Consultation response:

Capacity Market Review – Call for Evidence

1 October 2018

EXECUTIVE SUMMARY

Meeting the UK's climate and energy market obligations while maintaining security of supply requires a **cohesive and evidence-based policy approach**, which takes account of **technological and market developments**. The Capacity Market (CM) must not undermine the UK's **coal phase-out** and other emissions reduction objectives, place less environmentally harmful technologies at a **competitive disadvantage**, or otherwise prohibit the disruptive innovation and investment needed for a flexible and low-emissions energy system.

In order to achieve this goal, the CM Review should include an **independent and updated resource adequacy assessment**, factoring in regulatory changes (e.g. cash out reform), interconnection and the growth of DSR, storage and renewable capacity;

Assuming that a CM is still required, we recommend:

- Changes to CM eligibility criteria to **require EPS and LCP BREF compliance**

- Changes to the **CM auction design** to: enable all technologies to bid for **all contract lengths**; reduce **financial barriers** for new entrants such as DSR and storage; increase **certainty and consistency of T-1 auctions**; and ensure that **derating factors and penalties are proportionate** to actual risk of non-delivery

- Inviting stakeholder and expert evidence on the **impact of the cost-recovery methodology** used for setting the Supplier Obligation. This should include **price signal incentives for DSR**, **viability of a secondary market**, **capacity over-procurement risk**, **cost-effectiveness** and **unintended consequences**, e.g. rise in **diesel generation**

- Creating a **separate climate and competition objective for the CM**, which is not limited to carbon emissions

- Introducing a "**One Stop Shop" for CM amendment proposals** and a central **CM Handbook** of up-to-date policy and procedures, to assist new entrants

- A **longer-term project examining inherent institutional conflicts of interest** and investigating solutions being tested in other markets, e.g. the **Distribution Service Provider** model in the US.

BACKGROUND AND GUIDING PRINCIPLES

1. ClientEarth is a leading non-governmental public interest environmental law organisation based in London, Brussels and Warsaw. Within the UK, our work focuses on securing a just transition to a low-carbon energy sector, reducing emissions from greenhouse gases and protecting the rights of all to breathe clean air.

2. Security of electricity supply is of course an essential part of safeguarding the economic and wider public interest. However, achieving a just transition in the energy system means that security of supply "at any cost" to the consumer and to the environment is no longer an option. It is essential than any resource adequacy measures do not undermine the UK's coal phase-out and other emissions reduction objectives, place less environmentally harmful technologies at a competitive disadvantage, or otherwise prohibit the disruptive innovation and associated investment needed to build the flexible, zero-carbon, smart energy system of the future.

3. In our February 2017 response to the Government's consultation paper *"Coal generation in Great Britain: The pathway to a low-carbon future"*[1] (the Coal Phase-out Response), we welcomed the Government's commitment to managing a coal phase-out by the introduction of an EPS. We also called for a genuinely technology-neutral EPS, with a stricter emissions threshold than 450g/kWh, and an earlier implementation date of 2023. We emphasised the need to ensure that retiring coal capacity is not replaced by investment in large-scale gas and biomass plants. Converting coal plants to burn biomass is not a sustainable solution, and emissions from burning biomass are not properly accounted for under the current carbon accounting mechanisms. These principles apply equally to our assessment of the CM.

4. It is imperative that the CM operates in the context of a coherent policy framework. If regulatory schemes are not joined up, we risk penalising coal and other polluters with one hand only to reward them with the other. This would undermine both the UK's environmental and security of supply objectives, while making energy consumers pay twice. **In our Coal Phase-out Response, we proposed making EPS compliance a pre-requisite for CM entry (or preventing coal operators from bidding at all), at least in relation to the T-4 auctions for delivery from 2022-2023.**

5. **In October 2017 we also proposed a CM Rule change to Ofgem, which would require that where a generating unit is covered by the Large Combustion Plant Best Available Techniques reference document (the LCP BREF), it could only bid for a CM Capacity Agreement if it held a permit stating that it would comply with the best available techniques in relation to emissions and energy efficiency set out in the most recent LCP BREF.**

[1] https://www.documents.clientearth.org/wp-content/uploads/library/2017-02-08-coal-generation-in-great-britain-

6. The intention behind these proposals is to ensure that the CM design does not compromise the effectiveness of the EPS or prevent the UK from meeting its legally binding duties under the Paris Agreement, Climate Change Act 2008 and the Industrial Emissions Directive. Our Coal Phase-out Response includes a detailed assessment of the UK's national and international legal obligations to bring an end to coal (and other fossil fuels).

7. In addition to coherence with environmental and climate governance, the CM must be designed and continue to operate in a manner that does not undermine energy markets regulation or competition law. This includes the Electricity Act 1989, Competition Act 1998 and Utilities Act 2000. At the EU level, the Third Energy Package (and soon the proposed Clean Energy for All Europeans (CE4All)), Renewables Directive, Energy Efficiency Directive and EU State aid rules apply.

8. In order to ensure compliance with the above, and to bring forward investment in the nascent technologies required to achieve an affordable, clean and secure energy system (as it becomes increasingly electrified), we need a liquid and fully unbundled energy-only market, with transparent wholesale pricing and clear price signals to promote efficiency on both the supply and demand-side.

9. A predominantly renewable, intermittent supply-side can only be achieved by building out a smart and flexible demand-side. This will require the continued growth of "true" turn-down demand-side response (DSR), smart meters and appliances, electricity storage and Distributed Energy Resources (DERs). It will also require fully independent distribution grid operators, which are incentivised to innovate and encourage localised trading and balancing solutions. This might include the use of disruptive technologies such as blockchain or other distributed ledgers, to ensure secure and verifiable transactions without the need for expensive, centralised institutions. Consumers and "prosumers" must be empowered to become active market participants. Third parties can facilitate this, but end users must be given direct access to wholesale, balancing and ancillary markets, not limited to interacting with markets only via a licensed electricity supplier (especially in the current vertically integrated and illiquid market conditions).

10. Market intervention should only be resorted to where all alternative options have been thoroughly and openly investigated by an independent authority, taking into account the need for standardisation of methodologies and regional assessments where interconnected markets are making parallel assessments.

11. Capacity mechanisms should only be introduced to the extent that there is an authentic and persisting resource adequacy problem, with a built in strategy for closing the scheme if this ceases to be the case. Capacity contracts should be awarded on a genuinely technology neutral basis, which means the process has to be open to new market entrants in practice, not just on paper. Any competitive auctions must therefore be accessible, non-discriminatory and transparent, with the exception of restrictions necessary to ensure consistency with EPS and other environmental standards (see above). Contract lengths

should be set at an appropriate level to incentivise behavioural shifts, enable investment decisions and promote the development of new business models. This should be a needs-based framework, with no blanket rules or restrictions based solely on technology type.

12. The above principles and context guide our response to the consultation questions.

RESPONSE TO QUESTIONS

Assessing the need for the Capacity Market and its objectives

Q1: Do you believe there is a need to maintain the Capacity Market? What conditions would be necessary for the Capacity Market to be withdrawn?

13. In order for the Government to properly undertake the analysis needed to meet its statutory obligation to report to Parliament in 2019 on the question of whether the CM is still needed in the future, it would need to scrutinise and respond to the following:

    a. Ofgem's findings that National Grid has rarely needed "out-of-market" actions to maintain supply in practice - certainly much less than that predicted in the Reliability Standard - and that capacity margins are not as tight as forecast;

    b. Market developments since 2014, including the rapid growth of DERs, technology and business developments in the DSR, storage and data sectors, as well as interconnection;

    c. Regulatory developments since 2014, including the impact of the cash-out reforms, and the proposed EU CE4All package Electricity Regulation's requirement for a European Resource Adequacy Assessment (ERAA).

Capacity forecasting challenges

14. The current Reliability Standard implies that National Grid should use its out-of-market measures to balance supply and demand for three hours each year on average (assessed over a period of many years). In its 2017 State of the Market Report[2], Ofgem stated that National Grid has in fact carried out around 12 hours of out-of-market actions in total since 2005, about one hour each year on average, not three. It concludes that *"[g]iven that out-of-market actions have typically been less than expected in the reliability standard, this suggests a risk that security has been maintained at a higher cost to the consumer than necessary".*

15. Ofgem also highlights that the risk of loss of load does not maintain constant, but varies across settlement periods. There is new National Grid data available to estimate the risk of a loss of load for each half-hour settlement period across the year. This provides another way

[2] https://www.ofgem.gov.uk/system/files/docs/2017/10/state_of_the_market_report_2017_web_1.pdf

of measuring outcomes against the reliability standard. For example, in 2016-17 there were 437 hours when the risk of a loss of load was above zero but less than 10%, and 1.5 hours when the risk was between 20% and 30%. This suggests that the cumulative expectation of a loss of load across the year was around 45 minutes, a quarter of the reliability standard currently used by the Government. In addition, Ofgem reports that capacity margins are consistently less tight than forecast by National Grid. The margin between peak demand and available supply has generally been falling since 2010. In other words, National Grid has consistently overestimated the capacity gap, if it exists.

Technology and business model developments

16. One likely reason for these discrepancies (aside from institutional conservatism and possible conflicts of interest, which we address below) is that National Grid is underestimating the role of on-site generation and of DSR during peak periods. This is not surprising, given the exponential growth of the DER and DSR sectors since the initial resource adequacy assessments on the need for a capacity mechanism took place. Another very recent development is that new technology platforms and business models are emerging around the globe, which aim to use blockchain technology to optimise grid efficiency at the local level, without the need for national transmission and balancing services. These developments could overcome previous hurdles of managing granular data and micro-transactions in a secure and cost-effective way. For example, see LO3's Exergy project[3].

17. Part of the current forecasting problem appears to be that the very nature of distributed capacity resources, especially those located behind the meter, means that they are not seen by National Grid or other institutions, at least not in time to understand and predict their impact on capacity margins ahead of time. This is compounded by the fact that these capacity providers are often start-ups, without the resources to collate data, attend working groups or lobby for visibility and policy change themselves.

18. Since the CM auctions began 2014, there have been several studies by Ofgem, National Grid and DECC/BEIS into the potential contribution of DSR, prosumers and other grid-edge technologies. However, the time has come for a proper round-up of the most recent data, and a thorough assessment of the potential for DERs, DSR and storage to meet capacity needs now and over the next decade. This should include an exploration of how National Grid and the Government could improve the current information and influence gap going forward. For example, in the US, some states are considering the introduction of a new independent DER Authority, to oversee the growth of distributed resources, DSR and energy efficiency. This could even include the power to review utility investments.

19. **We recommend setting up a new, independent task force to produce an up to date report on the potential for DERs, DSR and storage to meet capacity needs now and over the next decade. The team responsible should actively work with the industry and other independent institutions (e.g. academic groups) to ensure the Government**

[3] https://exergy.energy/#whitepapers

and National Grid can obtain high-quality data going forward, without relying solely on individual start-up providers, which may not have the resources to produce, collate and effectively communicate data. After all, it is the Government's duty to ensure security of electricity supply at the lowest cost to customers.

20. Any assessment of resource adequacy also needs to incorporate an up-to-date picture of interconnection, and how this is likely to increase in the near future. In 2017, there were four operational interconnectors and ten more that were under construction or approved by the UK Government[4]. As with DSR and storage, the impact of interconnection cannot simply be measured in GW, because in addition to the quantitative contribution of capacity, interconnectors make a qualitative contribution by reducing the need for supply and demand to match in specific periods and locations in the first place. This in turn addresses balancing challenges and associated costs, while further increasing the viability (and reducing the cost of capital) of intermittent renewables.

Regulatory developments and future-proofing

21. The regulatory context is also significantly different to the one that existed when the need for a CM was originally considered. For example, Ofgem's "cash-out" reforms, introduced in 2015, sharpen price signals to make them more responsive to system balancing needs. Prices can now rocket when capacity margins tighten, providing a greater financial incentive to make capacity available during these times. At the same time, the Supplemental Balancing Reserve and Demand-side Balancing Reserve have been closed. **There is a need for an independent assessment of the likely net impact of these changes, with particular regard to the capacity margin and National Grid's approach to forecasting and response.**

22. At the EU level, Brexit obviously has huge implications for the wider regulatory backdrop. However, until a final agreement is reached, EU law continues to apply. In any event, while it remains possible that a common rulebook will be in place for energy markets, and that State aid rules, or a parallel regime, will continue to play a part in any future arrangements, it is sensible to future-proof the CM as much as is possible, to increase investor confidence at this uncertain time.

23. Article 19 of the proposed Electricity Regulation in the EU CE4All package makes provision for a European Resource Adequacy Assessment (ERAA) to determine resource adequacy of the electricity market over ten years, which will including scenarios with and without existing CMs in place. Importantly, Article 24 requires Member States to adapt any existing capacity mechanisms to comply with the requirements of Arts 18, 21 and 23. Art 23(5) states that, where the ERAA has not identified a resource adequacy concern, *"Member States shall not apply capacity mechanisms"*. There is no clear agreed exemption for future capacity contracts awarded under current regimes, at the time of writing.

24. **It would be prudent for the Government to act now to investigate the likelihood of the**

[4] Ofgem State of the Market Report (Supra) p. 46

UK being required to make changes to, or even disband, the CM as a result of the proposed ERAA in the future, assuming that the EU Electricity Regulation will apply to the UK. A proactive approach is required in order for the Government to diligently report to Parliament on the regulatory risks going forward.

Q2: Do you believe the current objectives of the Capacity Market remain appropriate?

25. We agree with the current objectives of security of supply, cost-effectiveness and avoiding unintended consequences. However, given the Government's commitments under the Paris Agreement, the Climate Change Act and EPS, the current imbalance of power in the GB electricity market and the risk of CM subsidies providing a further barrier to competition, we would like to see a specific climate change and competition objective.

26. **We propose the addition of a new objective: "Climate and competition: to facilitate the market entry and expansion of capacity providers that do not harm the environment or human health".**

27. The current objective to avoid unintended consequences refers to the need to *"complement the decarbonisation agenda".* Firstly, this wording is not tough enough given the seriousness of the challenge and the risk of fossil fuel subsidies via the CM derailing it. Secondly, carbon is only part of the problem and does not include greenhouse gas emissions.

28. The Committee on Climate Change's (CCC) 2016 report "UK climate action following the Paris Agreement"[5] indicates that to meet the 1.5°C target, the UK's contribution would need to include a reduction in UK greenhouse gas emissions of 86%-96% by 2050 compared to 1990 levels (with an equivalent reduction of 71%-83% by 2050 to meet the higher 2°C target).[6] This will ultimately require the total removal of gas, diesel, large-scale biomass and other combustion fuels from the GB electricity market.

Assessing performance against Capacity Market objectives

Policy objective - Security of supply: to incentivise sufficiently timely investment in capacity to ensure security of electricity supply

29. The following subsections set out our comments in relation to Questions 3-12.

CM focus and flexibility

30. We disagree with the statement in section 3.1 of the Call for Evidence that the CM is "solely" concerned with ensuring there is sufficient capacity available to meet forecasts of peak demand and that "other tools" are available to National Grid to manage "other aspects of security, including flexibility".

[5] www.theccc.org.uk/wp-content/uploads/2016/10/UK-climate-action-following-the-Paris-Agreement-Committee-on-Climate-Change-October-2016.pdf
[6] Ibid. Table 2.3 of page 30.

31. The amount of flexibility in the system and capacity margins are inherently linked. The more flexibility in the system, the better able it is to tap into intermittent renewable resources, with less dependency on the exact time of generation and demand, thus reducing peak demand spikes, and the need to procure extra capacity via the CM in the first place. The EU Guidelines on State aid for environmental protection and energy 2014-2020 (EEAG), the Energy Efficiency Directive and the proposed Electricity Regulation also make it clear that Member States have a positive duty to facilitate flexibility in the course of considering capacity mechanisms and cannot view the security question in isolation. This is covered in more detail below.

Reliability Standard Review

32. We welcome the Government's decision to commission an independent review of the Reliability Standard.

33. **In order to avoid vested interests, this must be independent not just of Government but also fully independent of the GB industry, including associated companies and secondments of personnel.** Where technical and academic consultants are used, we recommend choosing experts from a range of backgrounds, not just those with experience in conventional, centralised energy systems but also markets such as those in the US where DSR, storage, DERs are working with DSOs and Distribution Service Providers (DSP) to reduce capacity margins.

Splitting of capacity between T-4 and T-1 auctions

34. We agree with the principles of splitting of capacity across the two auctions, but propose some amendments to the T-1.

35. The T-1 auctions have the potential to provide an important launch pad for new entrant capacity providers, in particular DSR turn-down (which, due to operational changes in businesses and premises, might otherwise find it difficult to commit to providing capacity four years in advance). It could also help to incentivise other new market entrants with a need for a shorter lead-time for investment and revenue purposes, especially now that the Transitional Auctions have come to an end.

36. However, the T-1 auction in its current form is not providing this market opportunity because it is too unpredictable and variable. 54.4GW capacity was secured in the first T-1 auction for winter 2017/18, which was significantly more than the 2.5GW was originally set-aside for the first T-1 auction. However, new entrants did not have enough notice of this to gear up the necessary capital investment and capacity. At the other end of the spectrum, out of the of the total target capacity of 52,600MW to be procured for the 2020/21 auctions, only 600MW has been set aside for the T-1 auction. 600MW is not enough to build a market for new entrants.

37. **We recommend that the T-1 set-aside be made a guaranteed minimum** (except in exceptional circumstances outside the Government's control such as State aid approval being withdrawn), rather than being an indicative target that can be changed at the last

minute. **It should also be fixed at a certain minimum percentage of overall capacity procured for a certain delivery year.** This could be increased over time but not decreased, thus providing a stable market for nascent technologies and business models to develop.

Contract length and investment incentive

38. **All contract lengths should be available in principle to all technologies, with no blanket rules based solely on technology type.**

39. So long as the CM offers 15 year contracts, these should be available to all technologies. However, very long term contracts of, for example, more than 5 years, should ideally be avoided as these risk distorting the market for a disproportionate length of time, and foreclosing the market to more innovative, clean and efficient solutions, which might otherwise have broken through. Using long-term contracts to incentivise the building of new gas (including biomass) plant is particularly harmful to both the market and the environment, as the subsidised generating stations will remain in place for multiple decades, exasperating fossil fuel lock-in.

40. Bidders needing a more significant financial incentive to meet CapEx or OpEx requirements should factor this into their bids and compete with other capacity providers on price, to ensure that resource adequacy needs are met at the lowest cost to customers. This will enable true price discovery and efficiency.

41. Since the CM's introduction, the market has seen the withdrawal of various green subsidies and the emergence of new business models and technologies, each with their own investment needs. These might require the development of new software and hardware, but also go beyond CapEx. For example, DSR turn-down often requires operational changes to businesses, with significant associated costs. There is still much learning to be done about the incentives (financial and otherwise) needed to bring about this shift in commercial behaviour, and the Government should prioritise the acceleration of these developments.

42. However, using the CM framework to second-guess the investment needs of various technologies and then tailoring contracts lengths to them is anticompetitive and inefficient. The CM should be about competitive price discovery and clear price signals. The auction design should not place more expensive, polluting, centralised technologies at a competitive advantage by allowing them to spread their revenue streams over up to 15 times longer than new entrants.

43. **In October 2017, ClientEarth submitted a CM Rule change request to Ofgem, asking for an amendment to allow all types of CM unit to bid for all contract lengths available under the scheme.** The intention behind this was to help ensure that the current CM design achieves its goal of technology neutrality. However, as mentioned above, it would be preferable to make a more significant change the legislative framework to end the availability of very long-term contracts altogether.

Credit cover, penalties and DSR

44. **We believe that it is both lawful and strategically sensible to have different financial requirements in place for new market entrants and large utility incumbents, which represent different levels of risk. A proportionate and fair bid bond in particular is crucial to DSR in particular.**

45. The European Commission, in the final report of its competition Sector Inquiry into Capacity Mechanisms[7], recognised *"the need to treat different capacity providers differently with the aim of creating a level playing field between them"*. This is factored into the State aid framework, as is the general EU law principle of proportionality. New market entrants bidding into the CM as DSR are in a dramatically different financial position to vertically integrated utilities. Due to the aggregated nature of the capacity resource, failure of a single DSR unit also poses a much smaller risk to the overall delivery of capacity.

46. The rewards available for DSR in the CM (currently only a one year guaranteed revenue stream) must be weighed against the significant financial hurdles. These include the bid bond, which is made much more burdensome by the 2MW minimum size threshold, effectively creating a £10,000 minimum. This is 20 times larger than the 100kW minimum in the PJM capacity market. Moreover, we understand from industry participants that the bid bond is applied in a manner that is disproportionate to the actual risk present. This is because even if only a tiny amount, for example 50kW of the 2MW, is deemed as "unproven", a bid bond on the whole 2 MW will be payable as though the entire 2MW were unproven, not just on the 50 kW. This makes the bid bond for DSR heavy handed and even more of a barrier to market entry.

47. Other financial hurdles that have to be managed include the operational consequences of a business of turning-down demand and the severe penalties for non-delivery. These factors will inevitably affect new entrant DSR units and their customers much more than incumbent utilities.

48. In conclusion, some financial hurdles are unavoidable in order to safeguard customers and ensure reliability of the CM. However, some of the costs are disproportionate to the actual risks, as mentioned above, and others are actually created by the policy design. These include the minimum size threshold and the application of the bid bond to more than just the unproven element. The absence of a time-bound product (outside of the now completed Transitional Arrangements) represents another financial hurdle and risk. The fact that that all units are forced to bid for open ended capacity obligations throws up yet another barrier because it adversely affect DSR turn-down and storage but does not impact upon generation at all.

49. **We recommend that the Government re-evaluate the CM design in light of the knowledge it has gained on DSR, storage and other emerging capacity providers**

[7] https://ec.europa.eu/energy/sites/ener/files/documents/com2016752.en_.pdf

since the scheme was introduced, with a view to removing the centralised generator-centric assumptions that underpin the entry criteria and financial hurdles. This should include a comparison of the success of DSR turn-down within the CM design compared to that of other capacity markets such as the PJM.

Using resources efficiently and de-rating factors

50. We are aware of the ongoing discussion in the industry about whether the derating of DSR and behind the meter storage should be amended to bring it into line with the derating of stand-alone supply-side storage. Any suggested amendments from vertically integrated incumbent utilities[8], with the potential devalue new entrant technologies, should of course be considered with these vested interests in mind.

51. Even within the confines of the CM as currently designed (with the blanket requirement for unlimited capacity availability, rather than time-bound products), DSR and behind-the-meter storage are still free to aggregate capacity, and indeed this is the usual model. National Grid is blind to which resource is actually being used at any one time, and the limited duration of each unit does not compromise availability in aggregate. Therefore, treating these units the same as stand alone supply-side units does not make sense. In addition, DSR and storage offer added value in the form of faster response times and transmission and distributed losses, compared with large centralised generators. It would be discriminatory to penalise these technologies for time limitation (especially given that this is not an issue in aggregate) but not reward them for these benefits.

52. Regarding the complaint by some that battery owners are moving the same units behind-the-meter and to enjoy more favourable derating factors, such units would have to sacrifice the possibility of a multiple-year revenue in order to bid for a contract limited to one year. In any event, it is worth considering whether incentivising demand-side storage could have advantages, if it encourages storage providers to team up with DSR/distributed renewables.

53. If stand-alone storage units are in fact able to successfully bid for and deliver their capacity obligations (on either side of the meter) without needing to team up with other units or resources, this raises the question of whether the CM really needs unlimited capacity availability on a per unit basis in the first place. Even if there were an exceptionally long capacity event, National Grid could still call upon different resources on a rolling basis, as it does now for ancillary services.

54. The "availability" problem (for example, of renewable generators not running because of the weather or a mothballed coal plant not firing up, and the unpredictability of these events) is not same as the “time-limited” issue, where you *can* guarantee that a certain amount of capacity will be provided, but only for a defined period rather than an unlimited amount of time. The current CM approach does not appear to make this distinction clear.

[8] https://www.current-news.co.uk/news/ofgem-to-consult-on-de-rating-dsr-storage-units-in-2019
https://utilityweek.co.uk/scottish-power-proposes-capacity-market-rule-change-storage-cloaked-dsr/

55. **We recommend that the Government commission some independent analysis on whether the time-limited nature of battery storage capacity (and turn down DSR) is a true technology risk, factoring in aggregation and the added value of faster response times and network loss avoidance.**

Policy objective – Cost-effectiveness: to ensure that the most efficient level of capacity is secured at minimum cost to customers

56. This section responds to Questions 13-17, concerning the risk of over-procurement and the need to ensure participation of the most cost-effective technologies.

57. As mentioned above, Ofgem's State of the Market 2017 report suggests that the CM was introduced ahead of time (assuming that intervention would have been necessary at all) with capacity being consistently over-procured, compared with actual capacity margins. The report also highlights that the CM auction structure exacerbates the *cost* of over procurement, which is exponentially more expensive than under procuring. For example procuring 1.5 GW less capacity in the 2017-18 Capacity Market "Early Auction" than was actually purchased (54.43 GW) would have saved about £15 million. Conversely, procuring 1.5 GW *more* would have cost an additional £374 million, roughly doubling the total gross cost of capacity[9]. In order to achieve the cost-effectiveness objective, the Government should therefore make tackling over-procurement a top priority.

58. One important factor in determining the amount of capacity procured, which is not mentioned in the Call for Evidence at all, is the close relationship between the cost-recovery methodology (the process for setting the Supplier Obligation) and the calculation of capacity need for future years.

59. The design of the methodology directly affects the global cost of the CM. We note that a Triad-based methodology, which has historically been used by National Grid to calculate transmission cost allocation, was originally proposed by the Government because of its very sharp price signals and demonstrated success in incentivising demand reduction at critical peaks. However, the final CM design adopted a methodology that smears costs across customer use between 4-7pm on winter weekdays.

60. The smeared methodology dampens price signals considerably and makes it practically impossible for turn-down DSR to respond effectively (because few customer are able to avoid using for such a long period of time over consecutive days). This has both:

    a. a cost implication, because it masks the true potential for DSR to act in order to reduce demand spikes, leading to overestimation of capacity need in future years, by National Grid; and

[9] Page 102 of the State of the Market Report (Supra)

b. an environmental and human health implication, because it encourages large industrial customers to resort to carcinogenic, onsite diesel generators in order to avoid 4-7pm winter weekday evenings (and therefore CM costs), rather than using turn-down DSR to avoid, for example, the TRIAD periods.

61. We appreciate that there may be some issues with using the TRIAD system specifically. **However, given the high stakes involved, in terms of cost, the environment, and human health we recommend that the CM Review revisit the cost-recovery methodology.**

62. There is a clear need to better understand of the behavioural economics at play. In particular, the review should examine the potential for a more concentrated time period (and therefore sharper price signal) to produce a viable secondary market in CM cost avoidance by flexible customers. This would reduce the amount of capacity procured, therefore greatly reducing costs and emissions, for the benefit of all customers. It would also help GB's large industrial energy users to reduce electricity costs and emissions.

63. A more effective methodology might require some administrative changes to the way that electricity suppliers bill customers, but these arguments should be scrutinised openly, with a transparent cost-benefit analysis and impact assessment conducted. The previous policy decision to switch to a smeared methodology took place after the consultation on CM design had ended, so the public were not given an opportunity to comment on the new policy. In order to ensure due process and a thorough policy analysis, stakeholders and Parliament should be provided with this opportunity now.

64. In addition to our recommendation of a cost-recovery methodology review, other suggestions made in this response, relating to reducing barriers to new entrants (and DSR specifically) and introducing a time-bound capacity product, would also make the CM more cost-effective.

Policy objective – Avoid unintended consequences: to minimise design risks and complement the decarbonisation agenda

65. This section responds to Questions 18 and 19 on unintended consequences arising from market distortions and barriers to competition, and Question 20 on how the CM could better complement the decarbonisation agenda.

Consequences for competition

66. As explained above, the CM could be made more accessible to new market entrants, in particular DSR and storage, by making the following changes:

a. allowing all technologies to bid for all contract lengths, and removing long-term contracts altogether to avoid fossil-fuel lock in;

b. addressing financial barriers through a more proportionate approach to bid bonds (and size thresholds) and derating factors/risk assessment, especially where there is aggregation;

c. facilitating the growth of a secondary market through a cost recovery methodology geared towards DSR rather than diesel generation.

67. Of course, the CM does not operate in a vacuum, it is layered on top of the energy-only market and the balancing and ancillary service markets. Therefore, underlying market conditions such as vertical integration and lack of wholesale market liquidity have an impact on the CM, as do other fossil fuel subsidies such as Black Start payments.

68. In conducting its CM review, it is essential that the Government looks at the CM in context and actively seeks to understand the position of new entrants, not just incumbents with sophisticated public affairs functions. It is also crucial that data is obtained and analysis undertaken in an independent capacity as far as is possible.

Consequences for decarbonisation and ensuring technology neutrality

69. We have proposed (in response to Question 2), the introduction of a stand-alone climate and competition objective. This is to reflect the UK's ambitious environmental and climate targets. It also incorporates all harmful emissions, rather than just carbon.

70. The principles of technology neutrality and non-discrimination mean that comparable technologies should not be treated differently without an objective justification. It does not mean that all technologies have to be treated exactly the same. It is not a breach of the technology neutrality principle to make special arrangements to facilitate new market entrants in order to level the playing field, or to meet emissions targets, especially where this is required by law.

71. Paragraph 220 of the EEAG requires Member States to *"primarily consider alternative ways of achieving generation adequacy which do not have a negative impact on the objective of phasing out environmentally or economically harmful subsidies, such as facilitating demand side management and increasing interconnection capacity".* Paragraph 224 requires the Commission, in considering resource adequacy and the extent to which a capacity mechanism is needed, to examine (amongst other things) the Member State's *"measures to encourage demand-side management".*

72. This echoes the principle in the Energy Efficiency Directive, which states at Recital 45 that *"equal market entry opportunities for demand-side resources (supply and consumer loads) alongside generation should be pursued."*

73. The draft EU CE4All package also proposes a carbon emissions intensity limit for capacity mechanisms, which looks likely to apply to existing as schemes as well as new ones. If introduced in its current form, this will prevent future capacity providers from receiving

capacity payments if they emit more than 550 gr CO2/kWh of energy or more than 700 kg CO2 on average per year per installed kW[10].

74. As mentioned above, in our response to the Coal Phase-out Consultation, we proposed making EPS compliance a pre-requisite CM entry (or preventing coal operators from bidding at all), at least in relation to the T-4 auctions for delivery from 2022-2023. Our Coal Phase-out Response also emphasised the need for the UK to maintain its leadership role in combating climate change and investing in clean technologies, as we move into a post Brexit world. This brings important environmental, reputational and economic benefits, and will place the Government in a strong position to lead when discussing environmental and climate change matters with other national leaders and international organisations.

Priority issues: Renewables and interconnectors

75. This section sets out our comments in relations to Questions 24-29.

76. **While there is a CM in place in the GB market, the Government is legally required to ensure that it is open to renewable generators and interconnectors (limited to those that are not already receiving State aid through other schemes), unless there is a technical reason why they cannot deliver.**

77. Paragraph 232 of the EEAGs requires that capacity mechanisms *"be designed in a way so as to make it possible for any capacity which can effectively contribute to addressing the generation adequacy problem to participate in the measure"*. In particular, Member States must take into account the *"participation of generators using different technologies and of operators offering measures with equivalent technical performance, for example, demand side management, interconnectors and storage".* Restriction on participation can only be justified on the basis of *"insufficient technical performance"* required to address the resource adequacy problem. In addition, capacity measures must *"be open to potential aggregation of both demand and supply"*[11].

78. If, as the Call for Evidence suggests, wind and solar (in addition to interconnectors) are now able to meet the technical standards, especially when aggregated with other resources, then the question should not be whether they should be allowed to participate, but how can this best be facilitated.

79. The derating and risk assessment principles mentioned above in respect of behind-the-meter DSR and storage, also apply to renewable generators, on either side of the meter. Aggregation and hybrid bidders could be achieved either through private sector consortia, or facilitated by National Grid. Ideally both options should be available. While these technologies should be permitted and incentivised to aggregate, this could represent an operational barrier to entry (as has been the case with DSR and storage). **The CM design,**

[10] Article 23 of the draft Electricity Regulation
[11] Paragraph 232(a) EEAG

including eligibility criteria and capacity products, should be reassessed to determine whether they are fit for purpose in light of the incorporation of wind and solar. The time and effort invested to do this will pay dividends in the form of a more effective, cost efficient, lower emissions scheme and a reduced capacity margin.

80. The Regulatory Assistance Project's (RAP's) recent paper *"Realising the Benefitse of European Integration"*[12] sets out the economic and social advantages of an integrated and harmonised approach to resource adequacy and balancing, including reduced wholesale prices and enhanced security of supply. Incentivising interconnector capacity and facilitating cross-border participation is an essential component of this. The European Commission's CE4All package[13] aims to further this cohesion.

81. Whatever the final outcome of the Brexit negotiations, and notwithstanding some concerns about correlated stress events in regional markets, national markets are becoming more geographically interconnected, not less. Overall, it simply cannot be efficient, in terms of resource adequacy, emissions and cost, for each national system to continue with individual, non-standardised approaches.

82. **Instead, the UK must continue to push for integration and properly incentivise interconnection, so that its citizens are not denied the benefits of regionalisation, including access to the cheapest energy sources, the pooling risk and exploiting geographic diversity.**[14] When combined with DSR to optimise local efficiency, system integration could reduce the need for new national generation capacity, creating huge climate and cost benefits.

The institutional framework

83. This section sets out our comments in relations to Questions 30-33.

Within the CM framework

84. We agree that the presence of multiple institutions with different but overlapping functions is confusing and could present a barrier to new entrants.

85. In order to address this, the Government should consider putting in place:

    a. **a "one stop shop" for proposing amendments**. This could be facilitated, for example, by Ofgem, who could filter the submissions to the appropriate body. This would have the added bonus of making policy more joined-up;

[12] http://www.raponline.org/wp-content/uploads/2018/05/rap-pb-mh-ck-benefits-european-market-integration-2018-may-21.pdf
[13] https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans
[14] http://energypost.eu/a-step-backwards-european-member-states-threaten-to-reverse-progress-on-the-single-electricity-market/

b. **a central CM Handbook for current and potential capacity units and investors**. This would be maintained in order to provide an up-to-date description of the CM, without the need for stakeholders to trawl through a series of consultations by different institutions in order to get a clear snapshot of the scheme.

Outside of the CM

86. Vested interests within the wider energy-only market will inevitably affect the independence of suggestions and decisions made in relation to the CM. Such bias is rarely presented openly. **It is important that care is taken, when meeting with stakeholders and accepting industry secondments into Government departments, to identify potential conflicts of interests and partisan technical advice masquerading as fact.** The imbalance of power in the wider market can be redressed to a certain extent by ensuring that policy working group members are chosen from the full spectrum of the sector, not just from well-funded incumbents.

87. Incumbent utilities, whose fossil fuel generators have a significant stake in the CM, are able to present arguments through their retail supplier businesses, claiming that design elements intended to assist new market entrants in the CM present a risk to billing processes or electricity prices. The combination of vertical integration and considerable market power allows them to claim that the perceived risk of that change would make tariffs unpredictable or force them to raise prices. See, for example, the supplier concerns expressed in relation to the originally proposed cost-reflective CM cost-recovery methodology in 2013.[15]

88. Network companies that own line assets and also carry out balancing and dispatch functions have an inherent interest in favouring generation, because optimising the grid at a local level through DSR and storage shrinks their physical asset base over time. National system operators, which are likely to be blamed in the event of an outage, may also take an overly cautious approach when assessing overall resource adequacy, seasonal capacity margins and the benefits of interconnection. As mentioned above, the conclusions in Ofgem's State of the Market report (mentioned above) suggest a conservative approach by National Grid in relation to the CM. We welcome Ofgem's proposals to review the System Operator incentive framework to ensure that long-term efficiency and innovation is promoted.[16]

89. **One obvious solution would be to move towards a truly Independent System Operator (ISO), which does not own physical transmission assets.** The US has long championed the ISO and independent DSO model. In fact, at the local grid level some States have now moved beyond DSOs. New York's Reforming the Energy Vision (NY REV) policy contains the new value proposition for **Distribution Service Providers** (DSPs). DSP carry out traditional balancing functions, but are also active market facilitators for new products and

[15] Page 106 Government Response on CM Proposals October 2013. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/324170/Government_Response_to_EMR_implementation_consultation.pdf
[16] https://www.ofgem.gov.uk/system/files/docs/2017/02/future_arrangements_for_the_so_-_the_regulatory_and_incentives_framework_0.pdf

services to customers within the network, including data services, the integration of DSR and peer-to-peer trading between prosumers[17].

Emissions Performance Standard Review

90. We are not submitting responses in relation to questions 33-36.

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[17] http://projects.exeter.ac.uk/igov/new-thinking-energy-distribution-service-providers/