions are taken. Operational stresses may be caused by events such as unanticipated changes in supply/demand patterns, offshore supply failures, unexpected pipeline and/or plant unavailability. There is also a need to procure an amount of OM gas to cover the safe and orderly rundown of large loads connected to the NTS and distribution networks whilst maintaining safe pressures on the NTS in the event of a network emergency.

To date, OM services have been provided by storage facilities due to their strategic location on the extremities of the network, implicit availability and the high deliverability rates which are necessary for OM purposes.

The system reserve incentive encourages National Grid NTS to minimise the storage service costs (space, deliverability, injection, withdrawal, overrun costs). The costs of purchasing and selling gas in storage for system reserve are not part of the incentive and are recovered from shippers through Network Code neutrality arrangements.

Residual Gas Balancing

Shippers are incentivised, via cash-out arrangements, to ensure that the volume of gas that they enter onto the system matches the volume of gas that they take from the system on a daily basis. However shippers (in aggregate) do not always maintain balance, and it falls to National Grid NTS as residual balancer to make trade offs between using linepack, and/or buy and sell gas via the on-the-day commodity market (OCM) to balance the system by end of day and keep system pressures within operational limits.

This incentive is split into two parts: (i) daily price incentive and (ii) daily linepack incentive.

(i) Daily price incentive

In performing its role as residual balancer on any particular day, National Grid NTS may need to take balancing actions on the OCM where it believes it is necessary in order to resolve the energy imbalance. National Grid NTS is not directly incentivised to minimise the total cost of its actions but instead is incentivised to trade close to the System Average Price (SAP), to minimise the impact that its trades may have on market prices.

(ii) Daily linepack incentive

NTS linepack is the volume of gas within the NTS. The daily linepack incentive encourages National Grid NTS to balance the system such that the change in linepack between the start and end of the gas day is maintained within a tight tolerance, to avoid shipper imbalances being transferred from one day to the next through linepack.

Any incentive payments for each element of the Residual Gas Balancing scheme are calculated on a daily basis (subject to daily caps/collars). These are then summed derive an annual incentive payment, which is then subject to an annual cap and collar.

Quality of Information Incentive

The quality of information incentive was introduced in October 2006 to improve the quality of certain information published to market participants. Two specific performance aspects were subject to individual incentives: (i) demand forecast accuracy, and (ii) availability and timeliness of certain operational data published on National Grid's website.

(i) Accuracy of day-ahead demand forecast

This incentive encourages National Grid NTS to invest in systems and processes to increase the accuracy of its day-ahead demand forecast published to market participants.

(ii) Website performance

This incentive encourages National Grid NTS to invest in new processes, IT hardware, software, and infrastructure upgrades and appropriate support arrangements to improve the timeliness of key market information that it publishes via its website.

1.2 Incentive Design Issues

System Operator incentives should be designed to encourage efficiency, risk management, investment and innovation, to drive a lower overall cost of system operation to consumers. From a future scheme design perspective, National Grid NTS believes a number of design drivers are relevant:

- Multi-year duration schemes may provide increased scope for efficient investment to reduce overall costs or increase performance over a longer period, but should also be designed to accommodate the uncertainties that exist over the range of possible outcome scenarios;
- Incentives should provide an appropriate balance of risk and reward that aligns the interests of National Grid NTS with those of consumers and that are consistent with our licence obligations and wider duties;
- Consideration should be given to the relative magnitude of the incentive relative to the size of the activity that is being incentivised, and in the case that multiple incentives exist, their relative size to each other;
- Incentives should be focused on activities that are within National Grid NTS' control and not be distorted by elements over which we have no direct control or jurisdiction;
- Incentives should be designed to protect National Grid NTS from risks that might have the effect of materially increasing its overall business risk and cost of capital beyond that assumed in setting its price control;
- Incentives should be established ahead of key procurement decisions being made, to avoid nullifying the incentive properties; and
- Mechanisms should exist within the incentive framework to cater for structural changes in the market which impact incentivised costs/performance.

2. Key SO Cost Drivers Going Forward

2.1 New Supply Infrastructure and Flow Uncertainties

The pattern and location of gas supplies into the UK has a very significant effect on a number of system operation activities, and is the greatest source of uncertainty going forward. With the UKCS production in decline, the UK is now increasingly dependant on imports to meet its demand for gas. With many new import projects now coming on stream, and with further projects expected next year and beyond, it is expected that there will be a surplus of import capacity to the UK with differing underlying drivers.

Last winter saw the successful commissioning of a number of major infrastructure projects facilitating the potential importation of substantial quantities of gas into the UK at various locations. These projects included the Langeled pipeline from Norway connecting at Easington, enhancements to the Belgian Interconnector (IUK), and the BBL pipeline linking the UK market at Bacton with Holland. In addition, Excelerate Energy commissioned its import LNG facility at Teesside, using onboard ship re-gasification technology.

Looking forward there are a number of major import developments expected to commission relatively soon. During the coming winter we expect the commencement of flows from the two LNG terminals at Milford Haven and the Aldbrough storage facility. Storage space at Hole House Farm is also expected to increase. In 2008, further capacity expansion is expected at IUK and BBL, and the Phase II expansion of the Isle of Grain LNG import terminal facility is anticipated to be complete. Beyond this there are many other projects in various stages of planning and development.

These supply projects provide a significant amount of importation capacity connecting to the NTS at a variety of locations, and have the potential to cause a fundamental change to supply patterns and associated flows on the network. This longer term trend is important from a network investment perspective but crucially from an SO perspective it creates a much more uncertain day to day operating environment. Historically supplies from UKCS have been relatively stable, but going forward flows are likely to be much more price sensitive as the UK will compete for gas with continental Europe and, in the case of LNG, the global market. This creates a very significant increase in uncertainty regarding how the market will choose to use the new capacity going forward.

National Grid NTS forecasts supply scenarios based on information provided from UKCS producers, gas importers and project developers through our Transporting Britain's Energy (TBE) consultation process and also from auction signals received through longer term NTS capacity auctions. This information is published annually in the Ten Year Statement in accordance with National Grid's Gas Transporter Licence in respect of the NTS. In

addition, National Grid NTS also publishes a document entitled "Development of Investment Scenarios" following the TBE consultation phase.

Going forward, this change in potential supplies - in terms of the NTS entry locations, drivers behind actual gas flow, and diversity of gas sources – presents challenges for system operation and incentive scheme designs. The issues that may arise include:

- Where new facilities are being built to receive and process gas, flows will are likely to be strongly coupled to prices and other commercial drivers on European and global markets, in particular due to the open nature of the UK market. As a result it is difficult to predict the where and when gas is likely to flow from compared to the historic nature of gas flowing from the UKCS. Hence historic trends could prove to be unrelated to future behaviours.

- Increased variation in the relative volumes of gas entering the NTS at particular locations may require system reconfiguration on a more frequent basis, which may lead to a change in OUG/ECE requirements due to the need to use compression differently to redistribute gas around the NTS.

- Going forward the UK is dependent on gas imported from much more diverse sources than previously seen. This increase in diversity of gas source, coupled with uncertainties in supply patterns, will increase the challenge and uncertainty in managing CV Shrinkage quantities.

- The challenging nature and pattern of supply diversity brings with it as yet, unproven residual balancing risks. This could lead to a changing requirement for residual or location specific balancing actions compared with historic patterns as the drivers and uncertainties underpinning deliverability from diverse supply sources become apparent.

2.2 Other Significant Cost Drivers

Contestability in the Provision of Operating Margins Services

In its capacity as System Operator, National Grid NTS currently procures Operating Margins services from various storage facilities to meet its obligations under UNC and its Safety Case. As part of the recent Price Control Review we accepted, in principle, a new licence obligation to develop contestability in the provision of Operating Margins services. National Grid NTS has looked into this issue in the past but has been met with little or no interest from new providers, due to the nature of the service requirements. With the new developments coming forward in the market, there is now potentially increased scope for potential new providers.

The aim of developing contestability is to allow any provider, capable of providing the service, to provide OM services on a competitive basis. Currently a proportion of the requirement for OM is required in geographic areas, and hence contestability may potentially widen the pool of providers in certain areas to include for example demand-side participants and new storage facilities. Once contestability has been proven and established, all potential providers should be free to offer OM services on a competitive basis, enabling the System Operator to purchase OM services at the best available price in the market, but with the certainty of offered volume that is required to be able to meet its safety case.

The prices currently paid for OM services at National Grid's regulated LNG storage facilities (Avonmouth, Glenmavis, Dynevor Arms and Partington) are regulated prices contained within National Grid's Gas Transporter Licence in respect of the NTS. Prices beyond the current formula year are the subject of further review by Ofgem and clearly directly impact the costs of procuring OM. In the longer term, the development of contestability in the provision of OM services may remove the need for these facilities to be price regulated and allow National Grid's LNG facilities to compete with other potential new providers through market based procurement mechanisms. Both of these factors will influence the costs of OM services and should be taken into account as part of the review.

Gas Demand Levels

Over recent winters the UK has generally experienced mild weather conditions compared with seasonal averages, leading to lower than seasonal normal demand levels. Last winter (06/07) was the warmest since 1914. This is measured using Composite Weather Variable (CWV), which is calculated by combining temperatures and wind speeds to produce a weather variable that is linearly related to non-daily metered gas demand.

Further analysis of weather and demands from previous years can be found in National Grid NTS' Winter 2007/08 Preliminary Consultation Report.

Uncertainties around the absolute levels of demand, demand distribution across the NTS, and the supply/demand balance are inherently linked with all aspects of system operation. In planning timescales forecast seasonal normal demand influences the procurement of OM volumes. On-the-day, demand patterns affects system balancing through the need to run compressors and the ability to control linepack swings. Demand variations may also affect shipper imbalance positions in relation to energy balancing (and hence the need for National Grid NTS to take balancing actions) and also potentially the quality of data provided by third parties to National Grid NTS as inputs into the daily demand forecasts.

NTS Compressor Changeout Program

As a result of legislative requirements, National Grid NTS is presently implementing a program to install compressors driven by variable speed electric drives, replacing some of the higher load factor conventional gas-fuelled turbine drivers more commonly used on the NTS. Currently number of electric compressors on the NTS is very small, accounting for approximately 0.5% of the costs of Shrinkage. Over the next few years, the changeover program will mean that a much more significant proportion of the energy required to run NTS compressors will be electrical, rather than from own use gas. Hence this is worthy of further consideration in terms of any incentive design in the longer term.

CV Shrinkage

CV Shrinkage arises from the interactions between the following factors

- Gas from different sources can have significantly different calorific values
- Gas from different sources can be delivered to the same LDZ through different offtakes
- The geographic location of NTS entry points and offtakes

CV Shrinkage is caused by circumstances where multiple sources of gas with different CVs are transported to the same LDZ and delivered through different offtakes. Where this occurs, when the energy is billed, the CV of all the gas is capped at 1MJ/m^3 above the lowest CV value as a result of application of the Gas (Calculation of Thermal Energy) Regulations 1996 (subsequently amended in 1997). Hence there will be some energy that has been delivered but not billed, which is termed CV Shrinkage.

Historically, the pattern and source of supply and demand has meant that CV Shrinkage was at relatively small levels. However going forward, as the importation of gas is increasing significantly, this is likely to mean a greater difference in CV between different sources of gas imported from different countries. In addition, the location of new gas supplies (for example LNG import terminals) may affect CV Shrinkage at nearby LDZs. These factors make CV Shrinkage a much more significant issue going forward, with National Grid NTS having little control over CV Shrinkage management.

3. Initial Information Relating to Future Shrinkage and OM Requirements

Source and Status of Information

As discussed above, forecast supply scenarios are a key driver of OM and Shrinkage gas requirements. National Grid NTS forecasts supply scenarios based on information provided to us from UKCS producers, gas importers and project developers through our annual Transporting Britain's Energy (TBE) consultation process, winter outlook consultation process and also from auction signals received through longer term NTS capacity auctions.

We have very recently completed the 2007 Transportation Britain's Energy (TBE) consultation process and are currently updating supply and demand scenarios with the latest available information and intelligence that has been gathered. This is the source data that feeds our modelling of operational requirements such as OM and Shrinkage and we will be undertaking further modelling and forecasting using this new information in the coming weeks.

Ofgem has asked us to provide some indicative data in relation to OM and Shrinkage Requirements to provide some context to the issues discussed in their consultation. As this is presented for indicative purposes only, it does not model the full range of potential scenarios.

The data we are currently in a position to provide is based upon supply/demand scenarios **derived from last year's TBE 2006 consultation process**. Readers should therefore recognise that this information is fully expected to change and will be updated when the latest data is used in the analysis, modelling and forecasting that we will be undertaking in the coming weeks.

3.1 Shrinkage Volume Requirements

As highlighted in this appendix, there are a number of variables that influence the Shrinkage requirement and, as the components of Shrinkage are not necessarily related, they are forecast individually.

There are three components of NTS Shrinkage:

- Own Use Gas (OUG) and electric compressor energy (ECE) for compression – that energy used to run compressors to transport gas through the NTS
- Unaccounted For Gas (UAG) – that gas which remains after taking into account all measured inputs and outputs from the system, own use gas consumption, CV Shrinkage and the daily change in NTS linepack.

- Calorific Value Shrinkage (CV Shrinkage) – that energy which cannot be billed due to CV capping under application of the Gas (Calculation of Thermal Energy) Regulations 1996 and subsequently amended in 1997.

Each indicative requirement component is expressed in terms of a low, central and high case, in an attempt to express the range within which probable scenarios could occur.

Own Use Gas (OUG)

There are two key volume drivers in relation to OUG uncertainties going forward:

- Supply scenario – Compressor use (and hence OUG) is driven by the pattern of supply-demand. The key dependency on St Fergus supplies is recognised in the 2007/8 incentive scheme.
- Electric drive change out progress – The phased replacement of gas driven to electric driven compressors as described previously.

Supply scenarios

This preliminary assessment of indicative Shrinkage volume ranges is based on supply scenarios developed from the 2006 TBE planning process. Against the 2006 base case supply scenario two key drivers of supply variation were identified; the market response of supplies from Norway through Easington and St Fergus, and the market response of LNG supplies through Milford Haven and Isle of Grain. However it should be noted that these scenarios may differ from the 2007 TBE base case that will be used going forward.

Electric drive change out scenarios

Electric driven compression adds an additional uncertainty for OUG forecasts for 08/09 as there are potentially compressors at 4 sites that are currently planned to be changed over during the period. Electric drives at St Fergus and Kirriemuir are by far the most significant in terms of reducing OUG (and increasing ECE) and are currently planned to be operational during the latter half of 08/09. Commissioning at two other sites is less certain and these units may be operational during early 2009.

Own Use Gas Volumes (GWh)

Low	Central	High
4908	**5609**	**6706**

Central Case

This case is based upon TBE 2006 base case but with high Norwegian flows coming in at the St. Fergus and Easington entry points. It is expected that the 2007 TBE base case supply scenario will be biased towards Norwegian supplies rather than LNG supplies over the short-term, hence the high Norwegian sensitivity is considered a more appropriate central case for the

2008/9 forecast. This case also assumes that two of the electric drives (at St Fergus and Kirriemuir) commission in the period as planned.

Low Case
This case is based upon the TBE 2006 base case which has favourable (in terms of reducing OUG) supply patterns and also assumes that two of the electric drives (at St Fergus and Kirriemuir) commission in the period as planned.

High Case
This case is based upon TBE 2006 base case but with low LNG flows. It remains aligned with a key sensitivity being considered in the 2007 TBE supply scenarios. This case creates incremental OUG requirements over the central case supply scenario and the higher OUG is largely attributable to the assumption that no new electric drives are commissioned in 2008/09.

Electric Compressor Energy (ECE)

Electric Compression Energy is driven by the electric drive change out programme. Where electric drive replaces gas compressors the electric unit will still have to transport the same volume of gas. The following cases assume electric drives will be 90% efficient compared with gas units at an efficiency of approx. 30%. Thus for each three units OUG saved, one unit of electrical energy will be required to transport the same volume of gas. However it is important to note that the electrical energy has to be generated at a certain efficiency, hence the price paid for electricity will reflect this.

Electric Compressor Energy - Volume (Electrical GWh)

Low	Central	High
12	**362**	**413**

Central Case
The Central case makes the same supply assumptions as explained above for OUG, and assumes that two of the electric drives (at St Fergus and Kirriemuir) commission in the period as planned.

Low Case
The Low case scenario assumes no new electric drives are commissioned during the period due to project delays.

High Case
The High case scenario assumes all new electric drives are commissioned during the period as planned.

Unaccounted for Gas (UAG)

Unaccounted for Gas remains a highly volatile component of Shrinkage volume, with there being little that National Grid NTS can do to control it. With no statistically robust driver apparent to assist in projecting future trends, our modelling approach uses historical averages corrected for periods when 'exceptional' negative UAG occurred. Exceptional negative UAG is defined as that UAG falling outside the lower band of the statistical process control methodology employed to assess UAG behaviour. This standard technique determines UAG volumes that fall outside two standard deviations around a 12 month rolling average.

Unaccounted for Gas - Volume (GWh)

Low	Central	High
1113	**1161**	**1823**

Central case
The central case is based on a six year average of volumes going back from 2006/07, excluding exceptional negative UAG.

Low Case
The low case is based on the current within year estimate for 2007/8, derived from the aggregate of the assessed outturn UAG volumes (since the start of the year) and an estimate for the remainder of the year taken from the equivalent period in the previous year.

High Case
The high case assumes current short-term run rate continues for rest of year.

CV Shrinkage

The CV Shrinkage requirement is determined by employing comprehensive network analysis to define the inherent risk of CV capping (unbilled energy) described in earlier sections. In particular CV Shrinkage is sensitive to LNG volumes, specific location of LNG entry points and uncertain sources of LNG.

To highlight the increasing magnitude of the potential for CV Shrinkage going forward we present the following two cases:

CV Shrinkage - Volume (GWh)

Case 1	Case 2
152	**720 - 1920**

Case 1

This case is based on zero LNG imports but shows that the diversity in other supply sources present a risk of higher levels of unbilled energy compared to historic outturn.

Case 2
Case 2 shows a range, the lower end of which assumes 2-3 months of flows from Milford Haven with a low LNG CV of 37MJ/m^3 and the higher end assumes Milford Haven LNG supplies with low CV at the same time as Isle of Grain LNG supplies with high CV.

Whilst we think the high end of the range is very unlikely, it serves to show that CV Shrinkage will become a much more material issue if significant volumes of varying CV gas are imported going forward.

3.2 Incentive Gas Cost Reference Price Methodology

For incentive purposes, a Gas Cost Reference Price (GCRP) methodology is used in the calculation of an overall cost target for Shrinkage gas. In future years, as the volume of electricity required to run electrical drives increases, it is logical to consider adopting a similar reference price methodology to incentivise the costs of procuring electricity. As gas volumes are still by far the biggest component our considerations below relate to gas procurement, but the principles hold for both.

The existing GCRP methodology incentivises a risk management strategy which protects shippers (and therefore consumers) from the volatility of prompt market prices, whilst generally following market trends. This type of approach has been prevalent for a number of years and we continue to believe it is in the best interests of consumers.

It is important that an appropriate GCRP methodology is used which reflects prices over the period when it is efficient for National Grid NTS to manage the risk in relation to its procurement of NTS Shrinkage gas. In addition to this, as this is likely to lead to forward gas procurement, it is important that the methodology is set well ahead of the relevant gas year and that there is certainty regarding the enduring arrangements.

For the past few years we have had relative certainty over the GCRP methodology as it has been set out within National Grid's Gas Transporter Licence in respect of the NTS. However this is not the case for the incentive year 08/09, as there is currently no GCRP methodology which applies for that year (or beyond). We have therefore not yet purchased gas for NTS Shrinkage purposes for delivery in the incentive year 08/09. Previously this procurement opportunity would have started in April 2007.

Given the volumes of gas required for NTS Shrinkage purposes, we believe that the current GCRP methodology is an appropriate enduring methodology

to reference the cost of NTS Shrinkage gas. However this is only the case if the methodology is agreed and known before the period in which procurement takes place. Whilst this could be the case for incentive years 09/10 onwards, it leaves the question of what to do for incentive year 08/09, where the GCRP (and therefore potential procurement) period has already started to elapse.

We believe the most important issue is to agree a methodology as soon as possible (ahead of the normal timetable for agreeing incentives) as the potential procurement period for 08/09 is diminishing and we are currently not procuring NTS Shrinkage gas for delivery next year. We believe delaying agreement of a methodology could have two potential negative consequences:

- Potential decrease in our risk management effectiveness as the period over which price risk can be managed on behalf of consumers is decreasing; and
- Greater potential for National Grid NTS' Shrinkage procurement to affect market prices if we were to get to a situation where significant volumes were procured over a short period.

For the incentive year 08/09 we do not believe it would be appropriate to establish a methodology which uses retrospective prices as this does not fulfil the purpose of the incentive, creates an unmanageable risk on both National Grid NTS and ultimately consumers and may result in a windfall gain or loss depending on how the market has moved since the start of the GCRP period. This would be the case if the current methodology was applied in its current form, or if a 'fixed price' approach was adopted.

We believe the best option is to agree and establish as quickly as possible a GCRP methodology similar to the current one, amended for 08/09 to exclude the period prior to agreement, and extending the reference period relating to the latter half of 08/09 to recover already elapsed procurement opportunity. We believe this could be expedited without detriment to the rest of the review process.

Another possibility is to design the GCRP methodology to use prices from a fixed period ahead of the delivering month (e.g. 9 months) on a rolling basis e.g. January – September for delivery in October, February –October for delivery in November etc. We believe this is less efficient as an enduring methodology, but could be applied to the incentive year 08/09 given the present circumstances.

We urge Ofgem to address this issue as quickly as possible.

3.3 Operating Margins Requirements

To date, OM services have been provided by both LNG and non-LNG storage facilities due to their strategic location on the extremities of the network, implicit availability and the high deliverability rates which are necessary for OM purposes. We have looked into potential alternative providers of OM in the past but had little response to our request for proposals. Going forward we are undertaking a significant project which will establish contestability in the provision of these services. For 08/09 we expect existing storage facilities to continue to meet our OM requirements.

OM Volume Requirements

This preliminary assessment of indicative operating margins requirements is based on supply scenarios from the 2006 TBE process. The cases show the impact of supply assumptions on OM requirements, but it should be noted that these cases may not necessarily form part of our forecast of OM requirements going forwards, as we expect to update the underpinning supply assumptions in the coming weeks using the output from the TBE 2007 process.

Operating Margins gas volumes are determined by analysing the requirement to hold gas in reserve for events such as the loss of major supplies onto the NTS, plant failure and pipeline losses. These failures cause specific network issues that can only be resolved by using OM gas located in particular areas of the network. These minimum requirements have been set out below with reference to the geographic area of the network. In addition to these minimum requirements, an additional amount of gas is also required for orderly rundown purposes (described in Section 1), which can theoretically be procured from any area.

Operating Margins -Volume (GWh)

	Non-Geographic Requirement	Minimum Requirement by Area				
		Scotland	North	West	South-East	Total
Case 1	**514**	**102**	**220**	**213**	**186**	**1235**
Case 2	**853**	**102**	**220**	**213**	**186**	**1574**

Case 1
Case 1 looks at a scenario where new sources of supply import significant flows into the NTS, and where such supplies flow at sustained high levels, thereby reducing the reliance on UKCS gas. This would tend to reduce the requirement for operating margins gas.

Case 2
Case 2 assumes a greater degree of variation in flows from new supplies and places greater uncertainty on whether such supplies can be relied upon to

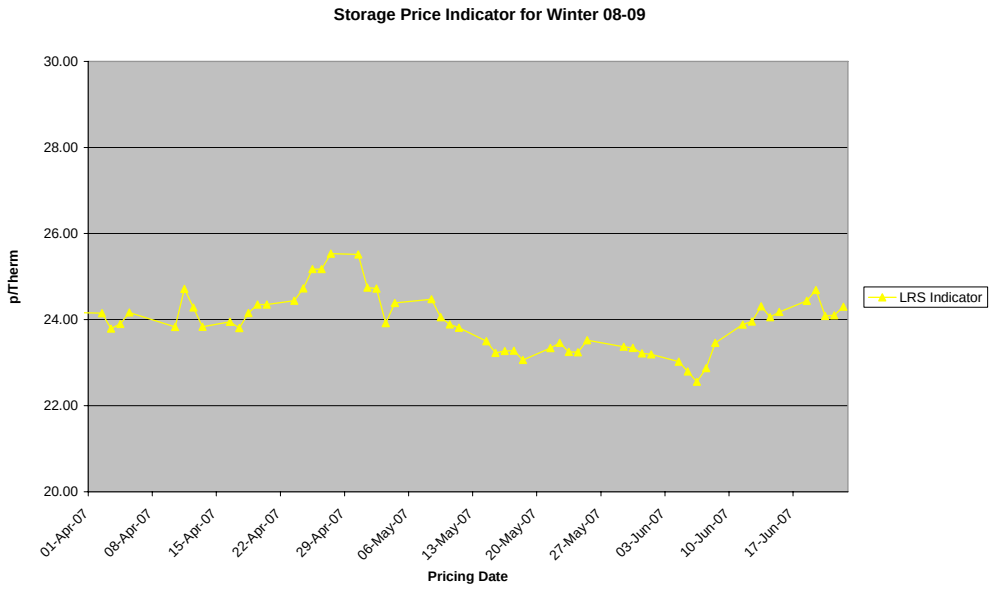
flow at sustained high levels. This, coupled with the expected decline in UKCS supplies will tend to increase the requirement for operating margins gas.

This shows that the non-geographic requirement is the most sensitive to the supply scenario, and hence our updated supply scenarios should give an updated indication of the requirements when they are available.

Operating Margins Pricing

Until contestability is established for the provision of operating margins service, the prices of National Grid's LNG storage facilities are regulated and the provision of Operating Margins from the Isle of Grain facility is provided by a single shipper. The drivers of non-LNG storage prices are driven by the value of storage capacity, which is driven by within-year gas price differentials, volatility and not directly by absolute levels of gas price.

The main commercial driver for seasonal storage is the differential between summer and winter gas prices. The differential used for the chart below is between October 08 and December 08 prices. October 08 could be substituted by September 08 if carried storage stock is high. Prices have been inferred from current Q4 08 forward prices based on the historical relationship between forward monthly and quarterly prices.



Whilst Long Range Storage (LRS) should track the differential closely, medium range storage (MRS) pricing is more difficult to extract as it is a shorter duration service, exploiting a smaller subset of the forward price curve. Last year National Grid NTS paid an 80% premium for MRS over LRS. At this stage we are expecting a smaller premium for next year. Market prices for space will differ accordingly to the relative supply and demand of the

space product at the time but the price movement should track the indicator above.

4. Summary

This appendix has set out the current shallow SO incentive schemes that are understood to be relevant to this part of the Review. Looking forward, it has highlighted the key issue going forward from an NTS operation perspective as being the new supply infrastructure and the commercial uncertainties associated with the utilisation of that infrastructure. Also the inherent uncertainties over the level and pattern of demand, and the programme to change over key gas compressors to electric drives have also been highlighted as relevant. Initial data relating to future Operating Margins and Shrinkage requirements has been presented to provide context to this consultation, but is based upon data that is currently being updated and so is likely to change.