

Your response

Question	Your response
<p>Question 1: Have we correctly identified the key changes in the utilities sector that could lead to additional spectrum requirements?</p>	<p>Confidential? – Y / N</p> <p>Broadly, yes. It is suggested that trends are further examined in terms of capacity, latency, and coverage. These factors are different for utilities when compared with public carriers. For example fault location, isolation, and service restoration (FLISR) applications typically require much lower latency than distributed energy renewable monitoring and control.</p>
<p>Question 2: What alternative communication solutions might play a role in meeting the future operational communication needs of the utilities sector, alongside or instead of additional spectrum for a private network?</p>	<p>Confidential? – Y / N</p> <p>Radio is the most flexible and economic solution to electricity distribution automation requirements. While fibre is a technical feasible solution its deployment is slow and costly. Public cellular solutions have been shown again and again to lack the resilience to cope with today's chaotic weather events as these networks are constructed for consumer use rather than as critical infrastructure.</p>
<p>Question 3: Are there any other spectrum bands we should consider for use by utilities?</p>	<p>Confidential? – Y / N</p> <p>It may be that generous allocations of mid-band spectrum in the 3GHz to 4GHz range and higher millimetre wave bands to public carriers will reduce pressure on low-band spectrum, while migration from terrestrial UHF TV to satellite distribution will enable access to the 600MHz Band 71 spectrum.</p>

<p>Question 4: Do you have any comments on the three bandwidths we have considered that might be necessary to support a private network for utilities? Please reference our capacity analysis in annex 7 where relevant.</p>	<p>Confidential? – ¥ / N</p> <p>Most distribution automation field area network applications require capacities and latencies that exceed Cat-NB1/2 and Cat-M performance, hence minimum private utility LTE bandwidths are typically 1.4MHz. With mid-term utility interest in 5G, a minimum of 5MHz will be required with present 3GPP 5G standards.</p>
<p>Question 5: Do you have any comments on our approach to examining each potential candidate spectrum band, including the factors relevant to assessing suitability, and the capacity and coverage analysis provided in annexes 7 and 8?</p>	<p>Confidential? – ¥ / N</p> <p>Band 39 is an attractive adjunct to any UHF allocation. The band would potentially support LTE 4G to NR 5G migration or 4G/5G DSS. The use of spectrum not already standardised by 3GPP, is not necessarily a barrier but it is a barrier to a rapid and economic adoption.</p>
<p>Question 6: Do you have any comments on our overview of the 400 MHz band in NI? Please consider the specific factors we have discussed in your response.</p>	<p>Confidential? – ¥ / N</p> <p>Clearly a full replan to align UK use of UHF with Europe would offer benefits in terms of interference that go well beyond the scope of this consultation. However, likely timeframes would significantly impact utility private LTE network development.</p>
<p>Question 7: Do you have any comments on our overview of the 450 MHz band in GB and NI? Please consider the specific factors we have discussed (including the coexistence analysis in annex 9) in your response.</p>	<p>Confidential? – ¥ / N</p> <p>Scanning telemetry networks are the mainstay of present utility radio-based field networks. Vendors have made significant strides in developing spectrum efficient QAM-based solutions and these remain popular in both the UK and US.</p>
<p>Question 8: Do you consider that changes in the spectrum environment for the 450 MHz band mean that there is a case for re-examining whether this band should be reconfigured in the UK to align with the harmonised band plan?</p>	<p>Confidential? – ¥ / N</p> <p>LMR systems have been in decline for many years while demand for scanning telemetry has grown in countries such as the US, with deployments in Band III, VHF, UHF, 700MHz cellular guard bands, and 900MHz. While understandably a significant logistical effort, whole-of-UHF replanning has been beneficially successful elsewhere (Australia).</p>

<p>Question 9: Do you have any comments on our overview of the 700 MHz band in GB and NI? Please consider the specific factors we have discussed in your response.</p>	<p>Confidential? – ¥ / N</p> <p>Shared use of Band 28 with PPDR for utility first responders would parallel the positive utility experience of the US FirstNet® service. A shared PPDR service network could well support the data needs of the utility field workforce but would be unlikely to address the needs of more specialised non-preemptable distribution automation and other smart grid applications.</p>
<p>Question 10: Do you have any comments on our overview of the 800/900 MHz band in NI? Please consider the specific factors we have discussed in your response.</p>	<p>Confidential? – ¥ / N</p> <p>Development of LTE modules for non-3GPP bands is a substantial undertaking, particularly for specific markets. 4RF has specific experience of this in the US with repurposed 800MHz LMR spectrum as a member of a three utility LTE router vendor consortium that has commissioned custom LTE silicon. While this band has been recently standardised as Band 106, this has not occasioned the general availability of ready-made devices.</p>
<p>Question 11: Do you have any comments on our overview of the 1900 MHz band in GB and NI? Please consider the specific factors we have discussed in your response.</p>	<p>Confidential? – ¥ / N</p> <p>Low and mid-band (1900MHz) spectrum is much more cost effective than bands above 3GHz, such as the US CBRS example, for utilities where coverage is prioritised over capacity.</p>
<p>Question 12: Which band(s) do you consider we should examine further with a view to developing consultation proposals to enable their use in a private network, if this were needed? Please reference the factors we have considered where appropriate and provide separate answers for GB and NI if relevant.</p>	<p>Confidential? – ¥ / N</p> <p>Broadcasting seems well served in terms of generous PMSE and UHF TV spectrum allocations. The digital terrestrial and satellite services now compete with fibre delivered programming, offering nearly unlimited home entertainment choices. Perhaps it's time for a new digital dividend for critical infrastructure utility services? Use of valuable UHF spectrum by the entertainment industry requires ongoing evaluation in terms of public good. Is entertainment properly balanced against keeping the lights on and water flowing for consumers and industry at affordable prices?</p> <p>Thank you for the opportunity to comment.</p>

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