

Consultation on Possible Models for a Capacity Mechanism

Response form

Responses are welcome by email or post. You may find this document helpful for structuring your response, but can reply in a separate document if you prefer. If replying in a separate document please make clear which questions you are answering.

Respondent Details	
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Tick this box if you are requesting non-disclosure of your response. ☐

Please return by 4 October 2011 to:

Department of Energy & Climate Change,
Electricity Market Design – Security of Supply
4th Floor, Area D
3 Whitehall Place,
London, SW1A 2AW

You can also submit this form by email to:
DECC.capacity.mechanism@decc.gsi.gov.uk

Consultation questions

Note: the references in square brackets refer to page and figure numbers in the consultation document where more information can be found, and the questions are set out in context. The consultation document is Annex C of the Electricity Market Reform White Paper, and is available here:

http://www.decc.gov.uk/en/content/cms/consultations/cap_mech/cap_mech.aspx

Targeted mechanism

Consultation question [page 167]	
1	Does this table [see Figure C3] capture all of your major concerns with a targeted Capacity Mechanism? Do you think the mitigation approach described will be effective?
Response	No specific points to make

Consultation question [page 168]	
2	How long should the lead time for Strategic Reserve capacity procurement be and why?
Response	No specific points to make

Consultation question [page 168]	
3	Should the length and nature of contracts procured by the Strategic Reserve procurement function be constrained in any way?
Response	No specific points to make

Consultation question [page 169]	
4	Which criteria should providers of Strategic Reserve be required to meet?
Response	No specific points to make

Consultation question [page 169]	
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5	How can a Strategic Reserve be designed to encourage the cost-effective participation of DSR, storage and other forms of non-generation technologies and approaches?
Response	No specific points to make

Consultation question [page 175]	
6	Government prefers the form of economic despatch described here. Which of the proposed despatch models do you prefer and why?
Response	<p>Under the economic dispatch model, the Strategic Reserve will need to run for a greater number of hours than if the last-resort dispatch model is used. This assumes that the price set by the Strategic Reserve feeds into the wider market to allow generators to recover their fixed costs. The lower those prices, the more hours are needed before the relevant costs are recovered. If the Strategic Reserve is to run for a greater number of hours, and power cuts are to be avoided in those hours, we will need a larger Strategic Reserve. In figure c.6, this is what we would get by moving P_{sr} downwards and D_m to the right in order to ensure the red and green areas remain equal. Figure c.6 has hours on the horizontal axis, but it is straightforward to translate from hours to demand levels via the load-duration curve, as is implicitly done in the document. The more hours the Strategic Reserve is used for, the lower the level of demand met by market-driven plant, hence the lower the level of that plant and the larger the Strategic Reserve needed to maintain security.</p> <p>High energy market prices can bring political pressures, as acknowledged in the consultation. Even though very high Pool prices were largely hedged and had little financial impact, their political effects were damaging. I suspect that the year-to-year volatility in the number of hours in which prices would be set at VOLL would be proportionally greater than that in the number of hours in which prices would be set at a lower level. That makes generators' revenue streams riskier with the last resort dispatch model. If the priority is to make investment less risky and reduce the cost of capital, that argues that economic dispatch is a better solution.</p>

Consultation question [page 175]	
7	How would the Strategic Reserve methodology and despatch price best be kept independent from short-term pressures?
Response	<p>Dispatch prices might be set against a formula which indexed them to items such as fuel prices or other key generation costs. This would allow the prices to move with costs, while the formula remained stable. If the formula could only be changed at defined moments (once or twice a year), and perhaps with a long lag (e.g. a six month delay before an agreed change was implemented), this could reduce the perceived benefits from campaigning for a change in response to short-term pressures.</p>

Consultation question [page 175]	
8	Do you agree that a Strategic Reserve should be periodically reviewed? If so, who would be best placed to carry out the review and how often should it be reviewed?
Response	No specific points to make

Consultation question [page 176]	
9	Into which market should Strategic Reserve be sold and why?
Response	<p>This is a false dichotomy. If the day-ahead markets appear to be short of capacity, the Strategic Reserve should be deployed there – what is the point of waiting until the Balancing Mechanism? Doing so could lead to day-ahead prices that were ultimately above those produced in the Balancing Mechanism. Savvy traders who realised that this was likely to happen would attempt to move demand from the day-ahead market to the Balancing Mechanism (subject to the inherent disadvantages in trading in a more volatile, two-priced, market). The more activity takes place in the Balancing Mechanism, the less likely it is that generators and others will have time to properly plan their dispatch and provide power in a cost-minimising way.</p> <p>Having advocated that the Strategic Reserve be available in the day-ahead market, if it is not used then, it should also be available in the Balancing Mechanism. It would be crazy to withhold this plant if a problem occurs close to real time, just because it had been available for problems that were predicted further ahead and none had arisen at that stage.</p>

Consultation question [page 178]	
10	Do you have any comments on the functional arrangements proposed for managing a Strategic Reserve?
Response	No specific points to make

Consultation question [page 179]	
11	Given the design proposed here and your answers to the above questions, do you think a Strategic Reserve is a workable model of Capacity Mechanism for the GB market?
Response	I believe that it is workable, but sub-optimal.

Consultation question [page 182]	
12	How and by whom should capacity in a GB market be bought and why?
Response	A centralised market would minimise transactions costs. I recommend you read "What should a power marketer want" by Steven Stoft, The Electricity Journal, June 1997, pp 34-45. Writing in the design period of the California electricity market, he pointed out that companies hoping to make a living by trading outside the main markets had a vested interest in making those markets inefficient, allowing the traders to beat them, and gave examples of such tactics in the then-current negotiations. I am sure, of course, that no companies active in the UK would attempt to increase my electricity bill by lobbying for an inefficient system of capacity trading.

Consultation question [page 183]	
13	What contract durations would you recommend for a Capacity Market?
Response	New plants should have the option of relatively long contracts (particularly new entrant plants); older plants might be best suited to single-year contracts, which match the timescales decisions on plant retirements are typically made on and ensure that consumers are not exposed to excessive risk of paying for stranded capacity over the long term if demand turns down.

Consultation question [page 184]	
14	How long should the lead time for capacity procurement be? Should there be special arrangements for plant with long construction times?
Response	No specific points to make

Consultation question [page 185]	
15	Should there be a secondary market for capacity? Should there be any restrictions on participants or products traded?
Response	No specific points to make

Consultation question [page 186]	
16	What are the advantages and disadvantages of making a central, administrative determination of (i) the capacity that can be offered into

	the market by each generator; (ii) the criteria for being available; and (iii) the penalties for non-availability? In outline, how would you suggest making these determinations?
Response	No specific points to make, although I favour the reliability option approach to capacity markets

Consultation question [page 191]	
17	How should the reference market for reliability contracts be determined and what would be an appropriate reference market if it is set by the regulator? How could any adverse effects of choosing a particular option be mitigated?
Response	<p>The reliability contract approach is appealing because peaking generators get paid for providing capacity, but then make payments related to market prices to ensure that they are not over-compensated (or under-compensated) and hence that consumers are paying appropriate amounts. This should minimise risks for both parties. Non-peaking generators get identical payments from these contracts, but these form a much lower proportion of their revenues.</p> <p>If you agree with this point, it follows that we would minimise risk if the reference market is the market in which we expect most of the peaking capacity to do most of its trading. I anticipate that this would be the day-ahead market.</p> <p>If there is a central auction of contracts, it would be very difficult to have more than one type of contract in respect of the reference market, although I suppose we could have a (single) contract which was settled against a weighted average of prices.</p>

Consultation question [page 192]	
18	For a Reliability Market, how should the strike price be determined? If using an indexed strike price, which index should be used?
Response	I would recommend indexing the strike price to the fuel costs of a (notional) peaking generator, of the type most common in the GB market, to minimise that type of plant's risks.

Consultation question [page 193]	
19	For a Reliability Market, what level of physical back up (if any) should be required for reliability contracts and how should it be monitored?
Response	<p>I would recommend that physical backup is required, based on nameplate capacity, adjusted for a (broad) type-specific availability record.</p> <p>If purely financial trading is allowed, traders selling capacity would earn a profit in years with high availability and low demand, and losses in years with</p>

	low availability and high demand. I suspect that the shape of the relevant distributions is such that there would be many years of small gains and a few years with large losses. I believe that the so-called “yen carry trade” has a similar distribution of gains and losses, and is regarded in some circles as a trap for the unwary. (Borrow cheaply in yen, lend the proceeds at a higher interest rate in some other currency to make a small profit, and hope that the exchange rate does not move against you to wipe you out.) Do we really want the security of our electricity system to depend on traders attracted to this “opportunity”?
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Consultation question [page 194]	
20	Do you agree that a vertically integrated market potentially raises issues for the effectiveness of a Reliability Market? If so, how should these issues be addressed?
Response	If the supplier has to compensate consumers who actually suffer a power cut (and gets the revenues from the reliability contracts to finance this), this would ensure that payments made by an unavailable generator were a real cost to an integrated company. A central auction would ensure liquidity and opportunities for entrants, as compared to bilateral trading.

Consultation question [page 195]	
21	What could we do to mitigate interactions between a Capacity Market (especially if a Reliability Market) and Feed-in Tariff with Contract for Difference without diluting the effectiveness of either?
Response	The FiT-CfD should be regarded as including a Reliability Market contract, and the adjusted volume of FiT-CfDs deducted from the amount that suppliers are required to buy in the central auction for Reliability contracts. The adjustment should be on the same basis as that recommended in answer 19 – based on the historic availability at peak times for broad classes of generators (eg PWR, CCGT, onshore wind...)

Consultation question [page 196]	
22	How can a Capacity Market be designed to encourage the cost-effective participation of DSR, storage and other non-generation technologies and approaches?
Response	No specific points to make

Consultation question [page 199]	
23	Do you have any comments on the functional arrangements proposed for managing a Capacity Market?

Response	No specific points to make
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Consultation question [page 199]	
24	Do you think that a trigger should be set for the introduction of a Capacity Market? If so, how do you think the trigger should be established, and how should it be activated?
Response	I believe that this would lead to greater uncertainty. Delaying the introduction of the market would avoid some transactions costs in the period before it was finally triggered, but the market should sensibly be designed to minimise such costs.

Consultation question [page 199]	
25	What is the most appropriate design of Capacity Market for GB and why?
Response	No further specific points to make – I support a centralised auction for reliability contracts backed by de-rated physical capacity.

Capacity mechanism Assessment

Consultation question [page 210]	
26	What are your views on the costs and benefits of a Capacity Mechanism to industry and consumers?
Response	The modelling results seem sensitive to the particular assumptions made on investment choices. If the model is designed to represent an energy-only market which produces optimal capacity choices without an additional mechanism, adding one is bound to lead to losses. As the commentary says, the missing money problem makes it unlikely that the energy-only market would lead to the right capacity choices, and so the analysis may well be flawed.

Consultation question [page 211]	
27	Which Capacity Mechanism should the Government choose for the GB market and why?
Response	The fundamental problem facing owners of peaking plant is the fear that they will be “missing money” because prices will not rise high enough for long enough to recover their fixed costs. This is relevant both for new build in peaking gas turbines and for delaying the retirement of larger stations. Potentially, every generator has the same problem, but the missing money

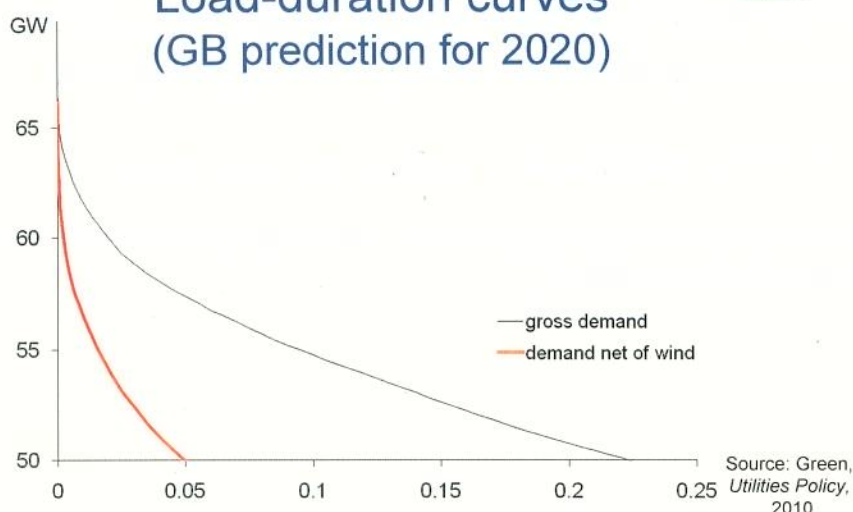
forms a much smaller part of the revenues of stations with high load factors.

My work on the load-duration curve facing fossil plant with predicted 2020 levels of demand and wind output suggests that there will be an average of around 450 hours a year in which the net load is between 50 and 66 GW – with wide variation from year to year. With some de-rating for unavailability, this implies that almost 20 GW of plant (or demand response) will be required for so few hours that the missing money problem could have a significant impact on their expected profitability. If a 5% load factor is viewed as sufficiently high for missing money not to be a major issue, the diagram below allows you to see how much plant would have a load factor of less than 2% (about 14 GW), or 1% (about 12 GW).

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Load-duration curves (GB prediction for 2020)



Thinking Networks

If this is the fundamental problem, then it needs to be dealt with, and preferably in a direct manner. I suspect that a strategic reserve consisting of 12 GW of plant would be perceived by many stakeholders as unacceptably large. I fear that stations in an energy-only market that expected a load factor of less than 1% would be regarded as too risky by many potential owners. In conference presentations on electricity market reform, I have described these stations as “the squeezed middle” – a few peakers in the Strategic Reserve would get a contract, low-carbon generators get a contract, but there is a danger that the low- and mid-merit stations we depend upon for our reliable electricity would not get sufficient support. A Capacity Market based around Reliability Contracts gives this support, but in the form of a hedge which can protect consumers from excessive peak prices and give them at least financial compensation in the event of a power cut.

Please select the category below which best describes who you are responding on behalf of.

- ☐ Business representative organisation/trade body
- ☐ Central Government

- ☐ Charity or social enterprise
- X Individual
- ☐ Large business (over 250 staff)
- ☐ Legal representative
- ☐ Local Government
- ☐ Medium business (50 to 250 staff)
- ☐ Small business (10 to 49 staff)
- ☐ Micro business (up to 9 staff)
- ☐ Trade union or staff association
- X Other (please describe): an academic expert who has been studying the electricity market in GB and abroad for over 20 years, with experience at the Office of Electricity Regulation, MIT and the World Bank (inter alia)

Thank you for taking the time to let us have your views.

The Government does not intend to acknowledge receipt of individual responses unless you tick this box. ☐