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Wholesale Markets Team
Ofgem

31 January 2012

Dear Sirs

Gas Security of Supply Significant Code Review – Draft Policy Decision and Draft Impact Assessment

Interconnector (UK) Limited ("IUK") welcomes the opportunity to comment on the Gas Security of Supply Significant Code Review – Draft Policy Decision and Draft Impact Assessment. This is an important piece of work that is likely to have major implications for the UK gas industry. Consequently, it is of upmost importance that the analysis is based on sound assumptions.

The document "Stakeholder Questions around the Modelling for the Gas SCR Draft Impact Assessment" details the assumptions used by Ofgem in its impact assessment regarding the level of imports through, and the reliability of, the Interconnector pipeline. In IUK's view, there is strong and compelling evidence that the assumptions used are incorrect by an order of magnitude. We are willing to share our analysis and relevant data. IUK is supportive of Ofgem's concern for security of supply as shown in its SCR documents. We are concerned that using incorrect assumptions about the Interconnector could distort the validity of the impact assessment and give incorrect signals to the market.

Price Differentials and Flows

The Impact Assessment assumptions document states[1] that there is no clear historic relationship between price differentials and flows and consequently the Redpoint model assumes that imports via the Interconnector pipeline are an increasing function of the GB price and the Continental gas price[2]. IUK analysis shows that there is a clear, evidence-based relationship between flows through the Interconnector pipeline and the price differential. Figures 1 and 2 show the assumptions used in Redpoint's impact assessment compared against actual data points from a two year period between 1 October 2009 and 30 September 2011.

[1] See response to question 1 within the document "Stakeholder Questions around the Modelling for the Gas SCR Draft Impact Assessment".
[2] The "Continental gas price" within the Impact Assessment is not defined; IUK's analysis has considered the NBP, Zee, TTF, Peg-N and NCG gas prices.

Figure 1 – Interconnector Flows (GWh/day) versus the Zee-NBP Price Differential (p/th) compared against the Redpoint assumption

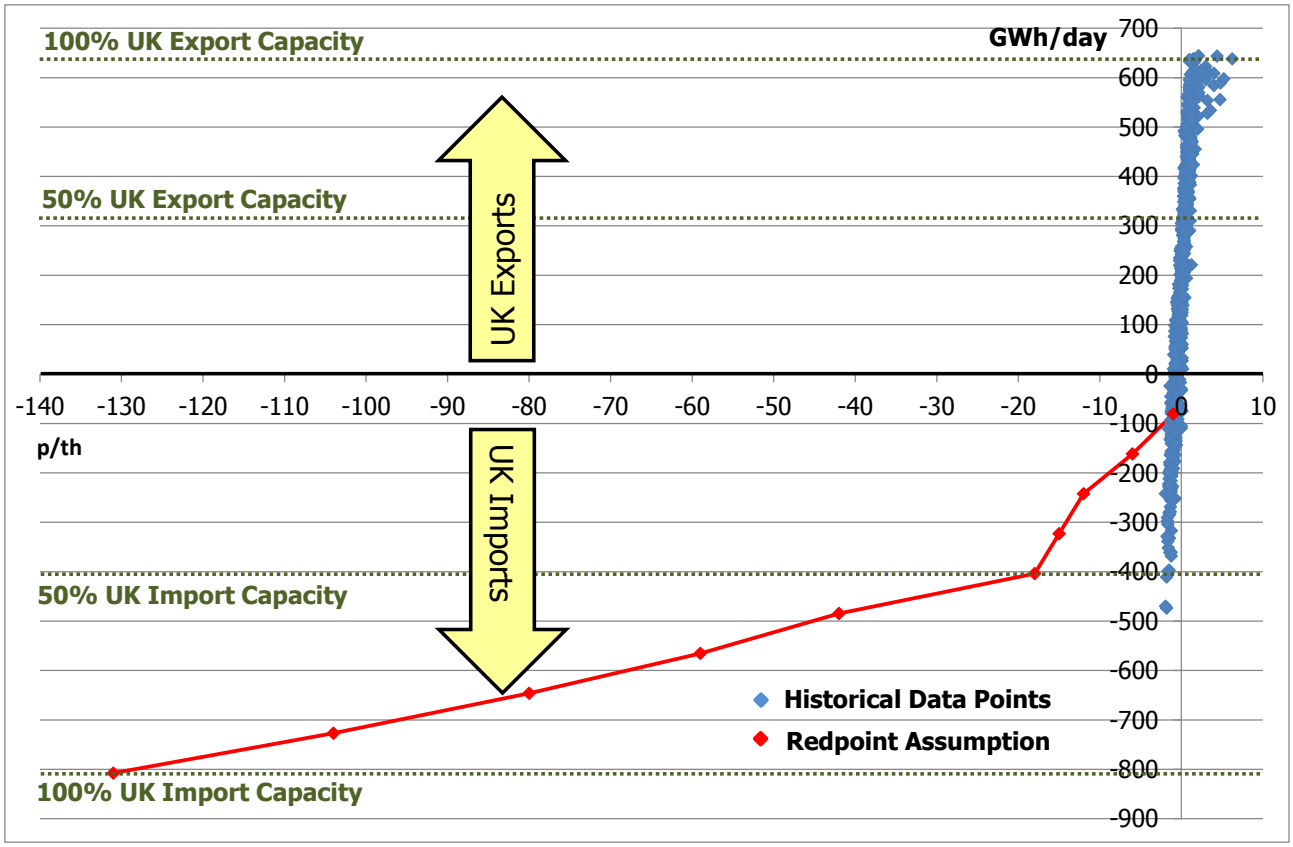
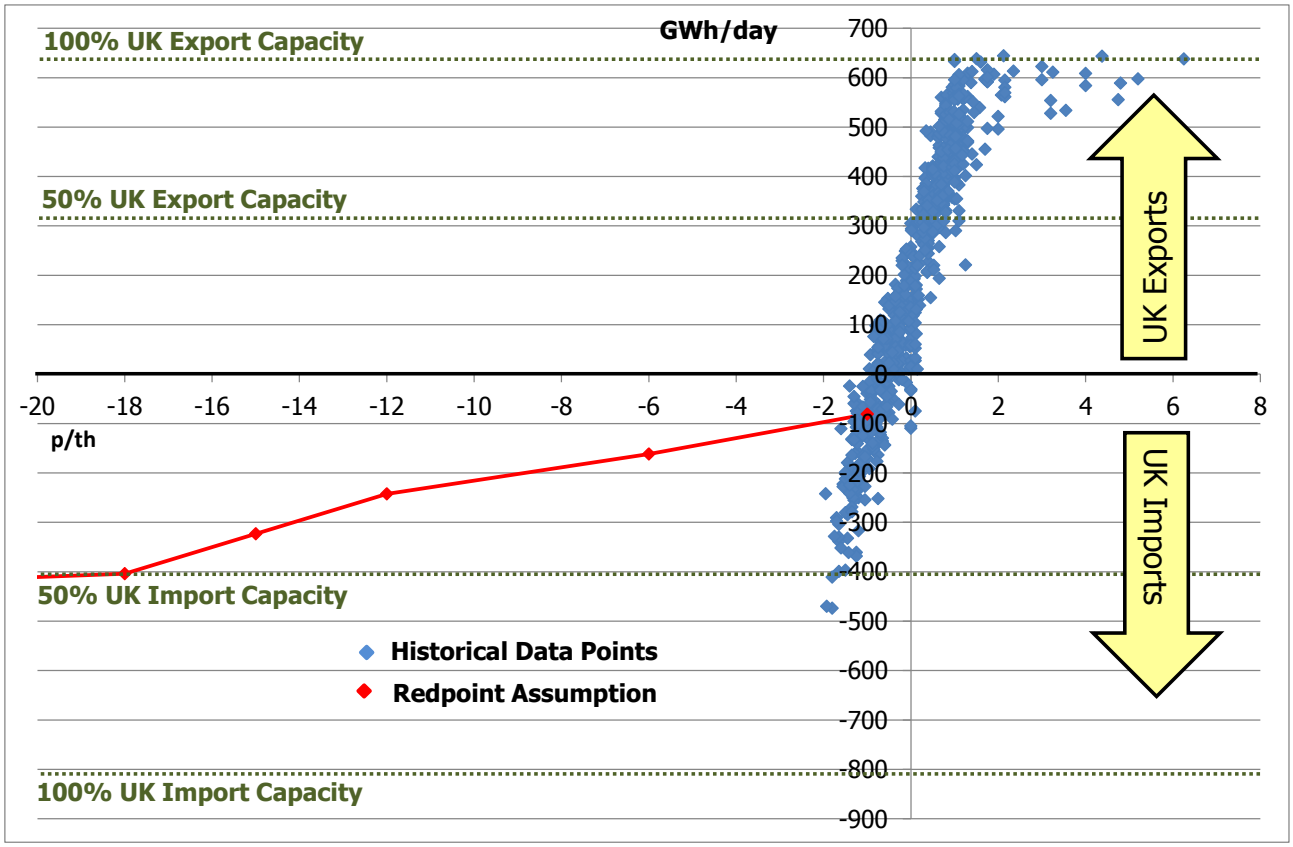


Figure 2 – Interconnector Flows (GWh/day) versus the Zee-NBP Price Differential (p/th) compared against the Redpoint assumption (reduced price axis)



Whereas, the Redpoint assumption requires an 18 p/th price differential to achieve 50% utilisation of IUK import capacity, the Interconnector pipeline has seen 50% utilisation at a price differential of around 1.8 p/th. This is an order of magnitude less than that assumed in the Ofgem analysis. Furthermore, extrapolation from the gradient of the historical data implies that 100% utilisation of such capacity would be achieved at a price differential of around 3 p/th. The Ofgem assumption is 43 times higher than this at 131 p/th.

We understand that the flow-price differential assumptions may be trying to reflect what happens under emergency conditions, rather than normal conditions. If so, firstly the text should make this clear. At the moment, it seems to suggest that these "emergency condition" assumptions are somehow derived from historic data relating to normal conditions (albeit taking into account the impact of public service obligations). As the graphics in this letter clearly show, this is not the case. Secondly, the impact assessment needs to indicate what evidence lies behind the assumptions used for emergency conditions. Fortunately, historical data regarding supply emergencies is limited. The most recent supply emergency was in January 2009 when due to a curtailment of flows across Ukraine there was a supply shortage in certain parts of Europe[3]. During this period the Interconnector was instrumental in helping to alleviate the difficulties by exporting gas from UK during the period. However, we note that the differentials observed at that time are not commensurate with the assumptions used in the SCR impact assessment. So the question remains as to what evidence supports the magnitude of the "emergency condition" differentials.

In addition to analysing Interconnector flows against the Belgian to UK price differential (Zee-NBP), IUK has also analysed Interconnector flows against the Netherlands (TFF), French (PEG-N) and German (NCG) price differentials and found similar results[4]. On balance, there is strong and compelling evidence that the assumptions used in the impact assessment modelling are incorrect by an order of magnitude.

IUK's analysis shows that it requires a negative price differential of around -1 p/th for the Interconnector to import gas; i.e. the pipeline tends to export gas when the price differential is greater than -1 p/th (i.e. -0.5 p/th, 0.5 p/th etc) and import gas when the price differential is less than -1 p/th (i.e. -1.5 p/th etc). The philosophy of a zero reserve price within the UK regime means that capacity is acquired, via auctions, at very little cost resulting in high commodity charges, as NGG is entitled to recover a certain revenue. Instead of paying the commodity charges, network users can opt to pay the NTS Optional Commodity Tariff which is now significantly cheaper than the commodity charges which it replaces. Therefore the bias toward UK exports may be due to the overall pricing regime in the UK's National Transmission System whereby it is far cheaper for gas landed at Bacton, either from production or the BBL pipeline, to be transported to the Interconnector pipeline for onward transportation to Zeebrugge than it is to be transported to the UK market (NBP)[5].

Interconnector's Response to Market Events

Customers with capacity in the Interconnector are able to, and do, respond to events. During January 2010 when there were gas supply issues and record demand in the UK, Interconnector flows responded strongly and appropriately. For example, on 4 January 2010 imports via the Interconnector pipeline tripled following a sudden reduction in supply from the Langeled pipeline[6].

[3] See Appendix 2 "Ukraine Supply Issues, January 2009" for further details.
[4] See Appendix 1 "Interconnector Flow Analysis" for the findings.
[5] See Appendix 1 "Interconnector Flow Analysis" for a more detailed explanation.
[6] See Appendix 3 "Norwegian Supply Issues, January 2010" for further details.

We note that this within day response to supply shortages may not have been possible had network users' renomination rights been restricted as is proposed with the Congestion Management Procedures that are currently progressing through Comitology. During December 2010 when the weather in the UK was particularly cold, the Interconnector imported significant volumes of gas.

Since Interconnector's entry into operation, timely investment has been made by IUK in increasing the UK import capability of the pipeline so that supplies to the UK could be assured as indigenous production declined. On 8 November 2005 IUK successfully delivered the first phase of an Enhancement project three weeks earlier than planned which almost doubled the import capacity of the Interconnector pipeline. Towards the end of that winter, to ensure UK demand could be met following an incident which meant that the UK's largest storage facility was unavailable, Interconnector flowed in excess of the pre-enhancement capacity for a period of 4 weeks and on occasion flowed in excess of the new enhanced capacity. The Interconnector pipeline would not have been able to meet the shortfall in UK supply to such an extent had timely investment not been made[7].

Interconnector Reliability

The Impact Assessment analysis assumes a gas quality constraint affecting the Interconnector pipeline, on average, every 2 years and 8 months and that, in broad terms, there is a 37% chance each year of there being a constraint down to 30% of import capacity that lasts for a period of 10 days[8]. Currently, IUK has an operational and maintenance philosophy designed to ensure that full capacity is available in both the UK import and UK export directions throughout the year. This entails having redundancy, where it is efficient to do so, within the physical infrastructure, control systems, communication infrastructure and commercial gas management systems. In addition, the business rules have been developed to ensure that minor operational issues do not impact gas flows.

Since November 2005 when the first phase of the UK import enhancement project was delivered through installing compressors at the Zeebrugge terminal, there has been a total of 13 hours of constraints which impacted UK imports, with the last constraint being on 29 July 2006[9]. These were all related to compressor trips at the Zeebrugge Terminal and could be considered as teething troubles following commissioning of the Zeebrugge compressors. Improvements to the business rules and better co-operation with our connected transporters means that a compressor trip is now unlikely to lead to a constraint as it did back in 2005/6. During the same period there were no constraints which impacted UK exports. This means that there has not been a constraint over the last 5 years and more.

IUK accepts that events can happen which impact the ability to flow gas and every effort is made by the company to (a) reduce the risk of events that are within the control of the company to as low as is reasonably possible and (b) mitigate the impact of an event if one should occur.

IUK's business rules have been carefully designed and refined over the past 13 years to ensure that gas can flow seamlessly between the UK and Continental markets. Legislation and regulations resulting from the Third Gas Directive may require changes to the business rules governing the

[7] See Appendix 4 "Rough Incident, 16 February 2006" for further details.
[8] See response to questions 5 and 8 within the document "Stakeholder Questions around the Modelling for the Gas SCR Draft Impact Assessment".
[9] The Interconnector imported gas into the UK on several days during summer 2006.

operation of the Interconnector pipeline which will require careful though to avoid unintended consequences.

Policy Direction

IUK is supportive of Ofgem's concern for GB gas security of supply, and the possibility that future extreme market conditions may pose challenges. We believe that policy needs to attach equal value to both existing and new assets that contribute to security; and that flexibility in gas infrastructure will become increasingly important. We are concerned that the current SCR impact assessment assumptions on flows across the Interconnector are implausible and contrary to historic evidence. Policy decisions about GB imports and security of supply need to be based on a sound set of assumptions about Interconnector's flows.

Summary

Historical analysis provides strong and compelling evidence that the assumptions pertaining to the Interconnector pipeline are incorrect by an order of magnitude. Given that the SCR work and resulting decisions will have a fundamental impact on the UK gas industry it is imperative that the impact assessment is based on solid assumptions.

Customers with capacity in the Interconnector pipeline are currently able to respond almost immediately to events and IUK will endeavour to ensure that it continues to provide a highly reliable and valued service to the overall European gas market.

IUK does not consider this response to be confidential.

Yours faithfully

Darren Reeve
Commercial Manager

Appendix 1: Interconnector Flow Analysis

The Ofgem impact assessment indicates that there is no clear historic relationship between price differentials and flows and consequently it is assumed that imports via the Interconnector pipeline are an increasing function of the GB price and the Continental gas price as follows:

IUK Utilisation	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Price Differential (p/therm)	1	6	12	15	18	42	59	80	104	131

IUK analysis shows that there is a clear relationship between flows through the Interconnector pipeline and the price differential. Figure 3 shows the relationship between the day ahead price differential and flow through the Interconnector pipeline for the two year period between 1 October 2009 and 30 September 2011. Figure 4 shows the same data with the price axis limited to between -2.5 p/th and 2.5 p/th. The R squared correlation is 0.9 when maintenance periods and days when flow is approaching/exceeding capacity are excluded. This demonstrates a strong relationship between the day-ahead price differential and flow.

Figure 3 – Interconnector Flows (GWh) versus the Zee-NBP Price Differential (p/th)

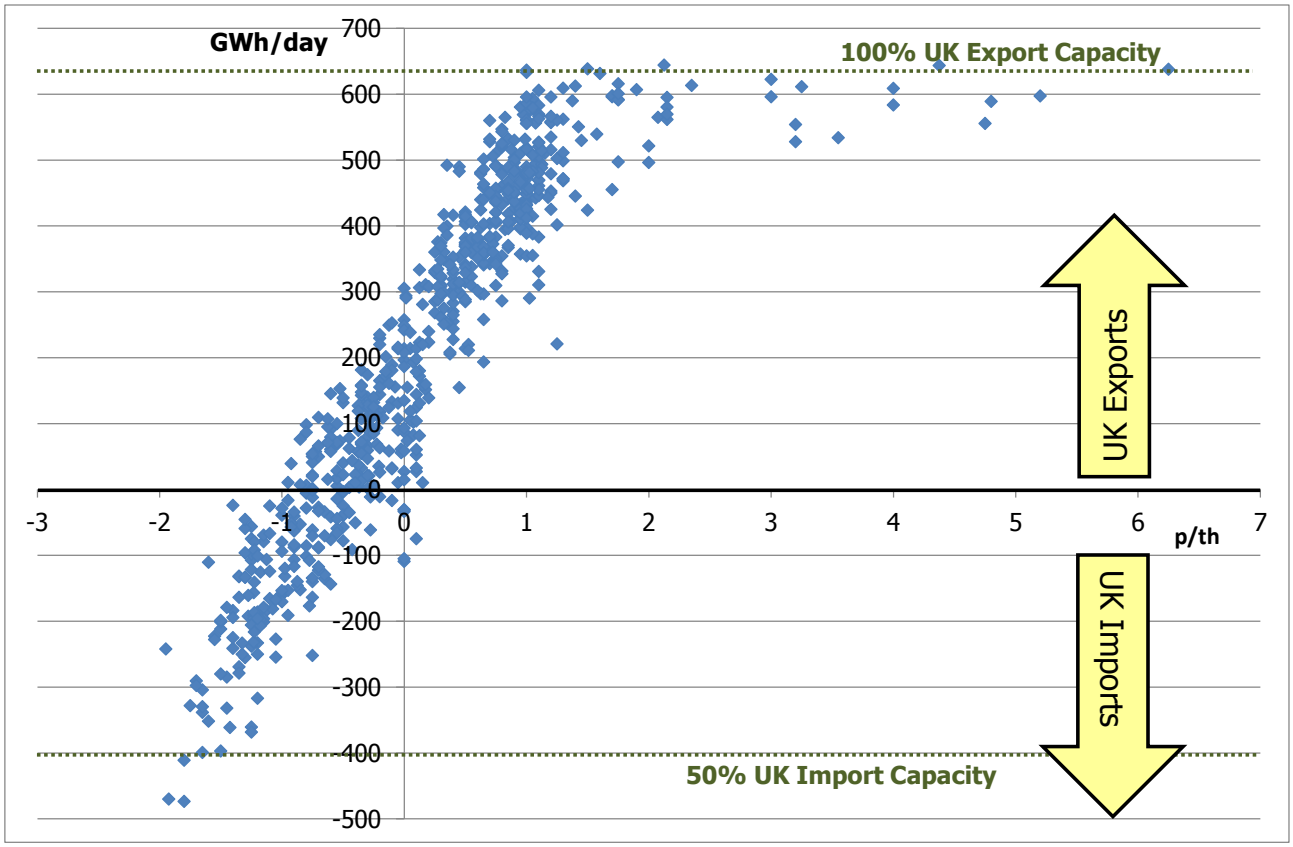
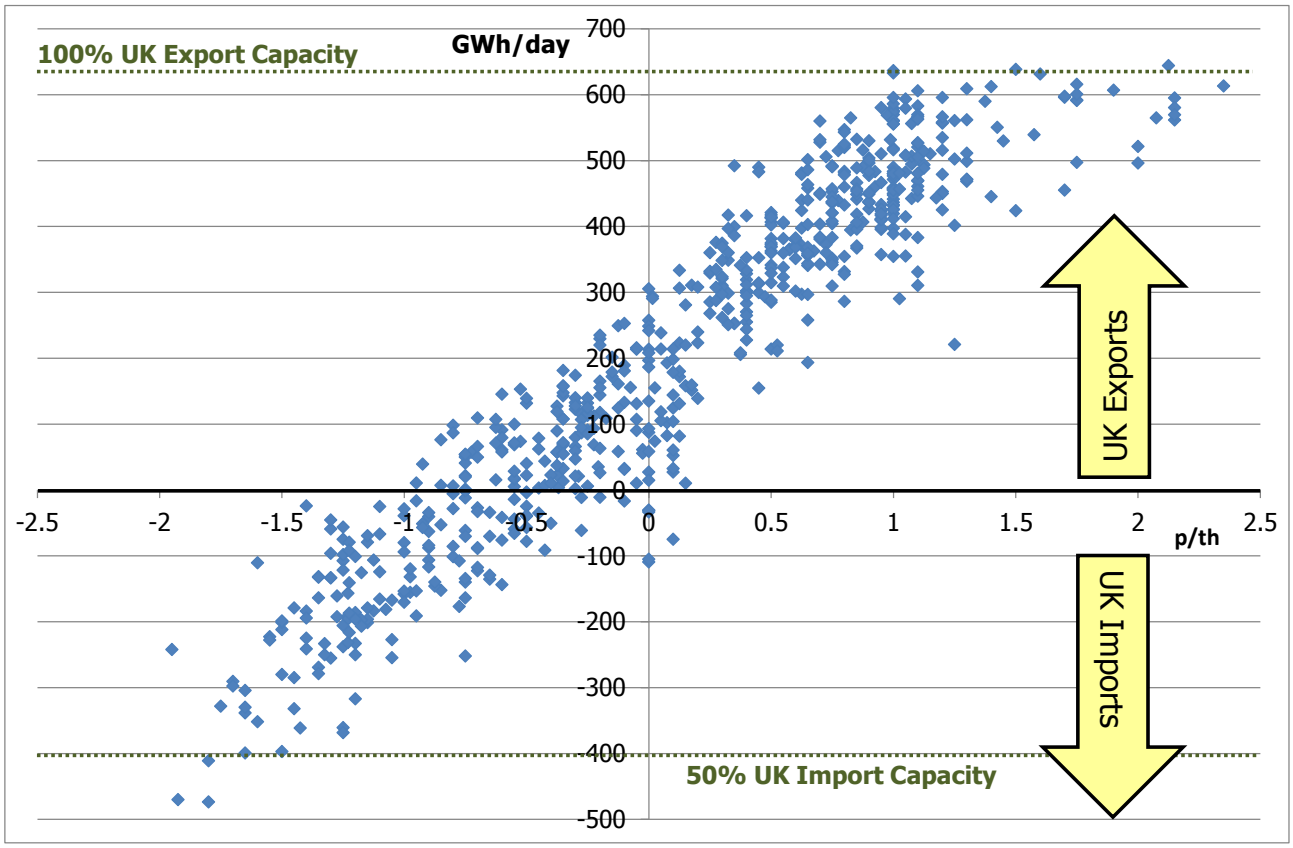


Figure 4 – Interconnector Flows (GWh) versus the Zee-NBP Price Differential (p/th)



The import capacity of the Interconnector pipeline is 807.5 GWh/day[10]. From Figure 4 it can be seen that 20% utilisation (161.5 GWh) occurs at a negative basis between 0.75 p/th and 1.4 p/th and 50% utilisation (403.75 GWh) has occurred at a negative basis of around 1.8 p/th. This is an order of magnitude less than that assumed in the Redpoint analysis.

There is clear relationship between price differential and Interconnector flow when considering other price hubs within NW Europe. Figures 5 to 7 show the relationship between various day ahead price differentials and flow through the Interconnector pipeline for the two year period between 1 October 2009 and 30 September 2011 compared against the Redpoint assumption[11].

[10] Based on a typical GCV.

[11] The historical data points use the actual exchange rate at the time, whereas an approximate exchange rate is used to convert the Ofgem assumption into Euros. The effect of correcting for this would not change the conclusion.

Figure 5 – Interconnector Flows (GWh/day) versus the TTF-NBP Price Differential (€/MWh) compared against the Redpoint assumption

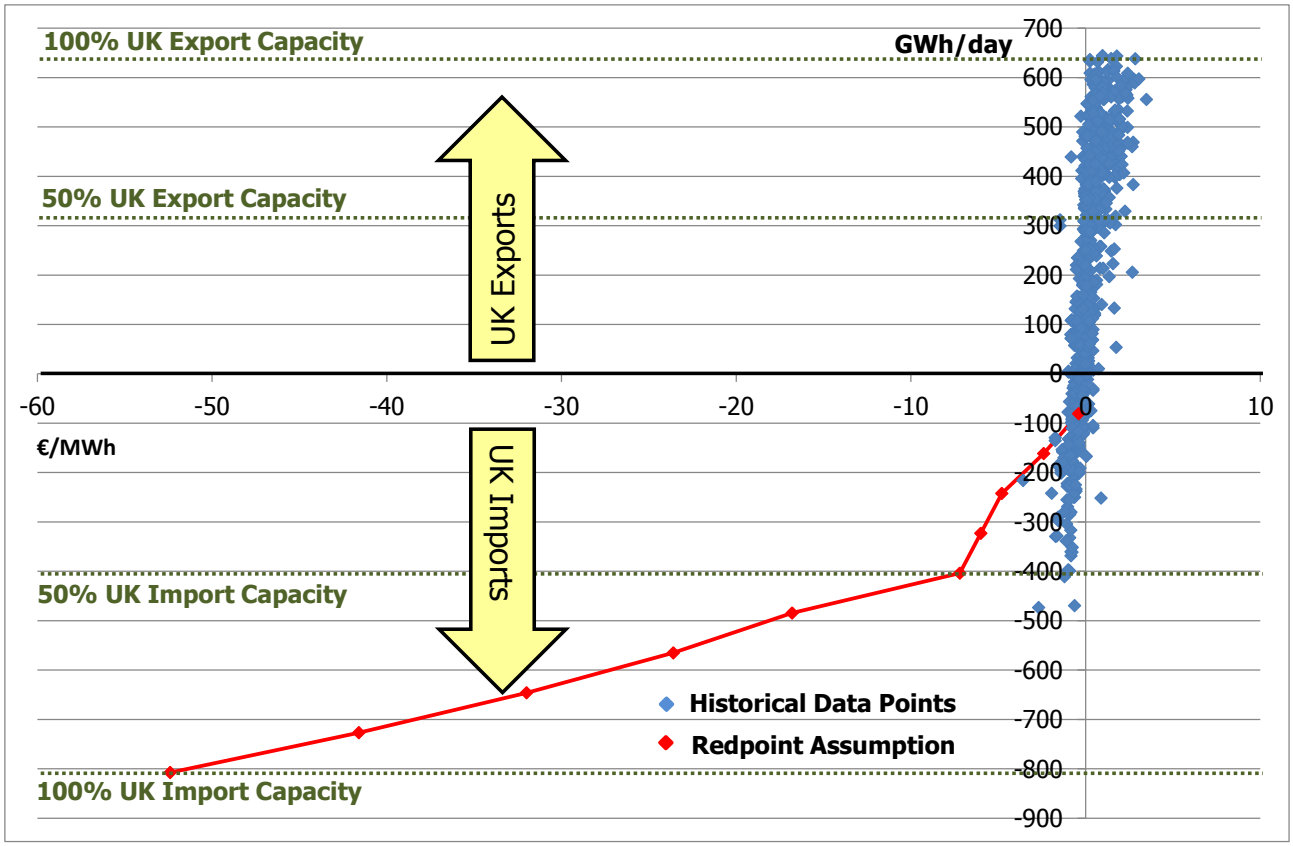


Figure 6 – Interconnector Flows (GWh/day) versus the PEG N-NBP Price Differential (€/MWh) compared against the Redpoint assumption

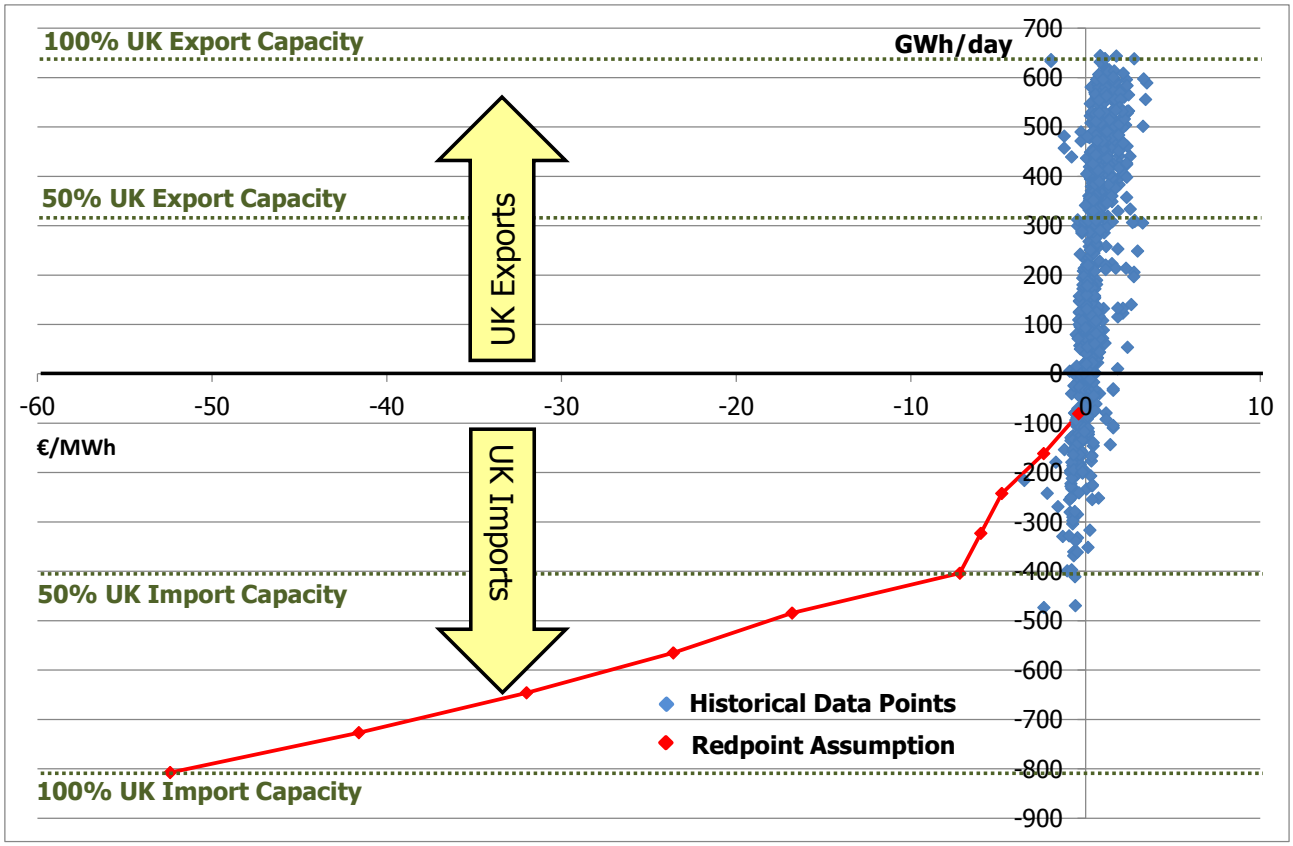
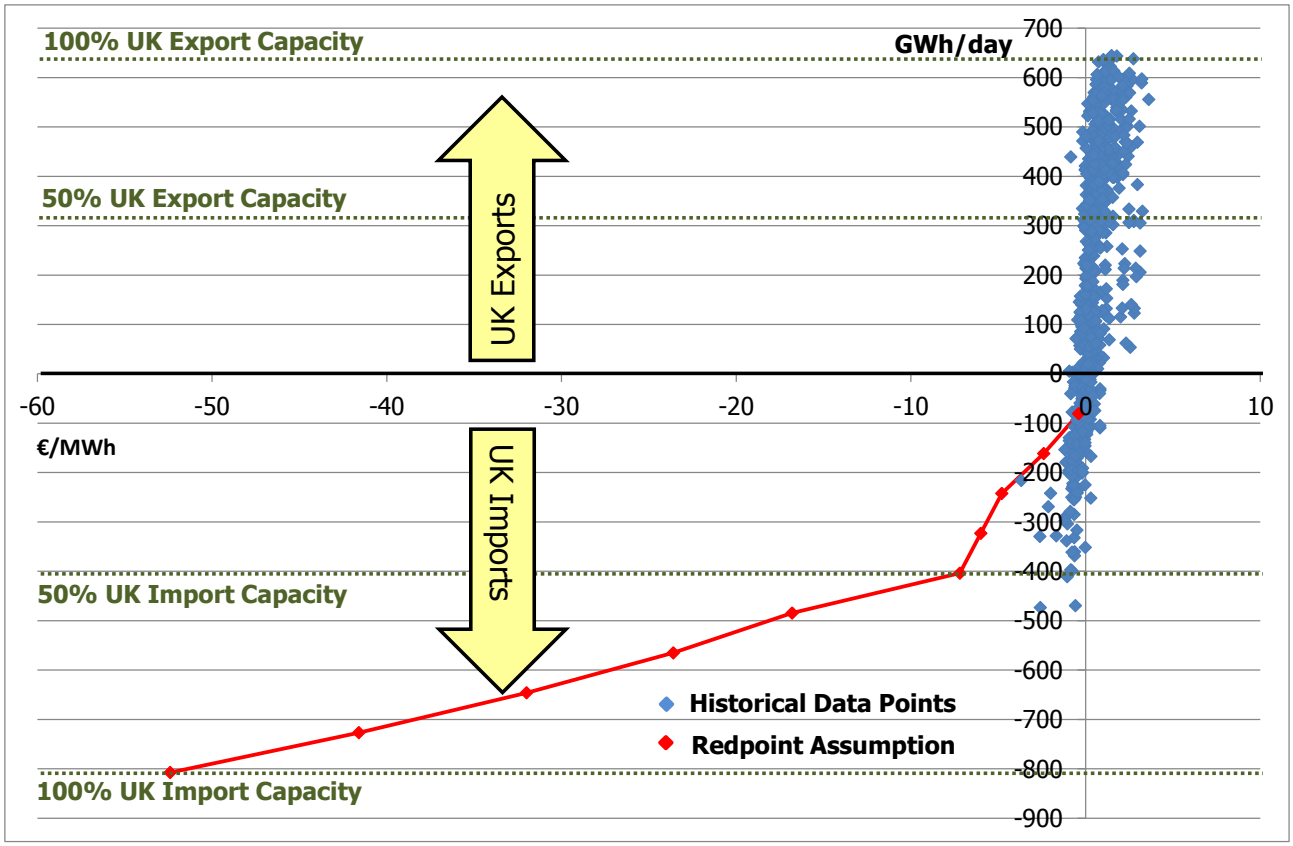


Figure 7 – Interconnector Flows (GWh/day) versus the NCG-NBP Price Differential (€/MWh) compared against the Redpoint assumption



UK Pricing Regime

IUK's analysis shows that it requires a negative price differential of around -1 p/th for the Interconnector to import gas; i.e. the pipeline tends to export gas when the price differential is greater than -1 p/th (i.e. -0.5 p/th, 0.5 p/th etc) and import gas when the price differential is less than -1 p/th (i.e. -1.5 p/th etc). The bias to UK exports is due to the pricing regime in the UK's National Transmission System whereby it is cheaper for gas landed at Bacton beach to be transported to the Interconnector pipeline for onward transportation to Zeebrugge than it is to be transported to the UK market (NBP).

Within the UK pricing regime, the NTS Optional Commodity Tariff is designed to avoid inefficient bypass of the NTS and is attractive for large supply points situated close to a terminal. This NTS Optional Commodity Tariff replaces the Entry SO, Exit SO and Entry TO Commodity charges. The philosophy of a zero reserve price within the UK regime means that capacity is acquired, via auctions, at very little cost resulting in high commodity charges, as NGG is entitled to recover a certain revenue. This means that the NTS Optional Commodity Tariff is becoming increasingly attractive versus the commodity charges which it replaces. Since 1999, the NTS commodity charges have increased significantly as shown in Figures 8 and 9. The volatility of the charges will have a significant impact on the incentive the import/export gas through the Interconnector pipeline. Currently, the commodity charges are at an all-time high resulting in a strong incentive to export gas via the Interconnector pipeline.

Figure 8 – Total NTS Commodity Charge (TO + SO Entry + SO Exit)

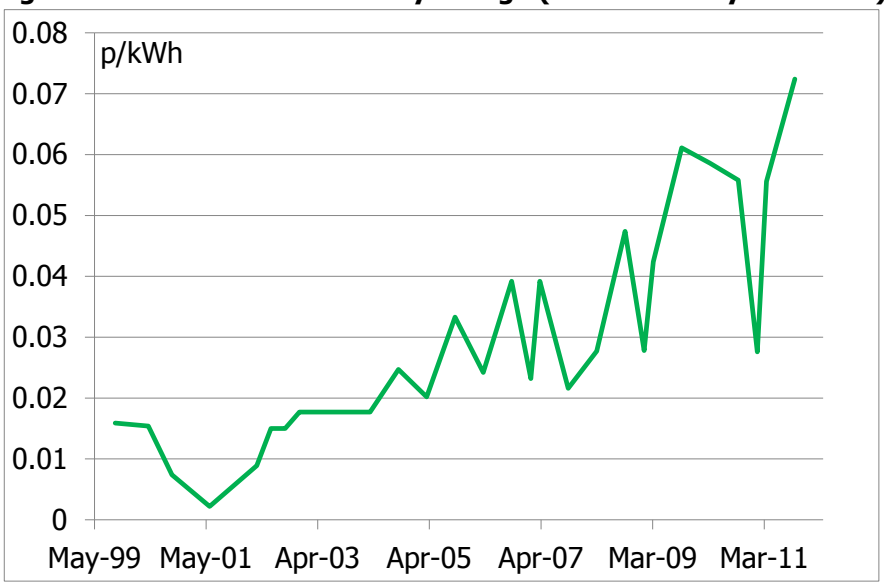
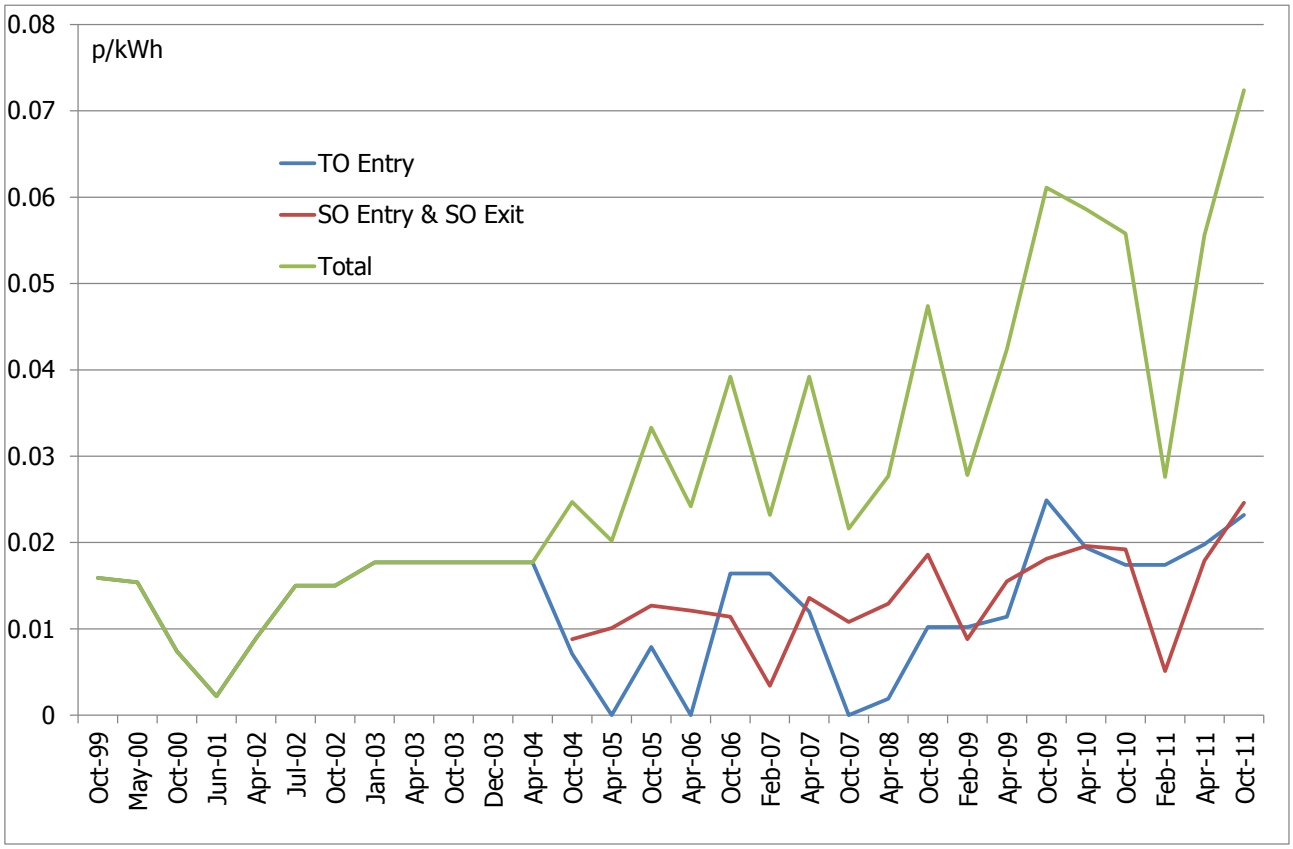


Figure 9 – NTS Commodity Charges



In the case of the Interconnector pipeline, gas delivered to the Bacton terminals can either:

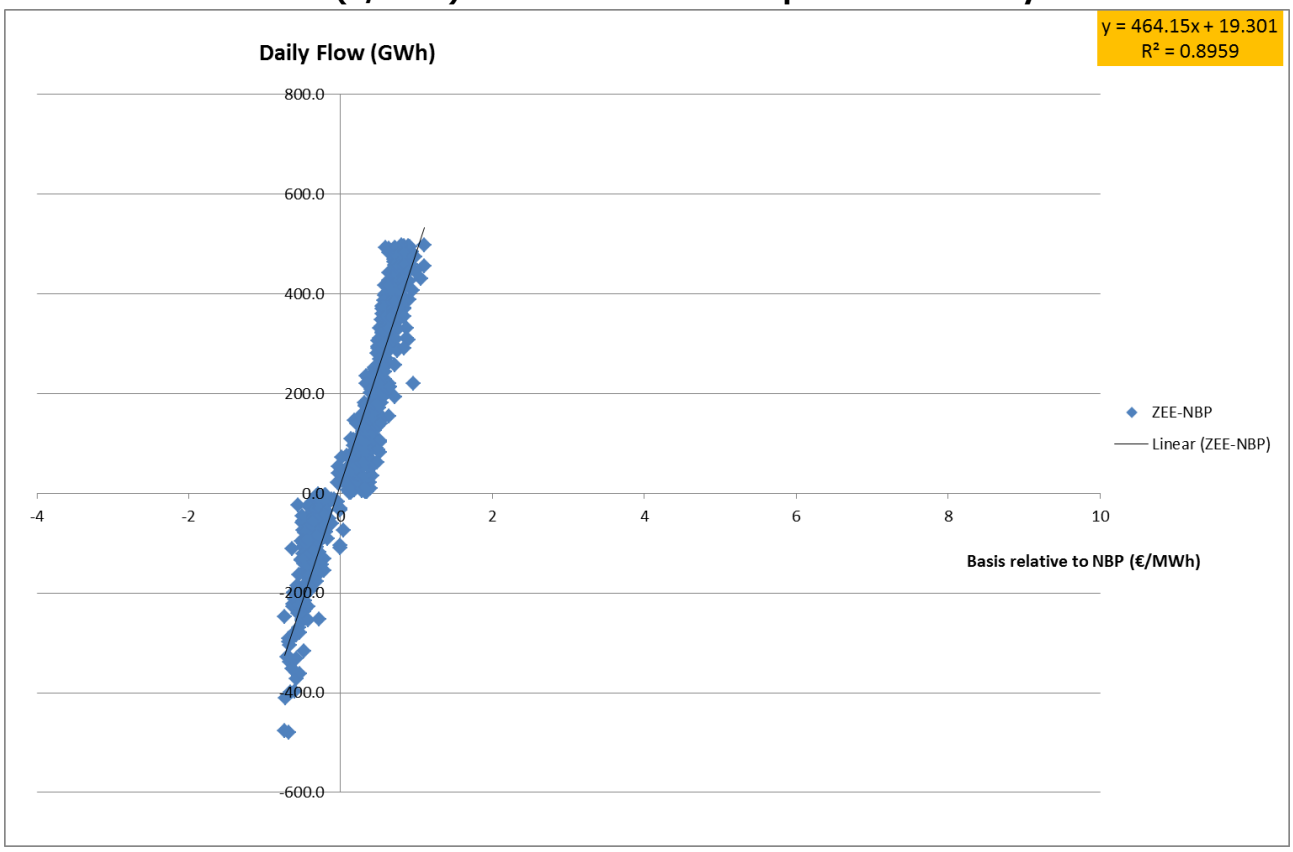
- flow to the NBP at a cost of 0.0478 p/kWh (TO Entry + SO Entry)[12]; or
- flow to the Interconnector at a cost of 0.006 p/kWh (NTS Optional Commodity Tariff, Bacton Terminal to Interconnector)

Taking account of the Interconnector compression costs (~0.8% of net aggregate flow) it currently costs around 0.03 p/kWh less to deliver the gas to Zeebrugge than it does to the NBP. This is equivalent to almost 1 p/th. The magnitude of the UK export bias is a function of the

[12] This excludes the SO Exit Commodity Charge which is also replaced. Including this charge would act to amplify the bias.

commodity charges and consequently varies over time. IUK's analysis, which corrects for this bias, shows a strong correlation between flow and the price differential which passes through zero as shown in Figure 10.

Figure 10 – Interconnector Flows (GWh) versus the Zee-NBP Price Differential (€/MWh) corrected for the NTS Optional Commodity Tariff



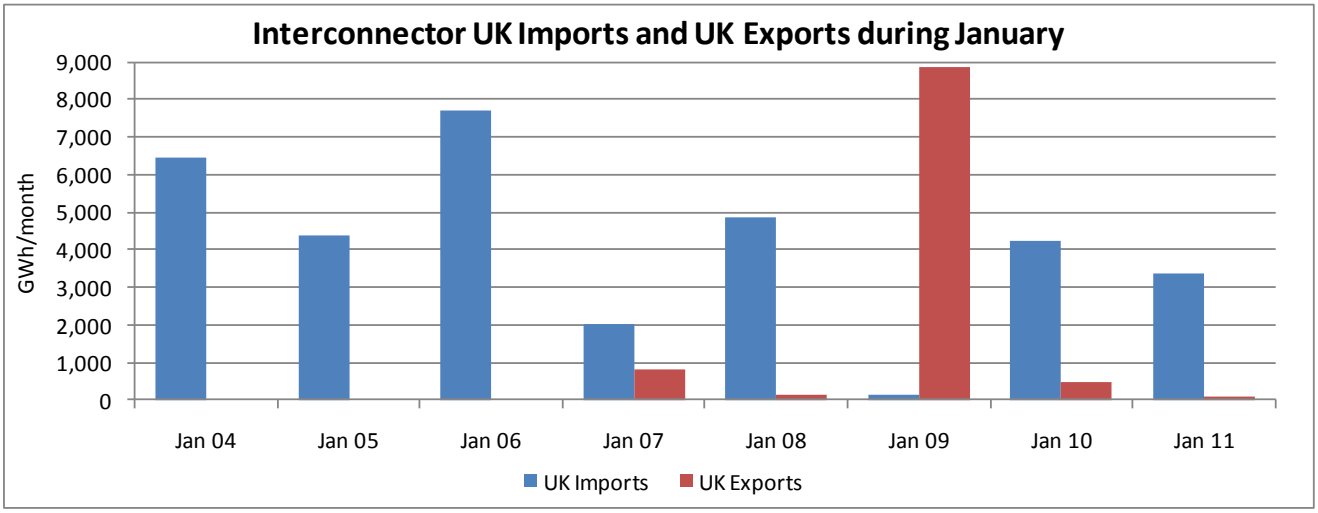
Arguably there is incentive for UK supply points further afield than Bacton to opt for the NTS Optional Commodity Tariff and delivery gas via the Interconnector pipeline to the Zeebrugge hub. The tariff (in p/kWh) is $1203 \times SOQ^{-0.834} \times D + 363 \times SOQ^{-0.654}$ where D is the distance in km and SOQ is the registered supply point capacity in kWh. SOQ for the Interconnector pipeline is 628,392,000 kWh, meaning that:

- For D=0 km, the charge is 0.0006 p/kWh (i.e. UK supply points at Bacton)
- For D=500 km, the charge is 0.0283 p/kWh
- For D=1,000 km, the charge is 0.0559 p/kWh

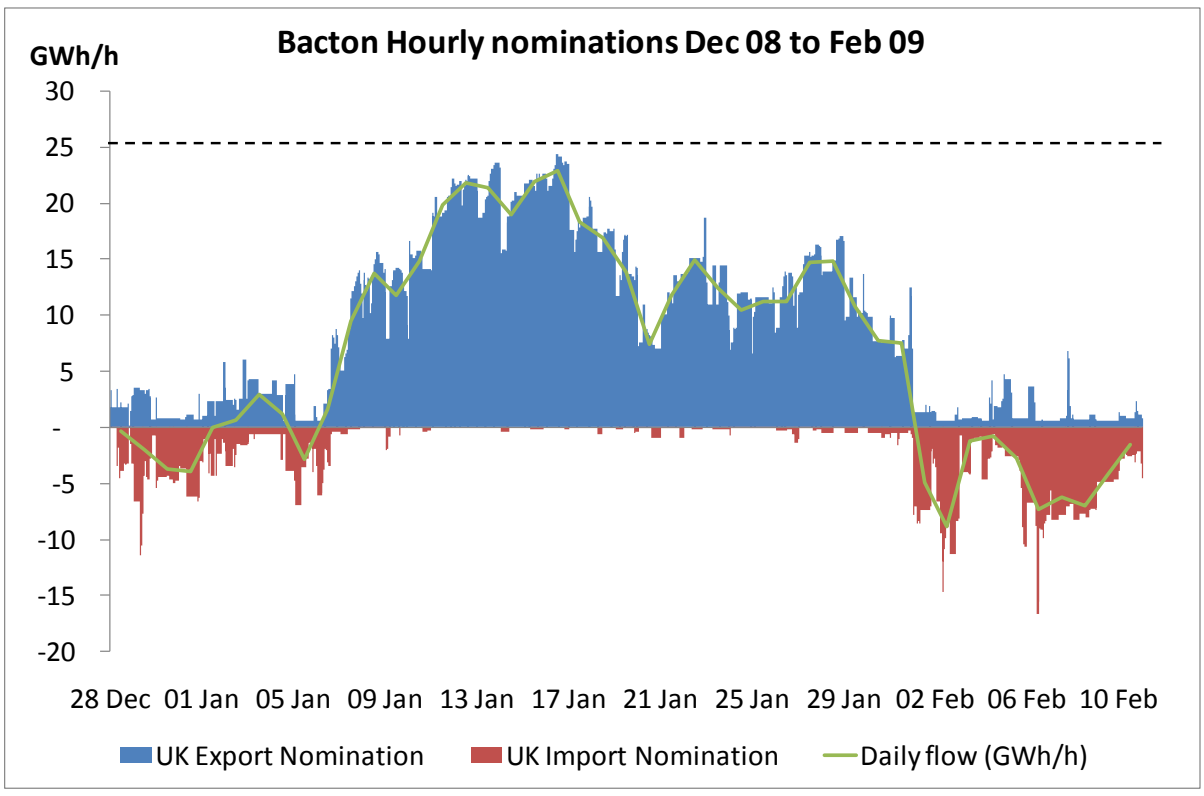
For gas supplied at Bacton (D=0km) the saving is around 0.03 p/kWh. Therefore, there is still a saving for supply points 500 km from Bacton; i.e. it is cheaper to take the gas to the Zeebrugge hub than it is to the NBP hub.

Appendix 2: Ukraine Supply Issues, January 2009

The Interconnector typically imports gas to the UK during January and February. In January 2009, gas flows through the Ukraine were severely curtailed for several days. This resulted in a shortage of gas in certain parts of Eastern Europe and the Interconnector was instrumental in helping to alleviate the difficulties by exporting gas from UK during the period.

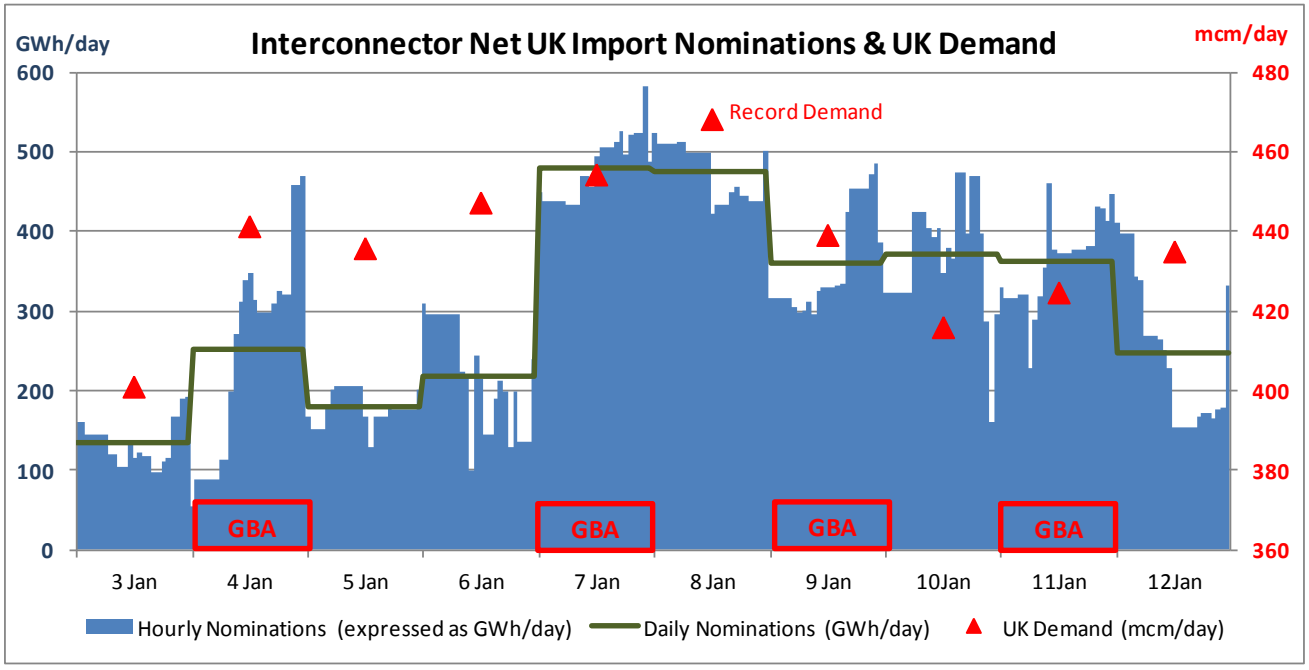


The Interconnector switched to UK exports in early January and flows rapidly increased such the Interconnector was exporting gas close to capacity, peaking at 550 GWh/day on 16 January. This required the use of all 3 compressors at Bacton a situation which is unprecedented for the winter months. On 1 February, the weather turned cold in the UK with snow falling across much of the country. The Interconnector immediately responded switching to UK imports with a swing of 568 GWh/day in 5 days and 393 GWh/day in 2 days. This clearly demonstrates the market responsiveness and flexibility of the Interconnector, which is capable of flowing at capacity in either direction at very short notice.

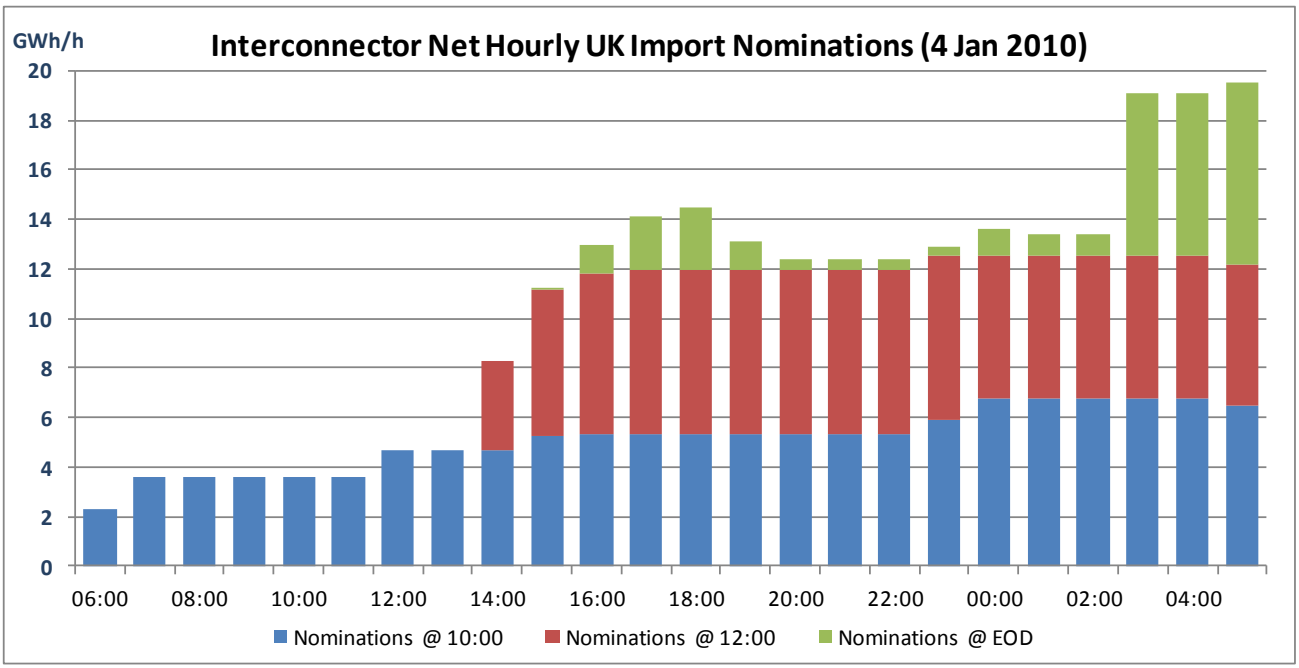


Appendix 3: Norwegian Supply Issues, January 2010

The first half of January 2010 saw record demands combined with Norwegian gas supply issues that resulted in four Gas Balancing Alerts (GBAs) being announced during the period. In order to meet the record demands and cover the loss of supply, Shippers were able to access gas via the Interconnector Pipeline with flows increasing dramatically during the period.



The first GBA on 4 January 2010 demonstrated how the Interconnector can respond rapidly within day to a changing supply/demand situation. At 10:00 on 4 January the Net UK Import Nomination from 14:00 to 06:00 was 93 GWh. Following the significant reduction in supply from Norway the equivalent Nomination had more than doubled to 190 GWh in less than 2 hours. By the end of the Gas Day the Interconnector Pipeline imported in excess of three times the originally scheduled quantity. The physical capability and commercial regime means that Shippers can massively increase their Nominations in either direction at short notice.

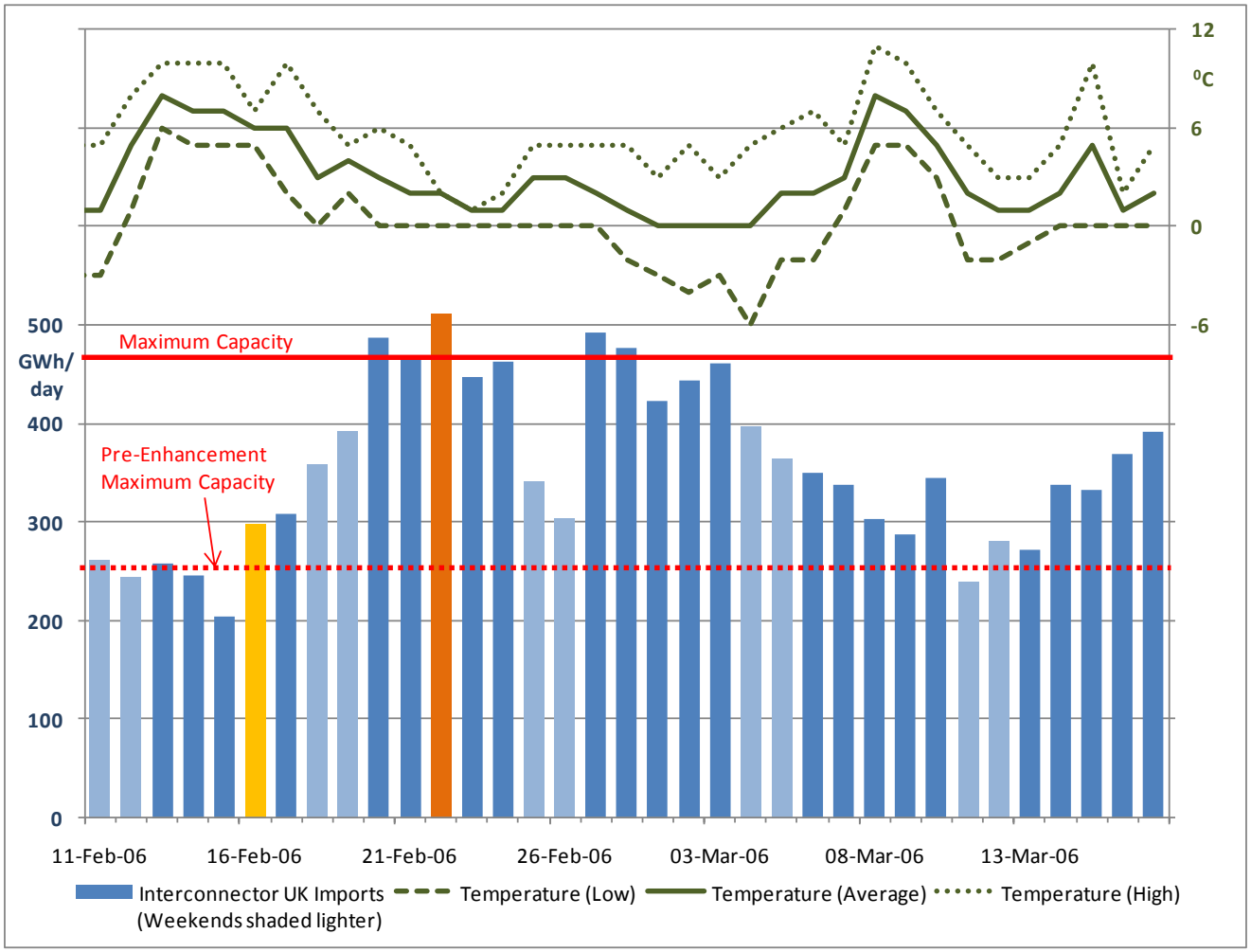


Appendix 4: Rough Incident, 16 February 2006

On 16 February 2006 an incident on one of Rough offshore platforms[13] resulted in the UK's largest storage facility being unavailable for the remainder of the winter. At the time of the incident the weather was relatively mild and the Rough facility was only delivering a small quantity of gas to the UK[14]. In response to the incident gas prices increased significantly.

The period following the incident saw significantly colder weather in the UK and Shippers were able to meet UK demand through increased utilisation of the Interconnector Pipeline with flows increasing across a period of 3 days from around 300GWh/day (~28mcm/day) to over 500GWh/day (~46mcm/day).

Following the first phase of a capacity enhancement project, the UK import capacity of the Interconnector Pipeline increased from 267 GWh/day to 487 GWh/day with effect from 8 November 2005. For a period of four weeks following the incident flow through the Interconnector Pipeline consistently exceeded the pre-enhancement maximum capacity, and on occasion exceeded the post enhancement design capacity. A flow record of 512 GWh (~47 mcm/day) was achieved on 22 February 2006.



[13] Centrica Storage Press Release http://www.centrica-sl.co.uk/index.asp?PageID=22&Year=2006&NewsID=39.
[14] European SpotGas Markets, 16 February 2006.