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Solutions

| **Energy HQ**

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c/o Edwin Tammias-Williams, Senior Manager, Ofgem

Our reference :

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Ref: Consultation regulatory treatment of CLASS as a balancing service in RIIO-ED2 network price control

Thank you for the opportunity to respond to the above consultation.

We strongly believe that Ofgem's minded-to position with regards to permitting CLASS to continue to access Balancing Services markets undermines market competition and puts future investment in assets that can improve flexibility at risk. The Energy Network Association's (ENA's) 'Flexibility Principles' document appears to provide a clear ruling that where balancing services are open to competition, system operators should not participate due to their advantageous position over other market participants.

We have fully supported the various statements from both Ofgem and the Department for Business, Energy and Industrial Strategy (BEIS) in recent years that claim to encourage flexibility services delivered from the demand-side. However providing a "*minded to position to continue to allow CLASS to bid into commercial services*" inevitably undermines investor confidence in future flexibility provision. Ofgem should be 100% committed to removing barriers to entry into the nascent Demand Side Response (DSR) market and to encourage participation as much as possible. Permitting CLASS to access balancing services markets under any guise fundamentally undermines this principle and as a result we should expect to see wide-spread investment in demand-side assets to cease.

Furthermore, the balancing services community are entering a period where they will be required to invest heavily in more sophisticated aggregation capability to satisfy the new complex suite of the Electricity System Operator's (ESO's) 'Faster Firm Frequency Response (FFR)' services. If CLASS is permitted to continue then the npower Business Solution's DSR team would struggle to justify the required system developments costs to our executive team while the future income is dependent on a market that is likely to be undermined by the Distribution Network Operators (DNOs). If other aggregators are in the same position then market liquidity and choice is likely to deteriorate rapidly.

Please find attached our response to the questions as set out in the consultation. We would be happy to arrange a meeting with you and your colleagues to discuss the contents of our response further.

Yours sincerely
Graeme Dawson

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Q1. Are there other options we should have considered? Please provide reasons.

The three options posed by Ofgem: (1) 'CLASS competed as a Directly Remunerated Service (DRS)'; (2) 'CLASS provided as a price control service' or (3) 'CLASS is prohibited' fail to recognise the fundamental market principles, technical characteristics and full roles of the extensive range of service providers that support the ESO in managing GB system resilience. In order to maintain and contain the electricity system within prescribed tolerances there is an established, competitive market. The DNOs only role in balancing the system should be to act as a last resort safety-net when system frequency breaches the ESO threshold at which time under Grid Code OC6 the DNO should enact their 'Voltage Control' capability and reduce the risk of Low Frequency Demand Disconnection (LFDD) events. In recent major system events the DNOs have failed to perform to the expected standard¹. The CLASS functionality has the potential to be of enormous value in improving OC6 Voltage Control² performance and as a result reduce the risk of large volumes of LFDD.

From the options document by Ofgem, of specific concern:

Under option 1 'DRS': Ofgem hint at the creation of "bespoke bilateral agreements where DNOs would not participate in tenders alongside other providers, but with alternatively agreed terms". This is a red-line and **should not be encouraged under any circumstance** as carving-out dedicated DNO-ESO service capacity between monopoly industries ultimately removes capacity from the existing functioning Balancing Services market place. Competition that is not based on a level playing field has the potential to lead to market domination and ultimately is detrimental to end consumers.

As the services required by the ESO can be provided by third parties, Project CLASS should not be able to compete in these markets. To continue to permit CLASS undermines the market, and has the potential to result in assets exiting the market altogether (as highlighted by Baringa). This would have a detrimental impact on security of supply as it is very unlikely that the DNOs can satisfy the full range of ESO services if other commercial providers exit for example:

Grid Service	Provider	Model	Status
Enhanced Frequency Response (EFR)	Commercial providers	Through Balancing Services market tenders	No further EFR tenders available
Dynamic FFR			At risk from CLASS / DNO provided response
Static FFR (Primary/Secondary/High)			
Fast Reserve			
Short Term Operating Reserve (STOR)			
Voltage Control	<u>DNO-enacted</u>	Under Grid Code OC6 as a last resort	N/A
Low Frequency Demand Disconnection (LFDD)			

Under option '3' "CLASS is prohibited" Ofgem claims that there would be "No incentive for new investment in CLASS Capacity". The statement is simply not true, if the more automated transformer tap-change functionality created by CLASS is reprogrammed and used only to improve the performance of DNO Voltage Control activity then as the 9 August blackout demonstrated, this kind of tool could be of enormous value, preventing large volumes of LFDD.

We have noted that Ofgem has not asked whether stakeholders agree with the minded to position set out in the consultation. For the avoidance of all doubt, npower Business Solutions does not agree with Ofgem.

¹ Noting that on the last occasions when Voltage Control was requested by the ESO on 27 May 2008 and 11 February 2012 the DNOs only managed to deliver ~50% and ~60% (respectively) of the Demand Control expected which inevitably meant the country was on the cusp of widespread blackouts on these dates.

² The Grid Code obliges a DNO to provide a demand response to NETSO for the management of frequency, delivered by the 3% or 6% voltage reduction at DNO substations; this Voltage Control activity is generally called upon only when other independent generation and demand management Response and Reserve options have been exhausted – see events of 27 May 2008 and 11 February 2012 when the DNOs only managed to deliver ~50% and ~60% (respectively) of the Demand Control expected.

Each of the options 1 and 2 where CLASS would be permitted by Ofgem to continue to bid in to competitive markets contradict all of the recent guidance from both Ofgem and the ENA and which appear to set a clear precedent:

- (a) **ENA Open Networks Flexibility Principles**³ (July 2019): state under “Section 1: Neutral Market Facilitation:
- ii. System Operators **must act as neutral market facilitators** in the way they undertake core functions.
 - iii. Market neutrality is a fundamental principle of operating Britain’s energy network infrastructure. **System Operators should procure Flexibility Services in a way that creates a level playing field for all energy technologies and services.**
 - iv. Where Flexibility Services are open to competition, **System Operators should not be allowed to be active in that area. This is due to System Operators having part of their costs covered by regulated tariffs, subsequently carrying a lower risk profile supported by their core monopoly activity and placing the System Operator in an advantageous position over other Market Participants”**
- (b) **Western Power Distribution’s Project Entire**⁴ (project closure document June 2019) stated: “Following discussions with the Ofgem the scope of Project Entire was curtailed due to the risk of undermining nascent markets which are facilitated by independent organisations:
- “Whilst the project originally included the offering of a managed, stacked services to customers, **this element was removed from the project as part of a review with Ofgem”**
 - “**Ofgem highlighted that they did not see models in which the DNO operates as a commercial operator in the long term interests of customers.** As such these elements of the project were removed to ensure that the trial continued to deliver relevant and valuable learning.”
- (c) **Ofgem’s Decision on enabling the competitive deployment of storage in a flexible energy system**⁵ (December 2018) concluded: “**Where competitive activities are carried out by monopoly network operators, there is potential for competition to be distorted, for new market entrants to be deterred, and for network operators’ incentives to invest efficiently in their networks to be affected.**

The development of effective price signals has been identified as **necessary for achieving a smarter, more flexible system that delivers efficient overall outcomes. Alongside demand-side response (DSR) and flexible generation, storage operators are one of the participants in these new markets. We believe that there is a risk that markets for flexibility at distribution level could be stifled if monopoly entities are able to participate as they have competitive advantages as compared to third-party storage providers.**

...because **network companies control the network infrastructure** needed to trade energy and flexibility services, **they have the ability to restrict the activities of market participants by denying (or otherwise impeding) their network access. If a network company is also participating in the competitive market, it may have a strong incentive to use this ability to gain an unfair advantage over its rivals.** The network companies’ incentives to invest efficiently in the network can also be affected, if decisions are driven by shorter-term market signals, rather than longer-term investment signals. Finally, there can also be circumstances where **the network company has information not available to the wider market, which might give it an undue advantage in competitive activities”.**

Through the statements above Ofgem has set out a clear position that “*network companies should undertake activities that can be done by third parties*”, but has subsequently argued that CLASS does not constitute this kind of contestable activity as it represents a network solution uniquely deliverable by DNOs. This disingenuous argument ignores the fact that while only networks can deliver CLASS, CLASS is providing a solution to the ESO that it is being entered for by commercial providers that can offer a variety of other means of providing these services. Any DNO providing a CLASS-type solution are therefore directly competing with commercial provision of services, while gaining a clear competitive advantage by using regulated, subsidised assets to do so – recognised by Ofgem in CLASS’s ‘*higher than average tender success*’ and ‘*ability to take lower prices*’ than projects that are based on regular funded assets and technology.

³ ENA Open Networks Flexibility Principles [https://www.energynetworks.org/assets/files/electricity/futures/Open_Networks/ON-WS1A-P1-Flexibility%20Market%20Principles%20\(Final\).pdf](https://www.energynetworks.org/assets/files/electricity/futures/Open_Networks/ON-WS1A-P1-Flexibility%20Market%20Principles%20(Final).pdf)

⁴ WPD’s PROJECT ENTIRE CLOSEDOWN REPORT (doc Ref WPD_NIA_017) dated 10th June 2019
<https://www.westernpower.co.uk/downloads/39682>

⁵ Ofgem’s Decision on enabling the competitive deployment of storage
https://www.ofgem.gov.uk/system/files/docs/2018/12/storage_unbundling_decision_letter_final_for_website.pdf

Ofgem should be 100% committed to removing barriers to entry into the nascent DSR market and to encourage participation as much as possible. By permitting CLASS to access ESO ancillary services market revenues under any guise, Ofgem will be fundamentally undermining this principle.

Q2. Do you agree that market based mechanisms can provide the most efficient incentive for CLASS participation in balancing services?

To be clear, we do not believe that CLASS or any similar DNO-provided capacity has any place in the Balancing Services markets.

Market based mechanisms do provide the most efficient incentive for balancing services providers but provision by a monopoly (with their inherent competitive advantages as a regulated network operator) have the potential to saturate⁶ and undermine the markets and ultimately jeopardise market engagement and therefore impact on security of supply⁷.

Q3. What is your view on DNOs' sharing profits with consumers, even if this means consumers are also exposed to DNOs' losses (including how this might affect DNOs' competitive behaviour noting this is different to other providers of balancing services)?

As per our response to question 2, we do not believe that CLASS or any similar DNO-provided capacity has any place in the Balancing Services markets. The question of profit sharing and exposure to losses is further evidence why CLASS should not be present in a market given that DNOs are largely protected from exposure to losses through their totex price-control sharing factor.

Furthermore if the DNO provider were to be motivated by profit through their own participation in balancing services it risks the creation of perverse incentives for DNO network planning teams to limit competition from commercial providers through, for example creating onerously expensive connection offers or delaying connections from new DSR, storage or generation projects which could have offered balancing services. DNO's would ultimately hold both 'poacher and gamekeeper' roles which is unacceptable.

Q4. How might limits on charges to the ESO in DRS9 affect investment and utilisation signals for CLASS?

As per our responses to previous questions, we do not believe that CLASS, either under DRS8 or DRS9, has any place in the Balancing Services markets. Ofgem does not appear to have commissioned appropriate impact analysis and is instead simply concluding that option 1B (DRS9) is less desirable on the basis of subsequent administrative '*complexities associated with price control and compliance reporting*'. Apart from the unacceptable impact on functioning, fair markets, Ofgem should recognise a much wider range of factors - i.e. also considering the incremental costs, ultimately born by the consumer, of the additional wear and tear on substation transformers resulting in additional maintenance costs and faster equipment replacement plus the exposure of customers to supplier imbalance costs as a proportion of their expected power demand is likely to shift to adjacent settlement periods as a result of CLASS activity.

⁶ Baringa Report 'Assessing the impact of CLASS on the GB Electricity Market' (dated 31/05/2016):

"Up to 200MW in ENWL's network, and when extrapolated to GB, the CLASS partners calculated an overall effect of 1.2 GW – 3.3 GW (summer minimum demand – winter maximum demand). **"All other providers could be displaced, including Pumped Storage, DSR, batteries, diesel engines, CCGTs and interconnection"**.

⁷ See **Baringa report** 'Assessing the impact of CLASS on the GB Electricity Market' (dated 31/05/2016) page 61 **"displaced market participants may decide that operations without the Balancing Services revenues that they were earning prior to CLASS' introduction is not commercially viable, so could look to exit the market altogether. This would have a detrimental impact on security of supply"**

Q5. Do you agree that requiring CLASS in the price control would not promote efficient investment signals in CLASS and could distort competitive outcomes?

We agree that 'requiring CLASS in the price control would not promote efficient investment signals in CLASS' as we believe CLASS should be excluded from participating in commercial, market-based products for all the reasons set out in our earlier responses.

However we are deeply concerned with the way that Ofgem has framed this particular question, as it appears to seek a tacit agreement that in a positive response we would support CLASS's inclusion in the DRS8 or DRS9 category, which npower Business Solutions does not.

Q6. Do you have evidence CLASS could affect the likelihood of system reliability issues?

Yes. Baringa in their 2016 report 'Assessing the impact of CLASS on the GB Electricity Market' stated that:

- CLASS could provide "up to 200MW in ENWL's network, and when extrapolated to GB, the CLASS partners calculated an overall effect of 1.2 GW – 3.3 GW (summer minimum demand – winter maximum demand)"
- As a result "all other providers could be displaced, including pumped storage, DSR, batteries, diesel engines, CCGTs and interconnection"
- And that "displaced market participants may decide that operations without the Balancing Services revenues that they were earning prior to CLASS's introduction is not commercially viable, so could look to exit the market altogether. This would have a detrimental impact on security of supply"

Furthermore our large industrial and commercial customers may be exposed to an increased fault risk factor particularly where they are connected through older substation transformers (some of which are customer-owned) that cannot react to voltage deviations. Many of these transformers are hard wire tapped so variation of voltage levels could impact a substation/customer site with brown out conditions or even failure of older client-owned equipment such as compressors/elevators which are not rated to run at lower EU (CE) rated voltages.

If CLASS is permitted to continue, as a responsible energy supplier npower Business Solutions would be obliged to advise our key corporate customers who are investing in assets to access ESO balancing services, to curtail their projects. As a result of the current minded-to statement from Ofgem we have already highlighted the risk to several of these organisations. With the retirement of traditional thermal generation assets in the near term, future system reliability could be undermined if assets from the demand side are discouraged by Ofgem's decisions with regards to CLASS. As outlined in our table in response to question-1, the DNOs cannot on their own satisfy the full range of services required by the ESO.

Q7. Do you have evidence competition is currently being distorted or impeded by the participation of CLASS? Do you agree with our assessment that it is unlikely DNOs have or would have market power in future, and the reasons we have provided in Appendix 2?

Yes, in each and every tender round that CLASS assets have secured balancing services contracts competition is being distorted and markets impeded. Within the text of the consultation Ofgem has recognised that ENW '*can bid between 40MW and 110MW and the max that ENWL has bid as a balancing service using CLASS assets has been 75MW*'. Where CLASS assets are successful in their FFR bids the inevitable consequence is that other Frequency-capable assets are displaced, becoming 'stranded' for the relevant period covered by the tender. Therefore there is an issue whereby assets that could otherwise have satisfied grid balancing issues become idle – as we experienced during the LFDD event of 09.08.2019.

Developers of commercial storage assets are investing between £500k to £800k per MW (installed battery energy storage system) with business cases that are highly dependent on accessing ESO Balancing Services income. Based on Ofgem's quoted data if CLASS assets secure 75MW of FFR contracts that would result in approximately £45 million worth⁸ of independently owned battery assets excluded from FFR services and deprived of expected revenues of

⁸ Typical Battery Energy Storage System (BESS) costs (1C installed) is ~£600,000/MW therefore 75MW of CLASS capability displaces and creates stranded assets worth £45,000,000.00 (75MWe x £600k/MW) from the FFR market

approximately £2.6 million of FFR income⁹ undermining Return on Investment and increasing the probability that going forward, banks would consider any other similar storage projects to be unworthy of investment.

No, we do not agree with Ofgem's assessment that it is '*unlikely DNOs have or would have market power in future*' – the values shown above are only a fraction of the potential market damage if Ofgem permit CLASS to continue as other DNOs are likely to adopt the service too.

While Ofgem has stated that they "*don't have evidence that DNO participation will increase substantially, either in volume or in the number of products delivered*", we are concerned at the bias that appears to be hard-coded in to the consultation document, where it appears as if Ofgem has pre-determined that 'cheap today' trumps all other measures and have provided very little data to support their position. We would urge Ofgem to recognise that the lack of adoption in other regions currently reflects the fact that CLASS is controversial throughout even the DNO community and as a service appears to be in direct conflict with the ENA's own Flexibility Market principles¹⁰.

Independent studies and reviews of CLASS have concluded that the whole of the Frequency Reserve requirement could be satisfied by DNOs and Baringa's assessment was even more specific concluding that if adopted across GB "*all other providers could be displaced, including Pumped Storage, DSR, batteries, diesel engines, CCGTs and interconnection*".

npower Business Solutions works with a great number of major businesses throughout the UK, including major corporates, independents and also local authorities. As we have highlighted elsewhere many of these entities are investing significant sums in to battery storage systems to support the ESO and access Balancing Services income. If CLASS is permitted to continue, as a responsible supplier we would be obliged to advise our customers to curtail their projects.

Furthermore as the ESO is in parallel expecting DSR service providers to develop their aggregation platforms in order to satisfy the new suite of sophisticated Faster-FFR products, we would be unable to justify the required system developments costs while the future income is dependent on a market that is likely to be undermined by the DNOs.

As further evidence we also refer Ofgem to the ENA's Open Network project - Workstream 3 (Product 7) "Conflicts of Interest" paper, specifically the issue of the use of TO / DNO funded assets where the treatment of CLASS has been identified in the Conflicts of Interest / Unintended Consequences Risk Register since December 18 as a conflict of interest within **ED1**. It is extremely disappointing that as part of this consultation Ofgem appears to be blinkered to the wider implications of CLASS on an active but nascent market and the consequential risk to system stability, ignoring the valid concerns of industry, and the acceptance by the DNO's own trade association, the ENA, that this issue is live and is continuing to cause concern. In the simplest of terms if Ofgem is unable to do the right thing, ultimately CLASS may need to be assessed by the CMA.

Q8. What information could the DNO have privileged access to that that could offer it an unfair advantage in balancing services provision? How might this change in future if the DNO and ESO increasingly coordinate?

The DNO planning teams and control engineers are more likely to have privileged access to National Grid Control Room planning and actions; including potentially ESO demand and its procurement strategy for reserve and response services ahead of time.

This information is not available to commercial participants in these balancing services markets.

⁹ And ENW CLASS assets will through their static FFR contracts earn over £2.5million of ESO revenue that these battery developers would have expected to earn as part of their battery investment case, assuming FFR (Static service) clears at ~£4/MW/hour x 75MW x 8760hrs = £2,628,000

¹⁰ See **ENA Open Networks Flexibility Principles**

[https://www.energynetworks.org/assets/files/electricity/futures/Open_Networks/ON-WS1A-P1-Flexibility%20Market%20Principles%20\(Final\).pdf](https://www.energynetworks.org/assets/files/electricity/futures/Open_Networks/ON-WS1A-P1-Flexibility%20Market%20Principles%20(Final).pdf)

Q9. What measures would you consider effective and proportionate to ensure that privileged information the DNO has access to is not used inappropriately to benefit the commercial performance of CLASS?

To be clear, we do not believe that CLASS or any similar DNO-provided capacity has any place in the Balancing Services markets.

The DNOs should be limited to a role of acting as a neutral market facilitator: DNOs are likely to have access to privileged information and also be in a position to distort the market for balancing services as a result of their funded asset base and their access to beneficial finances from their core monopoly activity.

Q10. In what other ways do you think DNOs could take advantage of their DNO role in the context of providing balancing services with CLASS?

We have concerns that instead of acting as a neutral market facilitator, if DNOs are permitted by Ofgem to compete in the various Balancing Services markets then:

1. up to 3,300MW of DNO capability will mobilise nationally and as a result of their (a) use of existing paid-for assets and (b) access to low-risk finance they will be able to take extraordinary prices in the various balancing services markets, undermining all other commercial providers
2. there is a conflict of interest risk whereby DNO planning and connections functions could be in a position to impede projects tabled by independent flexibility providers e.g. through prolonged or prohibitively costly connection offers
3. CLASS activity at a network transformer could suppress the signals and the required response from a downstream commercial balancing services provider meaning that they could be exposed to ESO performance penalties for lack of deliver.

Q11. How far do you think existing safeguards (including licence obligations and competition law) against DNOs taking advantage of their DNO role in the context of participating in the balancing markets with CLASS are sufficient?

We do not believe the existing safeguards are sufficient. The risk remains that investors who are developing alternative providers of flexibility will curtail their projects in the UK as a result of CLASS conflicts of interest and the ability of these monopoly network businesses to undermine balancing markets for other participants.

For this reason if CLASS is permitted to continue by Ofgem, as a responsible energy supplier we would be obliged to advise our key corporate customers to curtail further investment in their storage projects. As a result of the current minded-to statement from Ofgem we have already highlighted the risk to several of these organisations (which includes local authorities).

Q12. What additional measures would be effective and proportionate to address actual or perceived risks of DNOs taking advantage of their DNO role?

We believe the current DNO business model is outdated and should follow the structural reforms enacted at National Grid whereby the System Operator role has been ring-fenced and legally separated from the Network Owner function (see NG ESO and NGETO separation in 2019). This would ensure that any system balancing activity, either for the ESO or their own networks, is managed fairly - and distinct from the investment and planning/connections role that could impede independent flexibility providers (e.g. through prolonged or prohibitively costly connection offers).

If Ofgem permits CLASS and ultimately other DNOs to alter the voltage of consumers and non-domestic sites for commercial gain, then we would require the DNOs to seek explicit permission through new connection agreements and by retrospectively amending connection agreements with any customers that are 'down-stream' from a CLASS-active substation to clearly set out that the customer is agreeing to be exposed to:

- losses in the form of higher tariffs as well as gains in the form of lower tariffs (depending on CLASS performance)
- that within a certain range, their voltage will be affected which may affect the performance of equipment on site including manufacturing processes and customer-owned transformers and substations
- that any flexibility role that the customer had hoped to provide the ESO is likely to be suppressed as a result of the local network characteristics
- and as a consequence of the potential lag in their consumption as a result of CLASS activity (shifting a percentage of their power consumption from period 'a' to period 'b') that the customer may be exposed to energy imbalance penalties from their energy supplier

- in-extremis, they may be subject to more frequent brown-out and black-out events as the pool of resources available to the ESO for balancing the system will be less diverse

Ultimately given the widespread concerns regarding CLASS and its effect on markets, the only palatable role for this LCNI¹¹ funded capability is to use its sophisticated auto-tap change functionality to improve¹² the formal and DNO-Specific role of Voltage Control when requested as a last resort by the ESO (under Grid Code OC6) and as a result reduce the risk of future LFDD events as experienced in August 2019. Then the function of CLASS would have the potential to be of enormous value, preventing large volumes of LFDD and the resultant disconnection of embedded generators which provide essential services to the network during the event.

Q13. Are there other specific effects to competition that are relevant to our decision? What effects would these have on consumers?

We do not agree with Ofgem's statement that the risk of DNOs dominating the commercial market to the point of monopoly is insignificant. To reiterate the CLASS project's own feasibility studies and project material, ENW has stated publicly that it could deliver up to 170MW via CLASS, thereby displacing up to 40% of tendered Frequency Reserve, and that ultimately across GB DNOs could scale up to 3.3GW (3,300MW) on its networks by 2027.

Baringa's analysis for the ENA¹³ concluded that this volume of DNO activity would result in a position where *"All other providers could be displaced, including pumped storage, DSR, batteries, diesel engines, CCGTs and interconnection"* and these *"displaced market participants may decide that operations without the Balancing Services revenues that they were earning prior to CLASS' introduction is not commercially viable, so could look to exit the market altogether. This would have a detrimental impact on security of supply"*. This is a tangible risk that Ofgem should not be prepared to consider taking.

¹¹ LCNI/LCNF is the Low Carbon Network Innovation / Fund established and managed by Ofgem which allowed up to £500m to support novel DNO network projects. The Project CLASS trial received £7,174,000 of seed money from the LCNF fund, with Electricity North West contributing £0 and external partners providing £910,000 (see LCNF submission ref ENWLT204/01)

¹² Noting that on the last occasions when Voltage Control was requested by the ESO on 27 May 2008 and 11 February 2012 the DNOs only managed to deliver ~50% and ~60% (respectively) of the Demand Control expected which inevitably meant the country was on the cusp of widespread blackouts on these dates.

¹³ See **Baringa Report** 'Assessing the impact of CLASS on the GB Electricity Market' (dated 31/05/2016)