CHEMICAL INDUSTRIES
ASSOCIATION

A call for evidence on the role of gas in the electricity market - DECC

Response from the Chemical Industries Association

The Chemical Industries Association[1] welcomes the chance to respond to this key consultation. Energy costs are a significant part of our energy intensive members operating costs. Secure and competitive priced energy is essential to our membership, which compete in globally traded markets.

Gas is a key input for the chemical sector as well as the electricity generators

We welcome the Government's focus in providing a strategy for gas generation in the autumn and support the use of gas as a fuel for power generation both for back-up and baseload electricity (if competitively priced). However, we believe the strategy should also consider the broader context as gas will continue to form an essential part of the energy mix for a range of uses both during and after a transition to a low carbon economy.

We would particularly highlight that gas is also a vitally important source of fuel to energy intensive industries such as the chemical sector. In the chemical sector, gas is not only used as a fuel to raise heat and power but is a valuable source of hydrocarbons and hence a key raw material (or feedstock) for many processes including ammonia based fertilisers and petrochemicals. Whilst some of our members may have the flexibility to offer demand side response services, a large proportion require a reliable and constant baseload supply of gas due to the processes on site, HSE considerations or the large energy intensive nature of the sites. For many of those sites, even short term interruptions to gas supplies can cause many days of lost production. The chemical sector is also highly exposed to international competition as it participates in global markets.

Secure and globally competitive gas supplies are therefore a prerequisite not just towards meeting our future electricity needs but also towards promoting the right manufacturing environment in support of the UK's growth agenda.

Combined Heat and Power (CHP) is a key technology and should be incentivised

Half of our members' electricity needs are supplied by gas-fired CHP which is at least 15% more efficient than alternative conventional technologies. CHP also offers a considerable efficiency advantage over conventional CCGT technologies and represents a more cost

[1] See appendix for further details on the Chemical Industry

effective carbon abatement option than heavily subsidised renewable technologies in the power sector. We therefore believe there should be further investment in this technology from both in industry and electricity market perspective.

We welcome Budget 2012's decision to exempt fuels used to generate heat in our CHP plants from the Carbon Price Floor (CPF). However, it's vital that Government follows through on its Carbon Plan commitments to incentivise new investment in CHP whilst ensuring that the continued operation of existing CHP plants remain economically viable. Increased use of gas for backup generation will only increase price volatility and subsequently have an adverse economic impact on those chemical companies who are reliant on CHP. The gas generation strategy must consider CHP economics and the ability to stabilise gas prices.

We propose that a premium Feed in Tariff (FiT) for new and existing CHP is introduced under the Electricity Market Reforms (EMRs) with as little gap as possible from end of Levy Exemption Certificates (LECs). Even before the loss of LECs, new build CHP was uneconomic relative to CCGT so this incentive will help to ensure that due weight is given to CHP investments.

Regulatory clarity is needed to ensure secure power supplies and to support growth

The current regulatory framework is becoming increasing complex and at the moment does not offer enough clarity for investment decisions to be taken by generators or energy intensive industries (EIIs) like chemicals;

- On the generation side the proposed Capacity Mechanism has essentially stalled any near-term investment in gas CCGT's (or commitment to actually build, noting the current planning consents given) as the market waits for further details of possible payments. In the CIA's response to the EMR proposals we doubted the need for a capacity mechanism at this time. Now Government has indicated that this policy proposal will be taken forward, we ask that information is released to the market as soon as possible indicating the levels of back-up generation that will be needed in the future. Indeed, this information could highlight that no immediate support is required.

- Regulatory uncertainty is also currently affecting investment in EIIs such as the chemical sector. With 70% of CIA members headquartered overseas, there is increasing concern over the cumulative impact of unilateral energy and climate change policies on our UK cost base. We very much welcome the first steps being taken towards mitigating these costs in the Autumn Statement which proposed to compensate businesses in EII sectors for CPF and EU Emissions Trading Scheme (EU ETS) impacts on power prices, and in Budget 2012's proposal to exempt CHP from CPF on fuel inputs for heat. However, we look forward to the Government taking timely decisions to mitigate costs in the other intended policy areas (such as EMR impacts including those from capacity payments). It's also vital that Government develops a comprehensive "Phase 2" strategy for EIIs like

chemicals that are ideally placed to deliver both UK economic growth and our green future, but need long term predictability to invest. As part of this we continue to ask for government to draw up an EII strategy that recognises the specific risks to sectors such as chemicals with longer term policies so it can prosper and contribute to UK growth.

Gas infrastructure requirements to meet future needs should be investigated

Over the last few years, the GB gas market has attracted good investments in gas importation assets which are helping to ensure that sources of gas are significantly diverse and secure. However, it is also apparent that gas will play an ever increasing role in the electricity market in the future as it increasingly acts as a load management source for intermittent generation. We hope that the Government's strategy will also investigate and comment on the need to enhance the UK's future gas supplies to ensure they are of an adequate level and the network has a sufficient mix of sources and infrastructure to cope with the greater fluctuations in gas demand that will inevitably follow. The following key areas should be investigated:

- ***Shale gas*** is one such opportunity which, if safely exploited while minimising environmental impacts, could make a valuable contribution to diversifying the mix of gas sources available to the UK to the benefit of competitive and secure supplies and the competitiveness of the UK economy including the chemical sector. We would particularly highlight recent experience in the US where exploitation of shale gas is more advanced and is projected to lead to the creation of hundreds of thousands of new jobs. From a chemical sector perspective this is has been manifested in a raft of announcements of plans to invest in new capacities, eg: in fertilisers and petrochemicals, which will increase competitive pressures in global markets. We therefore welcome the UK Governments' considered and pragmatic approach to shale gas development to date and hope that this continues.

- ***Gas Storage*** – Historically, the UK has had a small percentage of gas storage (relative to overall demand) compared to other European markets and this has been of increasing concern as supplies from the UK Continental Shelf continue to diminish and we become increasingly dependent on gas imports (though the UK's new importation assets offer significant diversity). We therefore welcome the investments in fast-cycle storage facilities that are currently going ahead in the UK as these will dramatically increase the peak deliverability during the winter months. The exploitation of shale gas in the UK could offer the opportunity to limit any increase in our reliance on imported gas and reduce the need for further storage. However, the levels of exploitable shale gas reserves have yet to be established. We therefore ask that the Government's strategy considers the role of storage in promoting further security of supply according to possible scenarios for UK shale gas exploitation.

- ***Carbon Capture and Storage*** is a potential abatement technology which could allow fossil fuel based power generation to play a longer term role in meeting baseload electricity requirements. It is also a potential future emissions reduction technology for large emitting processes in the chemical sector if it can be shown to be economically feasible. We welcome the Governments re-vamped competition to promote developments in CCS technology in the power sector and ask that any investments made are "future proofed" to allow industries such as the chemical sector access to use the infrastructure once technologies are commercially proven.

Following our more general comments please find CIA responses to the questions asked;

1. **What are the main strengths and weaknesses of gas generation in helping deliver a secure, affordable route to decarbonisation through to 2020 and then by 2050?**

   Strengths: Technology is well known and investment lead times relatively short, capital costs are low (unlike nuclear or renewables), output is reliable (unlike wind or solar), and associated carbon emissions are lower than for coal. In addition, investment in CHP to also supply local heat demand offers a considerable efficiency advantage over conventional CCGT technologies. Longer term, the UK is well-placed to exploit carbon abatement opportunities from carbon capture and sequestration (CCS), if economically feasible.

   Weaknesses: Gas generation will lead to increasing dependence on gas in the overall energy mix: the UK is acutely short of gas storage and already has difficulty meeting peak demands. That said, solutions include the potential offered by the safe exploitation of shale gas while minimising environmental impacts to increase domestic gas supplies and a multiple increase in storage capacity. Also having significant gas fired generation capacity sets a lower limit for carbon emissions

2. **What role can gas fired generation play in the future and what level of gas generation capacity is desirable?**

   In theory, there is no future limit to the role of gas generation and it is one of the cheapest forms of generation available. In practice, it would be unwise to make the country overly dependent on this one energy source – gas is already used in its own right as an energy source for both domestic and industrial customers and it is also a vital feedstock for key chemical processes.

   However gas generation is the essential back-up source for erratic and unreliable renewables. We believe gas should also play a major role in providing baseload power subject to the availability of competitive and secure supplies of gas, including gas from unconventional sources and the longer term balance between the costs of gas generation with CCS and alternative sources of low carbon baseload such as nuclear, clean coal and more dependable renewables such as wave/tidal.

3. **What are the key factors driving the economics of investing in new gas-fired power generation and how are these factors likely to change?**

   Capital cost (low; a positive, unlikely to change); relatively short investment lead times, uncertainty over the variable cost of gas and future carbon costs /subsidies to renewables; the role of wind in having prior access to grid and forcing uncertain and erratic operation of other generation forms (as gas is the most flexible, it would perversely be likely to suffer most); and total energy demand (unless mitigated across a wider set of activities than allowed by current budgets, climate policies are likely to undermine UK manufacturing and lower overall energy demand).

   We would particularly highlight our concern that the removal of the LEC incentive for exisiting and new investments in CHP means that the economics of utilizing this energy efficient technology are less favourable than those for CCGT generation.

   As highlighted in our more general comments - the proposed Capacity Mechanism has essential stalled any near-time investment in gas CCGT's as the market waits for further details of payments. In the CIA's response to the EMR proposals we doubted the need for a capacity mechanism at this time. Now Government has indicated that this policy proposal will be taken forward, we ask that information is released to the market as soon as possible indicating the levels of back-up generation that will be needed in the future. Indeed this information could highlight that no immediate support is required. The Government needs to clarify the situation

4. **What barriers do investors face in building new gas generation plants in the UK? What are the key regulatory uncertainties that may prevent debt and equity investors making a final investment decision in gas generation and supply infrastructure?**

   Barriers: The raising of capital in the light of economic conditions and the operational/commercial and regulatory uncertainties alluded to in answers to previous question.

5. **Are there any other policy issues that need to be addressed beyond the Government's proposals for the capacity mechanism and the EPS?**

   There must be a guarantee for investors in gas fired generation that they will not subsequently fall foul of a tightening of EPS at some future time.

6. **Given a continuing role for gas and the potential for increased volatility in gas demand, to what extent is gas supply and related infrastructure a barrier to investment in gas fired generation? What impact will unconventional gas have on the case for investing in gas generation and the supporting infrastructure?**

Constraints include: overall gas supply and therefore adequate (and increasing) import capacity with associated firm supply contracts; inadequate storage capacity; and the location and capacity of main pipelines if new gas power stations alter current demand distribution and network flows.

Unless gas supplies can be assured, it will be difficult to persuade investors to build significant new gas capacity. Major development of shale gas/underground coal gasification and a mutliple increase in storage capacity would clearly give confidence to investors in gas fired power generation.

Appendix

About the chemical industry

With an annual turnover of £50 billion, chemical businesses in the UK are a key contributor to the economy. Every working day, our sector adds £30 million to our country's balance of trade. The jobs of 600,000 workers in the UK depend on chemical businesses. Workers in chemical businesses earn on average 40% more than other parts of manufacturing.

The UK chemical industry is exposed to the risk of carbon leakage. We are highly energy intensive, accounting for 22% of total UK industrial consumption. We are also highly exposed to international competition in terms of both trade in our products and attracting investment. This is because our businesses compete in global markets and pricing of basic chemicals is very similar across Asia, North America and Europe. In addition, about 70% of sites are headquartered outside the UK ($^{2}/_{3}$rds of these outside the EU).

The UK chemical industry already has a excellent track record for reducing our own emissions, having improved our energy efficiency by 35%, and will continue to make improvements. But we are also enablers of climate change solutions in a wide range of applications across sectors of the economy including: households, transport, energy and agriculture. Examples of solutions include: building insulation, PVC and soda ash for double glazing, fertilisers and crop protection (to reduce land use), lightweight components for cars and planes, low temperature detergents, biofuels and materials for wind turbines. An independent study has confirmed that the global chemical sector currently delivers 2 tonnes of greenhouse gas savings for every tonne we emit in our production processes and that, with the right policy framework; this could rise to more than 4 tonnes by 2030. These results are summarised in CIA's low carbon brochure which also includes case studies to demonstrate that many of these solutions are already produced in the UK.