Electricity Distribution

Ofcom Statement & Consultation – Enabling mmWave Spectrum for new uses

Enabling mmWave Spectrum for new uses – Consultation II

Executive Summary

As a critical system operator which depends on access to spectrum, National Grid Electricity Distribution (NGED) an Electricity Distribution Network operator welcome the opportunity to respond to Ofcom's Statement & Consultation.

NGED has deployed fixed links in the 26GHz band to ensure the operational integrity of the electricity to consumers across its licensed areas as per its regulatory responsibilities. With regard to the core elements of the Statement & Consultation our high level perspective is summarised below;

- In light of Ofcom's commitment to protect fixed links licences subject to revocation for 5 years we support the approach whereby Ofcom undertake the co-ordination activity such that the original availability of the links are wholly protected. In the case of Energy Networks the system integrity is predicated on these links and hence the security of supply to the end consumer depends on their availability. We also advise Ofcom that the same requirement applies to the deployment of 5G services in proximity to links that will not be subject to revocation.;
- Ofcom's re-assessment of the costs associated with the migration of fixed links better reflects reality but we note that no compensation scheme is contemplated. The costs to NGED will be in-excess of £1m which will be an indirect tax on UK Households for the benefit of Commercial Mobile Operators – does Ofcom consider this an acceptable policy outcome?
- In re-visiting the costs of migration Ofcom have acknowledged that the overall cost to UK Plc. will be considerably higher against the backdrop of a still unsubstantiated benefit case – we encourage Ofcom to take a more measured approach to clearance of the band in order to avoid a regulatory failure;
- Ofcom have asserted that there is sufficient capacity in alternative fixed link bands to accommodate the needs of the displaced links. This has not been substantiated in Ofcom's impact assessment particularly in the context of the high availability requirements of Energy Network Operators – we encourage Ofcom to undertake specific detailed analysis to address this omission.

Background

NGED is a Distribution Network Operator (DNO), operating in four regulated licence areas serving 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.

For DNOs to maintain a reliable and secure electricity supply as they transition to Digital System Operators (DSOs), reliable, resilient and complete coverage communications need to be maintained and expanded upon for critical functions.

NGED's primary focus will remain unchanged, distributing and proactively managing reliable electricity to its 8 million customers – not just through day-to-day normal operation, but also during events such as severe weather, flu-pandemics, Electricity System Restoration 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.

NGED is in a unique position among the DNOs of having its own in-house telecoms expertise in addition to a communications 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 thousands of additional users / assets of the smart grid and its components.

Increasingly NGED'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.

NGED has major concerns for the future of spectrum access. In the move towards 5G, the pressure on spectrum allocation has impacted on spectrum availability without any alternative options 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.
- NGED currently relies upon spectrum for private systems to support us not only for day to day operation but also for high impact low probability events e.g. Electricity System Restoration events.
- The evolution towards operating a more active system as a Distributed System Operator (DSO) will require an increase in the number of communication devices connected, and therefore an increase in data traffic and secure, resilient data infrastructure.
- Internet of Things or public networks or even the proposed 5G solutions anticipated here will not address our cyber security, connectivity and resilience needs.

NGED 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, as has been acknowledged in recent policy statements from Government[1,2], **NOT** a reduction as is being contemplated with Ofcom's proposals for the 26 GHz band.

[1] https://www.gov.uk/government/publications/spectrum-statement/spectrum-statement
[2] https://www.gov.uk/government/publications/uk-wireless-infrastructure-strategy

Aspects for further consideration from a Policy Perspective

Compensation Scheme

We note that Ofcom has revisited the approach to costing the impact of displacement of the incumbent fixed links out of the 26GHz band taking into account the feedback to the original consultation with a resulting increase in the financial impact to those licence holders subject to revocation. Considering this increased realisation of the cost it is disappointing that Ofcom is not contemplating a compensation regime particularly where the costs will be borne by UK Households when displacing links integral to the Electricity Networks. This will be an indirect tax on UK Households for the benefit of Commercial Mobile Operators.

Cost Benefit Analysis

Whilst Ofcom have acknowledged that the costs of forced migration out of the 26 GHz band are higher there is still a lack of substance to the benefit to be realised from this Policy intervention. To this end, it seems strange at this relatively late stage in the process that Ofcom are contemplating question 5;

Q 5. (section 9): Do you have an interest in bidding for specific high density areas in this award? If so, please provide evidence that you have a credible intention to do so.

Perhaps a more measured approach to enabling access to the band would be proportionate in order to avoid a regulatory failure, i.e. partial release rather than full release, noting that demand for 26GHz for 5G in other territories has been patchy.

Implication of the 'Wholesale' adoption of the 26GHz Band for 5G

Ofcom's approach to enable 5G access to the 26 GHz band has not only sterilised the band for future fixed links but also initiated the withdrawal of fixed links from the band, i.e. the number of active fixed links will dwindle over time as existing links are withdrawn. This is an inevitable consequence of the uncertainty introduced by Ofcom's policy approach which will lead to greater likelihood of disruption to the remaining fixed links which cannot be contemplated by critical system operators such as Energy Network Operators who design their radio links based on predictable availability. We encourage Ofcom to assess the effectiveness of this policy intervention in due course particularly away from non-HDA to establish what 5G system deployment has resulted and to what extent fixed links could be re-introduced into the band.

Viability of Alternative Fixed Link Bands

It is assumed by Ofcom that there are sufficient alternative fixed link bands to accommodate the displacement of fixed links from the 26GHz band. However, it is not obvious that Ofcom have undertaken the necessary technical assessment to confirm this hypothesis. Specifically fixed links that are integral to the operational integrity of an Electricity Network are designed and deployed to ensure high availability which may not be possible or practical at alternative frequencies for individual scenarios. We encourage Ofcom to revisit this aspect as part of their impact assessment.

NGED's Detailed Response to Questions

Q 1. (section 3): Do you have any further comments on the approach we are minded to take to authorising the 40 GHz band?

NGED Response

Confidential? No.

No Comment.

Q 2. (section 5): Do you agree with the method that we have outlined in annex 16 for identifying which licences authorising the use of fixed links around high density areas will be subject to revocation on the basis that the authorised links would be likely to suffer interference from new users in the high density areas? If not, please give reasons.

Q 2. NGED Response

Confidential? No.

No Comment.

Q 3. (section 7): Do you agree that the licence fee for fixed links that we allow to remain in the 40 GHz band should be the same as the fee in place for the 26 GHz band? If not, please give reasons.

Q 3. NGED Response

Confidential? No.

No Comment.

Q 4. (section 9): Do you have any comments on the proposed rules of our auction?

Q 4. NGED Response

Confidential? No.

No Comment.

Q 5. (section 9): Do you have an interest in bidding for specific high density areas in this award? If so, please provide evidence that you have a credible intention to do so.

Q 5. NGED Response

Confidential? No.

It seems strange that at this relatively late stage in the process of closing the band to fixed links and establishing an award process Ofcom are contemplating this question. Is this a consequence of the lack of a benefit that can be substantiated to warrant this intervention and if so then there is a real and tangible risk of a Regulatory failure.

Q 6. (section 9): Do you consider it appropriate to have one or two 26 GHz lot categories?

Q 6. NGED Response

Confidential? No.

No Comment.

Q 7. (section 10): Do you agree with our proposed approach to coordinating Shared Access users in the 26 GHz band? If not, please give reasons.

Q 7. NGED Response

Confidential? No.

No Comment.

Q 8. (section 10): Do you agree it would be appropriate to coordinate Shared Access users in the 40 GHz band in a similar way to the 26 GHz band if we make it available in 5 years time (noting we would consult on the detail of this coordination). If not, please give reasons.

Q 8. NGED Response

Confidential? No.

No Comment.

Q 9. (section 10): Which of the proposed options for coordinating award winners and existing licensees during the (5-year) revocation period do you think would be most appropriate? Do you think alternative approaches to coordination would be more appropriate?

Q 9. NGED Response

Confidential? No.

Co-ordination with 26Ghz Fixed Links in and around High Density Areas

NGED encourage Ofcom to adopt Option 3 subject to ensuring that the fixed links operated by the Energy Network Operators are afforded the same availability as they would have had prior to the deployment of 5G services.

d) Option 3: Ofcom coordinates stations for award winners.

For the options contemplating co-ordination by the award winners we anticipate these would create the potential for too much risk of disruptive interference to incumbent fixed link users as the award winners would be potentially prioritising 5G system deployment to the operational detriment of incumbent fixed links – how would Ofcom ensure that this does not occur? Furthermore, there would need to be an additional overhead for the fixed link operators to support the ongoing dialogue and information exchange associated with the co-ordination activity by the award winners.

We also encourage Ofcom to adopt the same approach to co-ordination and protection for the 26GHz fixed links that will not be subject to revocation.

Q 10. (section 10): Do you agree with our proposal to protect the radio astronomy site at Cambridge (42.5-43.5 GHz) from new mobile users using the 40.5-43.5 GHz band using technical assignment coordination? If not, please give reasons.

Q 10. NGED Response

Confidential? No.

No Comment

Q 11. (section 10): Do you agree with our proposed approach to coordinating at the boundary of high and low density areas? If not, please give reasons.

Q 11. NGED Response

Confidential? No.

No Comment

Q 12. (section 10): Do you agree with our proposed approach to international coordination? If not, please give reasons

Q 12. NGED Response

Confidential? No.

No Comment.

Q 13. (section 11): Do you agree with the non-technical conditions that we propose to include in the award licences to be issued following the award of the 26 GHz and 40 GHz bands? If not, please give reasons.

Q 13. NGED Response

Confidential? No.

No Comment.

Q 14. (section 12): Do you have any comments on our proposal to award fixed term licences with a 15 year term?

Q 14. NGED Response

Confidential? No.

No Comment.

Q 15. (section 13): Do you agree with the proposed technical licence conditions for award licences and local access licences in the 26 GHz and 40 GHz bands? If not, please give reasons.

Q 15. NGED Response

Confidential? No.

No Comment

Q 16. (section 13): Do you have any comments on our proposed licence conditions relating to antenna elevation?

Q 16. NGED Response

Confidential? No.

No Comment.

Q 17. (section 14): Do you agree with our proposal to make available channel sizes of 50 MHz, 100 MHz, 200 MHz, 400 MHz and 800 MHz? If not, please give reasons.

Q 17. NGED Response

Confidential? No.

No Comment.

Q 18. (section 14): Do you have any further comments on the proposal to limit low power outdoor deployments in 24.45-25.05 GHz to three base stations in any 300km2 area in order to comply with the EESS protection requirements?

Q 18. NGED Response

Confidential? No.

No Comment.

Q 19. (section 14): Do you have any further comments on the proposed level of fees for the Shared Access licences in the 26 GHz and 40 GHz bands?

Q 19. NGED Response

Confidential? No.

No Comment.

Q 20. (section 14): Do you have any further comments on the proposed extension of the Shared Access licensing framework (including its standard non-technical licence conditions) to the 26 GHz and 40 GHz bands?

Q 20. NGED Response

Confidential? No.

No Comment.

[redacted]