

To: DECCContractsForDifference@decc.gsi.gov.uk

Email Date-time: 11:21 on Wednesday 8th June 2016

Email Title: URN 16D/225 – Consultation on changes to the CFD contract and CFD regulations

Dear Sir/Madam,

Wind Farm Analytics Ltd (WFA) would like to provide the following response to your consultation. Wind Farm Analytics Ltd has been studying the combination of wind farms with energy storage including programming of computer simulations using real market data.

WFA does not have a view on all questions and has omitted those from the list below.

Thank you for taking these views into account.

Yours Sincerely, Dr Theodore Holtom

Consultation questions

2. How likely is it that a project has benefitted or will benefit from state aid in addition to that granted under a CFD?

- WFA would like to point out that state aid can include projects cooperating with universities, and research and development projects which are beneficial to lowering the cost of energy and stimulating economic opportunities; please consider that such projects may not go ahead without "state aid" and that the "state aid" may not necessarily be in the form of a direct financial grant, rather it can take the form of manpower input to a project and use of equipment in a university; please take care not to disincentivise this type of positive endeavour; please ask universities what they think

4. Can state aid that benefits a CFD project be distinguished from other state aid received by the same party and used for other purposes?

- In principle this should be possible. However, if CFDs constitute state aid, please consider whether "negative state aid" should apply when the reference price rises above the strike price. Under this calculation the overall state aid would increase when the strike price is above the reference price and would decrease when the strike price is below the reference price.

5. When the aid granter is unable or refuses to accept repayment of the aid (with interest), is preventing cumulation by setting off the previous aid against CFD payments, so the aid is in effect deducted from the CFD payments, a fair solution?

- Retrospective changes are damaging to businesses and should be avoided if possible.

6. Could preventing cumulation via set-off against CFD payments pose a credit risk to the LCCC? If so, how significant do you consider this risk to be and are protection measures required to minimise this risk (e.g. posting of collateral)?

- Please consider whether there is a limit on the allowed amount of State Aid for a given company in a given period, and how much might that be? If so then does this imply that a given company will be limited in the number of MWh delivered under CFDs? This would surely be disastrous to the CFD regime and destroy the supposed certainty which the CFD was supposed to offer.

15. Have you considered installing storage on a CFD site? If yes, what storage services have you considered offering?

- Yes, Wind Farm Analytics Ltd has undertaken computer simulations of wind farms trading energy in combination with additional revenue from offering grid ancillary services such as STOR, Fast Reserve and possibly Frequency Response. Apart from offering grid stability and energy security by provision of such grid ancillary services it is possible to deliver energy to market when the market

needs it most (eg breakfast time) and when the market price is highest. There are many constraints to consider and the modelling is complex but there are great benefits from combining wind farms with energy storage, especially pumped hydro energy storage which is the only method capable of storing the necessarily large volumes of energy. One very great advantage of combining energy storage with wind farms is that it handles the variability of wind and captures curtailment energy instead of the wasteful dumping of green energy. The energy storage can also deliver stored energy when it is not windy (or sunny in case of solar). Pumped hydro is highly controllable compared with very slow-to-adjust nuclear power which can also benefit from energy storage.

16. Are there any other barriers to installing storage on a CFD site?

- Investors are wary from investing in large scale storage because they feel the market signals should be stronger (they are looking for long term support for high capital investments); energy storage has never benefited from subsidy in the same way as nuclear, wind or solar and yet energy storage is the key to the whole world's future energy management, especially considering heat and transport needs in addition to electricity needs. Please find a way to ascribe higher value to energy storage than current market offers. This is a current market failure (due to design of market mechanisms before high capacity of wind and solar was on our grid) which needs addressing, maybe you can help.

17. Do you think that the use of storage on a CFD site could lead to overcompensation for generators with storage?

- No, if so then generators without storage would have the option of getting storage or combining with storage investments. This will be to the benefit of all of us since it offers badly needed controllability and grid stability and allows smooth integration of more renewables in the future grid, such as very large offshore wind farms in planning.

18. Would installing storage units in a separate BM Unit to the CFD Facility meet your aims of installing storage on site? If not, please explain, and propose alternative arrangements.

- It is possible to combine storage into a trading group with distant generators. However, there are definite benefits if the storage can be collocated with large variable (renewable) generators. This is because the storage cannot be on the other side of a grid bottleneck if we are to avoid curtailment due to that bottleneck. We can better utilise the transmission network and lower the cost of transmission by incorporating new energy storage. It will be better if additional incentive is provided for (electrical) co-location of energy storage within the (electrical) connection point of the wind farm.

19. Do you agree with the proposed definition of a "storage facility"?

- The definition seems reasonable. Wind Farm Analytics Ltd suggests that it should also be allowed that a generator unit such as a wind farm should be allowed to have a storage facility within its electrical connection point without altering its grid designation. Metering can obviously be used to ensure that the wind farm with energy storage does not unduly import electricity for trading purpose (obviously a wind farm or wind farm with empty energy storage must be allowed to import small amounts of electricity to keep its lights on and run computers etc when it s not windy).

20. Do you have any views on the proposed minor and technical changes?

- no, thank you for asking