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Mr Andrew Pester
Senior Economist
Ofgem
9 Millbank
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31 January 2012

Dear Andrew,

RE: Gas Security of Supply Significant Code Review – Draft Policy Decision

We support Ofgem's review to ensure that market arrangements function efficiently in an emergency. As supply patterns change, with a shift towards greater import dependence, it is right to consider the extent to which the arrangements will deliver secure gas supplies to customers, both in an emergency and more generally.

Ofgem is correct to identify that emergency cash-out arrangements are in need of reform. There is currently a danger that cash-out prices would be frozen at too low a level in an emergency, with the price of gas in the GB market therefore not reflecting the value customers attach to it, with the result that insufficient gas is attracted to meet demand.

However, Ofgem's proposals go far beyond what is required to address this situation. By taking as a base assumption that customers should in principle receive financially firm supply in all situations, regardless, for instance, of acts of terrorism or other uncontrollable events, it proposes to introduce a fundamental mismatch between the security of gas shippers can buy and the security they are expected to provide to their customers.

The financial impact that this will have in an emergency is potentially huge. Where a DM customer is, for instance, involuntarily interrupted for 1,000,000 therms/d for 14 days, short shippers will be exposed through their cash-out liabilities to paying £20/therm for the gas not made available and the DM customer concerned will be entitled to £280m of compensation, funded by short shipper payments made through cash-out. This contrasts with the £700 to which that same customer will be entitled if their gas supply is interrupted due to a network transportation failure, rather than a commodity shortage, over the same period of time. Moreover whereas the transporter's liability is capped at £1000, the shipper's liability is unlimited until reconnection.

Exposing shippers to these risks is likely to lead to costly mitigating actions and perverse incentives on shippers, the effect of which will be to damage, rather improve, supply security. Examples include:

- A disincentive to contract bilaterally for physical gas. Bilateral contracts invariably contain FM relief for the seller in a range of circumstances, and potentially leave the

buyer short. Shippers may in future be reluctant to accept this "short" risk given the greater exposure now associated with these contracts (emergency scenarios are likely to include events where failure of infrastructure leads to FM being called). Yet we believe it is precisely this type of contract which GB needs in order to safeguard supply security.

- As an alternative, shippers may turn more towards the traded NBP market, where all sales are financially firm. Providing that a shipper contracts for enough "title" gas at NBP to cover its customers' needs, it cannot be short even in an emergency.
- However, this pushes the "short" risk onto NBP sellers. Upstream physical gas producers bringing gas to GB may therefore demand more for their gas in order to price in the "short" risk, pushing up prices for delivery to GB. Alternative they may simply sell their gas to more attractive destinations where they are not being asked to take on these risks.
- Given the huge liabilities shippers will face in an emergency, shippers have incentives to create "shell" companies, which if bankrupted in an emergency would be designed to enable them to escape their full cash-out liabilities.
- Those shippers who do take reasonable steps to secure their customers' needs, and who may even be "long" for the duration of a gas emergency, still face exposure as they will be required to pick up the liabilities of any bankrupted shippers. This in turn undermines their incentives to take actions to strengthen the security of their own customer supplies.

Ofgem's impact assessment fails to address any of these concerns and we do not think Ofgem should rely on it as a basis to implement its proposals. The modelling includes a series of extremely pessimistic assumptions which do not reflect the reality of the gas market. Moreover, it does not adequately explore effects on competition, market liquidity and prices.

Ofgem's proposals therefore need to be substantially modified if Centrica is to support them. In particular:

- We believe there should be Force Majeure (FM) relief from cash-out in circumstances beyond a reasonable and prudent shipper's control. There are many ways in which the test to trigger this relief could be defined. For example an appropriate definition could be an event(s) which resulted in a 50mcm/d reduction in flow capability upstream of a National Grid Aggregate System Entry Point (ASEP), compared to the average of the previous five days.
- Failing this, the compensation duration for daily metered customers should be limited to one day, as for NDM customers.

We also propose that Ofgem should make a number of other changes to the reforms to improve their effectiveness:

- The approach to the setting of Value of Lost Load (VoLL) compensation should be rethought. £20/therm is too high a value for vast majority of DM customers. The cost of applying a single number in this way will be market inefficiency through its effect in distorting decisions at the margin that determine whether individual customers will remain supplied or not.
- Cash-out prices should be set to remain dynamic later into a gas deficit emergency, with the marginal price being set by National Grid's balancing actions. These will include buying gas on the market (as now) and demand side reduction actions as set out below.
- National Grid should facilitate a more transparent market for demand side interruption with daily metered customers being free to bid in an option price for being interruptible and an exercise price for being interrupted. We see this as a simple extension of the current Operating Margins concept.

- At a defined point prior to an emergency being declared (precise trigger to be agreed) National Grid would be able to access these pre-contracted interruption services. We anticipate that this would be done in price order, lowest first;
- The unit price of exercising an interruption contract (e.g. p/therm) would be fed into the daily cash-out price to be paid by short shippers;
- We do not anticipate a role for administered cash-out prices. However if this element was retained shippers should benefit from force majeure relief from that administered price in circumstances beyond their reasonable control.

Should Ofgem intend to proceed on its proposed timetable, we believe these changes must be made for Ofgem to be confident it is improving the market arrangements with these measures. It cannot be confident that this is the case at present. Indeed we believe that unchanged these measures will damage UK supply security. A possible approach would be to include the cash-out work in its wider review of security of supply this year. We look forward to participating in this work.

Yours sincerely

Philip Davies
Director, Regulatory Affairs

Executive Summary

- Centrica broadly welcomes the current focus on gas security of supply. However, we consider that Ofgem has failed to establish satisfactorily that current supply security standards are inadequate, nor has an appropriate security standard been defined. We also believe the proposed reforms contain significant scope for unintended consequences. For these reasons we are unable to support the package of reforms set out by Ofgem, without significant modification.

- We believe that effective measures can be taken to deliver incremental improvements to supply security, at acceptable cost. We would particularly support a sharpening of emergency balancing incentives through a more dynamic, market based cash-out mechanism which operates later into a gas deficit emergency. We believe this would rectify the current risk whereby cash-out prices for short shippers may be frozen at too low a level, thereby blunting balancing incentives.

- Ofgem's current proposals would actually divert attention away from supply security and would instead concentrate attention on actions designed to avoid excessive penalties for failure to supply. They will serve to reduce the attractiveness of GB internationally as a destination for gas exporters and increase the risks of physical gas procurement by companies such as ours, thus making it less likely that customers will benefit in the future from the long term supply arrangements that the government believes are essential for supply security.

- Shippers will be incentivised to seek financially firm supplies on NBP traded markets which do not carry the buyer non-delivery risk inherent in physical supplies. It can be expected that NBP gas prices will increase as sellers factor in increased cash-out risk. The consequential impacts on NBP liquidity and bilateral contracting incentives have not been properly modelled or considered in Ofgem's analysis.

- Gas shipping businesses may also be encouraged to be financially ringfenced to produce easily collapsible entities, designed to limit company liabilities by being easily bankruptible in the event of extreme cash-out. Another possibility is that shippers/suppliers only offer customers supply contracts which are deemed to be interrupted at the point a gas deficit emergency is declared thereby completely avoiding the penal cash-out and associated compensation regime.

- Some mitigation for these unintended consequences may be found by establishing a shipper force majeure (FM) clause defining circumstances beyond a shipper's control following which normal cash-out arrangements with no customer compensation would apply. We believe a workable definition is both possible and essential given the potential scale of cash-out liabilities faced by shippers under these proposals, and the very real risk of multiple shipper bankruptcies stemming directly from those liabilities on short shippers and also from socialised costs following other shipper bankruptcies.

- Moving on to the details of the proposals, we have concerns over the proposed level at which the cash-out floor price has been set. London Economics' (LE's) analysis of VoLL does not support a universal figure of £20/therm for either daily metered or domestic customers. On the basis of LE's own figures, the cash-out floor price should commence at a much lower figure and eventually rise to, at most, £10/therm. We believe the higher proposed level may constitute a contravention of EU Regulation 994/2010, article 5, which seeks to ensure that preventative actions plans are *based primarily on market measures....and not put an undue burden on natural gas undertakings nor negatively impact on the functioning of the internal gas market.*

- Collecting excessive revenues through cash-out to compensate (and in most cases over compensate) customers will unduly increase shippers' risks from having a short system balance position in an emergency. Offering excessive compensation will also erode rather than strengthen incentives on customers to contract for interruption services. It establishes an unrealistic expectation of the value a shipper might place on interruptible load and hence the price they are prepared to pay through discounted tariffs.

- Given the scale of the liabilities being created, we believe there is justification for limiting DM compensation, and the associated cash-out liability, to one day - in line with the arrangements for network-isolated customers.

- We think there is merit in considering a role for National Grid in facilitating a more transparent market in demand side interruption, with a tender process open for customers to bid in – contrary to Ofgem's IA view - both an option and an exercise price. The cost of exercising these options should be reflected alongside National Grid's market based gas buying actions in real time cash-out in an emergency. We see this as an extension to the current Operating Margins process, successfully championed by Ofgem. This would provide transparency around physical gas volumes and prices with minimal scope for unintended consequences, and would offer the most straightforward supply security enhancement.

- There are notable flaws in both the modelling techniques and the assumptions used to underpin Ofgem's analysis and decision making. The impacts of these are to understate the current supply security standards, and to overstate the benefits of the proposed reforms.

- We do not accept that a simple storage obligation as modelled, i.e. a limit on the rate at which gas may be drawn down from existing storage, could in reality deliver the degree of benefit claimed for it. A review of storage withdrawals over recent winters demonstrates that even at the 2030 obligated level the effect on market based withdrawals would be minimal. It may also result in unnecessary DM interruption in circumstances where gas is "shut-in" early on in a winter.

- There are likely to be many costs associated with implementing the complex processes and systems necessary to manage the payment of customer compensation, with no certainty that they will ever be utilised. Again we do not believe that these costs have been fully considered in the impact assessment.

- We are concerned that many of the further interventions set out within Ofgem's consultation, especially "strategic" storage or specific supplier/shipper obligations, would be ineffective or carry extensive other unintended consequences. As structured, the proposals will do nothing to incentivise new investment to increase GB supply security. Real improvements to GB gas supply security can potentially be achieved by more investment in <u>new</u> gas storage, but market signals may be distorted and do not currently support the business case. Work on further interventions should therefore consider ways in which new storage build might be better incentivised in a manner consistent with a well functioning wholesale gas market.

- In conclusion, we believe there is much still to do to develop Ofgem's proposed cash-out reforms. We believe that the best course of action would be to undertake a holistic review of all possible reform options, including further interventions, rather than press ahead with piecemeal reforms, using cash-out as a starting point.

1. Centrica response to Ofgem's SCR Proposals

1.1 Background

This response is provided by the Centrica Group of companies excluding Centrica Storage Limited. We do not regard this response as being commercially confidential and are happy for it to be published in the Ofgem library in its entirety.

Centrica takes its gas supply obligations with the utmost seriousness. We have repeatedly demonstrated this by utilising innovative technology to exploit remaining North Sea resources, as well as being at the forefront of efforts to attract new sources of pipeline gas and LNG to GB in order to provide certainty that gas will be available when needed. These actions benefit not just customers of British Gas, but all GB gas consumers who ultimately benefit from greater supply security and lower prices as a result.

To help inform this response we have sought support from Pöyry Management Consulting to provide an independent assessment of the Gas SCR and in particular utilise its expertise in gas modelling and gas security of supply. Pöyry previously undertook three very detailed security of supply studies for DECC in 2010. These included detailed considerations of the risks associated with European pipeline supplies, the LNG and global gas market, and whether storage and demand side response could improve the GB gas market security of supply position.

1.2 Supply Security Standards

GB has never experienced a gas deficit emergency i.e. commodity shortage. Supply patterns are changing, with a shift towards greater import dependence, and we understand that this brings new challenges. It is therefore right to consider the risks that these changing supply patterns might present to supply security and we broadly welcome the current focus upon gas security of supply. We have played a full part in discussions with Ofgem and government departments in order to provide evidence and ideas to shape potential market reforms.

Natural gas is a finite commodity, with GB increasingly competing for supplies in a global market. There can, therefore, never be any absolute guarantees that firm gas supplies will be available to all customers at all times. Price is also a key consideration when establishing a desired level of supply security.

It is frustrating that throughout this SCR process Ofgem has failed to establish satisfactorily that current supply security standards particularly for NDM customers are inadequate, nor has an appropriate security standard been defined. Rather, a value of £20/therm (itself ill-supported by the underlying LE analysis) is proposed as a proxy for the desired level of supply security. This makes it extremely difficult to assess transparently and objectively future security standards, and the costs and benefits of reforms.

1.3 Assessment of Current Standards

Modelling on behalf of Ofgem suggests the current supply security standard is 1:16 years for firm DM customers, and 1:122 years for NDM customers. We have identified limitations in the modelling that suggest these conclusions are not robust. We also question the validity of a number of assumptions used e.g. as regards outage rates, with many appearing to be unsupported by either historical or sensible future expectations.

Assumptions used differ markedly from those used by Pöyry when it undertook detailed supply security studies for DECC in 2009-10, following which it concluded that there was limited cause for concern. It is unclear why such different assumptions have been taken in this case; however the effects would appear to be to strengthen the case to take action, and heighten the stated benefits of proposed actions.

These concerns are sufficient to raise doubts about whether Ofgem has delivered quantitative analysis of sufficient accuracy and robustness as recommended in the Competition Commission ruling on the UNC Modification 0116 appeal into proposed NTS Exit reforms.

1.4 Concerns with Assumptions and Modelling Techniques

1.4.1 Assumptions

We have serious concerns over the validity of a number of assumptions used. One example is the assumptions used for GB import infrastructure reliability. These are reported in a table circulated by Ofgem on 20 January 2012 following a request from us to produce this information, and appear to severely understate reliability, as set out below:

- For BBL it is assumed that there is a 37% chance of an unplanned outage in any year, which will last for an average of 10 days and will remove 70% of BBL's import capacity. By contrast, BBL report actual outages of just 5 hours for the last three years as shown in the following table:

Year	Hours of unplanned outage	Number of outages
2009	2	1
2010	3	1
2011	0	0

- The same reliability assumptions are used for IUK import capacity, but IUK report a total of only 13 hours of import constraints in the last 7 years, all associated with the "one-off" commissioning of new compression equipment at Zeebrugge during 2005-06. These are shown in the table below:

Year	Hours of unplanned outage	Number of outages
2005	10	5
2006	3	3
2007	0	0
2008	0	0
2009	0	0
2010	0	0
2011	0	0

- LNG regasification capacity has been modelled as one block, rather than separate import terminals, with assumptions of a 37% chance of an unplanned outage in any year, which will last for an average of 10 days and will remove 30% of LNG import capacity. Evidence shows that since 2008 when Centrica became involved as a capacity holder at Isle of Grain, there has been just one unplanned outage which lasted one day and had no effect on import/send out capability. We also understand that the assumptions used are similarly unrepresentative of Milford Haven LNG reliability.

We believe that past reliability is a good indicator of future infrastructure reliability on the reasonable assumption that operators are prudent with their maintenance and replacement schedules.

Examples of our other concerns include:

- In several important respects (including gas demand assumptions and parameters), the reported basis for the Redpoint modelling is not sufficiently transparent.

- We have investigated the assumptions relating to Continental European price shocks and gas quality constraints on IUK imports, as both seem very high. Redpoint estimates that the frequency of these happening is one in every 2 years and 8 months in each case. The impact of this a significant reduction in modelled peak gas supplies through IUK, in particular, and in BBL from 2016.

- Continental European price shocks of the variety modelled (i.e. a sharp rise in the German Average Import Price relative to NBP) are in fact quite rare – e.g. winter 2008/9. This effect may have been confused with a fall in NBP relative to GAIP **when UK markets are well supplied** – and this is clearly not a concern in supply security terms.

- There have been no gas quality interruptions to IUK imports. It is not credible to assume genuine gas quality constraints would arise and remain in place until 2030 without the industry putting in place alternative and relatively low cost solutions. We also that Fluxys is now proposing action to provide enhanced gas treatment at Zeebrugge, and that this does not appear to be reflected in the modelling.

- The modelling of LNG supplies is not realistic. On the one hand, LNG in tank at the regasification/import terminals is ignored, when in fact it could provide some "fast-response" supply. On the other hand, it is assumed that LNG supplies can respond to price signals within 7 days - which is generally over-optimistic – and as we understand it half the model runs assume that LNG will be available to the UK at US Henry Hub prices.

- BBL – restricting the maximum capacity to 8bcm until 2016 can't be justified on historical flows, where the flow rates for the winters of 2007 to 2010 have been nearer to 11-12bcm.

- The modelling takes no account of back-up oil facilities at some gas-fired power stations (e.g. oil tankage at our Langage CCGT).

1.4.2 Modelling

Most of our modelling concerns relate to the stochastic assumptions and probability distributions used. In general the stochastic methodology is a well tried and tested approach; however, the model used by Redpoint does have some limitations. In particular it doesn't use the widely used and accepted Gumbel-Jenkinson distribution, also known as the extreme values distribution. This method is used by National Grid Gas in its network and demand planning and was also used by Pöyry in its analysis for DECC in the 2010 studies. This technique is better suited to modelling extremes than the Poisson distribution used by Redpoint.

We also have a significant concern with how the modelling has been implemented. When checking the Poisson frequency distribution, lognormal duration distribution and multiplicative factor used in the continental price shock analysis, we found that 1500 simulations were not sufficient to reach convergence. Similar concerns arise with the

modelling of infrastructure outages. If the Monte Carlo analysis does not converge, then the results cannot be relied upon as robust and the pattern of "errors" (between the reported result and the "true" convergent one) are most unlikely to be consistent. Should this be the case, then this introduces significant uncertainty and undermines the confidence that can be placed in the reported unserved energy probabilities.

Therefore, both the extremely pessimistic nature of the assumptions used, and the way the model works, results in the effects becoming cumulatively penal. We have, for example, looked at the five factors that influence IUK flows, these being continental price shock, gas quality, infrastructure outages, price differential flows and a capacity limiting factor included in the original report to see if we can determine how much this facility actually contributes to GB supply. We have made an assumption that GB prices remain at the historical difference to GAIP as the Redpoint model produces its own NBP prices. The end result is that IUK is hardly used at all even when the price difference should show flows into GB.

This highlights very important limitations with the approach taken and tends to cast doubts over the robustness of the case for reform. Overall, therefore, we believe that in order to be credible, the Redpoint modelling must be re-run addressing these identified deficiencies, and the results made public.

1.5 Appropriateness of Current Standards

The DECC risk assessment[1] in 2011 leaves no doubt that current commodity security standards for GB comfortably exceeds the requirements of EU Gas Security of Supply Regulation (Regulation (EU) No 994/2010)[2] particularly as the undiversified rather than diversified peak day demand has been used in that assessment.

We were most surprised to see that the Ofgem Impact Assessment makes little or no reference to the operational supply security standards for retail gas customers in GB which are currently set out in Gas Transporters Licences and incentivised through UNC arrangements. These are generally **higher** than the minimum provided for in the EU Regulation and refer to the 1-in-20 year peak day demand together with a statistical 1-in-50 year severe winter. They are also the legal basis for the UNC cash-out regime – since NGG has an obligation to ensure that incentives on shippers are sufficient for their achievement. As far as we are aware, there has been no suggestion – let alone supporting evidence – to the effect that these standards are no longer appropriate or sufficient.

Consideration must also be given to the onshore gas transportation network. Gas transporters have a licence obligation to design and build a network capable of satisfying gas demand likely to be seen on the peak demand day in 20 years. Therefore, while Ofgem believe NDM customers currently face a 1:122 year commodity interruption risk (and apparently see a benefit in improving this to 1:182 years and even 1:2000 years), the reality

[1] http://www.decc.gov.uk/en/content/cms/meeting_energy/en_security/eu_sec_reg/eu_sec_reg.aspx

[2] The EU Gas Security of Supply Regulation (Regulation (EU) No 994/2010) stated that Member States ensure gas supply to the protected customers (this will include very few daily metered customers, with the possible exception of hospitals) of the Member State in the following cases:

- extreme temperatures during a 7-day peak period occurring with a statistical probability of once in 20 years;
- any period of at least 30 days of exceptionally high gas demand, occurring with a statistical probability of once in 20 years; and
- for a period of at least 30 days in case of the disruption of the single largest gas infrastructure under average winter conditions.

is that the gas distribution network would fail to deliver gas to smaller businesses and households long before commodity constraint was ever encountered.

There is currently no uniform gas supply security standard for most DM gas customers and rightly so, in our view, since – as Ofgem recognise – the value they put on supply continuity is widely divergent. They also have some ability to chose their own bespoke level of supply security by offering or agreeing to "self interrupt" when the market price of gas exceeds the value they place on continued supply.

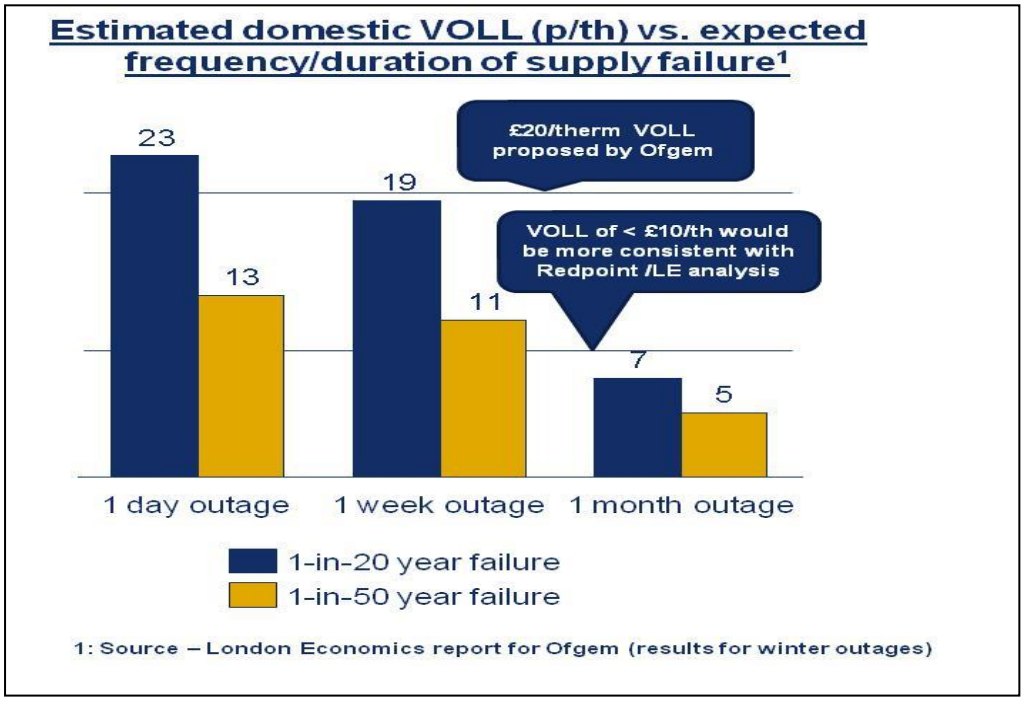
Questions must therefore be asked about whether the costs and risks associated with the proposed reforms are warranted or appropriate against this background of ill-defined and largely notional benefits.

1.6 VoLL and Customer Compensation

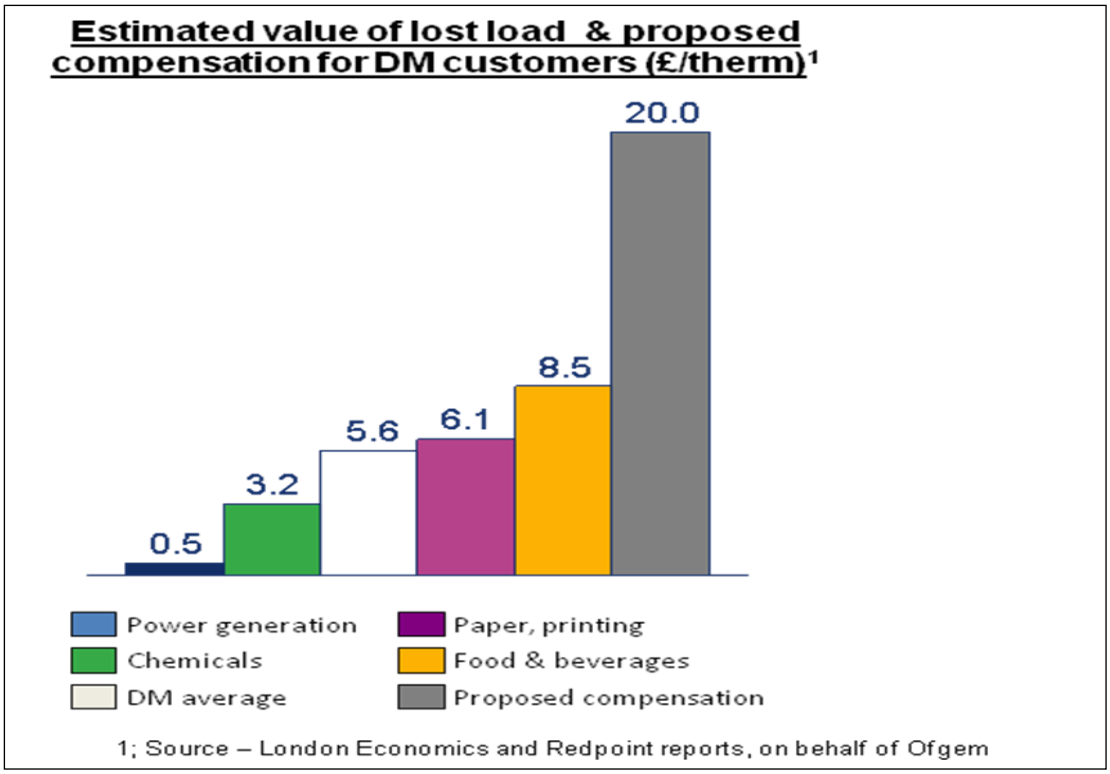
We have reviewed the paper by LE on estimating the value of lost load. We feel in general that this work has been undertaken to a reasonable standard, but LE themselves recognise that the work has limitations, and in some areas further work is required in order to be sufficiently robust.

LE has based its residential VoLL estimates on the amount of money which customers would require to compensate them for "poor service" (inadequate supply security). As LE's results demonstrate, the stated requirement for compensation is critically dependent on what customers are told about the reliability (or otherwise) of the service they currently receive.

According to LE, a VoLL of £20/therm corresponds to the expectation of a 1-in-20 year residential failure rate, assuming a 7 day outage. However, according to the Redpoint analysis, the estimated NDM failure rate before any SCR intervention is actually 1-in-122 years. Therefore, using figures provided by LE, it would be more appropriate to use the residential VoLL associated with a 1-in-50 year interruption rate, which is £11/therm for a 7 day failure; this would be lower still if Redpoint's 14 day failure duration had been used by LE. Thus the "true" residential VoLL, corresponding to Redpoint's assessment of the supply security already being provided, is likely to be less than £10/therm (as shown below)



The proposed emergency cash-out floor price of £20/therm significantly exceeds the estimated VoLL of most DM gas customers by an even greater margin, as shown in the table below.



From this table it can be seen that compensation for daily metered customers at £20/therm, unlimited in duration, would lead to massive over-compensation. Collection of this amount through cash-out can only be viewed as penal, and will lead to economically inefficient outcomes, and further market distortions. This will erode DM customers' incentives to strike demand side interruption contracts and indeed is likely to serve as a target price in any contract negotiations, especially for the largest customers who know they will be interrupted very early on in an emergency by National Grid under the "largest off first" rule.

Other research has been undertaken on the subject of VoLL, and reaches entirely different conclusions from LE's work. For example, the Centre for European Policy Studies (CEPS) concludes that UK domestic consumers would consider a three day sudden loss of supply at £22/annum[3].

1.7 Support for cash out reform

We continue to believe that current arrangements whereby cash-out prices would be frozen at pre-emergency levels may set a "short" shipper price which is too low, thereby blunting incentives for individual shippers to balance their supply and demand position.

We would therefore support a sharpening of emergency cash-out incentives which extended market based cash-out signals later into a gas deficit emergency. We believe this price should also be subject to an escalator, based upon the cost of National Grid exercising interruption contracts, as set out in 1.8, below. In other words, the cash-out floor price would rise in stages to reach a maximum of £10/therm as set out above. Thus it would reflect more

[3] http://www.ceps.eu/book/consumer-valuation-energy-supply-security-analysis-survey-results-three-eu-countries

closely the VoLL of DM customers facing a risk of interruption; this is consistent with Redpoint's modelling assumption that "VoLL order" is a good proxy for "size order" disconnection.

If properly structured, such a reform would secure a pragmatic and cost effective enhancement to GB supply security with minimal regulatory intervention in the market and very limited scope for unintended consequences. The hurdle for any impact analysis would therefore be very low, and such a reform could be implemented swiftly to good effect.

1.8 Demand Side Response Facilitated by National Grid

Anecdotal evidence suggests that shippers and customers find difficulty agreeing interruptible supply contracts, and we do not believe that Ofgem's proposed reforms will materially improve this. Indeed it could actually make it worse by establishing an unrealistic target price of £20/therm. A key issue in our view is the fact that purely bilateral contracting will not create any real price or volume transparency around the "market" (if there is one) for Demand Side Response (DSR).

Instead, we would support a role for National Grid to facilitate a market for demand side interruption in future years in order to supplement supply side security. This could involve National Grid determining a target amount of DSR to be bought (a "sell side bid" model), or simply acting as a neutral facilitator between willing sellers and willing buyers (matching bids from both the buy side and the sell side).

In either case National Grid would undertake a demand side response tender, in order to secure the required volume of interruption at the best prices. This process would in effect be a straightforward extension to the Operating Margins competitive tender process, successfully introduced by Ofgem following the 2007 gas Transmission Price Control Review (TPCR4). We would not see this as any greater intervention in the market than the Operating Margins process, and indeed much less of an intervention than the a regulated cash-out price of £20/therm, as proposed.

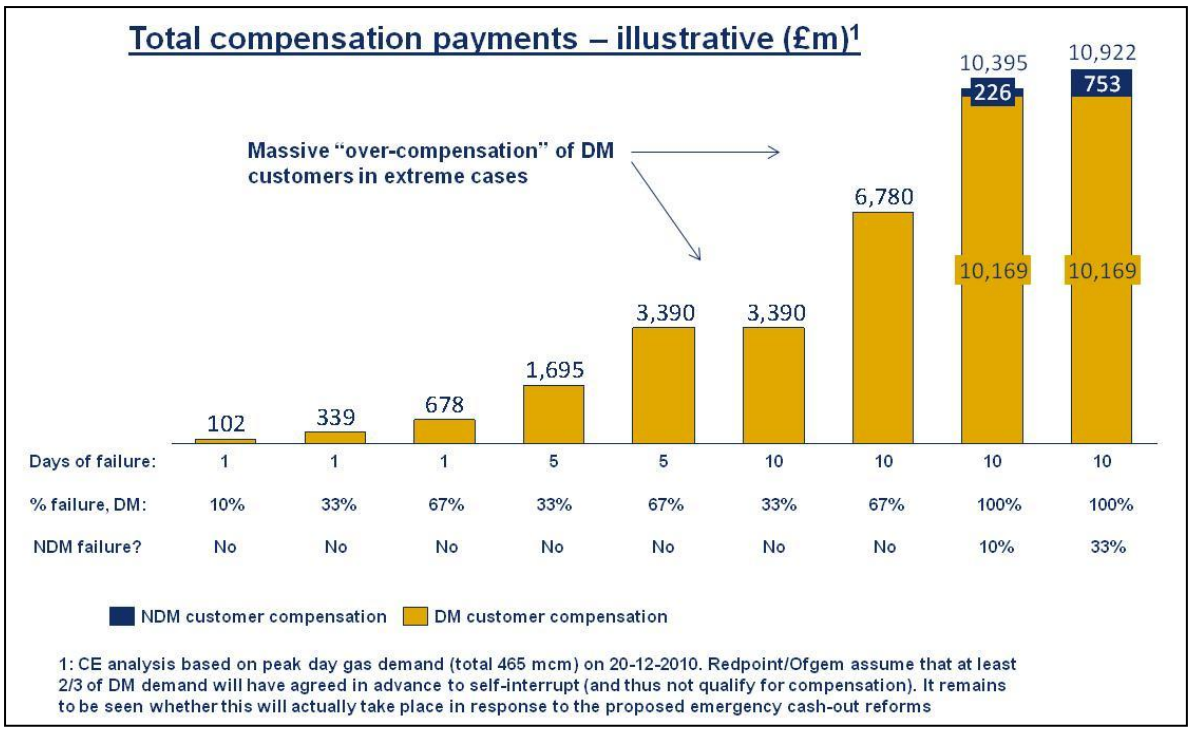
Operating Margins tenders can and do contain both option and exercise prices and (in contrast to Ofgem's IA view) we do not believe that bidders in this proposed extension to that process should be restricted to an exercise price only. Indeed, an option and exercise price structure would be essential for most bidders, since it allows the possibility of a regular income which could be used to facilitate (for example) the provision of backup fuel capability. Option fees should be socialised with exercise fees being targeted at short shippers.

We believe that, taken together, more dynamic cash out and DSR facilitated by National Grid would make a significant contribution to meeting supply security goals.

1.9 Customer Compensation and Associated Liabilities

1.9.1 Compensation Liabilities

Ofgem assumes that the majority of DM customers will be willing to agree self-interruption ahead of any Gas Deficit Emergency – thus avoiding any need for compensation – but it is surely necessary to consider what would happen if this confidence proves unfounded. Indicative compensation liabilities in the absence of extensive self-interruption are set out in the following table.



Expressed like this, there must be genuine concerns about the ability of the gas industry to withstand the cost shock of a GDE of all but the shortest duration.

1.9.2 Disparities with Transporter Compensation Regimes

These proposals do not properly address the current imbalance between the compensation a customer would receive under an interruption due to a commodity shortage, and an interruption due to a transportation constraint[4]. By way of example, a large gas fired power station using a million therms a day which was interrupted for fourteen days would receive £50 x 14 days = £700 from a transporter, but would receive £20/therm x 1,000,000 therms/d x 14 days = £280m for a commodity interruption. For a transporter this liability is capped at £1000, whereas for shippers the liability is unlimited until reconnection.

Finally, we note that gas transporters appear to have recourse to FM whereas shippers do not. The flange between a gas delivery terminal and the National Transmission System is a defined point. Under these proposals, therefore, an incident one metre in the upstream direction could result in gas customers being interrupted and in aggregate receiving billions of pounds in payouts from shipper(s), while the same incident one metre in the other direction could result in the same level of interruption to gas supplies but would receive just a fraction of the financial compensation.

1.9.3 Administration of Compensation Payments

Systems and processes will need to be developed, both centrally and by each shipper/supplier, in order to be able to administer customer compensation. The costs and complexities of both implementing such processes and systems, and managing the compensation payment process, must not be underestimated. There is also, of course, an efficiency question, in as much as there is no certainty that these processes and systems will ever be used.

[4] The current transporter compensation liability is £30 per day for a residential customer and £50 per day for a business customer, capped at £1000 per customer per event.

1.10 Unintended Consequences and Perverse Incentives

1.10.1 Possible Responses

Ofgem's proposals seek to move the shipper/customer contractual relationship to a position where DM customers are entitled to full financial compensation – indeed overcompensation - where their gas supply is interrupted. A regulated formula will determine the value of this payment and in an emergency the proposed emergency cash-out price floor (directly applicable to "short shippers" only) is intended to create the compensation fund.
These proposals establish that an individually isolated DM customer's lost load will continue to count as a "debit" against a shipper's balance position until the customer is reconnected – whereas currently an isolated load is taken out of the balance equation. Similarly the lost load from customers isolated as part of a network isolation will count as a debit against the shipper's balance position, but for the first day only. The combination of these two proposals is a new risk to shippers.

In response to the potential magnitude of this heightened risk, and awareness of risk, shippers will be incentivised to pursue risk limiting strategies. The most likely of these are summarised below:

- Financial Response. Shippers may seek comfort from securing more of their requirements on NBP traded markets where supplies are financially firm, or seek financial derivatives to hedge against a "short" risk. They may also choose actions which simply aim to provide a fund to pay very high cash out prices were they to be short in an emergency.

- Liability evasion. Ofgem's proposals highlight and strengthen the attractiveness of perverse incentives on shippers to evade extreme cash-out liabilities. Such actions could include the financial ringfencing of shipping businesses to produce easily collapsible entities, designed to limit company liabilities by being easily bankruptible in the event of an extreme cash-out event. Another possibility is that shippers/suppliers only offers customers supply contracts which are deemed to become interrupted at the point a stage 2 GDE (firm load shedding) is declared thereby completely avoiding the penal cash-out and associated compensation regime.

1.10.2 Unintended Consequences – NBP vs Bilateral Purchases

A shipper can "guarantee" not to be short by contracting for all of its customers' needs on the traded market. Providing the shipper has contracted for the correct volume in that way, it is insulated from any risk of physical non-delivery. This makes market trades significantly less risky, and therefore more attractive, than bilateral gas purchase agreements and their inherent non-delivery risk.

It may also be observed that over time prices for gas sold on the financially firm NBP contractual markets will rise disproportionate to the supply demand balance in order to "price-in" the increased risk faced by sellers who are short. Only time will tell whether the extent of any such price rises represents an efficient response to the increased level of risk brought about by these proposals. However, an alternative and more worrying scenario may be a reluctance for sellers to make physical gas available on traded NBP contractual markets, where doing so would incur this higher financial non-delivery (force majeure) risk. In reality, sellers of physical gas typically pass a large measure of FM risk onto their buyer – and these proposals can only serve to reinforce such contracting behaviour.

1.10.3 GB Security of Supply Impact

Any significant move away from bilateral physical contracting will serve to weaken GB supply security through reduced contracted import volumes. This appears to us to be an unintended consequence running directly counter to what we intuitively believe to be right for GB supply security.

It might be thought that a logical reaction among bilateral gas purchasers would be to seek a price discount (relative to NBP) for those contractual supplies which carry a material FM risk. Whilst this could no doubt be attempted, the reality is that major resource holders (especially LNG producers but frequently also suppliers of pipeline gas) generally have a choice of gas supply destination. For example, there are a number of LNG regas terminals on the near Continent with under-utilised capacity, such as Gate and Zeebrugge. Where the perceived FM risk in other markets is less, either because of different regulatory arrangements (e,g. supply responsibility passing to GTS in the Netherlands at temperatures below minus 9º C) and/or because greater storage capacities allow more scope for risk mitigation, it will often be difficult or impossible for UK buyers to secure such a price discount.

Thus the current proposals are likely to mean that GB is perceived as a somewhat less attractive gas market, relative to others, and this can only be unhelpful as regards GB gas supply security. Again, we do not believe that this risk has been fully considered.

1.10.4 Policy Developments

We consider that the unintended consequences highlighted above can be mitigated. One way to do this would be to recognise that there are circumstances where, for reasons beyond their control, a buyer will not receive physical gas they contracted for. Effectively, this would be allowing the effected shipper(s) cash-out FM relief in the event of major unplanned outages. In terms of a mechanism, we propose that cash-out should operate as at present in circumstances of “major FM” – i.e. any load disconnected as a result would immediately fall out of the cash-out balance. By definition, the intention is that “major FM” would be very rarely triggered – i.e. it would not interfere with the smooth functioning of cash-out under normal circumstances.

We recognise the challenges in producing a workable definition of “major FM”, but believe that such a solution is both possible and necessary. For example, FM relief could apply in circumstances of an unplanned physical outage upstream of the NTS which:

- reduces flow through any single ASEP by more than [50] mcm/d compared to the previous 5 working days average flow; and/or

- reduces the total gas flow through 2 or more ASEPs by more than [75] mcm/d compared to the same benchmark period.

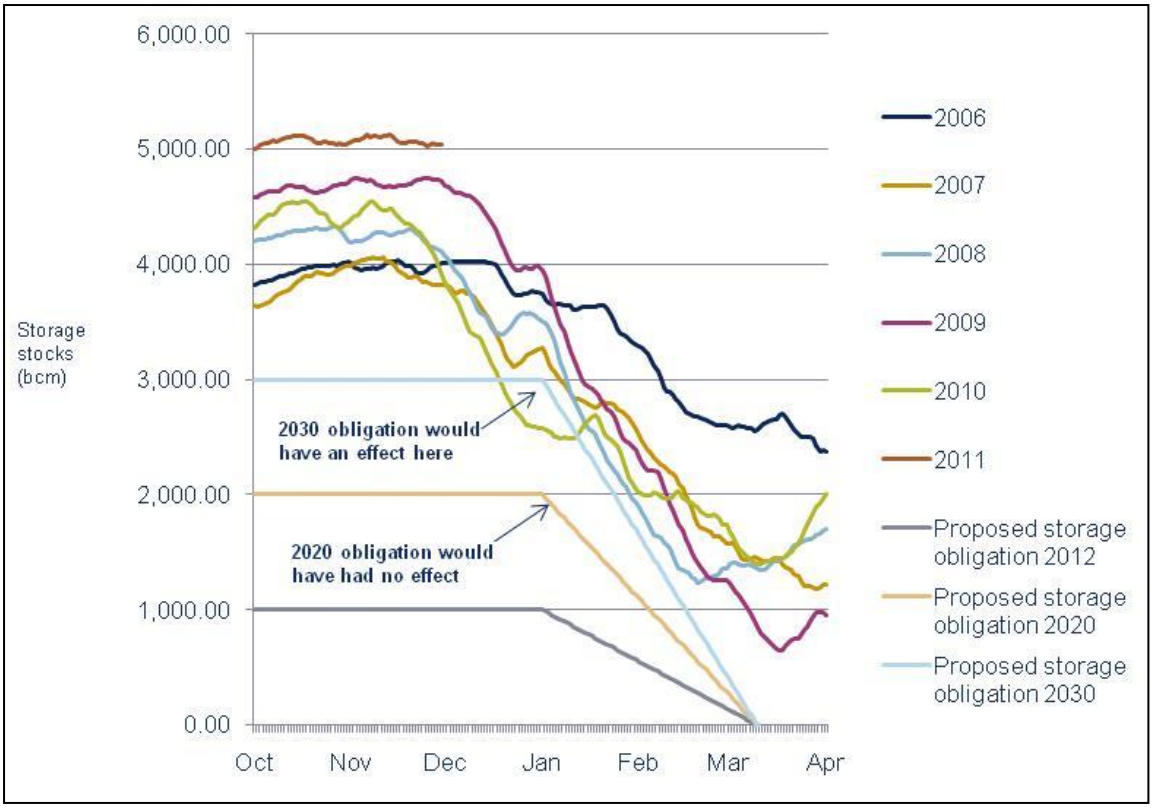
In practice, it could be a matter for NGG to determine “major FM” if this were ever triggered. Where such a criteria was met, unserved energy demand should not be included within the affected shipper’s balance position and no customer compensation would result.

If Ofgem concluded that a workable FM proposition was impossible to define, we believe the worst aspects of the unintended consequences identified in this note could be mitigated by restricting customer compensation payments to one day for all categories of customer, with cash-out arrangements for DM customers adjusted to reflect this lower compensation liability.

1.11 Further interventions

1.11.1 SCR proposed further intervention – A Simple Storage Obligation

Ofgem (through Redpoint) has sought to model the impact of a storage intervention which would limit the rate at which shippers could draw down gas in **existing** storage through the winter months. The impact of this, it is claimed, would raise residential security standards to risk interruption just once in 2000 years. Based on analysis of storage withdrawals in recent years we find this claim incredible. The figure below identifies that even at the obligated level proposed for 2030, this intervention would have been ineffective except in cases of extreme weather seen in January 2010.



We believe the real effects of this proposal would be to force DM interruption earlier in a cold winter than would currently be the case in order to keep gas in the ground and protect supplies, probably to NDM customers, later on in the winter period. Unless **new** gas storage is promoted, a stocking obligation of this kind would simply be “robbing Peter to pay Paul”.

1.11.2 Other Interventions

We consider that of the further interventions referred to in Ofgem’s consultation document, other than the National Grid facilitated DSR mechanism discussed in section 1.8, the only ones worthy of further consideration relate to gas storage.

The development of new storage gas is likely to have the positive benefit of providing physical infrastructure in times of short gas supply. The scope to design a storage support mechanism which is both cost effective and consistent with a well functioning, liquid and competitive wholesale gas market needs significantly more investigation and analysis than has been done to date.

It would be better to properly investigate this policy option before considering implementing the emergency cash-out reform, rather than running the risk of there being other unintended consequences that would result from a combined further intervention and the emergency cash-out proposal.

Annex 1 - Response to Consultation Questions

Chapter 3: Level of Supply Security

Question 1: Are there any options for determining the level of gas supply security to be delivered by the market that we have not considered?

We believe a security standard should align with, or be closely based upon EU Regulation 994/2010 with consideration of the obligations which already bear on transporters for network security, and the incentives placed on shippers through the UNC.

A more thorough piece of work would assess the implications on GB supply security of other Member States setting their own security standards significantly in excess of those mandated by EU Regulation 994/2010, this being the course of action that is proposed in GB.

Question 2: Do you agree with our approach towards setting the level of security of supply?

No. In fact, we do not believe that Ofgem has determined a level of supply security. Rather, the cash-out price of £20/therm is used as a proxy.

Primarily we believe it is for DECC to establish the desired supply security standard.

Chapter 4: Cash-out reform

Question 1: Do you agree that it is appropriate to retain the Post Emergency Claims (PEC) arrangements? If not please explain why.

In principle yes, but recognise that the PEC carries payment risks for shippers who may be able to deliver discretionary gas to GB. We do not believe that the alternative of a symmetrical cash-out price has been properly explored and analysed.

Question 2: Do you agree with how we have estimated VoLL and the level of VoLL that we have used? Is there a case for using a higher VoLL to incentivise more discovery of the demand side?

Concerns with the methodology?

- The methodology used by LE appears broadly appropriate for this study; however Ofgem's interpretation of these results is over simplistic. LE's report shows that VoLL will vary within and across sectors in addition to reducing as the length of the interruption increases. However this is not reflected in Ofgem's draft decision, where a single arbitrary figure is used.

- LE has based its residential VoLL estimates on the amount of money which customers would require to compensate them for "poor service" (inadequate supply security). As LE's results demonstrate, the stated requirement for compensation is critically dependent on what customers are told about the reliability (or otherwise) of the service they currently receive.

- The main concern with the methodology relates to the Willingness to Pay (WTP) questionnaire. The results imply the respondents to the domestic and SME WTP surveys did not fully understand the questions asked.

- As a result of these limitations Ofgem's estimate is based solely on the Willingness to Accept (WTA) values. However very few studies have used the WTA methodology alone as this will tend to overestimate the VoLL. This is because the maximum amount consumers are willing to pay to achieve a better service is less than the minimum they are willing to accept in compensation for poor service. This is especially the case when individuals view the current system to be reliable.

- Separately LE state that more robust analysis should be undertaken by Ofgem in terms of calculating the VoLL for Electricity generators and large electricity users. This is to gain greater understanding of the uses of gas within industry to allow VoLL to be more accurately modelled. However this has not been completed.

We have also identified inconsistencies between the Redpoint modelling and LE analysis. These include:

- The Redpoint modelling assumes an average network isolation will last 14 days and not 7 days. Therefore there is an argument for reassessing what the VoLL would be for a 14 day interruption or calculating a new value between the 7 day outage value and the 1 month outage value already calculated by LE.

- According to LE, a VoLL of £20/therm corresponds to the expectation of a 1-in-20 year residential failure rate, assuming a 7 day outage. However, according to the Redpoint analysis, the estimated NDM failure rate before any SCR intervention is actually 1-in-122 years. Therefore, using figures provided by LE, it would be more appropriate to use the residential VoLL associated with a 1-in-50 year interruption rate, which is £11/therm for a 7 day failure; this would be lower still if Redpoint's 14 day failure duration had been used by LE. Thus the "true" residential VOLL, corresponding to Redpoint's assessment of the supply security already being provided, is likely to be less than £10/therm

Concerns with the level of VoLL used?

- LE presents a wide range of estimates for VoLL, indicating the value is highly dependent on the circumstances presented to a survey respondent, and the questions asked. However this is not reflected in the level of VoLL used by Ofgem.

- Due to the problems we've highlighted with the WTP questionnaire, Ofgem's estimate of VoLL is therefore based solely on the WTA, and evidence from other studies suggests the WTA value is generally higher than the WTP.

- This WTA value would usually provide the upper bound of the analysis for domestic and SME customers. As a result very few studies have used the WTA methodology alone as a representative value of gas security, as this will tend to overestimate the VoLL.

Is there a case for a higher VoLL?

No. Based on LE's results the proposed level of VoLL for firm customers is already excessive in the vast majority of cases and simply increases the probability of severe financial distress throughout the industry.

Question 3: Is one day domestic VoLL an appropriate administrative price for any firm load interruptions?

No, based on LE's modelling the use of a single VoLL is too simplistic and will lead to a number of unintended consequences. This approach will lead to non-domestic firm

customers receiving compensation significantly above the level of VoLL calculated by LE. This will have unintended consequences including increased risk of shipper bankruptcy, an increased credit burden acting as a barrier to new market entry, and cross subsidies as NDM customers will be expected to underwrite this liability.

Question 4: Do you agree that it is appropriate to retain the Emergency Curtailment Quantity (ECQ) arrangements? If not please explain why.

Yes, although based on SCR Workshop discussions we now believe there may be issues with restricting ECQ to DM load only, which have not been properly thought through.

Question 5: To what extent do our proposals alleviate shippers' concerns about credit implications of targeting the full cost of multiple days of interruption on shippers that were short on day one of a stage 3 (network isolation) interruption?

We support restricting network isolation cash-out liabilities to one day only, but still have significant concerns regarding financial liabilities and credit implications. The significant negative impact still remains due to the level of VoLL being proposed by Ofgem and the unlimited duration of DM VoLL compensation.

The corresponding adverse effects of excessive liabilities and credit requirement on long term competition due to increased barriers to market entry have not been properly priced in to the costs of these reforms.

Question 6: Should extended payment terms be applied to emergency cash-out (possibly to align with payments through the PEC payment process)?

We acknowledge that this proposal could reduce the likelihood of short term credit default amongst shippers, as it will spread payments across a longer time period. However, we would be extremely concerned that deferred payment arrangements could allow an insolvent shipper to continue to accumulate liabilities which they may have no ability (or, worse, no intention) of settling. This would simply result in greater liabilities being socialised across remaining shippers. In this respect, therefore, we believe that rigorous credit arrangements must remain in place throughout an emergency.

Question 7: Will enhanced incentives to avoid an interruption occurring increase the number of interruptible contracts entered into by industrial consumers? Please explain why.

We agree that more contracted demand side response is desirable, but the incentives created by Ofgem's proposals are extremely broad and greater interruption contracting is just one way in which shippers may seek to avoid the liabilities created. Anecdotal evidence suggests that shippers and customers find difficulty in agreeing interruptible supply contracts, and we do not believe that simply implementing Ofgem's proposed regime will materially improve this position. If anything, they could actually make the situation worse by creating a £20/therm target price. A key issue in our view is the fact that purely bilateral contracting will not create any real price or volume transparency around the "market" (if there is one) for DSR.

Question 8: Do you agree with our broad proposal for collecting monies from shippers and passing this through to customers? If not do you have an alternative proposal?

These arrangements will mean the shipper will still be liable even in the event of supply disruption outside of its reasonable control. It is our view that this places unfair requirements on shippers to be responsible for matters significantly beyond their control. We do not believe that this is appropriate.

Were Ofgem intent on sticking with its proposed cash-out reforms, as a minimum we believe it would be necessary to define shipper FM relief from cash-out. There are many ways in which this could be defined, for example an event(s) which resulted in a 25mcm/d reduction in flow capability upstream of an National Grid Aggregate System Entry Point (ASEP), compared to the average of the previous five days.

Where Ofgem was unable or unwilling to accept any such definition, we would need to see the compensation liability for individually isolated daily metered customers reduced to one day, as for network isolated customers. Cash-out arrangements would then have to be amended so that excessive amounts were not collected from shippers.

Chapter 5: Possible further interventions

Question 1: Do you agree with our assessment that a gap in the emergency arrangements would remain following the introduction of capped cash-out? If so, to what extent do you believe that this gap can be overcome through further interventions?

Ofgem has not established that current supply security standards are inadequate, nor has an appropriate security standard been defined. Nevertheless, we believe that greater demand side response from the DM sector is necessary in order to better protect supplies to NDM customers. Anecdotal evidence suggests that shippers and customers find difficulty in agreeing interruptible supply contracts, and we do not believe Ofgem's proposed reforms to cash-out will significantly alter this situation.

Instead, we would support a role for National Grid to facilitate a market for demand side interruption in future years in order to supplement supply side security. This could involve NG in determining a target amount of DSR to be bought (a "sell side bid" model), or simply acting as a neutral facilitator between willing sellers and willing buyers (matching bids from both the buy side and the sell side).

In either case National Grid would undertake a demand side response tender, in order to secure the required volume of interruption at the best prices. This process would in effect be a straightforward extension to the Operating Margins competitive tender process, successfully introduced by Ofgem following the 2007 gas Transmission Price Control Review (TPCR4). We would not see this as any greater intervention in the market than the proposed application of a regulated cash-out price of £20/th.

However, a significant weakness in this process is that Ofgem is considering and seeking views on further interventions without anyone having a clear understanding of the impacts of its cash-out reform proposals. More logically, we believe that any decision in respect of cash-out reform and associated customers compensation should be put postponed until detailed further interventions have been considered and evaluated. It could, for example, that a simple unfreezing of cash-out arrangements combined with a more targeted further intervention is the only reform that is needed.

Question 2: Have we captured the full set of potential further interventions? If not what other further interventions should be considered?

As set out above, we would support a role for National Grid in assessing and managing a tender process in order to secure demand side response.

Chapter 6: Assessment of four revised cash-out options

Question 1: Do you believe that we have captured all the appropriate options?

No. We would favour a straightforward reform comprising more dynamic cash-out prices immediately pre-emergency and into the early stages of an emergency. We would also support the creation of a price link to National Grid- led demand side interruption contracting, such that cash-out prices escalated in line with the cost of the demand interruption actions taken by National Grid. We believe that this model would lead to the simplest, most effective and cheapest reform allied to the least scope for unintended consequences.

Question 2: Do you agree with our assessment of the costs and benefits of the various options?

We do not feel that the assessment adequately takes account of the full consequences of the proposed options, including the costs and complexities involved in administering compensation. We also have serious concerns with the input assumption (based on the Redpoint modelling) used in this cost benefit analysis. Examples of our concerns with the modelling and assumptions set out elsewhere in this response.

Question 3: Do you agree with our preferred option?

No, we do not agree with the proposed option set out by Ofgem. The proposed arrangements will place significant and unnecessary risk on market participants to the detriment of long term competition. They also include the potential for significant unintended consequences as set out elsewhere in this response.

Appendix 3 – Further interventions

Question 1: Do you have a preference for a specific intervention/s that you think might be most effective for ensuring security of supply while minimising the risks and unintended consequences?

No. We would favour a straightforward reform comprising more dynamic cash-out prices immediately pre-emergency and into the early stages of an emergency. We would also support the creation of a price link to National Grid- led demand side interruption contracting, such that cash-out prices escalated in line with the cost of the demand interruption actions taken by National Grid. We believe that this model would lead to the simplest, most effective and cheapest reform allied to the least scope for unintended consequences.

Question 2: Do you think that standard contracts combined with cash-out reform provide the necessary incentives for suppliers to increase penetration of contracts for interruption?

We do not believe that cash-out reform as proposed is necessarily helpful to supply security.

It is not clear what is meant by “standard contracts”. If the intention is to have a regulated supply contract which suppliers must use, then we could not support that level of market intervention.

If the intention is for Ofgem to develop a suggested template which could form the basis of an interruption contract, we believe there may be some merit in this but suggest that shippers who are active in the DM market will probably have the skills and knowledge necessary to design and draft appropriate contracts to meet their customers’ needs.

That said, we find it hard to believe that a standard template will have any material impact on the volume of interruption under contract.

Question 3: A number of stakeholders have suggested an auction for interruption. We outline several challenges with such an approach and are keen to hear proposals on how to overcome these challenges.

We see this more as a tender process than an auction, to operate very much along the lines of the successful Operating Margins process currently in use. This is something that we would strongly support if properly designed and executed, and used instead of administered cash-out and customer compensation.

It is not clear to us why a National Grid-led tender process should be any more difficult in securing DM isolation than when a shipper has a DSR option based agreement. Previous experience of interruption contracts often has some delay whilst the consumer debates with the shipper the contractual position. This would actually be easier if being implemented by National Grid as, in many cases for the very large customers, they also have control over the gas control valve.

Indeed, discussion we have had with large gas users indicate that in general they would find it more acceptable to respond to a call for interruption from the National Grid, than a similar call coming from their shipper/supplier.

The question of interrupting large customers first and not just on bid price would be better understood if Ofgem could show there was no relationship between site size and VoLL, which we suspect there is.

Question 4: If some kind of storage intervention was to be implemented, do you favour a direct intervention aimed at developing storage capacity or an indirect intervention through an obligation on suppliers or shippers?

As stated elsewhere, we are not able to assess the need for further interventions since the effects of Ofgem's proposed cash-out reforms cannot be fully understood at this stage.

However, were a storage intervention to be considered our preference would be for some form of financial support mechanism to assist otherwise viable projects to meet the required financial certainty for them to proceed.

This could, for example, take the form of a tender to assess the most cost effective new storage proposals to meet a demonstrable new volume requirement. Having identified the best placed project(s), they would then proceed with, for example, the benefit of a revenue floor guarantee underwritten by either HMT or gas consumers. An associated revenue cap could also be applied to return excess revenue were this to be generated. Elements of such arrangements can be found with the Electricity Market review (EMR) and the Project Nemo electricity interconnector.

Draft Impact Assessment

Chapter 1: Background and Objectives

Question 1: Do you agree with our modelling approach and the assumptions we have made?

We believe there are notable flaws in both the modelling techniques and the assumptions used to underpin Ofgem's analysis and decision making with many assumptions appearing to be unsupported by either historical or sensible future expectations.

The impacts of these are to understate the current supply security standards, and by implication overstate the benefits of the proposed reforms.

The Competition Commission (CC) ruling on the UNC Modification Proposal 0116 appeal[5] helped to establish a benchmark for the robustness and integrity of analysis used in support of major policy decision.

The CC considered that GEMA has an obligation to properly assess/demonstrate likelihood of potential future events as well as the costs and benefits. In respect of this SCR, the uncertainty around the model accuracy (stochastic not converging) and certain of the assumptions (e.g. import infrastructure reliability and gas quality) could, we believe, be interpreted as not passing the required stringency test.

Paragraph 7.14 of the CC decision also states '*[GEMAs] Decision was not expressed in sufficiently clear and transparent terms, particularly in relation to the explanation of the qualitative benefits of reform*'. As variously highlighted in this response we remain concerned that the explanations from Ofgem are either too simplistic or ignore many potential unintended consequences, which if properly analysed could result in a different conclusion.

Assumption issues

We have serious concerns over the validity of a number of assumptions used. One example is the assumptions used for GB import infrastructure reliability. These are reported in a table circulated by Ofgem on 20 January 2012 following a request from us to produce this information, and appear to severely understate reliability, as set out below:

- For BBL it is assumed that there is a 37% chance of an unplanned outage in any year, which will last for an average of 10 days and will remove 70% of BBL's import capacity. By contrast, BBL report actual outages of just 5 hours for the last three years as shown in the following table:

Year	Hours of unplanned outage	Number of outages
2009	2	1
2010	3	1
2011	0	0

- The same reliability assumptions are used for IUK import capacity, but IUK report a total of only 13 hours of import constraints in the last 7 years, all associated with the "one-off" commissioning of new compression equipment at Zeebrugge during 2005-06. These are shown in the table below:

[5] http://www.competition-commission.org.uk/appeals/energy/eon_final_decision.pdf

Year	Hours of unplanned outage	Number of outages
2005	10	5
2006	3	3
2007	0	0
2008	0	0
2009	0	0
2010	0	0
2011	0	0

- LNG has been modelled as one block, rather than separate import terminals, with the assumptions that there is a 37% chance of an unplanned outage in any year, which will last for an average of 10 days and will remove 30% of LNG import capacity. Evidence shows that since 2008 when Centrica was involved at Isle of Grain, there has been one unplanned outage which lasted one day and had no effect on import/send out capability. We also understand that the assumptions used are similarly unrepresentative of Milford Haven LNG reliability.

Examples of our other concerns include:

- It is not possible to understand whether the demand variations are reasonable and reflect suitable levels of peak demand to cover a 1 in X winter as no parameters are mentioned or plots of the demand variation provided.

- We have investigated the assumptions relating to the European price shocks and the gas quality shocks, as both seem very high. Analysis shows that the chance of these happening is one in every 2 years and 8 months with the average shock being for 10 days and at double the previous price and/or a 70% reduction in IUK flows.

- Observed price spikes will have been caused by many factors, not just European price shocks and there have been no gas quality interruptions. To assume genuine gas quality constraints would remain in place until 2030 without the market putting in place alternative and relatively low cost solutions we believe is not credible, and we note that Fluxys is now taking action to provide enhanced gas treatment to facilitate greater IUK import flows.

- It is often not clear whether certain stochastic assumptions are applied to all gas supply sources or only the points which highlight this.

- It is not clear how the model is reflecting the availability of LNG to the GB market in the global context and any limitations from existing contracts or how LNG storage tanks at regas terminals contribute to supply/demand balancing on any particular day.

- BBL – restricting the capacity to 8bcm until 2016 can't be justified on historical flows, where the flow rates for the winters of 2007 to 2010 have been nearer to 11-12bcm. The impact of reducing its capacity is equivalent to being 15% as it impacts one of the 4 sample years.

Model limitations

In general the stochastic methodology is a well tried and tested approach. However, the model does have some limitations. In particular it doesn't use the widely used and accepted Gumbel-Jenkinson distribution, also known as the extreme values distribution. This method is used by National Grid in its gas network and demand planning and was also used by

Pöyry in its analysis for DECC in the 2010 studies. This technique is better suited to modelling extremes than the Poisson distribution used by Redpoint.

We also have a significant concern with how the modelling has been implemented. When checking the Poisson frequency distribution, lognormal duration distribution and multiplicative factor used in the continental price shock we found that 1500 simulations were not sufficient to reach convergence so introducing a range of uncertainty with the results that may be replicated elsewhere in distributions to which no detail is provided. Should this be the case then this introduces significant uncertainty and undermines the confidence that can be taken in the reported unserved energy probabilities.

In the stated process of the steps used to evaluate the counterfactual and a given options, step 5 says '*determine the additional storage capacity …*'. However, option 1 and 2 are reported by Redpoint to be based on the assumptions that the first two I&C tranches are converted to interruptible contracts, not additional storage capacity. It doesn't state at what cost this is done although it implies the contracts are done at the VoLL for that tranche and not at the £20/th being proposed by Ofgem as the appropriate VoLL for all firm customers.

Question 2: Are there any other limitations to our modelling approach that have not been accounted for?

We have found several examples where the modelling has either missed out or incorrectly identified how something should be modelled. For example:

- Distillate CCGT tranche – the placing of the CCGT interruption after the DM tranches does not reflect the lower VoLL attributed to this sector by LE or the practical reality of some of these site having distillate backup capability. CCGTs have a strong market incentive to fuel switch before the firm DM interruptions and not modelling this tranche is likely to result in more instances of unserved energy than would be expected. It is also not clear what volumes of DM tranches are assumed.

- LNG regas tanks – The model makes no mention of the contribution that LNG regas tanks at import terminals would provide to meeting gas demand. The volume of gas stored in regas tanks has a maximum quantity of 1.32bcm of natural gas and has stock levels at an average of 64% and been as high as 85% over the last two years. Including this in the model would make a difference by allowing it and storage to react to a potential GDE and provide time for LNG to arrive.

Question 3: Are there additional sensitivities that we should consider for our final Impact Assessment?

The modelling has assumed that continental prices have not been significantly impacted by the introduction of the 3rd Energy Package and that oil-indexation remains the dominant price setter. With various price re-openers and arbitration on-going this may not be the case for the next 20 years and this may alter GB supply security.

A more comprehensive list of our concerns is given at 1.4.1 above, but in essence there are many examples where assumptions are extremely conservative and we believe result in higher levels of unserved energy than would be expected under more realistic assumptions. The sensitivities shown in section 8 of the Redpoint report all show what happens when these assumptions become even tighter. We believe it is important for a new set of results be run with more realistic assumptions and some of the errors identified above corrected.

Chapter 2: Impact of Reform Options

Question1: Have we fully captured the key impacts arising from our reform options?

No, we do not feel that the impacts have been properly assessed. For example, the Impact Assessment does not fully consider the impact of increased credit liabilities, or the effects on NBP liquidity

Question 2: Do you agree that capping cash-out as proposed under options 2 and 4 will significantly reduce the risk of adverse consequences for competition?

No. We believe that setting a regulated cash-out price at £20/therm introduces a requirement for substantial additional credit to be place by shippers. The effects of this will be detrimental to long term competition by imposing barriers to new market entry.

Question 3: Do you believe that our modelling under or over estimates consumer price increases?

We believe the modelling has under-estimated the consumer price increases.

Ofgem's draft decision is essentially premised on the notion that the current arrangements could cause a market failure, with customers being potentially 'undersupplied' during emergencies, and that the proposed amendments would address this failure, thereby ensuring that the system provides the optimal level of supply at all times. More specifically, the stated objective of the reform is '*to create incentives for shippers to purchase gas priced up to customers' estimated VoLL*'.[6]

We recognise that the current regime could potentially cause a market failure at times of emergencies (although we have some reservations with respect to the magnitude of the issue). However, we do not believe that Ofgem's proposals truly address this failure, or that they will necessarily produce the optimal level of supply at all times.

The fundamental issue with the current arrangements is that shippers cannot contract for security of supply with individual customers (for technical and commercial reasons). This is why market-based processes are suspended during emergencies and the cash-out price has to be capped administratively at a fixed level, which may differ from the theoretically optimal level. However, the proposed reform does not directly address this fundamental deficiency. It simply replaces one administrative price by another, and there is no guarantee that the resulting level of supply would be more efficient. In fact, if there are large numbers of customers with a VoLL below £20/th that cannot be interrupted commercially (which is likely), then the proposed change might potentially create situations of oversupply, where certain customers are supplied even as the cost of gas exceeds their willingness to pay. Even if this situation might be rare in practice, it highlights a conceptual flaw with the proposals.

This is best explained by a simplified example. The remainder of this section develops a simplified representation of the gas market at times of emergencies, starting with the current arrangements, and then considering the effect of the proposed change under different assumptions concerning the supply curve and the proportion of customers that are interruptible. The key variable considered is customer welfare.

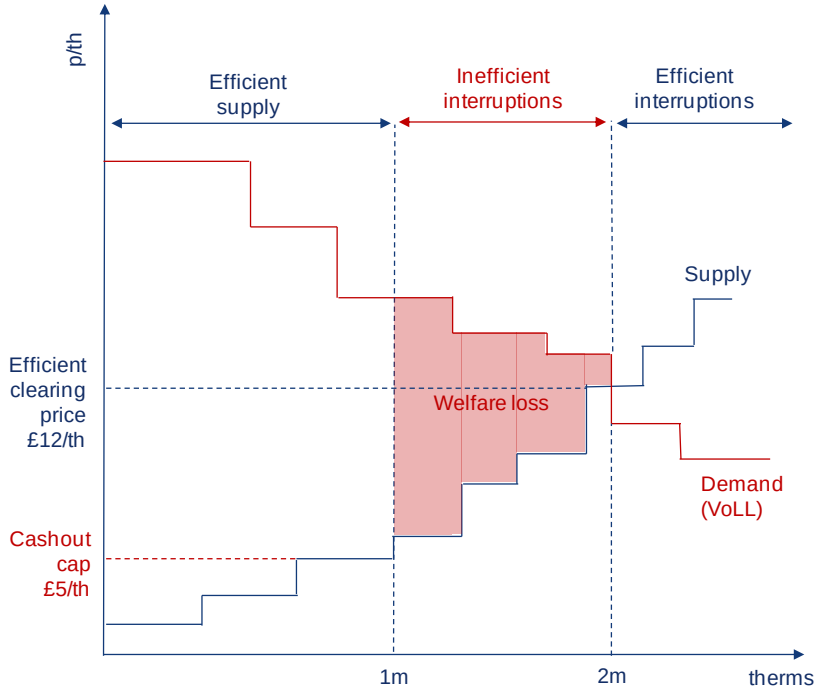
[6] Ofgem (2011), 'Gas security of supply significant code review – draft policy decision', Novermber 8th, paragraph 4.2.

1. The current regime might produce inefficient market outcomes

Suppose that on the first day of an emergency there is only 1m therms available to the National Grid. The cashout price is capped at the level of the most expensive source (say, £5/th) and National Grid interrupts all customers except the ones with the highest VoLL.

Suppose that on the second day of the emergency shippers have additional (more expensive) sources of gas available. If the market was efficient, an additional 1m therms would clear at £12/th. If the cashout price is capped at £5/th, however, shippers have no incentive to bring these resources to the market. This leads to an inefficient outcome, in that certain customers remain interrupted even though they would be willing to pay for gas (Figure 1).

Figure 1 Gas market equilibrium under current arrangements



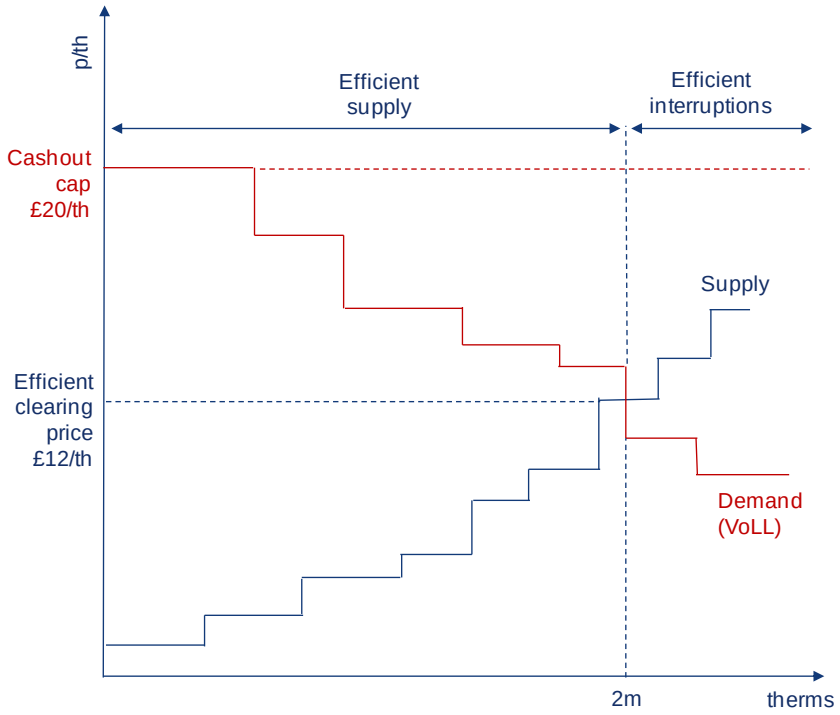
Source: Centrica Energy.

2. Ofgem's proposals would remove distortions *assuming most customers can be interrupted commercially*

If the cashout price is raised to £20/th, suppliers have an incentive to: supply all customers whose VoLL exceeds the clearing price (£12/th); and interrupt commercially all customers whose VoLL is below the clearing price.

This leads to an efficient market outcome, in the sense that all customers who would be willing to pay for gas at the clearing price are supplied, and conversely those who would not be willing to pay for gas at this price are interrupted (Figure 2). Note this is contingent on the suppliers being able to enter into commercial interruption agreements with all customers with a VoLL below the clearing price.

Figure 2 Gas market equilibrium under the proposed arrangements assuming all customers can be interrupted commercially



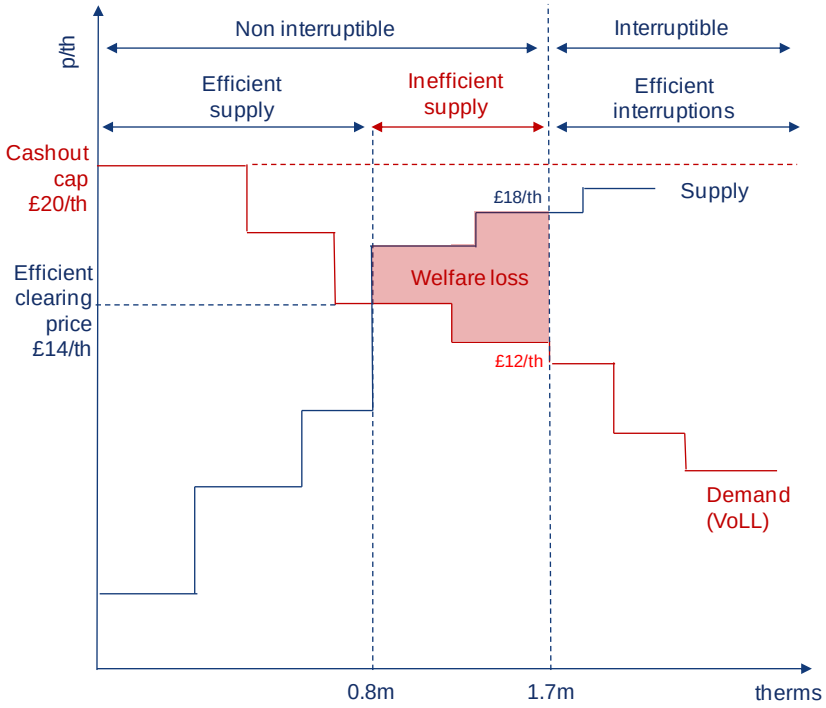
Source: Centrica Energy.

3. Ofgem's proposals might actually introduce further distortions if there are categories of customers that cannot be interrupted commercially

Suppose that on the second day of the emergency the market is actually facing a much 'steeper' supply curve than assumed above. In principle, shippers would only supply the customers with the highest VoLL and interrupt the rest (eg the market would only clear 0.8m at £14/th)

Suppose, however, that the first 4 tranches of customers cannot be interrupted commercially. In this case, shippers have an incentive to supply all non-interruptible customers as long as the marginal cost of gas is below the administrative cap of £20/th (regardless of their VoLL). This leads to an inefficient market outcome, in the sense that certain customers are supplied even though they are not willing to pay for the gas.
For example, if the marginal resource comes from a commercial interruption in Germany at £18/th, and the last tranche of non-interruptible customers has a VoLL of £12/th, then the market is effectively taking a resource from a customer who values it at £18/th to give it to a customer who values it at £12/th.

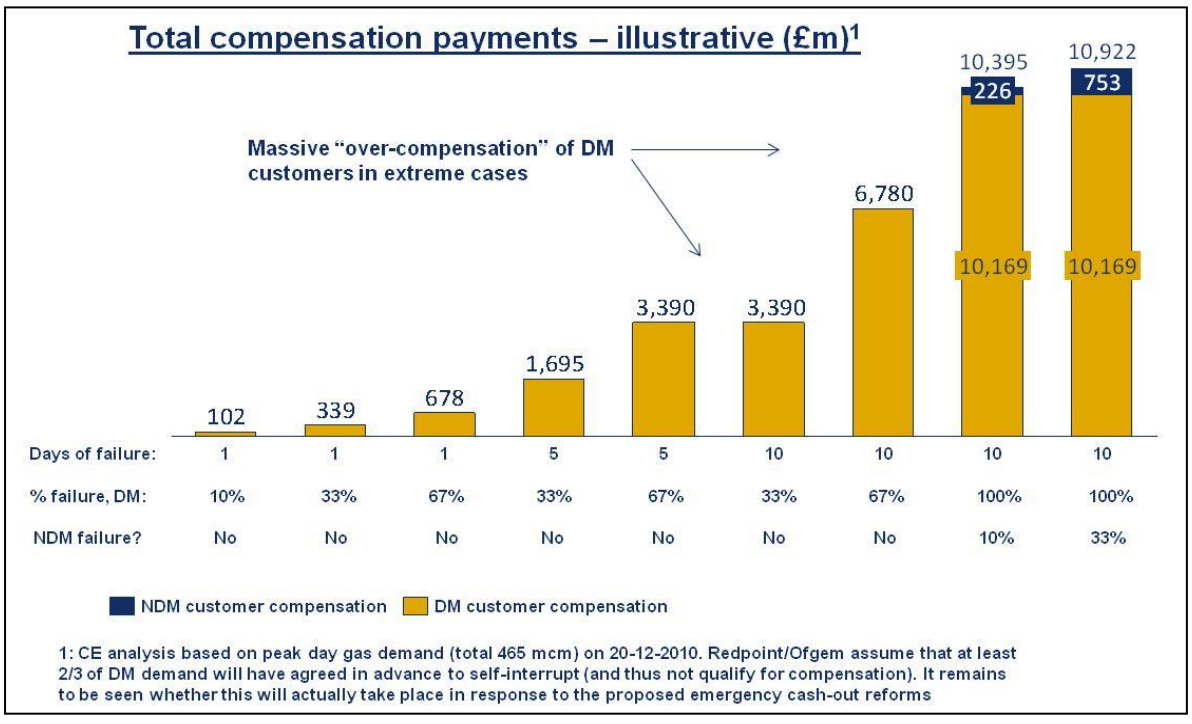
Figure 3 **Gas market equilibrium under the proposed arrangements assuming certain customers cannot be interrupted commercially**



Source: Centrica Energy.

Question 4: Can you provide further evidence on the impact of our reform options on competition, in particular in relation to financial distress, credit requirements and barriers to entry?

There is significant risk of financial distress resulting in companies going bankrupt. We repeat below the table which highlights the extent of the cash-out risk faced by the industry.



We believe that this, in itself, should act as evidence that the levels of financial liabilities introduced by these proposals are highly likely to either cause financial distress and act as a barrier to entry, or alternatively to create perverse incentives to avoid these liabilities, including restructuring shipping businesses to facilitate bankruptcy and market exit.

Question 5: Can you provide information on the costs of implementing the proposed reforms, such as system changes and staff training?

The cost to us of implementing these proposals is likely to occur mainly from staff costs in considering and implementing our response, and ongoing monitoring of our liabilities.

Question 6: Have we effectively modelled interactions with other markets?

A significant gap exists in respect of interactions between electricity and gas markets, both in the run up to, and during, an emergency. Factors which are demonstrably missing from considerations are DECC's ability to instruct otherwise interrupted CCGTs to resume generation, and the extent to which electricity rota disconnections due to insufficient generation capacity would reduce gas demand, for example by preventing domestic central heating from operating.

Question 7: Do you agree that the use of interruptible contracts will be encouraged through a reform of the cash-out arrangements?

Although this is clearly desirable, we do not agree that this will be a likely outcome. Indeed, we believe that reforming cash-out as proposed will create additional barriers to demand side interruption contracting by setting a target price of £20/therm. We set out elsewhere in this response our preferred option of a National Grid-led demand side tender process which we believe would deliver greater demand side interruption contracting.

Chapter 3: Conclusion

Question 1: Do you agree that option 4 is the best option?

No. As set out in 1.11.1 above our analysis shows that the storage obligation proposed for Option 4 would have little beneficial impact. We do not accept the claims that post cash-out reform this simple storage obligation would move NDM supply security from 1:182 years to 1:2000 years, and DM supply security from 1:63 years to 1:175 years.

We believe there is a conflict between removing a significant amount of existing storage from use in the market, the reported improvement in gas security of supply and this having no impact on non-GDE event gas prices to be paid by consumers.

We believe there are far better ways to improve supply security than the proposed combination of cash-out reform and a simple storage obligation. There are many alternative options which have not been considered or modelled and until this is done it is impossible to identify the best overall option(s) for enhancement. We therefore propose full consideration and evaluation of all options before any reforms are made.

Question 2: Do you think that table 12 provides an appropriate assessment of the reform options?

With so much uncertainty on the modelling assumptions, and some of its methodology, it is not possible at this stage to comment on whether Table 12 represents a true and accurate assessment of the reform options proposed. Presented results in this way, however, can be extremely subjective and over-simplistic for matters as complex as this.