

Energy System Integration Team
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Dear Energy System Integration Team

In response to Ofgem's call for evidence: a plan for a Smart, Flexible Energy System, please see our policy recommendations for energy system transformation and recommendations on how to manage the policies.

About Tempus Energy

Tempus Energy ('Tempus') is a technology company, set up to make energy systems more efficient by capturing the value of under used assets using demand-side flexibility technology. Tempus has developed technology to shift real-time consumption patterns to optimise trading on the electricity market within each half-hour, leading to cheaper electricity prices for customers whilst helping to balance the overall electricity system.

Importantly Tempus is demonstrating that through the use of demand-flexibility in liquid, transparent and competitive wholesale markets, where prices reflect actual scarcity and network stress, we can create a market-based approach to integrating more intermittent renewable energy onto the grid and therefore combat climate change through market-based solutions.

Our vision is to transform the energy system from a generation centric model with licenced suppliers and a price inelastic demand side to a decentralised, physically and financially secure customer centric model where imbalance risk is managed through flexibility.

The fundamentals to achieving a Smart, Flexible Energy System are:

Liquidity and transparency in wholesale trading

- The GB electricity market is dominated by six vertically integrated energy suppliers that trade through opaque bi-lateral contracts with inter-company partners. This is a barrier to competition from independent suppliers and bad for customers as the internal transaction cost is unclear.

We recommend all electricity trades above 1MW are traded or settled on an exchange. This would result in **transparency** and **fairness** and **reduced costs**, reflective of scarcity and therefore ultimately ensure a more efficient use of our existing assets.

- For there to be transparency and competition, we should allow the market to make generation investment decisions by keeping as much value as possible in the wholesale market as opposed to generation investment decisions being dominated by subsidies. This would also allow for more new suppliers to enter the market as the trading platform would be a level playing field for all suppliers. This change would benefit customers as prices would be more transparent and start to rebuild trust in the energy sector.
- The domination of the vertically integrated energy suppliers also slows down the pace of change of progressive policies such as energy efficiency, smart meter rollouts and demand response especially in situations where vertically integrated companies have such a large concentration in a given market. We would recommend a truly smart and flexible energy system does not have vertically integrated energy suppliers.

Ensure balancing programmes are designed for demand-side participation and that they rewarding flexibility.

- **Ensure there is a 100kW minimum participation size for all auxiliary services**, including STOR, Demand Side Balancing Reserve (DSBR), the capacity market and voltage regulation programmes. This will allow for more smaller customers to participate, with real demand turn-down and turn-up programmes, ensuring the energy system is cleaner, which will contribute towards meeting the energy and climate change objectives. This also provides more competition and better prices for all customers.
- **Simplify and refine STOR rather than developing new programmes.** For example, £5m has been spent on DSBR; and the demand turn-down services could have been incorporated in STOR instead the cost of having additional programmes.

Black Start arrangements

- We would recommend **decentralising black start arrangements** by reducing minimum participation size, ensuring enough resource in the event of a black out in an increasingly more decentralised energy system. This will also increase competition and reduce the cost of this service.
- We would also recommend full transparency of contracts, pricing and requirements for black start arrangements to allow for competition and keeping the cost to the customer as low as possible.

Capacity Market programmes designed for demand-side participation

- **Ensure there is a 100kW minimum participation size.** This will allow for more small customers to participate in the auction and increase competition and reduce the price. The present eligibility of 2MW and any participant below this threshold needs to combine with other aggregation service to meet the current 2MW eligibility, is just another barrier to innovation and favours large scale generation.
- **Ensure that all contract lengths and terms are equal.** Current capacity market rules offer differential contract lengths to different resources and yet forces them to bid by price as though they were receiving the same terms. A child can calculate that a given auction price times 1 will result in a lower revenue amount than the same auction price times 15! It is extraordinary that DECC was not capable of this level of mathematics. This design results in a less competitive arrangement and higher costs to consumers as well as contravening competition law.

PJM, (the regional wholesale market made up of ten different states in the US) holds a three-year capacity market auction (called the Reliability Pricing Model) where all resources receive the same contract length. This provides a competitive market that delivers the lowest price possible for consumers.

Furthermore, 15-year contracts risk a lock-in of dated technologies in an environment where innovation is moving rapidly, potentially resulting in customers having to pay for this lack of foresight. It could also increase risk of mispricing through over buying of capacity.

We would recommend **3-5 year contracts and equal terms and conditions for all participants resulting in fairness, competition and a reduced price for the customer.**

Network innovation incentives

- **The Network innovation incentives need to be more holistic.** At the moment, the focus is to generate knowledge that will benefit the DNO community, however, knowledge and learning is generated at every part of supply chain. This means that if the DNO feels it is not benefitting from the programme, the programme could cease and all knowledge has the potential to being lost.

The DUoS charges for 2018 show a significant flattening of the differentials between low and high periods, reducing the incentive of customers to reduce demand when networks are congested. This will result in the unnecessary need for costly network reinforcement and costly increase to network capacity, which would in turn increase the customer's energy bills and counter-intuitive to innovation.

- **The DNO's return on investment needs to be reviewed and changed.** At present the Regulatory Asset Values (RAV) provide DNOs with a 6% return, which comes from customer's bill. Some of this 6% is coming from unused assets, which customers are paying for, but they are not receiving the benefit from an unused asset. Currently, there are no financial consequences of building assets that do not get used, which means that DNOs will continue to build them to gain revenue.

We recommend the investment motivation behind investing in network assets needs to be understood and taken in to account when determining the design of the regulatory framework, and recommend a **higher regulated return on innovation that enables a smart and flexible energy system.**

Energy storage

- Storage could play a significant role in the success of a smart, flexible energy system. However, for this to happen, there needs to be **clarity of roles and responsibilities, clear market arrangements and a level playing field for new technologies.**
- We recommend that customers are incentivised to take up new technologies such energy storage and CHP situated on customer sites and to allow customers (businesses and domestic) to decide their technology choice for flexibility. This would benefit current and future customers and the smart, flexible energy system. Removal of embedded benefits will do the exact opposite of incentivising customers to invest in these technologies.
- The most cost effective place for **energy storage is located behind the meter**, where there are several revenue streams and cost savings. These savings include arbitrage (peak-shaving), reducing distribution network investment cost, triad avoidance and energy storage unit being used as an Uninterruptible Power Supply, which are all beneficial to the customer. If energy storage units are located on the distribution network or on the transmission network, they can only save distribution or transmission network charges.

Smart meters and half-hourly settlement

- We need clear policy and common standards on smart metering and smart grids well before 2020 to ensure interoperability across the network. As all SMETS 1 meters installed prior to 28 October 2017 will count towards a supplier's compliance with annual milestones and the 2020 rollout obligation, this will cause customer confusion with switching suppliers and ultimately cost the customer money. The interoperability is crucial to ensure customer choice whether it's behaviour change through a Time of Use tariff or automation through interoperable smart appliances that can automatically respond to price signals.

- We agree with Ofgem's **Elective** half-hourly settlement: conclusions paper (26 May 2016)¹ to remove all financial and technical barriers (data collection cost, meter spec etc.) using half-hourly smart meter data to settle all customers. We agree that removing these barriers will deliver a more flexible, innovative and efficient electricity market and will be a more cost-effective option for domestic and smaller business consumers. Please refer to Tempus Energy's response to Ofgem's open letter on 'Half-hourly settlement: the way forward' (28 January 2016) providing details of half-hourly settlement barriers and our recommendations for further details.
- However, whilst we welcome Ofgem's approach to moving towards mandatory half-hourly settlement in 2018, we would recommend **half-hourly enablement** to minimise the opposition to mandatory half-hourly settlement. Discussion over mandatory half-hourly settlement could be very resource intensive and time consuming, which would delay an environment for more DSR, promote more innovation and competition in the energy market. We would urge that the enablement happens as **early as possible in 2017** as unless all customers (I&C, SME and domestics) are half-hourly settled, smart meters will not deliver the full potential return on investment. Customers may benefit from having more accurate bills, but will not benefit from flexible technologies, which will contribute towards meeting the UK's energy and climate change obligations.

Too Many moving parts

- Many DSR programmes have been designed to avoid peak network charging periods to balance the network, avoid costly reinforcement requirements and save the customer money. However, there is potential that the network charging regime changes following the open letter on 'Charging arrangements for embedded generation' published in July 2016. Given the complexity of the GB energy system, it is counterintuitive for innovation to be trying to solve network issues, while the incentives for solving them are being removed. This will lead to less innovation and higher costs. Flattening of DUoS charges has the same effect as mentioned above.

Furthermore, the Third Energy Package has **enshrined in UK law** the concept of network cost reflectivity. We are concerned that the above changes are a direct contravention of UK law.

Learning from around the world

- The benefits of technologies such as demand response and storage are well understood, and the technology operational in other markets around the world. In the PJM market, a market with three times the electricity demand

¹ https://www.ofgem.gov.uk/system/files/docs/2016/05/elective_hhs_conclusions_paper.pdf

of the UK, 14.8GW of total capacity in 2015/16² was provided by demand side response. The technology is working, creating savings and improving security of supply. Technologies such as demand response and storage optimise the use of our existing infrastructure and assets meaning that we are using our system in a smarter, more efficient way.

Conclusions

With all our recommendations, we are ensuring that the **customer** is at the heart of all decisions and through **fair** and **transparent competition**, positive steps will be made towards addressing the energy trilemma of maintaining a **secure, affordable** and **low carbon** energy supply for a Smart, Flexible Energy System.

Please do not hesitate to contact us for any clarification on the above points.

Yours faithfully

Sara Bell
CEO & Founder, Tempus Energy

² <https://www.pjm.com/~media/markets-ops/rpm/rpm-auction-info/20120518-2015-16-base-residual-auction-report.ashx>