

Mr Roger Witcomb
Panel Chair
Energy Market Investigation
Competition and Markets Authority
Victoria House
Southampton Row
London WC1C 4AD

22 December 2014

Dear Mr Witcomb

Response to CMA's Energy Market Investigation Statement of Issues

This letter provides written evidence, on behalf of Tempus Energy Supply Ltd ("TE"), in respect of the Statement of Issues ("the **Statement**") published by the CMA's Energy Market Investigation ("EMI") team on 24 July 2014.

TE is a new electricity supply market entrant, which uses demand-side response technology to cost-optimize on behalf of customers. TE obtained its electricity supply licence in November this year. Although TE was not in a position to submit evidence by 14 August 2014, Ofgem's Retail Markets team encouraged me to write to you, as founder and CEO of TE, in light of the potential for our disruptive technology and unique business model to drive competition and innovation within the GB electricity supply market.

Background

About Tempus Energy

1. TE is a clean-tech start-up, focused on bringing the cost benefits of demand-side flexibility to all electricity customers. Our technology and business model enables customers to automatically shift non-time crucial energy demand away from the most expensive times to cheaper ones, either because demand is low or because power from renewable sources is plentiful. TE aims to unlock the smart energy business model in GB, by providing a full service (both electricity supply and DSR) 'one stop shop' to all customers.
2. TE's business model differs from traditional DSR aggregators, which sell services to the SO (and sometimes DNOs), to enable customers to benefit from avoiding using the networks at peak times. Traditional DSR aggregators do not hold a supply licence and therefore cannot trade in wholesale electricity markets, or sell electricity directly to customers (who must in turn purchase their electricity from a separate supply entity). In order to sell services to the SO, half hourly metering and settlement must be in place. Electricity suppliers have resisted the implementation of half hourly metering and settlement for smaller customers. This makes the metering solutions required by DSR aggregators expensive, as it is not possible to take advantage of the dual use for settlement and DSR. The traditional DSR model is too

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Office address: 31 Oval Road, London, NW1 7 EA

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cumbersome to be attractive to most domestic and small SME's. It also limits the potential for cost-optimisation because, although the customer can reduce network costs through DSR, they are still likely to be purchasing electricity from a supplier which lacks the tools to minimise imbalance and wholesale costs. In addition, when a DSR aggregator reduces customer demand at times of system stress, it delivers a benefit to suppliers through the Elexon imbalance system, which the supplier has not earned. DSR customers are not currently to benefit from the value they create in this way.

3. TE is an independent electricity supplier with no generation assets. TE has the incentive, as well as the technical ability, to minimise the cost of electricity and compete aggressively on price. All TE customers will be provided with a smart meter and moved to a half hourly settlement metering arrangement, which will allow their electricity usage to be recorded and managed in real time. TE's model has been designed to drive supply market competition by demonstrating that there is a more efficient and innovative way to supply electricity to customers. TE's model will also enable new categories of customer (e.g. domestic and small businesses) to access the cost savings created by DSR, in a way that the traditional DSR and supply models do not.

Capacity Market State Aid Challenge

4. In addition to helping customers to reduce their energy bills, TE's technology will enable electricity networks to be balanced more efficiently by reducing and managing consumption to match supply, rather than by increasing fossil-fuel generation to meet demand (which is the traditional approach). TE strongly believes that any generation adequacy measure that interferes with market functioning, such as the capacity market ("CM"), should provide fair access to DSR companies and flexible customers (i.e. on equal terms to those offered to fossil fuel generators), in order to ensure security of supply at the lowest cost to customers.
5. Without fair CM terms for DSR, the market will be foreclosed to cost-efficient, innovative technologies, which could otherwise have minimised demand spikes and reduced the cost of energy security to customers, by avoiding the need to pay for expensive and unnecessary peak-time generation capacity. A diverse range of capacity solutions is also imperative from a system security perspective, as demonstrated by recent generator failures¹. The current CM policy framework does not deliver these benefits. Instead, it offers long-term (up to 15 years) subsidies to conventional generators (many of whom are powerful market incumbents) but only 1 year of support for DSR capacity providers (all of whom are customers or new market entrants). This 1 year limit applies regardless of the capital expenditure and operational changes required to

¹ <http://www.ft.com/cms/s/0/74161a70-7404-11e4-82a6-00144feabdc0.html?siteedition=uk#axzz3MdDXjat>

<http://www.theguardian.com/politics/2014/oct/26/energy-secretary-power-station-fires-ed-davey-ofgem-supply-outlook-didcot-b>

bring DSR to a particular customer's premises. In addition, the CM cost recovery methodology (through which suppliers recover costs via customer electricity bills) plays into the hands of vertically integrated suppliers, which do not have an incentive to help customers avoid peak costs through price signals. More detail on this point is provided below.

6. On 4 December, TE lodged a legal challenge in the General Court of the European Union, applying for annulment of the European Commission's State aid approval of the UK government's capacity market policy design. As the litigation is ongoing, TE cannot publish details of the grounds of challenge. However, we would be willing to provide the CMA with further information on a confidential basis.

Further Background on DSR

7. DSR is a low-carbon, diverse and highly flexible resource with multi-gigawatt potential. As demonstrated by US precedents, when given full market access DSR can substantially reduce customer bills, increase networks security and reduce carbon dioxide emissions. By CM auction prices by only £1/kW, DSR would save customers £50m each year².
8. Despite progress made since 2008, DSR faces barriers in current market arrangements. Both Demand-Side Balancing Reserve (DSBR) and the CM will fail to deliver the full potential of DSR due to problems in the detailed design of the schemes.
9. DSBR suffers from payment restrictions, which will hold back investment, and is at risk of delivering a poor quality of resource due to the ineffective testing regime. Many DSR resources are ruled out of the programme. DSBR is adversely affected by competitive advantages bestowed on fossil-fuelled power stations. National Grid ("NG") has recognised that more needs to be done to encourage DSR, and has made several announcements in recent months, emphasising the paramount importance of DSR to balancing and system adequacy³. However, NG's good intentions are limited in practice by the policy framework set by DECC, as well as wider electricity market failures.

Response to the Statement

Market Characteristics Identified in the Statement

10. TE broadly agrees with the baseline market characteristics described in the Statement, but would like to submit some technical points and further comments, which are set out below.

² http://www.nera.com/content/dam/nera/publications/2014/PUB_Anstey_DSR_0814.pdf

³ <http://www.nationalgridconnecting.com/balancing-act/>

<http://www.nationalgridconnecting.com/removing-the-barriers-to-demand-side-response/>

- a) *Non-storability and the need to balance generation and supply in real time:* The Statement comments that electricity is very costly to store. This is true, but innovation and cost-efficiencies in technology do not take place in a vacuum; market conditions can either act as a catalyst or a barrier to such progress. DSR, storage and energy efficiency are natural partners, because storage and energy efficiency increase the flexibility required for the benefits of DSR to be fully realised. In identifying the benchmark against which the CMA will assess an AEC, the current costs and limitations of demand-side technologies should not be treated as a factual absolute, but rather another factor which can be proactively addressed through a well-functioning market.

In addition, the Statement notes that blackouts may occur when there is insufficient generation to meet demand. In fact, blackouts occur when there is insufficient system capacity; it is cost-effective and therefore desirable to reduce demand to match generation wherever possible;

- b) *Small-scale customers do not respond to short-term wholesale price changes/methods of rationing are blunt:* TE agrees with the Statement's observations about the limitations of traditional meters. However, in paragraph 18, the Statement notes that the roll-out of smart meters by 2020 "will allow consumption to be recorded on a half-hourly basis, which could allow for time-of-use pricing, and provide for two-way communication, which could enable more price-responsive demand or better-targeted direct load control". This is correct, but it does not provide the full picture. Smart meters do indeed enable half-hourly settlement (as opposed to traditional profile settlement, based on estimates). As such, they empower customers to respond to price signals quickly enough to avoid peak time use.

However, it does not necessarily follow that time-of-use tariffs must be part of the smart-meter customer offering. Time-of-use tariffs can help customers to avoid evening peak demand times, but they do not, for example, enable customers to access the upside of cheap onshore wind power that is flooding the grid at night. TE's customer offering involves using automated technology, which could, for instance, heat customer storage heaters at 4am at time of low or even negative pricing. This would assist the SO in addition to *all* customers (flexible customers would benefit directly, but non-flexible customers would also benefit from demand being diverted away from peak-time spikes, and reduced imbalance costs for renewable generation). A time-of-use tariff sophisticated enough to be of real value would be complex and would require customers to actively modify use. We note that Citizen's Advice's recent report on the potential for DSR in the domestic sector expressed concerns about complexities of time of use tariffs⁴. TE is currently engaging with Citizen's Advice and Ofgem's Retail Market's team to ensure that tariffs for flexible customers are simple and transparent.

⁴ http://www.citizensadvice.org.uk/take_a_walk_on_the_demand_side

TE does not intend to use time-of-use tariffs. Instead, costs will be optimised to the fullest extent through aggregated demand flexibility within each of the 48 settlement periods per day, with the total cost savings translating into a significantly lower flat-rate for all customers;

- c) *The external costs of climate change:* TE agrees that climate change-related costs are an inherent and necessary aspect of energy bills. However, as with point (a) above, such costs should not be treated as part of a fixed baseline that sits outside of EMI scrutiny. Renewable and low-carbon generation subsidies are necessary partly because the current market structure fails to provide intermittent generators with a competitive market price for their power. Whilst renewable generators and ‘green taxes’ are often made a scapegoat for rising electricity costs, it is actually a systemic market failure to deal with imbalance risk that is to blame. The creation of a flexible demand-side is crucial to the development of an intermittent supply-side, which is not so dependent on green subsidies funded ultimately by customers. More detail is provided on this point below. Although it is outside the scope of the EMI to question climate change policies themselves, the execution of such policies should be considered to the extent that it serves to create or perpetuate an AEC.

Theories of Harm Identified in the Statement

11. TE considers that the CMA has correctly identified key market barriers in its ‘theories of harm’ hypotheses. However, there are some additional factors that TE would urge the CMA to bear in mind throughout the EMI, particularly in relation to the interplay between competition, financing, and imbalance risk.

Theories of Harm 1 and 2 - Low levels of liquidity and high levels of vertical integration:

12. TE agrees that these two theories are interrelated, and so has taken them together.
13. As the Joint Assessment concluded, the GB electricity wholesale market is highly illiquid. Most power is traded through private bilateral contracts between generation and supply entities within large vertically integrated utilities (“VIUs”), rather than in an open and transparent market place. This means that independent generators (particularly intermittent renewable generators) have no real certainty over the power price they will receive on an electricity exchange. This creates a financing problem, which is a barrier to independent generator market access. There is a low churn ratio and thus too much price volatility for banks to provide project financing to an independent generator that does not have a long-term power purchase agreement (“PPA”) with a vertically integrated utility.
14. The implications of this for independent generators and customers are considered further on. The impact on independent suppliers is that access to generation is limited: access to VIU generation is hampered by self-supply and access to independent generation is curtailed by

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reliance on PPAs with VIUs. As noted in the Statement, Ofgem's 'Secure and Promote' licence condition aims to unlock VIU generation. In TE's view, this is a step in the right direction, but it will not itself produce anywhere near the liquidity necessary to turn the 'Big 6' into the 'Big 60,000' figure to which DECC aspires⁵. If the current level of liquidity persists, TE will be forced to move to a more liquid electricity market (such as that seen in Scandinavia), once it achieves a modest share of the GB market, because the range of power products available in the open market will be too limited for TE to thrive. Drastic measures are urgently needed to address this market failure, such as requiring all generators to sell anything over 1MW on an open and transparent exchange. In TE's view, tackling liquidity head-on in this way would significantly reduce the ability of VIUs to distort the market by favouring their associated entities. It would also create genuine price transparency and provide comfort to financiers that a PPA is not necessary to provide a stable market price. This still leaves the problem of imbalance risk, which is addressed below.

15. Simply breaking up the VIUs (through legal or ownership unbundling requirements), without addressing the liquidity or finance issues, could actually make the situation worse for independent generators in the short-term. As mentioned above, illiquidity and vertical integration create a financial barrier to project development and market access for independent generators. The government's Electricity Market Reform Contracts for Difference ("CfD") scheme aims to reduce price volatility by providing a top up payment between a market-based reference price and the strike price. This is a worthy objective. However, a CfD only actually creates price certainty if the generator knows that it can sell its power at or around the market reference price. In order to produce the kind of certainty required for a bank to project finance a renewable development, a developer will need to have entered into a 15 year PPA with a VIU (one with a sufficiently strong credit rating and balance sheet), before the bank will release the funding for construction. This means that generator developers will continue to be at the mercy of large VIUs, because they need the PPA in place in order to get the financing to build their projects.
16. Under the current Renewables Obligation scheme (which the CfD will replace), VIU suppliers at least have an obligation to procure ROCs (and therefore an incentive to enter into PPAs with independent generators). The introduction of CfDs removes this, reducing the bargaining power of independent renewable generators further. The government's 'Offtaker of Last Resort' policy seeks to address the narrow issue of illiquidity in the PPA market, rather than tackling the wider problem of illiquidity in the wholesale electricity market. This perpetuates the reliance on large vertically integrated utilities (which, in the context of the Offtaker of Last Resort, are both the problem and the proposed solution). Meanwhile, independent suppliers are frozen out.
17. In TE's view, there is better alternative. If the government made a serious effort to (a) foster the development of a flexible demand-side and (b) break down barriers to competition (specifically

⁵ <http://www.theguardian.com/commentisfree/2013/sep/12/gas-cleaner-energy-sector>

illiquidity) so independent, innovative DSR suppliers were able to come forward, then imbalance risk would actually be *managed* across the network, rather than just shifted around it at a price premium. This would reduce the imbalance premium on renewable generation and create an electricity system much better equipped to handle intermittent generation without imbalance costs spiraling out of control. It would also allow the *market* to provide independent renewable generators with a fair price for their power, without relying solely on green subsidies, which rack up electricity bills. The subsequent cost efficiencies would help renewable generation to become competitively priced (especially if the current policy for long term fossil fuel subsidies via the CM were reversed). In TE's opinion, the result would be more renewable investment, increased supply market competition and a better deal for customers.

Theory of Harm 3 – Market power in generation leads to higher prices:

18. TE agrees with the observations made in the Statement and would like to make some additional points.
19. There is an interaction between market power in generation and lack of electricity capacity that should be borne in mind. When generation levels are low, relative to demand, even generators with relatively low levels of market power can have a significant impact on price⁶. In addition, the collective market power enjoyed by VIUs enables large generators to exploit generation adequacy concerns, in their own interest and to the detriment of new market entrants and customers. TE submits that the CM is a classic example of this. It is all too easy for powerful VIU generators to scare the government (and the media) with warnings about blackouts. This can lead to over procurement of new generation capacity and customers subsidising existing fossil fuel plant unnecessarily. Government intervention has created the baffling situation whereby carbon taxes make fossil fuel generation more expensive for customers on the one hand, whilst CM subsidies see customers also paying the same fossil fuel generating stations to stay open. Again, the scope for such abuse could be mitigated through increasing competition and fostering a DSR capacity, in order to loosen the grip of VIU generators.
20. TE is at a loss as to why the CM policy has been developed in a way which seems to increase rather than reduce generator market power, though it is noted that a key architect of the policy at DECC was actually a secondee from ESB⁷. Unfortunately, small independent suppliers and generators do not have the resources to constantly lobby government officials and provide secondees to policy teams. The UK Demand Response Association (of which TE is a member) proposed a secondee, to be jointly funded by members in November 2014. However, this secondee was not selected by DECC for the CM policy work. In addition, it is noted that the CM Expert Group saw generators and network representatives outnumber DSR representatives 9:1⁸.

⁶ L.J de Vries & R.A. Hakvoort "The Question of Generation Adequacy in Liberalised Electricity Markets", Delft University of Technology, September 2004 (section 7). Social Science Research Network Electronic Paper
<http://www.feem.it/userfiles/attach/publication/ndl2004/ndl2004-120.pdf>

⁷ <http://www.theguardian.com/environment/2013/nov/10/gas-industry-employee-energy-policy>

⁸ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/73190/ToR_for_EMER_Expert_Group_on_the_Capacity_Market.pdf

In addition, at the reading of the CM Rules and Regulations in April, DSR participants were restricted from attending but no such restrictions were imposed on generators. Indeed ESB alone fielded two representatives at the session while DSR industry participants were limited to three in total across all companies.

Theory of Harm 4 – Energy suppliers face weak incentives to compete on price and non-price factors in retail markets, due in particular to inactive customers, supplier behavior and/or regulatory interventions:

21. TE agrees with the observations made in the Statement and would like to make some additional points.
22. TE's considers that the problem of customer inertia will not be resolved by simply improving or simplifying tariff information. Customers do not operate within the energy industry, their priorities lie elsewhere and they should not have to become energy market experts to obtain a good deal. Customers need to see (a) significant savings and (b) a simple offer that doesn't require too much action on their part, in order to be persuaded to switch. In TE's opinion, DSR and the introduction of independent suppliers will help with (a), and the combination of automated DSR technology, an integrated supply and DSR offer, and avoiding time-of-use tariffs can deliver (b). However, as mentioned above, advances in innovation and competition require the right market incentives and an absence of significant barriers, in order to provide customers with an attractive proposition.
23. Regarding the interplay between inactive customers and weak price signals: as mentioned above, smart meters and half hourly settlement will help in this respect, but they are not enough on their own. Renewable generation presents an extraordinary opportunity for innovative suppliers that are genuinely incentivised to cost-optimize. As set out above, TE's business model involves exploiting disruptive DSR technology and utilising price signals created by intermittent generation to enable customers to access the upside of renewables (cheap or free power at certain times), whilst reducing the overall downside (green subsidies being partially attributable to the systemic failure to manage imbalance).
24. The Triad methodology is another good example of how clear price signals can be used to encourage (half hourly settled) customers to be active. Customers who are able to avoid drawing power from the grid during the 3 highest peak 30 minute settlement periods are rewarded by avoiding transmission network costs, which in turn reduces grid stress at peak times. CM policy framework originally foresaw CM costs being recovered through a deepening of Triad. TE and DSR aggregators would have been able to help customers avoid these costs, which would have sent a clear market signal that some customers would rather reduce demand than pay peak prices. In turn, less capacity would have been procured in future CM auctions. All customers would have benefited from this, as overall costs of the CM scheme would have been reduced.
25. However, following concerns raised by incumbent VIU suppliers, the CM policy was changed so

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that costs will now be smeared across a longer timeframe (4-7pm all winter weekday evenings). It is neither feasible nor reasonable to ask domestic customers to avoid using power every winter evening, so even domestic customers with smart meters will now be unable to avoid the costs. This decision will serve to benefit the VIU generators that dominate the CM and wider market, at the expense of customers. By dampening the price signal, extra capacity will now be procured in future CM auctions, whether or not the need for such capacity could have been avoided. The incentive of, and ability for, dynamic suppliers to produce new attractive customer offers has also been stymied. This is a missed opportunity and a real set back for innovation and competition in the GB electricity supply market.

Please do not hesitate to contact me should you have questions on any of the points raised in this submission. I would be very happy to meet with you in person to discuss further.

Yours sincerely

Sara Bell

CEO

Tempus Energy Supply Ltd