



By Email:
NIAEvidence@nic.gsi.gov.uk

Uniper UK Limited
Compton House
2300 The Crescent
Birmingham Business Park
Birmingham B37 7YE
www.uniper.energy

Uniper UK Limited

Registered in
England and Wales
Company No 2796628

Registered Office:
Compton House
2300 The Crescent
Birmingham Business Park
Birmingham B37 7YE

Response to: National Infrastructure Commission report: Congestion, Capacity, Carbon: Priorities for national infrastructure – Consultation on a National Infrastructure Assessment
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Uniper

Uniper is an experienced international energy company focused on power generation, energy trading, transportation, and storage, as well as a provider of specialist power engineering services. In the UK we own seven power stations comprising over 6GW of flexible installed capacity, as well as Holford gas storage site. As such Uniper is the fifth largest generator in the UK. Our employees, our experience and our assets make us a well-established business that makes an important, tangible contribution to Britain's security of supply and contributes to a cost-effective transition to a low carbon society.

We are pleased to take part in the consultation process. Our reply is focussed on questions 13 and 15 in Chapter 4, on eliminating carbon emissions from energy and waste. Our views can be summarised as:

- Gas as the enabler of the energy transition; and
- Consistent treatment of competing technologies

Question 13) What will the critical decision factors be for determining the future of the gas grid? What should the process for deciding its future role be and when do decisions need to be made?

Gas is an important fuel to enable the transition. Gas fired generation provides a reliable, flexible and efficient source of electricity to manage gaps due to intermittent generation for a number of minutes, hours, or days. The Committee on Climate Change analysis suggests that gas generation will still account for 24% of generation by 2030 and analysis carried out on behalf of BEIS as part of the Smart Flexible Energy System call for evidence suggests around 18GW of CCGT capacity by 2050, albeit with much reduced load factors by then. Importantly Gas CCGT's and OCGT's will provide the primary source of flexibility to manage the intermittent residual generation requirement, where demand is not satisfied by nuclear, renewable generation and interconnectors. With the



range of uncertainty regarding future sources of flexibility, if new build or replacement low carbon generation is delayed the need for gas generation could be higher in to the 2030's.

Decarbonising heat is a major challenge and decarbonising the use of gas, by utilising the existing gas networks, could make a cost-effective contribution to achieving this objective in combination with other solutions. More research will be required to investigate how lower carbon gas, such as hydrogen, can be utilised in gas turbines.

Gas fired generation provides flexibility, adequacy and resilience as a partner to renewable generation. Technologies, such as batteries, are developing and could become more cost competitive in the future. However, it is not yet clear that these technologies will be able to provide sufficient energy for a prolonged winter period on their own. Gas fired generation can do this. Making better use of existing gas fired generation infrastructure, utilising existing fuel and power connections, as well as civil infrastructure, is an important part of ensuring a cost-effective energy transition.

Question 15) How could the existing mechanisms to ensure low carbon electricity is delivered at the lowest cost be improved through:

- *Being technology neutral as far as possible*
- *Avoiding the costs of being locked in to excessively long contracts*
- *Treating smaller and larger generators equally*
- *Participants paying the costs they impose on the system*
- *Bringing forward the highest value smart grid solutions*

The capacity market (CM) is the competitive market based mechanism to achieve security of supply; not just in peak periods, or under a stress event, but to secure the forecast demand alongside renewables throughout the year. It is one of the three pillars of the energy system that sits alongside the wholesale energy market and developing flexibility market of the future. Recognition that the capacity market forms part of the enduring energy landscape will provide stability and bolster investor confidence. The foundation provided by the capacity market to provide a stable and secure energy supply will ensure that the energy transition can proceed at the desired pace; as it will ensure that sufficient capacity is procured on a competitive basis, therefore at the lowest possible cost, to be available to secure demand throughout the year for those times when the wind is not blowing or the sun not shining.

There are a number of issues under the existing market framework that need to be considered in terms of achieving a more cost effective outcome.

The CM auctions have been highly competitive which keeps the financial cost in check. However, market distortions, inconsistent environmental standards and market design (e.g. grid charging and procurement of ancillary services) potentially brings forward technology that is more polluting (diesel reciprocating engines) or provides non-comparable service (e.g. batteries and interconnectors versus gas CCGTs). We note the decision taken by Ofgem on embedded benefits, and the implementation of the medium combustion plant directive.

There are, currently, differences in treatment of new build compared to existing assets, which need to be reviewed to ensure that new build and existing compete on equivalent terms and the most cost effective capacity is bought.



One year capacity agreements for existing generation gives planning challenges whilst 15 year agreements for new build without any adjustment (e.g. price duration curve) is a distortion locking in potentially inefficient costs for 15 years. In addition, developers of new build are less exposed to penalties for under-delivery than existing generation plant, allowing for delays and delivery of less capacity than planned without penalty. CM rules allow new build to be delivered up to 2 years late (18 months plus 6 months appeal time) without having to pay a penalty; and if a new build project delivers a minimum 50% of capacity it loses income but does not have to pay a penalty. Treatment of unproven DSR is more generous with DSR CMUs able to reduce minimum delivery requirements to only 2MW up to 1 month before the start of the delivery year. Where these events do occur, speculative developer behaviour may have led to closure of otherwise cost effective capacity and replacement capacity would need to be procured at a later date and potentially at a higher cost.

Gas fired power stations are expected to have an important, continued role to play in the energy transition through to 2050, albeit with an evolving role as levels of installed capacity remain but load factors continually decline. In this context, the economics of new build gas capacity over the full life of these assets remain challenging. Finding ways to use existing infrastructure would help to reduce the overall cost of the energy system over the long term. The re-use of suitable existing power station sites, with established infrastructure, grid and gas connections as well as established civil engineering and structures, through replanting of the generating assets could do this. Assessing ways to unlock this potential lower cost investment in suitable established power station sites could similarly lead to greater competition in the capacity market.

GB generation competes with generation on the continent, where electricity markets are physically connected. Interconnection of markets is an important part of ensuring diversity of energy sources and can offer flexibility. However, interconnectors must compete with other technologies on a consistent basis and only where they offer a comparable service. An interconnector cannot independently provide generation capacity; it only provides transmission of the electricity from connected sources of generation. Electricity flows across interconnectors according to market signals, and not in response to capacity market obligations. The question as to whether interconnectors could meet their obligation under a capacity market agreement needs to be considered further in the context of the energy and climate policies of the markets that they are connected to. Even if de-rating factors are representative of the overall contribution from interconnectors including an assessment of the impact of the growth of interconnectors on their contribution, the timing of flows is dependent on market conditions.

It may also be appropriate to review whether GB generation should continue to pay Balancing Services Use of System Charges, as interconnectors and non-GB generation do not pay this charge which means UK generators earn less than a similar continental generator would earn for the same service.

The distinction in the regulatory arrangements between large generation plant that is connected to the transmission system and smaller distribution connected plant is becoming increasingly artificial. Many small participants are just as system relevant as one large participant. Whilst it is important to retain cost reflective network charging arrangements, the ability to offer flexibility services to different buyers should rely on a consistent set of requirements in terms of information to the market. The price, volume and location of each instructed MW should be visible to all market participants irrespective of size, technology and network that they are connected to.



At present, there is a disparity between the reporting of balancing actions and services procured from traditional providers and through the Balancing Mechanism (BM), compared with that on new services procured from new entrants and technologies. In March, National Grid reported that non-BM Short-Term Operating Reserve (STOR) availability and utilisation costs amounted to 54% of the reported cost of £72m for STOR in 2016/17. Yet market participants do not know when non-BM STOR plants are available, utilised and at what prices, whereas in the BM this information is available at the generating unit level. There is also no market information on what non-BM service providers delivered compared to their instruction. The volume of non-BM actions are now significant and they should be placed on an equal footing to ensure a competitive market.

The new regime must ensure that all equivalent information for participants is visible to the market to promote effective competition. Transparency and consistency are essential to ensure a more effective and dynamic flexibility market across the transmission and distribution networks. Systems operators should have a clearly defined set of standardised services and procurement principles. Setting out in advance the system needs and how services will be valued and assessed.

We note the proposal in Government and Ofgem's Smart Systems and Flexibility Plan regarding network ownership of storage. The regulated transmission and distribution network companies make decisions which affect the cost and therefore the competitiveness of storage and flexibility providers, for example when providing network connections. Hence, owning storage would make network companies a direct competitor in the markets they facilitate. This approach could undermine the government's objective of a transparent and effective energy market. Instead, independent systems operators should tender for such services.

Suppliers, aggregators, generators, and customers must be allowed to innovate and compete on an equitable basis in transparent competitive markets.

The energy transition brings new challenges to grid operations and balancing supply with demand. Legal separation of National Grid's System Operator function by April 2019 allows for consideration of full separation of this activity by April 2021, in time for the start of the next price control period. Full separation would enhance confidence in future flexibility and capacity markets by removing any doubts in relation to conflicts of interest. It would also potentially enable a more holistic approach to systems operation to be considered, where synergies across the transmission and distribution boundary can be extended to efficiently integrate distributed generation, storage, demand side response and prosumers in to the market.