Dear Tim,

Follow-up information to the Energy and Climate Change Committee’s session on Ofgem’s policy review

On 13 May 2014 I appeared in front of the Energy and Climate Change Committee to discuss some of the key issues facing Ofgem and my thoughts as the new Chief Executive of the organisation.

During this session I committed to getting back to you on a number of specific issues. These were outlined on 16 May, 2014 in an email from the Clerk’s office. I am pleased to provide you with additional information with regard to the profitability of energy companies, and security of supply.

I welcome the opportunity to further discuss Great Britain’s (GB) gas security of supply. Our analysis and other independent analysis has consistently shown that the gas market is diverse and robust to supply shocks. Britain has never had a gas supply emergency and the risk of it happening is low. However we are not complacent.

As requested, I am providing a note describing how resilient the GB market is to potential shortages in the gas market. I have also outlined security issues for the upcoming winter, the situation in Russia/Ukraine, and the recent policy decisions regarding gas security of supply.

We are always happy to cooperate with the Committee. In the attached Annexes, I have responded to each relevant question and elaborated where helpful. If there are any areas below where you require additional information please do not hesitate to get in touch with Sarah Roberts in External Relations.

Your sincerely

Dermot Nolan
Chief Executive
APPENDIX I – Ofgem’s assessment of profitability

Q15  Dr Lee: What sort of metrics does Ofgem use to assess the profitability of these companies? Do you make any assessment of their long-term viability as companies?

Dermot Nolan: I think we do. One of our duties is to make sure that our licence holders are capable of financing their activities. What we found is that profitability for the Big Six, as broadly constituted in terms of their generation and supply arms together, has risen over the last few years. On the evidence we have seen, they are making a fair amount of profit in supply but less in generation. I can certainly follow up in writing to you on this if you would like.

Q16  Dr Lee: The data I have seen is that EDF is totally unviable, and therefore must be receiving significant support from the French state.

Dermot Nolan: I have not seen that. The evidence I remember—and I will obviously write to you if I am incorrect in this—is that in the supply market EDF is not doing well but it is making significant profits in generation, predominantly because of its nuclear fleet.

Q15.1 What sort of metrics does Ofgem use to assess the profitability of companies?

We use a variety of profitability metrics to help us assess market functioning. These metrics are used to:

1. Assess trends in companies’ financial performance:

   We routinely monitor the following metrics for the Big Six energy companies’ supply and generation arms:
   - Earnings before interest, tax, depreciation and amortisation (EBITDA)
   - Earnings before interest and tax (EBIT)
   - EBIT margin (equal to EBIT divided by revenue)

   This information is available in the Consolidated Segmental Statements (CSS), which we require companies to publish annually, and in our annual summary document of these statements. We know from the CSS that, in the period 2009-2012, the average EBIT margin for domestic energy supply for the largest energy companies varied between 1 and 4 per cent. We used return on capital employed (ROCE) in our State of the Market Assessment and have proposed to do so when looking at the profitability of companies’ generation activities.

2. Understand and assess the dynamics of the wholesale and retail electricity and gas markets in the short and medium term:

   In the wholesale team, we routinely monitor the notional profitability for coal- and gas-fired generation, as well as indicative figures for production cost for different fuel types in the market. We also estimate the short-term profitability of each power plant in the country. The plant-level profitability gives an initial indication of investment signals, highlighting which power plants may close next, and whether there are incentives for power plant investment (and what type of plant this may be).

   However, indicative profitability figures alone may not determine whether a plant is operational or its actual profitability as these figures may not fully capture all of the actual costs faced by a generator.
In the retail team, we calculate an indicative average pre-tax margin that a large supplier may register for a domestic gas, electricity and dual-fuel customer for the following 12 months. This information is available in Supply Market Indicator\(^1\) (SMI).

We calculate the SMI by estimating average bills and costs for a representative large supplier. This helps us, consumers and other stakeholders understand pricing trends in the domestic energy supply market. In accounting terms, the net margin figure we report through the SMI is closest to EBIT. The SMI shows a 13-month rolling average as net margin figures are prone to fluctuations and can vary significantly in a 12-month period.

The SMI cannot and does not seek to provide a forecast of company profits. It is not based on contemporaneous information from the large suppliers such as supplier-specific current hedging strategies, actual and forecast energy consumption and suppliers’ operating costs. The SMI also does not try to estimate suppliers’ financing costs and corporate tax liabilities, which would imply knowing details of their capital structure. A reliable indicator of profitability (before interest payments and taxes) is provided in the individual companies’ CSS. These present the required information in historical form. Only by looking back can we accurately observe a company’s profitability in a given time period.

**Q15.2 Do we make an assessment of their long-term viability as companies?**

Our role, as set out in the public policy framework within which we operate, is to protect the interests of GB energy consumers through the introduction and promotion of competition in the energy market and by other means.

A competitive market is one where firms can easily enter and exit, successful firms can grow, and unsuccessful ones exit. Therefore, the possibility of unsuccessful firms exiting is central to an effective and efficient competitive market. We would expect companies to exit if they are consistently inefficient, or if they do not offer products and services that consumers value at competitive prices and acceptable quality. In this context, we do not (ourselves) make assessment of the long-term viability of companies.

However:

- We do ensure that there is a framework in place to protect consumers if a company that falls (i.e. supplier of last resort), and we monitor company exits, customer numbers and market shares.
- In the context of network regulation, where we set the revenues that companies are allowed to earn, and therefore the prices they can charge; we do have an explicit duty to ensure that companies can finance their activities.
- We indirectly monitor the financial viability of players in the market through credit rating agencies’ and banks’ assessments of the profitability of energy market participants.
- We have good links with Elexon and Xoserve (who run the balancing charges system for electricity and gas respectively). They would alert us if there is immediate cause for concern that market players cannot post enough capital to meet their balancing credit and collateral requirements in the wholesale market, or if suppliers fail to pay some of their fees.

Q16.1 Do we have data to show that EDF is not doing well in the supply market but making significant profits in generation?

The CSS contains this information. For example, EDF's 2012 CSS (the latest available) shows that they had a loss of £92 million before interest and taxes (or -3% EBIT margin) in supplying domestic gas and electricity consumers. Their generation EBIT and EBIT margin was £1.06 billion and 24.9% respectively.

EDF's relatively high generation profit margin is driven predominantly by their nuclear generation fleet. Nuclear is currently a very profitable source of generation because:

- Gas is currently the price setting source of power – ie the electricity price is set by the costs of the marginal (last) power plant needed to meet demand, and in theory it should just break even, with all the other plants making a profit. This is the desired competitive outcome (known as marginal cost pricing). Nuclear has high initial investment cost, but low marginal, short-term cost. Therefore, it makes relatively high profit margins, used to remunerate the large amounts of up-front capital invested. Therefore, ROCE would be a better measure of profitability.

- Nuclear power faces no carbon costs from either the EU ETS, or the Carbon Price Support. Thus, any increases in carbon costs will directly benefit nuclear generation because it will be factored into the power price, but nuclear plants will not have to pay it. This benefit will continue to rise as the carbon price support floor increases.

Q16.2 Do we know the level of support that companies receive from government? (i.e. does EDF receive support from the French government?)

Energy companies do not get direct support from the British government, other than the incentives to invest in low carbon generation (eg Renewables Obligation), which are set by government but paid by energy consumers.

EDF will receive indirect support for its nuclear fleet from the British government as the costs associated with nuclear waste are socialised (paid for by the tax payer), and dealt with by the Nuclear Decommissioning Authority. This is in effect an indirect subsidy for nuclear power generation.

We do not know how much direct support EDF receives from the French Government, but direct aid would be contrary to European state aid rules.
APPENDIX II – Resilience to shortages in gas market

Q51  Dr Lee: How resilient are we, though? How many days? If the worst happens, how many days can we exist?

Dermot Nolan: I cannot give you that kind of figure off the top of my head but I will revert to you within a couple of days on this.

Great Britain supply overview

Great Britain (GB) has a diverse range of sources of supply, the most diverse in Europe and second only to the US in the world. Gas storage would never be relied upon to solely meet our gas supply needs, so it is perhaps misleading to only consider how many days’ gas supply is in storage. This overlooks our significant infrastructure capability in receiving pipeline gas, liquefied-natural gas (LNG) and that storage sites can and do refill during winters. In fact, we have enough LNG infrastructure to meet roughly two thirds of our annual gas needs.

As you are aware, GB gets no gas directly from Russia. If the disruption of gas from Russia to Europe were to occur, the impact on GB security of supply would likely be indirect in all but the most extreme circumstances. The effect would more likely be to energy prices rather than supply flows, seen by an increase in the wholesale price of gas to attract sufficient imports. The extent of the price increase would depend on how tight the global LNG market is.

Following the Fukushima nuclear disaster in Japan (2010), the global LNG market tightened significantly, but is now beginning to loosen with more supply expected to come on line from a number of sources, such as Australia, East Africa, the Mediterranean and the US.

Both ourselves and DECC have considered the resilience of our market extensively in the past four years. In 2011, Ofgem began a significant code review into Gas Security of Supply (the gas SCR), as well as providing a report to DECC in 2012 on Gas Security of Supply. Following this, DECC decided in 2012 that there was no case for ‘further interventions’ in the GB gas market.

We continue to monitor the market on a daily basis, liaising with DECC and National Grid, as well as other European regulators and policy makers. In addition, National Grid is obliged by us to compile a Winter Outlook Report each year that considers the resilience of the market for the forthcoming winter. We will be working with NG and DECC to make sure that the Russia/Ukraine crisis is fully captured in the forthcoming winter 2014/15 assessment.

GB gas supply and demand

GB is well supplied, and receives its gas from a number of diverse sources. No single source is relied on exclusively; it is therefore insufficient to rely on the number of days of gas supply in storage as a measure of system resilience. The supply mix includes interconnection to the Continent, pipeline supply from Norway, domestic supply from storage and UKCS, and access to the international LNG market. The diversity of GB gas market is captured on the following page.

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The chart shows (a conservative) estimate of maximum supplies for winter 2013/14, on the highest demand day possible. Supplies are shown using an estimate (supplied by NGG) of how much gas each source of supply could deliver per day at maximum deliverability rates. The maximum forecast supplies indicate that we could get just under 600 million cubic meters (mcm) of gas on any given day.

This compares to our highest ever gas demand of 465 mcm/day on 1 January 2010, average winter Seasonal Normal Demand (SND) of 273 mcm/d, and an average of 253 mcm/d in the 2013/14 winter. This suggests we have excess supply capacity of roughly 130 mcm compared to our highest ever gas demand, and an excess of 327 mcm/d compared to average winter SND.

It would therefore take outages on at least two or three major pieces of infrastructure to occur simultaneously, in a sustained period of very high demand, for there to be the chance of supply disruptions. In addition, it is likely that at times of system stress there would be a demand side response to high wholesale prices from large industrial and commercial customers. This would dampen demand and provide additional capacity to the market.

The data also suggests that at maximum, gas from storage would only have been able to meet under a third of our highest ever gas demand. Gas from storage meets only a small fraction of total annual demand (about 8%). As previously mentioned, the GB market actually utilises a range of different sources of supply to meet its demand, and this is large part of its resilience. In addition, we have a market based system in which the wholesale price is allowed to float freely (under normal conditions) to attract gas from different sources.

The GB gas system remains highly resilient to supply shocks. GB has never suffered a gas deficit emergency, and the likelihood of having an emergency remains low. The response to the combination of relatively high demand and an interconnector outage in March 2013 indicates that. In 2010, GB experienced very cold weather and had six out of the ten highest gas demand days ever. On this occasion the extremely high demand levels were met and the market’s performance was robust.

**Market expectations for next winter**

Current prices for NBP day-ahead delivery are at their lowest levels since October 2010, and 35% down on the same time last year, reflecting the current healthy supply picture.
Similarly forward prices for the winter ahead are at their lowest levels in over three years, and around 16% down on Winter 13/14 prices at the same time last year, indicating that the market sentiment is generally optimistic for the coming winter.

GB storage stocks are at record levels for this time of the year, in both absolute and percentage terms. This trend is likely to continue as summer injections have commenced and extra capacity, in the Stubbach facility, comes online. So-called medium range storage will continue to fill up during winter in low demand periods such as weekends, ensuring increased supply over peaks. There is now more gas in storage than the four-year average; this has helped contain concerns of Ukraine/Russia security of supply threats.

![Total GB Gas Storage (mcm)](image_url)

Stocks are similarly healthy across Europe (see graph overleaf), exceeding the four-year peak levels for this time of year. This is a encouraging for GB security of supply. The interconnectors between the UK and the Continent enable GB to import where required. The more gas there is in European markets means the less gas we would have to export, and the more gas there is potentially aviable for GB to access from Norway and through our interconnectors.
Russia/Ukraine

The recent deterioration of relations between Russia and Ukraine, and concerns that Russia may suspend gas supply to Europe is a particularly pressing concern for gas security. We are examining the issue, and its potential impact on GB security of supply, closely.

Russia supplied approximately 30% (139 billion cubic metres (bcm) /year) of Europe’s gas in 2013, with around 60% (84 bcm/year) of this travelling through Ukraine. Since disruptions to Russian gas flows through Ukraine in 2009, the 55 bcm/year Nordstream pipeline from Russia to Germany has begun operation. In 2013 the pipeline operated at just above 40% of capacity, meaning it could potentially transport a further circa 32 bcm/year of gas to Europe.

If flows through Ukraine were halted completely, 2013 utilisation rates suggest that other pipelines from Russia to Europe could transport about 40% (33 bcm/year) of the gas which flowed through Ukraine in 2013. This would leave a reduction in capacity of around 50 bcm/year.

Impact of supply disruptions on GB

GB receives no gas directly from Russia (2013 estimates put the total at close to zero). This compares to press reports that put Russian gas supplies to GB at 15%. Whilst gas may come to GB via our interconnectors with Belgium (IUK) and Holland (BBL), it is unlikely this is actually physically from Russia.

Russian supply disruptions could lead to Norwegian flows being diverted from GB to continental Europe due to their reliance on Russian gas. In addition, gas flows out of GB through the IUK interconnector with Belgium could increase.

The worst case scenario (although highly unlikely) is that, based on 2013 flows, if gas was diverted from Norway to Belgium, France and Germany up to their pipeline capacities, GB could see Norwegian flows drop by about 22 bcm/year (approximately 70%) to around 8 bcm/year. Flows along the interconnectors may also be affected by Russian gas supply disruptions. IUK and BBL imported 3.3 bcm/year and 7.3 bcm/year, respectively. IUK also
has the potential to export 20.4 bcm/year of gas. However, GB’s LNG capacity can provide up to 53.1 bcm/year, and only operated 16% of capacity in 2013. This will, depending on global availability, be sufficient to meet GB demand in all but the most extreme circumstances, though prices would increase to a level sufficient to attract LNG to GB from the global market. In addition, the likely cost of attracting LNG, our market would be less resilient to outages at key price of infrastructure.

In addition to specific projects exploring gas security of supply, we monitor the gas market daily, looking at security of supply and wholesale price movements. We work with National Grid and DECC to consider issues as they arise. National Grid is also obliged by us to provide Market outlooks for both electricity and gas each summer and winter. We will be working with NG and DECC to ensure that the Russia/Ukraine tensions are explored in this year’s winter outlook report.

**Market price reaction**

This view is reinforced by the market; day-ahead NBP prices have declined by around 35% compared with the same time last year, and reached their lowest levels since 2010. This trend has been reflected along much of the forward curve, though to a lesser degree. Next winter’s prices are currently 16% lower than the comparative contract at the same time last year.

**Conclusions**

There is currently no evidence of disruptions to Russian gas exports through Ukraine, and no immediate impact on GB security of supply. However, uncertainty remains. GB receives no gas directly from Russia, and there were disruptions, it is likely the impact to GB security of supply would be indirect in all but the most extreme circumstances, and would be to prices rather than disconnections to GB consumers. Prices would increase to a level that would attract global LNG into GB. How high this price may be will depend on the conditions of the global LNG market at the time. We will continue to monitor the situation closely, working with DECC and NG.

**GB gas supply resilience studies**

We have conducted numerous studies into our gas market resilience, these include:

- Project Discovery (2010) – assisted by Redpoint.

**Gas Security of Supply 2012**

In November 2012, Ofgem submitted its Gas Security of Supply report to the government. The analysis found that ‘the diversity and quantity of supplies that can be delivered to GB would protect consumers from supply disruptions in a broad range of events’.

The report also included a resilience study for GB supply. The updated analysis below uses National Grid’s assumed maximum flow data for total supply. Declared maximum capacities are substantially higher than this and no demand side response from industry is assumed.

With a 50% deliverability loss at storage sites, GB could still lose over 18% of import infrastructure on a peak day (435 mcm) before elective disconnect of Combined Cycle Gas Turbines (CCGTs) would be required (18% of non-storage supplies equates to all United Kingdom Continental Shelf (UKCS) supplies, or total loss of LNG supplies.)

With National Grid’s assumed storage deliverability of 135 mcm on a cold day (total declared storage deliverability is 154 mcm) we could lose almost 20% of supply capacity on a 1-in-20 peak day before CCGT demand was impacted. Over 45% of infrastructure would have to be lost before domestic (NDM) customers were impacted by supply disruption on a
1-in-20 peak day (45% of non-storage supplies equates to all UKCS supplies, IUK and 25% of LNG supplies.)

A range of work commissioned by DECC has also been conducted in recent years. In March 2010, Pöyry published a report\(^4\) commissioned by DECC examining the security of GB's gas supply until 2025. A range of supply shocks were modelled, including losing the Rough storage facility, a major import terminal, or gas supplies from a major source (Russian gas via Ukraine or Qatari LNG), together with sensitivity to demand levels. The report found that 'the GB gas market will be sufficiently resilient to security of supply risks and able to withstand most foreseeable problems, and that no major changes to current policies are required.'

DECC also examined the key factors affecting the development of the LNG markets and assessed the circumstances under which market developments might put LNG supplies to GB at risk. The report\(^5\) found that 'the global LNG market can be regarded as a well functioning market and that GB has established successful access to this market'. In addition, it concluded that 'the risks to GB security of gas supply as a result of developments in the global gas and LNG markets are minimal, and that the GB gas system may only be under stress in extreme circumstances'.

Cash-Out Reform
The best way (i.e. cost effective) to improve GB’s security of supply was to change the gas emergency cash out arrangements. The GB gas market arrangements place the onus on market participants to provide secure supplies to consumers. We do this by incentivising shippers to balance their supply and demand. Our regulatory framework for storage and LNG allows developers to apply for exemptions from third-party access, which may help to support new investment. Over the past decade, the GB market has brought forward significant investment in gas supply capacity. This includes LNG import facilities, increased interconnection with the continent, further capacity for Norwegian supplies and additional storage.

In 2011 we launched a Significant Code Review into gas security of supply. Our proposals ensure:

- Prices will no longer be frozen in an emergency and could rise to attract imports.
- The cost of consumer interruptions (i.e. the value of lost load) will be factored into the cash-out price.

Efficient price signals in the gas and electricity market are necessary to ensure security of supply. Our cash-out reforms ensure that the price signals during a gas emergency are improved. We aim to make a final decision in September 2014 and cash-out reform will be implemented by winter 2015.

Demand Side Response Mechanism
We recognise that increased demand side response (DSR) could improve our security of supply resilience and reduce the costs of an emergency if one ever happened. Therefore we have decided to proceed to implement a mechanism to encourage DSR whereby an industrial consumer can offer to voluntarily reduce their demand in pre-agreed circumstances in return for a payment. This relieves stress on the system and helps to avoid further customers being affected by the emergency. National Grid are in the process of working up a methodology on this, and we hope that a mechanism will be in place by winter 2016/17.

Gas Storage and Further Interventions
In November 2012 we provided a Gas Security of Supply report to Government. This again explored the resilience of our gas market is to supply shocks and what, if any, further

measures could improve GB gas security of supply. We concluded that our gas market was robust to supply shocks, but that Government should give further consideration to additional measures on top of the Gas SCR. Government last year considered the case for interventions to increase storage investment and place obligations on suppliers to maintain security of supply. They concluded that this was not necessary and the costs would outweigh the benefits.

**Daily Monitoring and Winter Outlook**

In addition to specific projects exploring gas security of supply, we monitor the gas market daily, looking at security of supply and wholesale price movements. We work with National Grid and DECC to consider issues as they arise. National Grid is obliged by us to provide Market outlooks for both electricity and gas each summer and winter.

Each year National Grid are obliged by us to provide an assessment of the coming winter's supply and demand outlook.

**Project Discovery 2011**

Project Discovery in 2010 highlighted that depletion of North Sea gas reserves increased potential risk to security of supply. It also highlighted the importance of having robust gas supplies to maintain electricity generation because of a greater reliance on gas fired generation.