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**BGN PROPOSAL FOR PUBLIC CONSULTATION**



**Short Term Tariff Analysis**

**CONSULTATION DOCUMENT**

This paper sets out the analysis undertaken and results obtained in relation to the analysis of pricing of short term transmission capacity tariffs

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## **1. INTRODUCTION**

In accordance with EU regulation BGN are required to establish a methodology for the pricing of short term transmission capacity products. In order to do this, BGN have:

- considered the key regulatory requirements for pricing;
- established some key pricing principles based on these requirements;
- defined two alternative methodologies based on these principles, and derived indicative prices;
- defined some scenarios relating to potential shipper booking behaviour following the introduction of short term transmission capacity products; and
- combined the indicative prices and shipper behaviour scenarios to assess the potential impact of the proposed pricing methodology on tariff levels.

This document summarises BGN's analysis and sets out:

- the pricing principles adopted for short term tariffs;
- the key assumptions behind tariff setting;
- the methodologies for deriving short term tariffs
- the scenarios for shipper behaviour which have been considered;
- the results of the impact assessment process; and
- observations and issues on the proposed tariff methodology to be addressed during consultation

The CER has reviewed the document and has decided to publish it as a consultation paper to allow the market to offer its views on BGN's proposals.

## **2. BGN SHORT TERM TARIFF PRICING PRINCIPLES**

Regulation EC1775/2005 deals with the conditions for access to the natural gas transmission networks. The regulation states that tariffs, or the methodologies used to calculate them, shall:

- be transparent
- take account the need for system integrity and its improvement
- reflect the actual costs incurred (insofar as such costs correspond to those of an efficient and structurally comparable network operator and are transparent)
- include appropriate return on investment
- be applied in a non-discriminatory manner

Tariffs are also required to:

- facilitate efficient gas trade and competition
- avoid cross-subsidies between network users
- provide incentives for investment and maintaining or creating interoperability for transmission networks

Finally, tariffs for network access must not restrict market liquidity nor distort trade across borders of different transmission systems.

In accordance with the Regulation, tariffs (or at least the methodology used to calculate them) must be approved by the CER prior to their entry into force.

Based on the requirements of the Regulation, and the specific context of the Irish network, BGN have defined a set of pricing principles which will underpin the chosen short term tariff methodology and short term tariffs.

1. Short term tariffs should:
  - (a) take account of the need for system integrity, reflect the drivers of network costs, and therefore reflect the seasonal nature of capacity demand;
  - (b) incentivise efficient use of the network and hence increase gas use where appropriate (e.g. over summer);
  - (c) provide an incentive to book long term capacity, where users have long term capacity requirements; and
  - (d) be simple to understand, and be set via a transparent methodology.
2. The introduction of short term tariffs should result in minimal increase in the volatility of transmission tariffs overall.
3. Tariffs should allow for the full recovery of any historic under-recovery by BGN relative to allowed revenue. They should also provide for the full payback of any historic over-recovery.

### **3. BGN KEY ASSUMPTIONS**

In undertaking the tariff analysis, BGN are making a number of key assumptions. These include that:

- tariffs will be set for an annual, monthly and daily product;
- initial annual tariffs will be developed according to existing processes, followed by an iterative process to ensure that allowed revenue will be recovered across all products;
- short term tariffs will be derived from annual tariffs (e.g. monthly tariff set to x% of annual tariff);
- short term tariffs will be set for entry and exit – and may use different percentages;
- short term tariff percentages will be reviewed annually in the light of observed market behaviour;
- short term products will be available to all sectors on the 1<sup>st</sup> October 2007
- the NDM sector may avail of short term products but the 1 in 50 requirement will continue to apply
- short term tariffs will have the same commodity element as annual tariffs; and
- Shippers with existing annual capacity commitments will be required to honour them.

### **4. TARIFF METHODOLOGIES**

In this section BGN sets out two possible methodologies for defining:

- monthly percentages at exit;
- daily percentages at exit; and
- monthly and daily percentages at entry.

#### **4.1. Defining monthly percentages at exit**

Both of the methodologies for defining monthly percentages to apply at exit have three stages:

- derivation of the monthly profile;
- scaling the profile to achieve an appropriate overall level; and
- adjusting the summer percentages.

BGN describe each of the methodologies below and then present the resulting monthly percentages and compare them to a number of possible benchmarks.

#### 4.1.1. Methodology 1

##### *Derivation of the monthly profile*

The percentages applied to any month should, broadly speaking, reflect the probability of incremental demand for capacity in that month resulting in actual investment costs. By setting tariffs in this way, shippers will be sent price signals that reflect the potential costs which they are imposing on the system through their decision to flow gas at various times.

The key planning criteria for the network relate to the ability to meet system peak demand – hence, the probability of a system peak occurring in individual months could be used as a proxy for the probability of incremental demand in that month triggering investment. While not all investment will be driven by system peak – for example, some investments will be required to mitigate congestion at lower demand levels in specific areas – taking this into account explicitly in tariff design is typically viewed as complex and of secondary importance.

Therefore, BGN have analysed 3 years of historic onshore exit load curves to estimate the probability of a peak in gas demand occurring in any given month, and hence to estimate the likelihood of extra demand in that month requiring additional investment. This probability was measured by counting the number of the top 5-25 demand days occurring in each month – on the assumption that if a large number of top demand days occur in a month historically, they will be likely to occur in that month going forward, and hence additional demand in that month would be likely to create a requirement for investment. The results are shown in Figure 1.

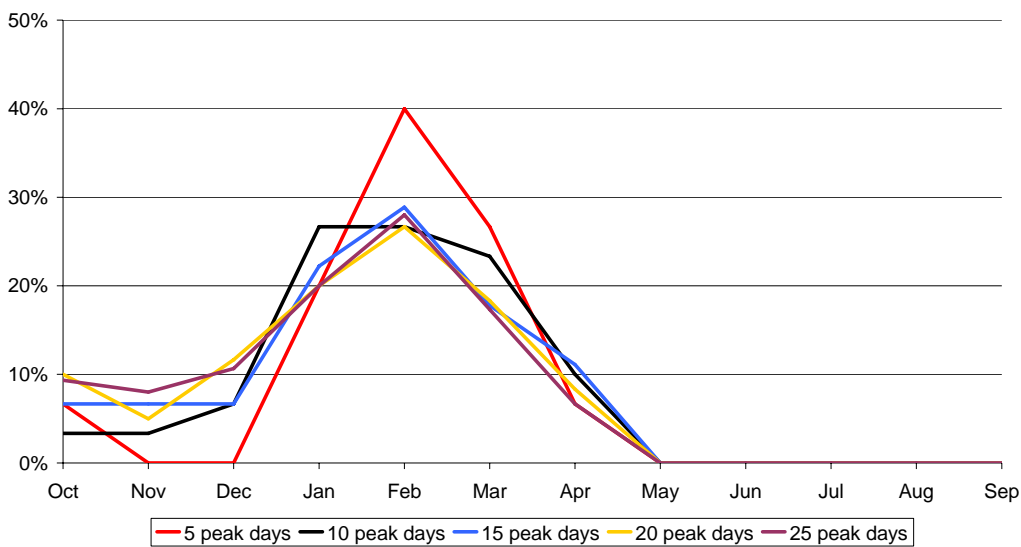


Figure 1: Probability analysis based on frequency of peak days in each month

These results indicate a low probability of peak days occurring in Q4, and a high probability in Q1, falling away to zero during Q2 and continuing at zero through Q3.

The curves generally get smoother as the number of peak days considered increases. If just one peak day were considered, there would only be 3 observations (one for each year of data) and hence the curve would not be smooth. With 25 peak days, there are 75 observations which generates a smoother probability curve.

The CER's Gas Capacity Statement also indicates that, while there may be spare summer capacity, winter capacity is expected to become tight in the next two years.

Taken together, these points provide support to the profile of percentages produced by the peak day probability analysis – i.e. high in winter months when the amount of spare capacity is lower and when there is likely to be a forthcoming requirement for new investment.

Since a single set of monthly percentages is required, a decision is needed as to which of the above probability curves to select. The curves differ significantly in smoothness – that is, some curves have significant step changes in percentages from month to month. Such step changes may distort consumption decisions, and since the results of the probability analysis inevitably have a degree of uncertainty associated with them (for a range of reasons it is not possible to carry out analysis which would indicate, with certainty, the probability of incremental demand resulting in new investment), such distortions could be in part arbitrary and therefore result in inefficient decisions by Shippers.

Therefore, BGN propose the 25 peak day curve on the basis that it provides a relatively smooth profile, avoiding such potential distortions

*Scaling the profile to achieve an appropriate sum of monthly percentages*

The sum of the monthly percentages derived from the probability analysis by definition equals 100%. If these percentages were used to derive monthly tariffs, an annual and monthly booking for the same profile would cost the same. This is not consistent with two of BGN's key pricing principles:

- **that tariffs should provide an incentive to book long term capacity, where users have long term capacity requirements** – consistency with this principle would require that the sum of monthly percentages be higher than 100%; and
- **that the introduction of short term tariffs should result in minimal increase in the volatility of transmission tariffs overall** – a significant shift towards short term bookings would increase the volatility of transporter cashflows and hence of transmission tariffs. Ensuring that the sum of monthly percentages is higher than 100% will mitigate the risk of this residual volatility.

BGN have therefore scaled up the overall level of percentages by multiplying each of the monthly percentages derived from the probability analysis by a constant factor<sup>1</sup>. To assess the appropriate overall level of monthly percentages (which effectively set the strength of the incentive for shippers to book annually and control the potential for tariff volatility) BGN have reviewed some international benchmarks. The results of this review are shown in Table1 below.

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<sup>1</sup> A multiplicative scaling is more appropriate than an additive approach. It leaves months where there is a low probability of a system peak with relatively lower tariffs, consistent with cost-reflectivity.

Table 1: International review of overall monthly percentage levels

Country	Sum of monthly percentages
Denmark	210%
France	250%
Netherlands (non-continuous capacity)	340%

Setting the overall level of tariffs at too high a level would reduce their usefulness to shippers. This has to be balanced against the risk (at least before the behaviour of the market is well understood) of tariff instability.

*Setting minimum summer tariffs*

With reference to international benchmarks and the pricing principles, BGN propose two further adjustments to the resulting scaled tariffs.

The monthly percentages resulting from the probability analysis during summer are all zero (recent history indicates there is no chance of a peak day during the months of May to September). However, consistent with the pricing principle that tariffs should provide an incentive to book long term capacity, where users have long term capacity requirements as well as the principle to incentivise efficient use of the network and increase gas use where appropriate e.g. summer months, BGN propose a floor be set for each of the monthly percentages at 8% (the level which is just below the price if the annual product were charged for equally in each month).

BGN then made a small number of additional adjustments to the profile to smooth monthly step changes. The total of the monthly percentages under Methodology 1 equals 289% (see table 2 below).

*4.1.2. Methodology 2*

The second methodology uses the same approach as the first to the derivation of the monthly profile. The key difference from the first methodology lies in the approach to scaling of this profile and the way in which the minimum summer tariffs are established.

Under methodology 1, following the scaling of all the monthly percentage profiles to a total of 210%, the monthly percentages for all of the summer months are increased to 8%. As a result, the sum of the final monthly percentages is higher than the 210% benchmark.

Under methodology 2, not all of the monthly percentage profiles are scaled – the scaling is only applied to those which are anyway above the summer floor of 8% (months October to April). These percentages are scaled such that their level is equal to the sum of the equivalent monthly percentages used by Denmark (170%). Following this scaling a floor level of 8% is applied for each month, and a number of small additional adjustments are made to smooth monthly step changes.

In contrast to methodology 1, the sum of the resulting monthly percentages is around the benchmark 210% level.

### 4.1.3. Indicative monthly percentages and comparison to benchmarks

The indicative monthly percentages resulting from the application of the methodologies described above are set out in Table 2 along with two potential benchmarks from Denmark and France.

Table 2: Comparison of monthly percentages

Month	BGN Methodology 1	BGN Methodology 2	Danish Monthly Tariffs	French Monthly Tariffs
October	20%	15%	10%	8.30%
November	25%	15%	15%	16.70%
December	35%	20%	30%	33.30%
January	50%	35%	35%	66.70%
February	50%	40%	35%	66.70%
March	35%	30%	30%	16.70%
April	20%	15%	15%	8.30%
May	15%	8%	8%	8.30%
June	8%	8%	8%	8.30%
July	8%	8%	8%	4.20%
August	8%	8%	8%	4.20%
September	15%	8%	8%	8.30%
Sum Over Year	289%	210%	210%	250%

This comparison reveals a number of things – both of BGN’s methodologies result in percentages:

- similar in profile to those applied in Denmark, though with a higher peak in January and February (months in which the probability analysis indicates the system peak is significantly more likely to occur); and
- that are less peaky than those applied in France.

The key difference between the two BGN methodologies relates solely to the overall level of tariffs – the first resulting in a higher level (289%) than the second (210%).

## 4.2. Defining daily percentages at exit

For daily percentages, there is less quantitative analysis to be performed in relation to the profile of tariffs – for example, there would be little point in setting profiles according to historic daily load patterns. The reason for this is that while seasonality will result in a similar pattern of consumption across the months from year to year, the same cannot be said about patterns of daily consumption. Therefore, while there is a purpose to analysing the monthly pattern of demand in years past, as it is likely that it will be a good proxy for the monthly pattern of consumption (and in particular, the monthly incidence of peak days) going forward, there is little point in analysing the pattern of daily demand. Whereas December 2006 should look similar to December 2007 in terms of consumption, the difference between December 13th 2006 and December 14th 2006 says little about the likely difference in consumption between December 13 and December 14 2007. BGN therefore believe it is appropriate to set daily tariffs to be constant within a month (this is also the approach used by other systems internationally).

The key parameter is therefore the overall level of daily tariffs each month. Since the monthly tariffs derived through the methodology described above embody the likelihood of incremental



demand in any month creating a potential need for new investment, there is a strong rationale for setting daily tariffs as a percentage of monthly tariffs. Doing so would ensure that the price signal in relation to the impact of consumption on investment feeds through to the daily tariff.

This is also the approach used in other systems. For example, in France and the Netherlands, the daily capacity price is set as a constant percentage of the monthly price.

In both of BGN's methodologies for monthly tariffs, the overall level of monthly percentages was set to provide an incentive to book long term to meet long term requirements. In the same way, the level of daily tariffs can be set to provide a similar incentive, such that if more than X days of capacity are required in a month, it is more economic to book the monthly product. A high X would make shippers more indifferent between daily and monthly bookings, and a low X will incentivise booking monthly.

In France, X is set at 20, and in the Netherlands it is set at 15. In Denmark, X varies by month. It *increases* in winter months, meaning that the incentive to book monthly is lower in winter and higher in summer. This is not consistent with BGN's desire to encourage summer throughput.

For both methodologies, consistent with the pricing principle of encouraging system throughput where appropriate, during the summer and shoulder months BGN propose to set X to 20. In winter (as defined in the Code), BGN propose to set X to 15.

#### **4.3. Defining percentages at entry**

As at exit, the percentages applied to derive monthly tariffs at entry should, broadly speaking, reflect the probability of incremental demand for capacity in each month resulting in actual investment costs.

The probability analysis described above was based on onshore exit load curves. A similar analysis was carried out for load curves comprising RoI, Isle of Man and Twynholme exit (i.e. in combination with shrinkage representing all entry to the BGN system). The results show little difference from the onshore exit analysis on a month by month basis – this is reasonably intuitive, as there is reason to believe that the probability of peak days occurring is similarly distributed across months in RoI and Northern Ireland / Isle of Man.

BGN also carried out a similar analysis for the profile of entry at Inch on the grounds that it is the entry point most likely to have a different profile. The scaling and smoothing steps described above were then applied to the resulting percentages.

While Inch analysis reveals a slightly different initial probability profile to the onshore network, after being scaled and smoothed, the final profile of percentages is relatively similar to those derived from the onshore analysis. Therefore, at least initially, BGN is proposing to adopt the same pattern of short term tariffs (both monthly and daily) for entry at Moffat and Inch as those for exit.

## 5. SCENARIOS FOR SHIPPER BEHAVIOUR

To assess the impact of the tariff methodologies, BGN have defined scenarios for the way in which Shippers react to the availability and pricing of the short term products.

These scenarios consider the way in which Shippers are likely to change capacity bookings to reflect the existence of short term products – the assumption being that the product availability should generally allow Shippers to reduce the margin of their capacity booking over expected demand.

It is important to consider only the extent of *incremental* reaction as a result of the short term product pricing (i.e. reaction over and above the uptake of the NDM secondary capacity transfer product). This will clearly depend to some extent on the relative pricing of the NDM secondary capacity and short term primary capacity products and the varying seasonal availability of the former.

BGN sets out below the detail of the scenarios adopted for changes to behaviour at exit and then at entry, and provides summary tables of the scenario assumptions.

### 5.1. Scenarios for behaviour at exit

For the purposes of carrying out the impact assessment of the short term tariffs, BGN are adopting three scenarios for behaviour at exit. In all three scenarios it is assumed that the NDM sector continue to meet their 1 in 50 booking requirement.

#### 5.1.1. Exit scenario 1: no change in margin or physical consumption

In the first exit scenario, BGN have assumed that shippers make no change in the volume of their capacity bookings, or their physical consumption.

The only change in behaviour is that they optimise their capacity bookings across the annual and short term products available, based on the relative prices.

#### 5.1.2. Exit scenario 2: reduction from historic capacity booking

In the second exit scenario, BGN have assumed that shippers make use of the fact that they can book short term products closer to the time of consumption (with greater certainty than using the current NDM secondary capacity transfer product) to reduce their level of capacity booking and bring it closer to their usage.

For DM and LDM non-power sector customers, primary capacity booked is currently lower than demand because they purchase secondary capacity from the NDM sector. For this sector, BGN assume that bookings reduce by 13%. Currently in 06/07 the DM/LDM sector bookings are roughly 13% less than their respective booking in gas year 2005/06. The rationale for this is that even if the short term product is more expensive than the NDM product, its existence may increase demand for the NDM product itself by providing a reliable “back-up”.

Power sector bookings (which are typically higher than actual demand) are assumed to reduce by 5%, subject to a margin of booking over usage of 2% being preserved on any given day.

### 5.1.3. Exit scenario 3: greater reduction from historic capacity booking

The third scenario is similar to the second scenario except for the DM and LDM non-power sector customers. For this sector, BGN assume that bookings reduce by 20%. The Power sector bookings are based on usage plus 5%.

Exit Scenario 2 represents conservative booking behaviour by shippers, and Exit Scenario 3 represents more commercially aggressive behaviour.

## 5.2. Scenarios for behaviour at entry

It is important to note that it is not possible to distinguish the bookings of individual market segments at entry. However BGN consider four scenarios at entry:

- **Entry scenario 1:** assume entry bookings at current levels;
- **Entry scenario 2:** assume that aggregate entry bookings are reduced by 5% from historic levels (subject to a margin of 2% over usage);
- **Entry scenario 3:** assume that aggregate entry bookings represent a 5% margin on actual usage; and
- **Entry scenario 4:** assume that aggregate entry bookings represent a 10% margin on actual usage

## 5.3. Summary of scenarios

The exit and entry scenarios used are summarised in Table 3 and Table 4 below.

Table 3: Summary of Exit Scenarios

	Exit scenarios		
	Exit scenario 1	Exit scenario 2	Exit scenario 3
<b>NDM</b>	Bookings as now (1/50)	Bookings as now (1/50)	Bookings as now (1/50)
<b>DM / LDM</b>	Bookings as now	Bookings down 13%	Bookings down 20%
<b>Power</b>	Bookings as now	Bookings down 5% (subject to margin of 2% over usage)	Usage + 5%

Table 4: Summary of Entry Scenarios

Entry Scenarios				
	Entry scenario 1	Entry scenario 2	Entry scenario 3	Entry scenario 4
<b>Inch bookings</b>	Bookings at current levels	Bookings down 5% (subject to margin of 2% over usage)	Usage + 5%	Usage + 10%
<b>Moffat bookings</b>	Bookings at current levels	Bookings down 5% (subject to margin of 2% over usage)	Usage + 5%	Usage + 10%

## 6. IMPACT ASSESSMENT

In this section, BGN sets out the approach used to undertake the tariff impact assessment and then sets out the detailed results.

### 6.1. Impact assessment approach

Having defined a set of monthly and daily tariff percentages and a set of scenarios for Shipper behaviour, BGN have modelled the volumes of each product which Shippers would have booked, based on the 2005/6 load profiles<sup>2</sup> had Shippers had access to short term products. Therefore, while the results of this analysis are reasonably indicative, there is clearly a range of uncertainty related to the actual outturn results.

For each scenario of shipper behaviour, BGN used an optimisation package to estimate the lowest cost way in which Shippers in each market segment could have met the assumed booking requirements through the year<sup>3</sup> given the proposed short term product prices for each methodology. The optimisation was conducted at the market segment level – no optimisation of individual shipper portfolios was undertaken. It was assumed that purchases of short term capacity on the secondary market would remain at a level similar to 2005/06 and takes into account some current 06/07 trends. If the demand for this product increases, it would tend to reduce the take-up of the short term products. Finally, in order to reflect the fact that, in any given year, there will be existing annual contracts struck from the previous year which end during the year, BGN have assumed that the profile (though not the level) of annual contracts struck during 2004/5 persisted into 2005/6.

From this optimisation, BGN derived estimates of the resulting tariff revenue under each scenario, and the volumes of each product which would be booked (assuming that there is no change in shrinkage related capacity bookings).

The analysis that we have carried out is based on data from gas year 05/06. The results only represent estimates of the future because future demand is unlikely to be exactly the same as 2005/06 demand and Shippers will not have perfect foresight when booking capacity.

### 6.2. Impact assessment results – exit

The revenue impact of the two methodologies at exit is shown in Table 5 and Table 6. The tables show the breakdown of revenue across the scenarios *before any tariff increase* and then separately the tariff increase which would be required to ensure recovery of BGN's allowed revenue.

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<sup>2</sup> BGN made an adjustment to the 2005/6 bookings and usage profiles in order to make them more representative of future years.

<sup>3</sup> Shippers can book annual capacity in any month through the year, and in doing so create some monthly profile to total bookings. In doing so, they will create constraints as to the monthly pattern of annual bookings available to them in the following year. In order to assess whether optimising over a single year was an appropriate approach, BGN also performed some optimisations over a two year horizon (assuming, for simplicity, that the pattern of load remained constant). While these indicated a slightly different profile of rolling annual bookings, they did not result in significantly different tariff revenue from each market segment.

Table 5: Estimated exit revenue before tariff increase and implied tariff increase – Methodology 1

€m	Methodology 1		
	Exit Scenario 1	Exit Scenario 2	Exit Scenario 3
<b>NDM</b>	Bookings as now (1/50)	Bookings as now (1/50)	Bookings as now (1/50)
<b>DM / LDM</b>	Bookings as now	Bookings down 13%	Bookings down 20%
<b>Power</b>	Bookings as now	Bookings down 5% (subject to margin of 2% over usage)	Usage + 5%
NDM	43.59	43.59	43.59
DM/LDM	7.91	6.88	6.33
Power	51.62	49.45	46.01
Shrinkage	2.50	2.50	2.50
<b>Total</b>	<b>105.6</b>	<b>102.4</b>	<b>98.4</b>
<b>Implied tariff increase</b>	<b>0.0%</b>	<b>3.1%</b>	<b>7.3%</b>

Table 6: Estimated exit revenue before tariff increase and implied tariff increase – Methodology 2

€m	Methodology 2		
	Exit Scenario 1	Exit Scenario 2	Exit Scenario 3
<b>NDM</b>	Bookings as now (1/50)	Bookings as now (1/50)	Bookings as now (1/50)
<b>DM / LDM</b>	Bookings as now	Bookings down 13%	Bookings down 20%
<b>Power</b>	Bookings as now	Bookings down 5% (subject to margin of 2% over usage)	Usage + 5%
NDM	43.58	43.58	43.58
DM/LDM	7.91	6.88	6.33
Power	51.62	49.36	45.27
Shrinkage	2.50	2.50	2.50
<b>Total</b>	<b>105.6</b>	<b>102.3</b>	<b>97.7</b>
<b>Implied tariff increase</b>	<b>0.0%</b>	<b>3.2%</b>	<b>8.1%</b>

The key driver of changes in revenue levels relate to the power segment and the DM/LDM sector.

In terms of power sector behaviour, in scenario 2, the power sector is assumed to maintain its historic profile of bookings, albeit reduced in absolute level by 5%. The impact of this behaviour on power sector revenues is relatively low – around €m.

In contrast, in scenario 3 power sector bookings are assumed to follow usage – here, the revenue impact is much more significant – between €m and €m.

In terms of the difference in revenue impact between the two methodologies, as expected the lower set of monthly percentages produced by methodology 2 results in a greater reduction in

revenue (and therefore a greater implied tariff increase). However, the overall magnitude of the impact from the lower percentages is relatively small.

The source of the revenue reduction shown in Table 5 and Table 6 is not primarily driven by the use of short term products but more the reduced level of *annual* bookings relative to historic levels. The availability of short term products means that Shippers could make annual bookings at a level more closely fitted to actual usage because the short term products provide a “fall back” if peaks in production are required.

**6.3. Impact assessment results – entry**

The estimated entry revenue impact of the two methodologies is shown in Table 9 and Table 10. Again, the revenue before any increase in tariffs is shown, along with the implied increase in tariffs required to recovery BGN’s allowed revenue.

Table 7: Estimated entry revenue and tariff impact – methodology 1  
 Note: For the purposes of this analysis, we take €1.9m as the required entry capacity revenue for methodology 1.

Methodology 1				
€m	Entry Scenario 1	Entry Scenario 2	Entry Scenario 3	Entry Scenario 4
Inch	3.2	3.1	2.8	2.9
Moffat	58.7	55.9	47.9	50.2
<b>Total revenue</b>	<b>61.91</b>	<b>58.95</b>	<b>50.74</b>	<b>53.17</b>
<b>Implied tariff increase</b>	<b>0.0%</b>	<b>5.0%</b>	<b>22.0%</b>	<b>16.4%</b>

Table 8: Estimated entry revenue and tariff impact – methodology 2  
 Note: For the purposes of this analysis, we take €1.8m as the required entry capacity revenue for methodology 2. The difference in total revenue is due to the difference in summer multipliers between methodology 1 and 2.

Methodology 2				
€m	Entry Scenario 1	Entry Scenario 2	Entry Scenario 3	Entry Scenario 4
Inch	3.2	3.1	2.7	2.9
Moffat	58.6	55.8	47.1	49.4
<b>Total revenue</b>	<b>61.83</b>	<b>58.85</b>	<b>49.85</b>	<b>52.22</b>
<b>Implied tariff increase</b>	<b>0.0%</b>	<b>5.1%</b>	<b>24.0%</b>	<b>18.4%</b>

The impact at Moffat clearly dominates in revenue terms. The range of potential outcomes is significant – if shippers’ bookings more closely match usage than has been the case historically, there could be a substantial decline in revenues. In contrast to the situation at exit, because entry and exit products are decoupled, it is not possible to assess the likely impact of increases in entry tariffs on individual market sectors.

## 6.4. Summary and Impact on Market Segments

### 6.4.1. Exit

The likely impact of short term capacity products on tariff revenues has been considered in section 6.2. This section looks at the impact across market segments of tariffs being adjusted upwards to ensure that allowed revenue is recovered. The revenues for each sector have been adjusted to take account of the implied tariff increase and the resultant revenues for each market segment have been compared to the original revenues under scenario 1.

Table 9: Summary of results of scenarios at exit

Note: the impact figures do not sum to zero as the effect on shrinkage capacity costs has not been considered

		<b>Exit Scenario 2</b>	<b>Exit Scenario 3</b>
	<b>NDM</b>	Bookings as now (1/50)	Bookings as now (1/50)
	<b>DM/LDM</b>	Bookings down 13%	Bookings down 20%
	<b>Power</b>	Bookings down 5% (subject to margin of 2% over usage)	Usage + 5%
<b>Method 1</b>	<b>Revenue reduction (€m)</b>	<b>-3.2</b>	<b>-7.2</b>
	<b>Implied tariff increase</b>	<b>3.1%</b>	<b>7.3%</b>
	Impact on NDM (€m)	1.36	3.19
	Impact on DM/LDM (€m)	-0.81	-1.12
	Impact on power (€m)	-0.63	-2.25
<b>Method 2</b>	<b>Revenue reduction (€m)</b>	<b>-3.3</b>	<b>-7.9</b>
	<b>Implied tariff increase</b>	<b>3.2%</b>	<b>8.1%</b>
	Impact on NDM (€m)	1.40	3.54
	Impact on DM/LDM (€m)	-0.81	-1.07
	Impact on power (€m)	-0.68	-2.68

In summary, the results of the analysis for these exit scenarios suggest that:

- under both methodologies, the majority of bookings continue to be via the annual product,
- as a result of shippers reducing and reprofiling their annual bookings, there is likely to be a material tariff impact due to the introduction of short term products. The difference in revenue impact between the two methodologies presented is likely to be relatively small – therefore, it is unlikely that the impact can be readily addressed via short term product prices; and
- revenue received from the NDM sector increases and revenue from the DM/LDM and Power sectors decreases

### 6.4.2. Entry

At entry, it is not possible to assess the likely impact of short term products on market segments. However, in terms of overall impact, it is clear that the most credible outcome is likely to lie somewhere between scenario 2 and scenario 4.

Table 10: Summary of results of credible scenarios at entry

		<b>Entry Scenario 2</b>	<b>Entry Scenario 4</b>
		Bookings down 5% (subject to margin of 2% over usage)	Usage + 10%
<b>Method 1</b>	Revenue reduction from Entry Scenario 1 (€m)	-3.07	-8.74
	Implied tariff increase	5.2%	16.4%
<b>Method 2</b>	Revenue reduction from Entry Scenario 1 (€m)	-3.08	-9.53
	Implied tariff increase	5.2%	18.2%

The analysis of these entry scenarios suggests that there is likely to be a material tariff impact from the introduction of short term products at entry. Depending on how commercially aggressive booking behaviour becomes, the analysis suggests a potential revenue impact between circa €3m and circa €10m, or between 5% and 18%.

## 7. OBSERVATIONS AND ISSUES FOR CONSULTATION

### 7.1. Assessment of methodologies against pricing principles

In section 2, BGN set out a number of pricing principles for short term tariffs. BGN believe that both the methodologies set out in this document are consistent with these principles.

The principles set out were that short term tariffs should:

- (a) take account of the need for system integrity, reflect the drivers of network costs, and therefore reflect the seasonal nature of capacity demand;
- (b) incentivise efficient use of the network and hence increase gas use where appropriate (e.g. over summer);
- (c) provide an incentive to book long term capacity, where users have long term capacity requirements; and
- (d) be simple to understand, and be set via a transparent methodology.

Both methodologies presented derive short term tariff percentages from the probability of system peak days. They are therefore grounded in the need for system integrity, and the need for prices to reflect the drivers of network costs. The results should therefore incentivise efficient use of the network.

Similarly, adjusting percentages to provide an incentive to book long term capacity is another key step in the methodology proposal – and the results of the modelling indicate that shippers could be expected to book long term products to satisfy long term capacity demands.

A key pricing principle was that the introduction of short term tariffs should result in minimal increase in the volatility of transmission tariffs overall. By creating a strong incentive to book long term capacity, the methodologies attempt to reduce the likely level of ongoing tariff volatility.



Finally the principle was that tariffs should allow for the full recovery of any historic under-recovery relative to allowed revenue (and provide for the full payback of any historic over-recovery). The modelling results show that if tariffs remain unchanged there will be some reduction in tariff revenue as a result of the implementation of short term tariffs – they therefore provide a basis for understanding the need for adjustments to tariff levels to ensure revenue recovery.

## 7.2. Addressing additional tariff volatility

The impact of the introduction of short term tariffs on tariff volatility can be broken down into two parts – the one-off impact as a result of the introduction of the products, and the ongoing impact as a result of greater uncertainty over booking levels and consequently revenue recovery.

The modelling suggests that the introduction of the products is likely to create a significant step change in tariff levels. On an ongoing basis, while the results of the modelling exercise show relatively low utilisation of short term products, there remains significant uncertainty as to the way shippers will behave in practice – and therefore uncertainty as to the amount of ongoing volatility which the products will create.

BGN has proposed that the K-factor mechanisms in the revenue control formulae be amended to allow over- or under-recoveries to be addressed over a number of years. This will go some way to addressing tariff volatility (and in particular could be useful in managing the one-off step change as a result of the introduction of the products). However, BGN believe that there would be merit in providing for a further mechanism to address volatility *during* the tariff year – in order that the problem is addressed once it is observed, rather than waiting for the start of the next gas year (when the K-factor calculation is undertaken).

Such a mechanism might allow a review of actual tariff revenue against forecast at key points in the year – for example, once it is clear whether the outturn winter is warm, average or cold, and once the booking levels of the various capacity products have been observed. If actual tariff revenue were significantly above or below forecast, the exit or entry commodity charge could be reduced or increased for the remainder of the year.

Such a within year mechanism would reduce tariff volatility in the long term and would be applied no more than twice within any one year.

## 7.3. Issues for Comment from Consultation Process

The analysis presented in this document raises a number of important issues for Industry Consultation. In particular industry views are sought on the following areas:

- **the appropriateness of the basic approach to developing methodologies:** is the basic approach underlying both of the methodologies (i.e. for monthly prices, derivation of a peak day probability, scaling and smoothing, and for daily prices, using a fixed percentage of monthly prices) appropriate?
- **the choice of methodology and the impact on tariffs:** which proposed methodology should be applied? Is a higher level of overall tariff percentages appropriate? Are the daily tariff percentages at an appropriate level?
- **the validity of scenarios:** are the scenarios used in the analysis reasonable, and in particular what are the views of Shippers on likely market behaviour with the introduction of short term capacity products?

- **addressing potential tariff volatility:** how should ongoing tariff volatility be addressed? Particularly in relation to ongoing volatility, would it be appropriate to provide BGN with a further mechanism such as a within year K-factor to address tariff volatility, over and above multi-year application of K-factors?