WPD Response to Enabling Opportunities for Innovation

Executive Summary

As critical system operators which depend on access to spectrum, Western Power Distribution (WPD) welcomes the opportunity to respond to this consultation as an Electricity Distribution Network Operator.

WPD is a Distribution Network Operator (DNO), operating in the four regulated licence areas serving 7.8 million electricity connected customers in the Midlands, the South West of England and South Wales. However, as energy generation is becoming more distributed, our network is becoming smarter and more active, and, as a result, we are stepping towards being a Distribution System Operator (DSO) – transforming our operations for an increasingly low carbon, digital future.

In order for DNOs to maintain a reliable and secure electricity supply as they transition to DSOs, reliable, resilient and complete coverage communications need to be maintained and expanded upon for critical functions.

WPD's primary focus will remain unchanged, distributing and proactively managing reliable electricity to its 7.8 million customers – not just through day to day normal operation, but also during events such as severe weather, flu-pandemics, Blackstart and acts of terrorism. To do this, and adapt to a low carbon future, DSOs will require more sensors, and hence more data and a mix of resilient data infrastructures.

WPD is in a unique position among the DNOs of having our own in house telecoms expertise in our own telecommunications department. WPD has a network using fibre and fixed wireless links to provide a backhaul / trunk network to its office sites and communication sites which are then used to communicate to substation sites and field staff. In the future, these sites will need to communicate to the thousands of additional users of the smart grid and all its components.

Increasingly WPD's data infrastructure is required to be extended to provide private connectivity to substations, distributed generation and active management systems because existing commercial networks are unable to provide the coverage, the resilience and the connectivity that is required and can be technically unsuitable.

Ultimately, WPD has major concerns for the future of spectrum. In the move towards 5G, the pressure on spectrum allocation will impact on our current spectrum use without any alternative at present. Indeed, we currently use spectrum in the following ways:

- 26GHz and other fixed wireless link frequencies is used for microwave communications for substation comms including electricity circuit protection.
- 450-470 MHz is used for scanning telemetry frequencies, which will see increased volumes of data traffic communicating with our Control Centres from our operational assets with no additional allocation presently for utilities.
- 400-430 MHz, we currently have a development licence from the Ministry of Defence for an LTE trial, we cannot move this to business as usual as it is a temporary licence.
- WPD currently relies upon spectrum for our private systems to support us not only for day to day operation but also for high impact low probability events e.g. Blackstart.

- The evolution towards operating a more active system as a DSO will require an increase in the numbers of communications devices connected, and therefore an increase in data and secure, resilient data infrastructure.
- It is our current opinion that the Internet of Things or public networks or even proposed 5G will not address our cyber security, connectivity and resilience concerns.

WPD depends on access to radio spectrum to facilitate the critical Operational Monitoring & Control of its remote assets and with the anticipated transition to 'Smart Grid' capability the enabler for this will be additional access to radio spectrum. In recognition of this developing need Ofcom are currently undertaking a due diligence process with the UK energy utilities in order to better define the industry's needs. We welcome this engagement from Ofcom to work with the industry to ensure that access to spectrum is not an obstacle to Government Policy aspirations to realise the benefits of Smart Grid. WPD have actively supported this due diligence process and recently assisted MoD and Ofcom with their technical appraisal of the 400 MHz spectrum block being promoted by the Public Sector Spectrum Release programme for release and we await the findings from this analysis. Considering Ofcom's Annual Plan proposals, we encourage Ofcom to ensure that suitable resource and oversight is committed to establishing the appropriate regulatory arrangement to facilitate the future enhanced Operational Telecommunications capability that will be central to enabling consumer and citizen access to Electric Vehicles and more Distributed Generation.

As a point of reference, the Irish communications regulator (ComReg) in its recent consultation, ref. 18/92[1], is actively engaging with the needs of the energy utilities for spectrum access and proposing to enable access to spectrum in the 400 MHz band specifically for 'Smart Grid' developments – WPD encourage Ofcom to adopt a similar approach to support the needs of the UK energy utilities.

WPD is a member of the Strategic Telecommunications group within the ENA which has been established to ensure that key stakeholders, Government and Regulators, understand the importance of robust and resilient operational telecommunications capability in enabling energy system resilience and operational efficiency. Furthermore, enhanced operational telecommunications functionality will be central to enabling future smart grid developments. To this end, the energy sector has described the market / system developments[2] that are driving the need for additional spectrum to enable the deployment of enhanced operational telecommunications capability. The industry is pleased to note that Ofcom is currently working with the energy sector to establish a better understanding of the industry's future spectrum needs and in light of this we are responding to this Ofcom consultation.

WPD welcomes Ofcom's efforts to establish innovative solutions for spectrum access for frequency bands that would otherwise be unavailable to new entrants / service providers in areas of the country where the spectrum will never be deployed by the Mobile Operators as they are uneconomic from a commercial operators' perspective.

[1] ComReg Consultation 18/92, 'Further Consultation on the Release of the 410 – 415.5 / 420 – 425.5 MHz Sub-band.' 24-10-2018.

[2] http://www.energynetworks.org/assets/files/ENA%20STG%20Comms%20Brochure_TCL_Final%20v4%20issued.pdf, Need for Increased Spectrum Allocation and Investment in Operational Telecommunications to Support Electricity Networks, Position Statement of Strategic Telecommunications Group – ENASTG, Jan 2019.

Whilst we encourage the strategic intent to enable creative solutions for spectrum access it is worth emphasising that the bands being considered are not directly relevant to facilitate the critical operational telecommunications needs of the energy utilities, i.e. spectrum is required on a national basis, the bands are uneconomic from a deployment perspective and the proposals for low power deployments would not service the industry's needs of wide area coverage per base station. The approach may offer the option for isolated system deployments but is unlikely to support a meaningful system deployment hampered by the issues with the regulatory framework noted below.

Furthermore, the regulatory framework being proposed does not afford sufficient security of access for new entrants to stimulate their engagement / investment, i.e. three-year term and the right for the operator to deploy the area in due course, is likely to make the approach un investible. We encourage Ofcom to consider a longer-term perspective for the access regime to enable investment; in the case of the Energy Utilities a seven-year minimum term would be more appropriate as the investment cycle is typically defined by the operational life of the network assets rather than the telecommunications systems.

Whilst we are supportive of the attempts by Ofcom to stimulate market access through these proposals, we do have serious reservations of this approach being extended to other frequency bands, such as those on which the Energy Utilities depend for network management and control purposes. Such operational telecommunications capability enables critical national infrastructure and has safety of life implications and hence there would be serious consequences resulting from disruption / interference caused by any third-party access arrangements of the type envisaged.

Overall, we are encouraged by Ofcom's efforts to facilitate spectrum access and are keen to work with Ofcom to establish the appropriate access arrangements and bands to service the Energy sector's developing needs.

Your response

Question	Your response
Question 1: (Section 3) Do you agree with our proposal for a single authorisation approach for new users to access the three shared access bands and that this will be coordinated by Ofcom and authorised through individual licensing on a per location, first come first served basis? Please give reasons supported by evidence for your views.	Confidential? – N No comment on the proposed authorisation approach. Separately we note that whilst the bands under consideration are naturally aligned to mobile service deployment, subject to limitations, the functionality / capability offered does not support the needs of the Energy Sector, i.e. regional / national access and wide area / high power deployment.
Question 2: (Section 3) Are there other potential uses in the three shared access bands that we have not identified?	Confidential? – N No comment.
Question 3: (Section 3) Do you have any other comments on our authorisation proposal for the three shared access bands?	Confidential? – N No comment.
Question 4: (Section 3) What is your view on the status of equipment availability that could support DSA and how should DSA be implemented?	Confidential? – N No comment.
Question 5: (Section 4) Do you agree with our proposal for the low power and medium power licence? Please give reasons supported by evidence for your views.	Confidential? – N No comment.
Question 6: (Section 4) Are there potential uses that may not be enabled by our proposals? Please give reasons supported by evidence for your views.	Confidential? – N No comment.
Question 7: (Section 4) Do you agree with our proposal to limit the locations in which medium power licences are available? Please give reasons supported by evidence for your views.	Confidential? – N No comment.
Question 8: (Section 4) Do you have other comments on our proposed new licence for the three shared access bands?	Confidential? – N No comment.
Question 9: (Section 4) Do you agree that our standard approach to non-technical licence	Confidential? – N

conditions is appropriate? Please give reasons supported by evidence for your views.	In terms of this proposed non-technical licence conditions for this new Licensing Product the Energy Utilities welcome the commitment that licences would be issued on an indefinite basis as noted in paragraph 4.24 as security of access to spectrum is a key component in unlocking the long-term investment that is necessary for the deployment of operational telecommunications systems. However, there does appear to be some ambiguity in terms of Ofcom's proposals, i.e. we observe that Ofcom has the right to give 5 years notice, but of even greater concern are the statements made at the stakeholder workshop that the licences would be issued with a minimum term of three years, but with the potential for the existing licensee to have a right of access during the initial minimum term. These arrangements provide virtually no certainty of access to spectrum and hence are likely to make the arrangements un investible.
Question 10: (Section 4) Are you aware of any issues regarding numbering resources and Mobile Network Codes raised by our proposals which we have not considered here?	Confidential? – N No comment.
Question 11: (Section 5) Do you agree with the proposed technical licence conditions for the three shared access bands? Please give reasons supported by evidence for your views.	Confidential? – N No comment.
Question 12: (Section 5) Are there other uses that these bands could enable which could not be facilitated by the proposed technical licence conditions? Please give reasons supported by evidence for your views.	Confidential? – N No comment.
Question 13: (Section 5) Do you agree with our proposed coordination parameters and methodology? Please give reasons supported by evidence for your views.	Confidential? – N No comment.
Question 14: (Section 5) What is your view on the potential use of equipment with adaptive antenna technology (AAS) in the 3.8-4.2 GHz band? What additional considerations would we need to take into account in the technical conditions and coordination methodology to support this technology and to ensure that incumbent users remain protected?	Confidential? – N No comment.
Question 15: (Section 5) Do you agree with our proposal not to assign spectrum to new users in	Confidential? – N

the 3800-3805 MHz band and the 4195-4200 MHz band?	No comment.
Question 16: (Section 6) Do you agree with our fee proposal for the new shared access licence? Please give reasons supported by evidence for your views.	Confidential? – N The cost-based fees approach seems sensible in light of the inherent uncertainty of demand and we are encouraged by Ofcom's commitment to provide certainty in terms of the fees to encourage innovation; 'We recognise the importance of providing certainty to licensees, particularly in bands such as these where there is opportunity for innovation in the uses of the spectrum. We would therefore expect to review these fees only if, following implementation, we considered that: • there was a significant misalignment with costs in the future; or • there was evidence of excess demand such that it was appropriate to move to AIP-based fees.'
Question 17: (Section 7) Do you agree with our proposal to change the approach to authorising existing CSA licensees in the 1800 MHz shared spectrum? Please give reasons supported by evidence for your views.	Confidential? – N No comment.
Question 18: (Section 8) Do you agree with our proposal for the Local Access licence? Please give reasons supported by evidence for your views.	Confidential? – N No comment.
Question 19: (Section 8) Do you have any other comments on our proposal?	Confidential? – N Against the process depicted does Ofcom intend setting response times for the individual stages to ensure timely engagement by the parties involved particularly the MNOs?
Question 20: (Section 8) What information should Ofcom consider providing for potential applicants in the future and why would this be of use?	Confidential? – N The following detailed information would be key to supporting new entry / systems;

	• A detailed record of all spectrum deployments, current and planned, on a location by location basis; and A detailed record of all available spectrum assets, current and planned, on a location by location basis
Question 21: (Section 8) Do you agree with our proposal to have a defined licence period and do you have any comments on the proposed licence term of three years?	Confidential? – N Refer to our earlier response to Question 9.
Question 22: (Section 8) Do you have any other comments on the proposed Local Access licence terms and conditions?	Confidential? – N We encourage Ofcom to establish the aspects that would constitute a reasonable objection by the incumbent licensee, as it is imperative that both the MNOs and the new entrant have clarity on these criteria. This will avoid wasted effort and minimise the amount of non-viable licence applications being submitted.
Question 23: (Section 8) Do you agree with our fee proposal for the new local access licence? Please give reasons supported by evidence for your views.	Confidential? – N As has been noted in response to Question 16 for this approach to be of interest to 'new entrants' the costs of spectrum access need to be kept to a minimum and remain stable over the term of the licence.