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## Setting licence fees for 412 MHz spectrum

Decision to apply Administered Incentive Pricing for the frequency band 412–414 MHz paired with 422–424 MHz

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**STATEMENT**

Publication Date: 7 October 2021

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# 1. Overview

**In this statement, we set out our decision on the level of annual licence fee for the 2 x 2 MHz of spectrum at 412–414 MHz paired with 422–424 MHz (the “412 MHz spectrum”).**

This spectrum was auctioned in October 2006 and an indefinite licence with a minimum period of 15 years was awarded to Arqiva. The minimum period comes to an end on 5 October 2021, after which an annual licence fee can be applied by Ofcom. In 2008, Arqiva added Airwave as a concurrent licensee.

We have decided to set a fee for this spectrum on the basis of Administered Incentive Pricing (“AIP”), which is based on the opportunity cost of the spectrum not being available to other potential users. We consider that setting a cost-based licence fee would result in excess demand for this spectrum, making a fee based on AIP appropriate.

We have determined that the highest value alternative use for this spectrum is Business Radio, which operates in the adjacent bands, and have decided to set the fee for the 412 MHz spectrum based on the fees we already charge Business Radio users in the adjacent bands for a national exclusive licence.

Our pricing policy is to set fees which reflect our estimate of the market value (i.e. opportunity cost) of the underlying spectrum. We consider this approach is consistent with our statutory duties, including our duty to secure the optimal use of the spectrum.

## **In brief**

We have decided:

- to set an annual licence fee of **£396,000 per MHz** per year for the 412 MHz spectrum which is equivalent to **£1,584,000 per year** for the concurrent Arqiva/ Airwave 412 MHz licence; and
- that the annual licence fee will apply from 31<sup>st</sup> October 2021 onwards, with an option to pay across ten equal monthly instalments.

**This overview is a simplified high-level summary only. The decisions we have taken, and our reasoning, are set out in the full document.**

## 2. Introduction and legal framework

### Background

- 2.1 Arqiva and Airwave concurrently hold a licence which authorises them to use 2 x 2 MHz of spectrum at 412–414 MHz paired with 422–424 MHz. In this document, we refer to this as the 412 MHz spectrum.
- 2.2 We auctioned the 412 MHz spectrum on a technology and service neutral basis in October 2006. The single-round sealed bid auction was for 4 MHz of spectrum in four lots; Arqiva won all four lots (2 x 500 kHz each) with a bid of £1,500,025 and was granted a national licence with a 15-year minimum licence term.<sup>1,2</sup>
- 2.3 Arqiva traded the licence in 2008 to include Airwave as a co-licensee. Airwave was acquired by Motorola Solutions in 2016.
- 2.4 The 412 MHz spectrum licence provides that, from 5 October 2021, fees shall become payable in accordance with regulations set by Ofcom.
- 2.5 Ofcom published a consultation in June 2021 which made proposals on the level of fee that should apply to this spectrum (the “June 2021 consultation”).<sup>3</sup> We received 11 non-confidential responses to this consultation, which are available to view [on the Ofcom website](#).
- 2.6 This statement confirms the approach we have decided to take in setting licence fees for the 412 MHz spectrum and the level of fee. We also consider and respond to the points raised by respondents to the June 2021 consultation.

### Relevant legal framework

- 2.7 Ofcom has the power pursuant to the Wireless Telegraphy Act 2006 (the “**Wireless Telegraphy Act**”) to require spectrum licensees to pay fees to Ofcom on the grant of a licence and subsequently. This includes the power to set fees at an amount that is higher than the cost to us of carrying out our radio spectrum functions, if we think this is appropriate in light of our statutory duties at Section 3 of the Wireless Telegraphy Act.
- 2.8 These duties include having regard to:
  - a) the extent to which the electromagnetic spectrum is available for use, or further use, for wireless telegraphy;
  - b) the demand for use of the spectrum for wireless telegraphy;

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<sup>1</sup> Ofcom, [412 MHz award – Publication under regulation 26\(a\) of the Wireless Telegraphy \(Licence Award\)\(No.2\) Regulations 2006](#), 6 October 2006

<sup>2</sup> Ofcom, [Award of available spectrum: 412-414 MHz paired with 422-424 MHz](#), 6 April 2006

<sup>3</sup> Ofcom, [Setting licence fees for 412 MHz: Proposal to apply Administered Incentive Pricing for the 412–414 MHz, paired with 422–424 MHz, frequency bands](#), 3 June 2021

- c) the demand that is likely to arise in future for the use of the spectrum for wireless telegraphy; and
- d) the desirability of promoting:
  - i) the efficient management and use of the part of the electromagnetic spectrum available for wireless telegraphy;
  - ii) the economic and other benefits that may arise from the use of wireless telegraphy;
  - iii) competition in the provision of electronic communications services; and
  - iv) the development of innovative services

2.9 Ofcom also has a number of statutory duties under the Communications Act 2003 (the “**Communications Act**”) which are relevant to its spectrum management functions. These include its principal duty to further the interests of citizens and consumers (where appropriate by promoting competition) and its duties to secure the optimal use for wireless telegraphy of the electro-magnetic spectrum and to promote competition. It is also required to have regard to the desirability of encouraging investment and innovation in relevant markets and encouraging the availability and use of high-speed data transfer services throughout the UK.

2.10 Further detail on the relevant legal framework is set out in Section 4 and Annex A1 of this consultation.

## Structure of this document

2.11 The rest of this document is set out as follows:

- **Section 3** sets out our approach to determining annual licence fees, our conclusion on future excess demand for the 412 MHz spectrum and our estimate of the market value of the 412 MHz spectrum.
- **Section 4** sets out our assessment of annual licence fees based on our estimate of market value, in light of our statutory duties.
- **Section 5** summarises our conclusions and implementation.
- **Annex A1** outlines the relevant legal framework
- **Annex A2** lists the responses to the consultation
- **Annex A3** contains a copy of the regulations that we have made in order to set annual licence fees in accordance with this document. The final version of these regulations will be published at <https://www.legislation.gov.uk/> and come into force on 27<sup>th</sup> October 2021.

## 3. Approach to determining annual licence fees

### Background

- 3.1 Our policy is to set licence fees by reference to the value of the spectrum (known as administered incentive pricing (“AIP”) fees), for spectrum that is expected to be in excess demand, or to charge cost-based fees where AIP is not appropriate. Following the convention of more recent documents, we typically refer to ALFs (annual licence fees) hereafter and any references to AIP should be read as equivalent to ALF.
- 3.2 We set out our general policy position for setting spectrum fees in our Strategic Review of Spectrum Pricing (the “SRSP”) in 2010 which we said would be used in future as a guide to setting ALFs.<sup>4</sup> We explained that the purpose of AIP was to set fees for spectrum holdings to provide long-term signals reflecting the value of the spectrum (based on its opportunity cost) in order to promote the optimal use of spectrum.
- 3.3 Setting fees on this basis promotes the optimal use of spectrum, since there is an incentive for users to sell spectrum to alternative users where the next best alternative is more valuable than the current use.
- 3.4 Our SRSP also considered the interplay between setting spectrum fees and spectrum trading in delivering optimal use of the spectrum. We concluded that many secondary markets are unlikely to be sufficiently effective to promote the optimal use of the spectrum without the additional signal from AIP-based fees, and that such fees are likely to continue to be needed to play a role complementary to spectrum trading for most licence sectors.
- 3.5 In instances where there is not an opportunity cost to other users, we set fees that reflect our spectrum management costs, in line with our framework for setting cost-based fees, published in 2014.<sup>5</sup>

### Structure of our assessment

- 3.6 Following the approach set out in the SRSP and in the June 2021 consultation, we have considered whether applying cost-based fees would result in excess demand for the 412 MHz spectrum from existing and/or feasible alternative users in the future. For the reasons set out from paragraph 3.17 below, and having considered stakeholder responses to the June 2021 consultation, we concluded that we expect there would be excess demand for the 412 MHz spectrum, in future, if cost-based fees were applied. Therefore, ALFs that

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<sup>4</sup> Ofcom, *SRSP: The revised Framework for Spectrum Pricing*, 17 December 2010

<sup>5</sup> Ofcom, *Spectrum Pricing: A framework for setting cost based fees*, 17 March 2014

reflect the opportunity cost should be payable. We expect this excess demand would arise in some local geographic areas as well as at a national level.

- 3.7 We have then estimated the market value of the 412 MHz spectrum (i.e. the opportunity cost of the use of the spectrum), considering stakeholder responses to our consultation. We explain how we have done this from paragraph 3.44 below.
- 3.8 Finally, we have considered what the likely impact of setting fees at our estimate of the market value would be and whether, in light of our statutory duties, there is any reason for us to set fees at a different level. This assessment is set out in Section 4.

## Excess demand and highest value alternative use in 412 MHz

### Our provisional view

- 3.9 Our provisional view was that there would be excess demand for this spectrum in some geographical areas if we set a cost-based fee for ongoing use of this band, and that there may also be excess demand for this spectrum on a national basis in the future.
- 3.10 We considered that the highest value alternative demand for this spectrum would come from Business Radio users, and that the 412 MHz spectrum would be substitutable for Business Radio spectrum in the UHF 1 or 2 bands.

### Consultation responses

- 3.11 Anglian Water,<sup>6</sup> ESB Networks,<sup>7</sup> EUTC,<sup>8</sup> JRC<sup>9</sup> and a confidential respondent ([redacted]) all agreed that there was excess demand for the 412 MHz spectrum for utility sector use. EUTC, ESB and a confidential respondent ([redacted]) highlighted that ComReg, the Irish communications regulator, has awarded 410–414 MHz paired with 420–424 MHz nationwide for smart grid applications.
- 3.12 Anglian Water, EUTC and JRC also agreed with our assessment that nationwide Business Radio represented the next highest value user of the 412 MHz spectrum.
- 3.13 However, Airwave,<sup>10</sup> Arqiva<sup>11</sup> and Motorola<sup>12</sup> disagreed with our provisional assessment, and did not think we had provided sufficient evidence of future excess demand for that spectrum:
- a) Arqiva suggested in its response that although there may be excess demand for the 412 MHz spectrum in certain areas, and that Business Radio may be the highest value

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<sup>6</sup> [Anglian Water response to June 2021 consultation](#)

<sup>7</sup> [ESB Networks response to June 2021 consultation](#)

<sup>8</sup> [European Utilities Telecoms Council response to June 2021 consultation](#)

<sup>9</sup> [Joint Radio Company Limited response to June 2021 consultation](#)

<sup>10</sup> [Airwave Solutions Limited response to June 2021 consultation](#)

<sup>11</sup> [Arqiva response to June 2021 consultation](#)

<sup>12</sup> [Motorola Solutions response to June 2021 consultation](#)

alternative use in these areas, this could not be extrapolated out to provide evidence of excess demand nationwide;<sup>13</sup>

- b) Airwave argued that UHF 1 and UHF 2 did not have the same level of demand and cited the graph we included as Figure 2 in page 12 of the June 2021 consultation, saying that it showed that while Business Radio licence volumes had risen in UHF 2, in UHF 1 they had actually fallen; and
- c) Airwave said that the level of demand from Business Radio users had not met the level which had been forecasted in Aegis Systems' 2014 report on demand for UHF spectrum, commissioned as part of Ofcom's strategic review of the UHF 1 and 2 bands (the "UHF Strategic Review").<sup>14</sup>

- 3.14 Airwave and Arqiva both suggested in their responses that we had not taken into account the impact that new technologies such as 5G, LoRa, NB-IoT and push-to-talk over cellular (PTToC) would have on demand from Business Radio users whose connectivity requirements could be met elsewhere, in other spectrum bands. Arqiva cited our Technology Futures report and suggested that it would provide the evidence for this shift in demand.<sup>15</sup> Motorola indicated that in the long term, there could be other users switching to substitute applications or some spectrum given up as a result of changing business models. Motorola also submitted that it might be possible to fit more Business Radio users into the UHF 1 and 2 bands (and therefore reduce any excess demand for Business Radio) if they used digital, rather than analogue, technology.
- 3.15 Frontier Economics ("FE"), in its report submitted as an annex to Arqiva's response,<sup>16</sup> indicated that we had not considered future availability of adjacent spectrum due to spectrum reassignment of emergency services<sup>17</sup> which could meet future demand for Business Radio, and would in turn reduce the likelihood of excess demand for the 412 MHz spectrum.
- 3.16 On the topic of whether nationwide LTE deployment<sup>18</sup> is a viable use case for the 412 MHz spectrum, Airwave and FE indicated it was not. The EUTC, however, did suggest that there

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<sup>13</sup> In its response, Arqiva draws on [Frontier Economics \(FE\)](#) analysis which disputed our conclusion on demand for national Business Radio licences. Specifically, FE noted that there is no evidence to conclude that demand from local Business Radio users exceeds supply at a national level or that there is excess demand from national Business Radio users (even if in some specific local areas demand may exceed supply). FE further noted that there is no evidence that localised congestion in Business Radio bands will translate into excess demand throughout the whole of the UK in the future, despite some evidence of an increase in demand for Business Radio in recent years. It also argued that there is no evidence that Business Radio is increasingly used for national level communication nor that it is used in previously uncongested locations. Overall, FE considers excess demand to be localised and Ofcom should set the ALF for 412 MHz accordingly.

<sup>14</sup> Ofcom, [Strategic Review of UHF Spectrum 420-470 MHz: UHF Bands 1 and 2 \(Call for Inputs\)](#), 4 December 2014, and Aegis Spectrum Engineering, [UHF 1 & 2 Future Demand Final Report](#), 2 June 2014

<sup>15</sup> Ofcom, [Technology Futures: Spotlight on the technologies shaping communications for the future](#), 14 January 2021

<sup>16</sup> [Frontier Economics annex to Arqiva's response to June 2021 consultation](#)

<sup>17</sup> FE refers to 380-385 MHz paired with 390-395 MHz (which is currently licenced to Airwave Network); 410-412 MHz paired with 420-422 MHz (which is currently held by the Department of Health and is used to supplement the Airwave Network in London); and 7 MHz of non-contiguous spectrum held within the UHF 2 band (450-470 MHz)

<sup>18</sup> Long-Term Evolution (LTE) is a standard for wireless broadband communication for mobile devices and data terminals and can support a wider range of data services than narrowband technologies. The smallest LTE channel size is currently 1.4 MHz. LTE band 87 covers 410–415/422–427 MHz and LTE band 88 covers 412–417/411–427.



could be potential for 2 x 1.4 MHz blocks for LTE in this spectrum, and also queried why it was that the current licensees were able to hold a national licence when the restrictions around RAF Fylingdales were so significant for LTE.

### Our decision

- 3.17 As outlined in the SRSP,<sup>19</sup> AIP should be applied when spectrum is expected to be in excess demand from existing and/or feasible alternative uses, in future, if cost-based fees were applied. This is on the basis that it is likely to promote the optimal use of the spectrum.
- 3.18 When determining whether to apply AIP, we therefore make a forward-looking assessment of spectrum availability and demand, as required by Section 3 of the Wireless Telegraphy Act, in order to ensure that AIP provides a suitably long-term signal to inform future decisions on investment and spectrum use. Given the forward-looking nature of assessing whether there will be excess demand in the future, we need to consider the evidence that is available to us in the round and apply our regulatory judgement.
- 3.19 We also note that this stage of our assessment considers whether – if cost-based fees were applied – we would expect to see excess demand in future. Cost-based fees may be significantly below AIP-based fees.
- 3.20 For the reasons set out below and taking account of the evidence available to us regarding congestion, demand and spectrum availability, we would expect there to be excess demand for the 412 MHz spectrum in future if cost-based licence fees were applied. We would expect this demand to come from Business Radio including users in the utilities sector, and for it to be in a number of local areas as well as at a national (UK-wide) level. Our detailed reasoning is set out below.

### Excess demand for 412 MHz spectrum

- 3.21 We consider that the 412 MHz spectrum is technically substitutable with the UHF 1 and 2 bands to which it is adjacent and note that stakeholders did not appear to disagree with this view in their responses to the June 2021 consultation. The bands are currently used by many different types of users although Business Radio is the most significant civil user.
- 3.22 As explained in the June 2021 consultation, existing Business Radio equipment is able to operate using 412 MHz spectrum and we note that Business Radio users already use 412 MHz spectrum in offshore locations, outside the geographic area covered by Arqiva and Airwave's licence.
- 3.23 In 2017, Ofcom conducted the UHF Strategic Review in which we considered the future needs of existing and new users and applications in relation to the UHF 1 and 2 bands.<sup>20</sup> We recognised the importance of these bands to Business Radio going forward, and that these are busy, heavily populated bands used by many industry sectors including transport,

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<sup>19</sup> Ofcom, [SRSP: The revised Framework for Spectrum Pricing](#), 17 December 2010, AIP principles 1 and 2, p. 3

<sup>20</sup> Ofcom, [Strategic Review of UHF Band 1 and Band 2: 410 MHz to 470 MHz](#), 25 May 2017

security, manufacturing and utilities (i.e. the water, gas and electricity industries), for a range of applications including voice and narrowband data services.

- 3.24 The UHF Strategic Review set out our assessment of future spectrum demand in these bands. We noted the following trends in particular:
- a) moderate overall growth for services currently using the band, with voice remaining the dominant application for Business Radio and some users seeing increasing use of data services;
  - b) potential for increased use for Internet of Things (“IoT”)/ Machine-to-Machine (“M2M”) type applications from both new and current users (particularly where wider bandwidths are available);
  - c) some interest in wideband services/private broadband communications networks for businesses; and
  - d) an increasing risk of congestion.
- 3.25 At the time of the UHF Strategic Review, we recognised that there was already congestion in London and that there was an increasing risk of congestion in other urban hotspots.
- 3.26 In light of the findings of that review, we implemented some measures to help to meet this demand over a ten-year period. However, as explained below, we have continued to see congestion in the UHF 1 and 2 bands since 2017. This is the case notwithstanding that the fees for a Business Radio licence in these bands are based on AIP (and are therefore, in many instances, greater than cost-based fees).<sup>21</sup>
- 3.27 We explained in the SRSP that we would consider congestion as a proxy for excess demand. In doing so, we are mindful that demand for spectrum may be naturally constrained where there is congestion on the basis that potential users may choose not to apply for a spectrum licence if they know that there is insufficient spectrum available in the band.
- 3.28 In terms of current congestion, we note that (even with AIP-based, rather than cost-based, fees):
- a) Both the UHF 1 and 2 bands are currently congested in a number of urban hot-spots (for example, in London, Manchester, Birmingham, Glasgow, Cardiff and Swansea) as well as in some industrial areas such as Sellafield and Immingham. In these areas, we are unable to issue further ‘local’ Area Defined or Technically Assigned Business Radio licences<sup>22</sup> in either of the bands.
  - b) It is currently not possible for Ofcom to issue additional UK-wide Area Defined Business Radio licences in the UHF 1 or 2 bands as no channels are available for this. The last

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<sup>21</sup> See paragraph 3.52 and Table 1

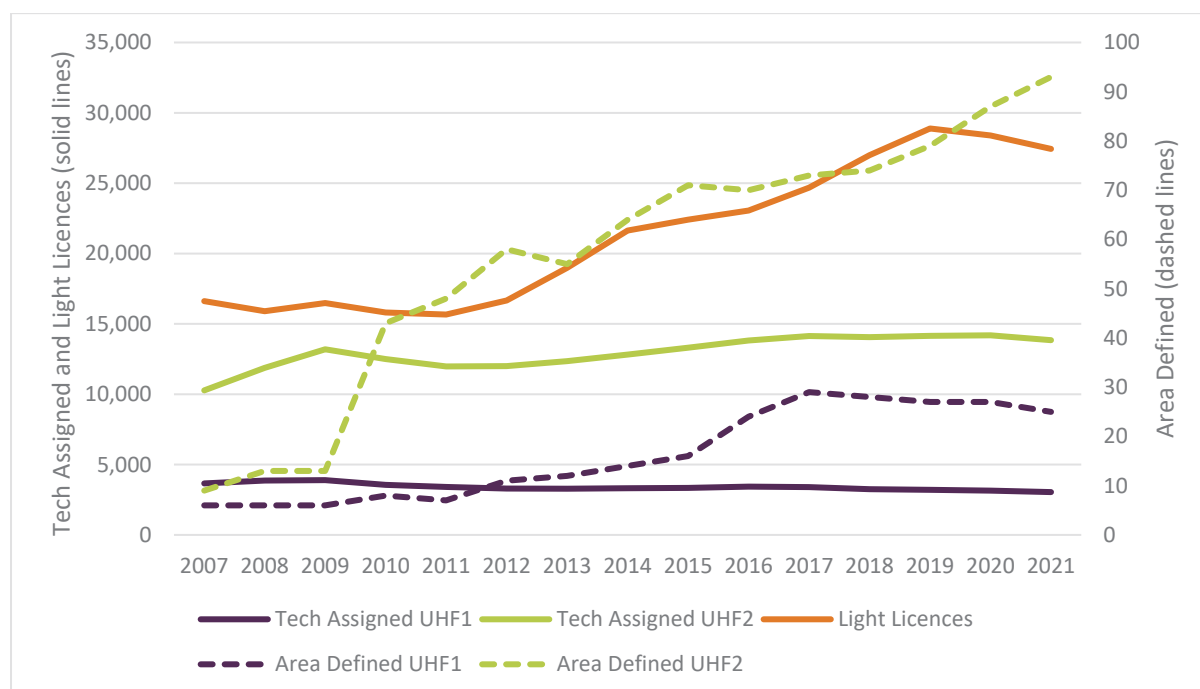
<sup>22</sup> Ofcom, [“Business Radio FAQs”](#), 11 August 2020

time Ofcom issued a new UK-wide Area Defined licence was in 2018 and, since then, we have rejected some UK-wide licence applications.<sup>23</sup>

3.29 Notwithstanding the above, some stakeholders suggested in response to our consultation that Ofcom had failed to take account of a number of factors which may suggest that demand for Business Radio licences is likely to decline in future. We have considered each of these and recognise that current congestion does not provide definitive evidence of likely future excess demand. However, we do not consider that the points raised by stakeholders undermine our view regarding future excess demand for the 412 MHz spectrum if cost-based fees were applied:

- a) On the development of new technologies such as PTTtoC and 5G, we have not seen this trend having a material impact on demand for traditional Business Radio products or licences, nor do we think it is likely to have a significant impact on future demand. As seen in Figure 1 below, overall demand from Business Radio users continues to increase for Area Defined licences in UHF 2, and some stakeholders in the sector have indicated to us that they do not see that these new technologies will replace the existing use we see in UHF 1 and 2.

**Figure 1: Volumes of Business Radio licences on 1 April each year, 2007–2021**



- b) In response to Motorola’s suggestion that excess demand for UHF spectrum could be eased by moving users to digital, rather than analogue, technology, Ofcom’s position for Business Radio is technology neutral and therefore this option already exists for

<sup>23</sup> At paragraph 3.18 of the [June 2021 consultation](#), we stated that “we have not refused any applications for a further national Business Radio licence”. This statement was unfortunately inaccurate. Since 2017, it is the case that we have rejected some applications for UK-wide Business Radio Area Defined Licences on the basis that there is insufficient spectrum.

those who want it. We recognise there are still some industries which prefer to use analogue technology because they need signals to be sent and received with no delay, whereas digital technologies can involve delays of a few milliseconds (which in some situations is not acceptable). Further, even if some users move to digital technologies in future, this does not change our expectation that there would be excess demand for the 412 MHz spectrum if cost-based fees were applied for the spectrum.

- c) We recognise, as noted by Airwave in its response to the June 2021 consultation, that the current volume of Business Radio licences is slightly lower than in some of the predictions included in a 2014 report on future demand for UHF 1 and 2 by Aegis. We also recognise that the graph we included as Figure 2 in the June 2021 Consultation (Figure 1 above) shows that the number of licences in the UHF 1 band declined slightly in recent years.<sup>24</sup> We do not however consider that either of these points undermines our view regarding the likelihood of future excess demand for the 412 MHz spectrum.

We note, in particular, that there remains congestion in some local areas, as well as at a national level, in relation to the UHF 1 and 2 bands notwithstanding the changes implemented by Ofcom in light of the UHF Strategic Review and notwithstanding that the fees for Business Radio licences are currently AIP based (which suggest that if cost based fees were to be applied, this would lead to even greater demand). Indeed, since the UHF Strategic review, the number of local areas in which there is congestion has increased from London in 2017 to include a number of other areas (see paragraph 3.28a) above).

Further, we would advise caution when looking at the overall (historical) volume of licences as an indicator of current (and in particular future) excess demand; particularly where the current fees regime for Business Radio licences is based on AIP rather than Ofcom's costs. We consider congestion to be a more informative indicator as the number of licences issued does not necessarily provide information on actual spectrum availability. As discussed from paragraph 3.30c) below, we note that a number of respondents to the June 2021 consultation emphasised the growing spectrum needs of utility companies.

- d) Whilst we agree with FE that the potential reassignment of emergency services spectrum adjacent<sup>25</sup> to 412 MHz (at 410-412 MHz paired with 420-422 MHz and 7 MHz non-contiguous spectrum in UHF 2<sup>26</sup>) could increase spectrum availability to meet demand for Business Radio, we note that this was also taken into account in the UHF Strategic Review and that we continued to consider there to be an increasing risk of congestion. In any event, we do not consider that the availability of this additional spectrum will materially change the level of future demand of UHF spectrum for

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<sup>24</sup> [June 2021 consultation](#), p. 12

<sup>25</sup> In relation to the 380-385 MHz paired with 390-395 MHz currently used by the Airwave Network, we do not consider that this spectrum could be used for Business Radio as it is NATO-harmonised spectrum and is harmonised for public safety use.

<sup>26</sup> Currently used in some local areas by emergency services

Business Radio to the extent that it would result in there being no excess demand if cost-based fees were applied.

- 3.30 Some stakeholders also commented specifically on Ofcom's proposed view regarding excess demand at a national (i.e., UK-wide) level. In particular, they suggested that Ofcom had not demonstrated that there is likely to be excess demand for such a licence, and that excess demand is only likely to arise in a small number of geographic areas. Having considered these comments, we remain of the view that there is likely to be excess demand in future (at a national level) for the 412 MHz spectrum if fees for that spectrum were set based on Ofcom's costs.
- a) As noted above, Ofcom is currently unable to issue additional UK-wide Area Defined Business Radio licences in the UHF 1 and 2 bands as no additional channels are available. This is the case notwithstanding that AIP-based fees currently apply for Business Radio licences in the UHF 1 and 2 bands. The last time Ofcom issued a new UK-wide Area Defined licence was in 2018 and we have rejected some UK-wide licence applications since then. We are unable to issue further national licences unless UK-wide Area Defined Business Radio licensees, the 412 MHz licensees or a number of Business Radio users in (local) high demand areas surrender their licences. We have not received any evidence to date to suggest that any of these scenarios is likely to arise.
  - b) Holders of UK-wide Area Defined Business Radio licences include HM Revenue & Customs, NatWest Bank, G4S, Tesco and Mitie Security Services.<sup>27</sup> These licensees are not operating in declining markets, and there is no evidence to suggest that other players in these same sectors, and the types of companies that could benefit from a national Area Defined Business Radio licence, will not be relevant in future.
  - c) We continue to support the findings on future demand for Business Radio, set out in the UHF Strategic Review. In particular, we recognise the potential for increased demand for Business Radio licences for IoT and M2M type applications, as well as the potential future demand for wideband services/private broadband communications networks for businesses.

We note, in this regard, that a number of utility companies responding to the June 2021 consultation highlighted future demand from the UK utility industry for access to this spectrum on either a national or regional basis. Whilst we remain unconvinced that the 412 MHz spectrum could be used to provide nationwide LTE,<sup>28</sup> we recognise that utilities companies may nevertheless benefit from regional or national UK-Area Defined Business Radio licences (including where larger bandwidths are available as would be the case if the 4 MHz of 412 MHz spectrum became available). Indeed, we note that

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<sup>27</sup> Information available on Ofcom's online [Spectrum Information Portal](#).

<sup>28</sup> We note, in particular, that the exclusion zone required to protect RAF Fylingdales from wideband LTE transmission would be much larger than for deployments which comply with the technical licence conditions in the 412 MHz licence. For conventional Business Radio-type usage (including that currently deployed by the 412 MHz licensees under their existing licence) the exclusion zone around RAF Fylingdales is 40km, as detailed in the [Frequency sharing arrangements between civil and military services document](#)

Arqiva currently uses the 412 MHz spectrum to provide smart water metering and smart energy metering services to utilities providers.<sup>29</sup>

- d) The extent of future viability of LTE including for smaller 2 x 1.4 MHz channels, which the EUTC queried, would be subject to further technical feasibility studies and is outside the scope of this statement. We note however that future improvements in technical coexistence could further increase demand for the 412 MHz spectrum.

## Conclusion

- 3.31 Taking account of all of the above, we expect that there would be excess demand (both nationally, and in some specific geographic areas) for the 412 MHz spectrum, in future, if we were to set a cost-based fee for its use.

## Market value of 412 MHz spectrum

### What we proposed

- 3.32 Following on from our provisional view that we expected there to be excess demand for this spectrum, and that the highest value alternative use would be for Business Radio, we proposed that the UK-wide Business Radio fees for UHF 1 and 2 provide the best available proxy for the market value of the 412 MHz spectrum. This would correspond with fees, if set based on market value, of £9,900 per 2 x 12.5 kHz.
- 3.33 We considered that, on the basis of revealed preference, this was likely to be a conservative estimate of market value.

### Consultation responses

- 3.34 EUTC and JRC agreed with our provisional assessment on the market value of the 412 MHz spectrum.
- 3.35 Anglian Water, Smart DCC Ltd,<sup>30</sup> Thames Water,<sup>31</sup> Waterwise<sup>32</sup> and Yorkshire Water<sup>33</sup> neither agreed nor disagreed with our provisional view on market value/the level of corresponding ALF, but suggested that Ofcom should satisfy ourselves that we were not setting the fee for this spectrum at a level where it would impede the rollout of smart water meters, and the associated benefits this rollout would bring (the impact of 412 MHz ALFs on smart meter rollout is discussed in section 4).

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<sup>29</sup> Arqiva, [“Planning your Smart Water Network...the Arqiva way”](#), 31 October 2019

<sup>30</sup> [Smart DCC Ltd response to June 2021 consultation](#)

<sup>31</sup> [Thames Water response to June 2021 consultation](#)

<sup>32</sup> [Waterwise response to June 2021 consultation](#)

<sup>33</sup> [Yorkshire Water response to June 2021 consultation](#)

- 3.36 A confidential respondent ([REDACTED]) did not comment on our estimate of market value but suggested that it should at least match that paid by the winner of the Irish auction<sup>34</sup> for this spectrum.
- 3.37 Airwave, Arqiva and Motorola disagreed with our assessment.
- 3.38 Airwave suggested that national deployment using the 412 MHz spectrum was severely restricted by the protections around RAF Fylingdales, and this should be reflected in the market value of the spectrum (and associated ALF).
- 3.39 Both Arqiva and Motorola suggested we should have used a different methodology to estimate the market value, and that this would result in a much lower value. In particular, they suggested the value of the 412 MHz spectrum was much lower than Ofcom had proposed, with values ranging between a third and a tenth of what Ofcom had proposed.
- 3.40 In particular, Arqiva considered that Ofcom did not provide sufficient evidence of excess demand for the 412 MHz spectrum from Business Radio in all locations of the UK and over-estimated the level of demand, and as a result the value of the spectrum and associated licence fee. It argued Ofcom should adopt a more cautious and conservative approach in line with Ofcom guidance and best practice in setting AIPs<sup>35</sup> and suggested either of the following would be more appropriate:
- a) an ALF based on Business Radio pricing in areas with evidence of excess demand such as in London (and potentially other metropolitan areas, such as Birmingham, Manchester and Glasgow).<sup>36</sup> This would mean setting the ALF equal to the sum of Area Defined Business Radio licences in these specific areas only and the Business Radio fees they are subject to, which FE estimates would result in an aggregate fee for the 412 MHz spectrum of between £189,600 and £261,600 per annum;<sup>37</sup> or
  - b) drawing on international awards in 450 MHz and 700 MHz spectrum<sup>38</sup> and using their relative valuation as a crosscheck to inform UK market value of the 412 MHz spectrum when setting the ALF<sup>39</sup> (based on FE analysis included in Arqiva's response).<sup>40</sup> They

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<sup>34</sup> The Commission for Communications Regulations (ComReg) in the Republic of Ireland awarded 2 x 3 MHz (410–413 MHz paired with 420–423 MHz) for Smart Grids use (and ten lots of 2 x 100 kHz on a technology/service neutral basis) in 2019 for 15 years. ESB Networks was awarded all spectrum and was expected to pay approximately €1.1 million for its spectrum rights of use, equivalent to around £945,000 or £118,125/MHz (this comprises of €320,000 upfront spectrum access fees and around €780,000 in spectrum usage fees paid over the licence period). ComReg, [Results of the 400 MHz Band Spectrum Award \(Smart Grid\) – Information Notice](#), 5 November 2019, p. 3.

<sup>35</sup> [Arqiva response to June 2021 consultation](#), p.9

<sup>36</sup> Assuming there is only excess demand in London, Frontier Economics estimates that the ALF would be around £189,600 per annum (or £1,185 per 2x12.5 kHz channel). If additionally to London, there is also excess demand in Birmingham, Glasgow and Manchester the ALF would be £261,600 per annum (or £1,635 per 2x12.5 kHz per channel). [Frontier Economics annex to Arqiva's response to June 2021 consultation](#), pp. 19–21

<sup>37</sup> [Arqiva response to June 2021 consultation](#), p. 20

<sup>38</sup> FE proposed to compare 450 MHz to 700 MHz due to their similar propagation characteristics. [Frontier Economics annex to Arqiva's response to June 2021 consultation](#), p. 21

<sup>39</sup> [Frontier Economics annex to Arqiva's response to June 2021 consultation](#), p. 21-22

<sup>40</sup> When we refer to a relative benchmark or value, we typically mean the relative value of spectrum in one frequency to another; in this case FE's international relative benchmarks consider the relative value of 700 MHz to 450 MHz. In our previous analyses of market value of spectrum in the UK Ofcom has also referred to absolute benchmarks. These typically



noted that this was the methodology adopted by Ofcom for informing the ALFs in the 900 MHz, 1800 MHz and 2100 MHz bands.

In particular, FE looked at the relative values of 450 MHz and 700 MHz from Norway and Sweden, and applied their ratio to the UK 700 MHz value to estimate the UK value of 450 MHz.<sup>41</sup> Based on this, FE estimated an implied 412 MHz spectrum value to be circa £156,000 per annum. Arqiva noted that using this approach would lead to a licence fee 10x lower than that currently proposed by Ofcom.

- 3.41 Furthermore, Arqiva argued that given the uncertainties involved in estimating market value, Ofcom should draw on a variety of evidence and, where different methodologies provide different results, it should take this into account.<sup>42</sup>
- 3.42 Motorola also proposed that Ofcom adopt a market value derived from international awards and recommended a value closer to the benchmark derived from regression analysis by EICON that used five awards in the 410 MHz band between 2006 and 2020.<sup>43,44</sup>
- a) EICON used spectrum award data from several European countries in UHF 1 (410-430 MHz) and UHF 2 (450-470 MHz) to estimate a UK-equivalent absolute value of the spectrum. It also argued that its regression analysis demonstrated differences in the market values of these bands. The results of this analysis implied annualised lump sum market value estimates of UHF 1 of £108,725/MHz/year and UHF 2 of £339,714/MHz/year and showed that the value of UHF 2 was higher than that of UHF 1.
  - b) Motorola indicated that Ofcom's proposed ALF is closer to its estimate of UHF 2 and suggested that setting the 412 MHz ALF not greater than the value implied by EICON's analysis for UHF 1. It noted that UHF 2 when considered on a wide contiguous block would have a higher value than UHF 1 given it's internationally harmonised for IMT, supports wider emerging equipment ecosystem and have been awarded to a variety of users in different countries.
- 3.43 Motorola also queried why we thought the value of the 412 MHz spectrum had increased beyond what was paid for it in the 2006 auction.

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capture the auction value of this spectrum in the comparator country adjusted for several factors relative to the UK (e.g. differences in licence durations, exchange rate and population). Ofcom, [Proposed annual licence fees for 2100 MHz spectrum: Annexes 5 - 10](#), 14 July 2021, pp. 6-9

<sup>41</sup> Denmark, Germany, Norway and Sweden have all recently awarded spectrum in the 450 MHz band. However, FE concluded that the Danish and German benchmarks may not be considered informative. [Frontier Economics annex to Arqiva's response to June 2021 consultation](#), p.21, footnote 38.

<sup>42</sup> [Arqiva response to June 2021 consultation](#), p. 4

<sup>43</sup> [Motorola Solutions response to June 2021 consultation](#), pp. 3-5

<sup>44</sup> A study conducted by EICON, referenced in Motorola's consultation response, considered five UHF 1 awards (410-430 MHz) in 2006-2020 and 12 UHF 2 awards (450-470 MHz) in 2004-2021 to assess market value of spectrum in UHF 1 and 2 separately. EICON estimated an UK equivalent 10-year licence for UHF 1 and 2, and based on this analysis concluded that the value of these two parts of the 400 MHz frequency bands are different, and derived proposed ALFs for both UHF 1 and 2 separately. In its response Motorola suggested that Ofcom uses the UHF 1 based ALF estimate for 412 MHz equivalent to £108,725/MHz/year for the UK wide license or £2,720 per 2 x 12.5 kHz channel nationwide. [Motorola Solutions response to June 2021 consultation](#), pp. 2-7.



## Our decision

- 3.44 As set out in the consultation, ascertaining the market value for spectrum is not an exact science, particularly where (as in this case) the market value may vary by geographic location. In assessing the market value for the 412 MHz spectrum, we are seeking to estimate the opportunity cost to other users of Arqiva and Airwave holding the 412 MHz spectrum (i.e. the value to the next highest value user of the spectrum).
- 3.45 As set out in the section above, our view is that the highest value alternative use case for the 412 MHz spectrum is likely to come from Business Radio users. Therefore, the opportunity cost of the spectrum will be its value to Business Radio users.
- 3.46 In the remainder of this section, we explain why we consider the UK-wide Business Radio fee provides an appropriate starting point for estimating the value of the 412 MHz spectrum. We then turn to consider whether there could be reasons that the market value of this spectrum could be higher or lower than this, taking into account, amongst other things, the points raised by stakeholders.

### Use of Business Radio as a proxy for market value in 412 MHz spectrum

- 3.47 Ofcom currently offers a range of Business Radio licences. Some of these provide licensees with dedicated frequencies over a prescribed coverage area (which may be local, nationwide or UK-wide), whilst others require licensees to share frequencies with other users. The fees for Business Radio licences reflect the different characteristics of these licences, with exclusive Technically Assigned and Area Defined licences being more expensive than other types of Business Radio licences on offer.<sup>45</sup>
- 3.48 In the June 2021 consultation, we noted that both the UK-wide Area Defined Business Radio licences and 412 MHz licence provide licensees with exclusive use of a national channel, and considered that the UK-wide Area Defined Business Radio fee of £9,900 per 2 x 12.5 kHz provides an appropriate starting point for estimating the value of the 412 MHz spectrum. This remains our view. In particular, we note that, on the basis of revealed preference, existing Business Radio users must value the spectrum at least as highly as the current Business Radio fees – if they valued it less than the amount they currently pay for it, they would be better off returning their licences and not incurring the fees.
- 3.49 Arqiva argued that we had applied what appeared to be flawed logic, in that just because there was excess demand in some – typically dense urban areas – it could not be assumed that that applied in all locations or across all nations of the UK. It argued that applying the benchmark of Business Radio pricing from high-demand areas, massively over-estimated the opportunity cost of the spectrum and was inconsistent with adopting a cautious or conservative approach to setting the fees. It put forward an alternative methodology

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<sup>45</sup> All of Ofcom's Business Radio licences are flexible in terms of licensed coverage area and can accommodate different channel sizes (subject to spectrum being available), and are offered on a first come, first served basis. Licensees whose operations are limited to a small area might opt for a Technically Assigned licence for a single site, or licensees with region- or nationwide operations may prefer an Area Defined licence, which can provide access to the same channel across one or several National Grid Reference squares, or even across the whole of the UK.

whereby the fee was based on Business Radio pricing in areas with evidence of excess demand with there being no fee associated with other geographic areas.

- 3.50 In essence, Arqiva is arguing that there is only an opportunity cost to them holding the 412 MHz spectrum in areas where there is local excess demand. We disagree, because as set out in the previous section, we expect there to be excess demand at the national and local level as well. There would be excess demand at the national level even if there is only a single user requesting a UK-wide licence. This user would then become the highest value alternative user. Therefore, our view is that the relevant opportunity cost in this case (i.e. the value to the highest alternative user) is that of a Business Radio user seeking a UK-wide Business Radio licence with exclusive use of a national channel.<sup>46</sup>
- 3.51 In addition, it is worth noting for clarity that the pricing structure for Area Defined Business Radio licences reflects the different levels of demand in different areas of the country by applying three different category of fee based on population. The fee for UK-wide use is not the equivalent of the High Population area fee applied nationwide; it is based on the total for *all* areas added together. In other words, the UK-wide Area Defined Business Radio licence fee already takes into account non-uniform demand around the UK, and does not assume that there is high demand throughout the UK.
- 3.52 Figure 2 below shows the UK split into individual 50 x 50 km National Grid Reference squares, each of which is assigned to a High, Medium or Low Population category.<sup>47</sup> Table 1 below shows the comparative fees for these different areas, along with the fees for Area Defined licences for England, Wales, Scotland, Northern Ireland and the whole of the UK.

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<sup>46</sup> We consider that the alternative methodology proposed by Frontier Economics on behalf of Arqiva basing the fee on the opportunity cost of the geographic areas where there is excess demand could be appropriate in situations where the highest value alternative use case was local Business Radio but for the reasons set out above, we do not consider that that is the relevant situation in this case.

<sup>47</sup> Ofcom, [Business Radio Licence Fees Guide](#)

Figure 2: Map of the UK showing Business Radio pricing categories based on population

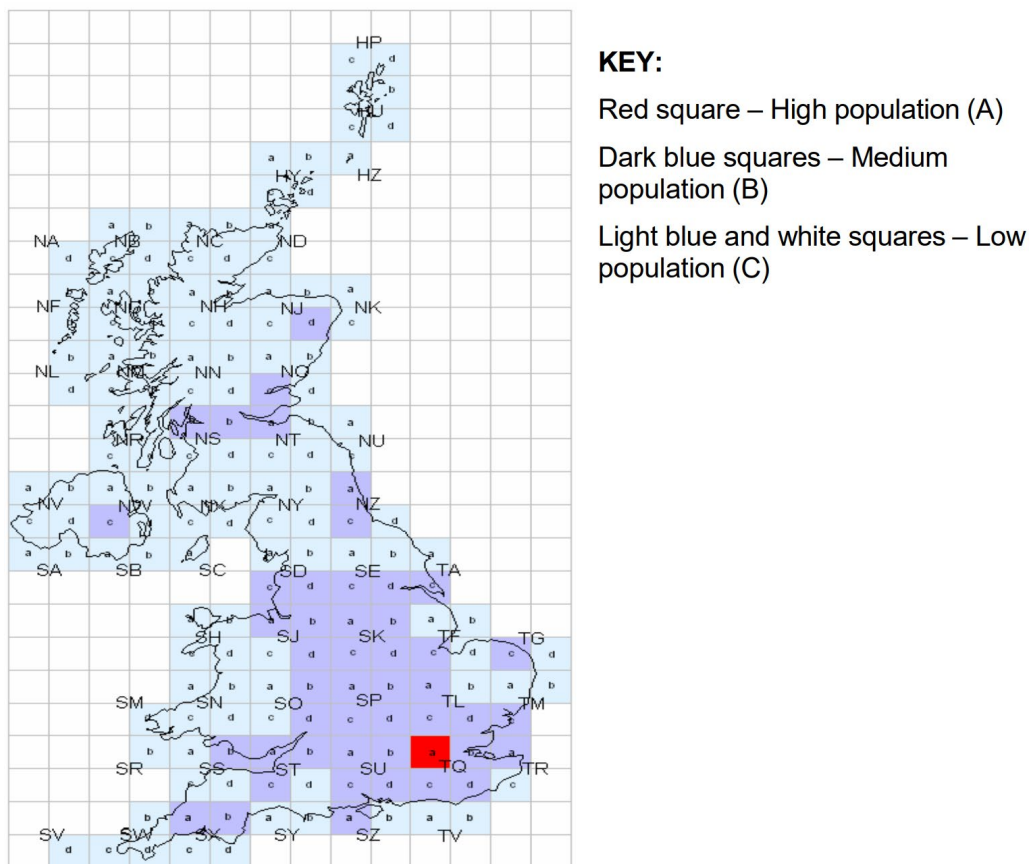


Table 1: Area Defined licence fees for UHF1 and UHF2 for a 2 x 12.5 kHz channel

Area	Annual fee (£)
High population category square (1 unit)	1,185
Medium population category square (47 units)	150
Low population category square (124 units)	14
<b>UK</b>	<b>9,900</b>
England	8,275
Scotland	855
Wales	490
Northern Ireland	280

3.53 As noted by Airwave, there are some deployment restrictions associated with the 412 MHz spectrum around RAF Fylingdales. We note that this is not unique to the 412 MHz spectrum, with similar restrictions applying to Business Radio licences in UHF 1 if they extent to the same geographic area. We therefore see no reason to apply a different

pricing structure in respect of the 412 MHz spectrum compared with other Business Radio licences which are subject to the same restriction.

### International benchmarking evidence

- 3.54 Both Arqiva and Motorola presented international benchmarking evidence in support of their view that the market value proposed by Ofcom was too high. We consider this evidence below.
- 3.55 As outlined in the SRSP, when assessing market value for ALFs, Ofcom will take account of observed market valuations from auctions and trading alongside other evidence where available when setting reference rates and AIP fee levels.<sup>48</sup> However, such market valuations will be interpreted with care and not applied mechanically to set reference rates and AIP fees.
- 3.56 We typically consider absolute value benchmarks (such as those proposed by Motorola), to be less informative than relative value benchmarks (such as those proposed by Arqiva). This is because several country-specific factors have the potential to affect auction prices in comparator countries relative to the UK. In previous ALF decisions, we have placed relatively little weight on absolute value benchmarks given they may not provide a reliable indication of the value of spectrum in the UK.<sup>49</sup> For the same reasons, we do not consider that the absolute value benchmarks proposed by Motorola are likely to be particularly informative of the forward-looking value of the 412 MHz spectrum in the UK.
- 3.57 Similarly, we do not consider that EICON's regression analysis provides strong evidence that there are significant differences in the value of UHF 1 and 2 spectrum, with the differences observed likely to be influenced in part by award and country-specific factors. Given the way the bands are used in the UK (which is different from other European countries), we do not consider there are significant technical reasons why the value of UHF 1 and 2 would differ. The current Business Radio pricing framework has the same fee structure for both bands, which existing national Business Radio licensees in UHF 1 and UHF 2 are currently paying.
- 3.58 Arqiva presented estimates of the UK market value of 412 MHz spectrum derived from using relative value benchmarks (see paragraph 3.40b) above). As it rightly noted, this was the methodology we used to inform the ALFs in the 900 MHz, 1800 MHz and 2100 MHz bands. In general, we expect relative value benchmarks to be less affected by country-specific factors, and as such we consider that it is potentially relevant evidence.

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<sup>48</sup> Ofcom, *SRSP: The revised Framework for Spectrum Pricing*, 17 December 2010, AIP principle 8, p. 71

<sup>49</sup> For example, in the derivation of ALFs for 900 MHz and 1800 MHz we focused on relative value benchmarks as evidence for the market value for 900 MHz and 1800 MHz spectrum, and used absolute value benchmarks as a cross-check on our findings. We recognised that a number of country-specific factors have the potential to affect auction prices in comparator countries relative to the UK. Licence holders have previously argued that, for this reason, absolute auction prices may not provide reliable indicators of the value of spectrum in the UK. In general, we expect that relative values are less likely to be affected by country-specific factors than absolute values (see paragraphs 4.20–4.24 of the 2018 900 MHz and 1800 MHz ALF Statement). Ofcom, *Annual Licence Fees for 900 MHz and 1800 MHz frequency bands*, December 2018

### Considering the evidence in the round

- 3.59 There is no predetermined single way of setting ALFs for spectrum and we consider all evidence as appropriate in the context. We have exercised our regulatory judgement in weighing up the available evidence.
- 3.60 While we recognise the relevance and potential usefulness of international benchmarking, we consider that in this case, where we have direct UK evidence of the value that users currently place on technically substitutable spectrum, that is the most informative evidence of the forward-looking UK market value of the 412 MHz spectrum. As a result, we consider it is appropriate to place most weight on that evidence in reaching our view on the market value of the 412 MHz spectrum.<sup>50</sup>
- 3.61 We therefore remain of the view that our best estimate of the market value of 412 MHz spectrum is (on the basis of revealed preference) likely to be at least equal to the fees charged for a UK-wide Business Radio licence with exclusive use of a national channel.
- 3.62 In reaching this conclusion, we recognise that this is a significantly higher value than implied by the (albeit only two) relative value benchmarks submitted by Arqiva, and suggests the 412 MHz spectrum is more valuable than is implied by the result of the 2006 auction.<sup>51</sup>

### Adopting a conservative approach to interpreting the evidence

- 3.63 Airwave and Arqiva both suggested that we should be taking a more conservative approach to interpreting the available evidence on market value.<sup>52 53</sup>
- 3.64 As set out in paragraph 3.28 of the June 2021 consultation, consistent with our approach to other ALFs, on balance we consider that the risk of inefficiency from spectrum lying fallow if the ALF for 412 MHz spectrum was set above the market value is greater than the risk that efficiency-improving changes would not occur if the ALF was too low.<sup>54</sup> Given our statutory duty to promote the optimal use of spectrum, we therefore take a conservative approach to interpreting the evidence on market price/opportunity cost of spectrum. This is also consistent with the principle set out in the SRSP that when deciding at what level we should set an AIP fee, we should consider the risks of setting the AIP fee too high or too low in light of the specific circumstances and of our statutory duties.<sup>55</sup>
- 3.65 We agree with Arqiva that given the uncertainties involved in estimating the market value of spectrum, we should draw on a variety of evidence and, where different methodologies

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<sup>50</sup> We note that this is not dissimilar to the approach we took when setting the annual licence fees for UK Broadband's 3.4 GHz and 3.6 GHz spectrum. In that case, we had recently had a UK auction of 3.4 GHz and accordingly based the ALF on the market value derived from that auction. We did not use relative benchmarks from international auctions to inform the ALF in that case. Ofcom, [Annual Licence Fees for UK Broadband's 3.4 GHz and 3.6 GHz spectrum](#), 7 June 2019

<sup>51</sup> However, as we explained in the [June 2021 consultation](#) (paragraph 3.31) we are cautious about placing too much weight on a 15 year old sealed-bid auction when assessing the forward-looking market value of that spectrum.

<sup>52</sup> [Arqiva response to June 2021 consultation](#)

<sup>53</sup> [Airwave Solutions Limited response to June 2021 consultation](#), p.2 and 3

<sup>54</sup> See [Annex 5 of our August 2014 consultation on ALF for 900 and 1800 MHz spectrum](#).

<sup>55</sup> [SRSP Statement](#), paragraph 4.344, AIP Principle 9

provide different results, we should take this into account. That is what we have done in this case.

- 3.66 However, as we have set out previously in the context of ALFs, taking a conservative approach is not the same as deliberately setting ALFs below our view of the appropriate level.<sup>56</sup>
- 3.67 Reaching a view on the appropriate level requires considerable exercise of our regulatory judgement, particularly in a situation such as this where the available evidence suggests quite different values.
- 3.68 In taking a conservative approach to interpreting the evidence, we need to weigh the available evidence and ensure that we place appropriate weight on it. As set out in the previous section, in this case, we consider that it is appropriate to place most weight on the direct UK evidence of the value that users currently place on equivalent spectrum.
- 3.69 We consider that using the current Business Radio fees as a proxy for the value that Business Radio users place on this spectrum is a conservative interpretation of the evidence, on the basis that they must value the spectrum at least as highly as the current fees. They may well value the spectrum more highly than that, but we would expect that if they valued the spectrum by less than the amount they currently pay for it, they would be better off returning their licences and not incurring the fees. Furthermore, we also note responses from utility companies to access this spectrum with the proposed level of the ALF, suggesting that they would be willing to pay this market value.
- 3.70 We consider that estimating the market value of the 412 MHz spectrum below this conservative interpretation of the evidence (which is based on the value to existing Business Radio users) would involve placing disproportionate weight on either the international benchmarks or the 2006 auction result and would lead to us under-estimating its market value.

### Conclusion

- 3.71 The highest value alternative use case for the 412 MHz spectrum is likely to come from Business Radio users (including those in the utility sectors), and therefore the opportunity cost of the spectrum will be its value to Business Radio users. Both the UK-wide Business Radio licences and 412 MHz licence provide licensees with exclusive use of a national channel.
- 3.72 We consider that a conservative estimate of the market value for 412 MHz spectrum is £396,000 per MHz<sup>57</sup> per year. That is, equal (on a per MHz basis) to the fee charged for a UK-wide Area Defined Business Radio licence.

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<sup>56</sup> See Ofcom, [Annual licence fees for 900 MHz and 1800 MHz spectrum](#), 24 September 2015, paragraph 1.39

<sup>57</sup> For the purposes of the Regulations at Annex 2, this fee is expressed as £9,900 per 2 x 12.5 kHz channel. This equates however to an annual fee of £396,000 per MHz.

## 4. Assessment of the annual licence fee in light of our statutory duties

### Background

- 4.1 For the reasons explained in Section 3 above, we are estimating that the market value of the 412 MHz spectrum (and corresponding ALF, if set based on that estimate) is £396,000 per MHz per year.
- 4.2 As set out in the SRSP, our existing spectrum pricing policy is to set fees for spectrum holdings to reflect the market value of the spectrum (based on its opportunity cost) in order to promote the optimal use of spectrum. We explained in the SRSP however that we would need to take account of the particular circumstances of the frequency bands and licence types under review.
- 4.3 In this section, we therefore present our assessment (in light of all our statutory duties) of setting the ALF for the 412 MHz spectrum based on our estimate of its market value.
- 4.4 As explained in Section 2, when we exercise our powers in relation to setting spectrum fees, a number of statutory duties are relevant. Broadly speaking, these can be categorised as follows:
- a) *Optimal use of spectrum*: The Communications Act requires Ofcom to secure the optimal use for wireless telegraphy of the electro-magnetic spectrum. The Wireless Telegraphy Act also requires Ofcom to have regard to: (i) the desirability of promoting the efficient management and use of spectrum, and (ii) the extent to which spectrum is available for use, and the demand (current and likely future) for use of the spectrum.
  - b) *Furthering the interests of citizens and consumers*: Ofcom's principal duty in the Communications Act is to further the interests of citizens in relation to communication matters and of consumers in relevant markets, where appropriate by promoting competition.
  - c) *Promoting competition*: Ofcom is required by the Communications Act to promote competition when managing the radio spectrum, and to have regard to the desirability of promoting competition in relevant markets. It is also required by the Wireless Telegraphy Act to have regard to the desirability of promoting competition in the provision of electronic communications services.
  - d) *Encouraging investment and innovation*: Ofcom is required by the Communications Act to have regard to the desirability of encouraging investment and innovation in relevant markets and to encouraging the availability and use of high-speed data transfer services throughout the UK. It is also required by the Wireless Telegraphy Act to have regard to the desirability of promoting the development of innovative services.



- 4.5 We therefore consider in this section the specific effects of our proposed ALF on:
- a) securing the optimal use of spectrum;
  - b) citizens and consumers;
  - c) competition; and
  - d) investment and innovation.

## Our assessment

### Our provisional view

- 4.6 We provisionally concluded, taking account of our statutory duties, that it was appropriate and proportionate to set a fee based on the market value of Arqiva/Airwave's 412 MHz spectrum.
- 4.7 We also noted that setting an ALF at this level would be consistent with the efficient management of spectrum, and with our duty under section 3(3) of the Communications Act to have regard to the principle under which regulatory activities should themselves be consistent.

### Consultation Responses

- 4.8 EUTC and JRC agreed that the approach we outlined would meet Ofcom's statutory duties, however the EUTC suggested that Ofcom should consider making this spectrum available to other users instead, and that this would better fulfil our duties under Section 3(4) of the Communications Act. It also suggested a regional structure with a use-it-or-lose-it obligation that could allow other users to deploy network would be more suitable for this band than the current national licence. ESB and a confidential respondent ([redacted]) similarly requested Ofcom to consider making spectrum in this range available to utilities on a national or regional basis.
- 4.9 Anglian Water, Smart DCC Ltd, Thames Water, Waterwise and Yorkshire Water suggested that Ofcom should satisfy ourselves that we were not setting the fee at a level where it would impede the rollout of smart water meters, and the benefits linked to the rollout.
- 4.10 Airwave, Arqiva and Motorola disagreed. Airwave suggested we should be more transparent in providing the evidence for our arguments.
- 4.11 Arqiva's response referenced FE analysis that suggested that overstating excess demand risks the spectrum being returned and left unused.<sup>58</sup> In addition, by overstating the value of 412 MHz spectrum and setting the ALF too high, Ofcom risks undermining competition in the downstream markets that Arqiva operates in.<sup>59</sup> Furthermore, the positive

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<sup>58</sup> [Frontier Economics annex to Arqiva's response to June 2021 consultation, p.6,25](#)

<sup>59</sup> [Arqiva response to June 2021 consultation](#), p. 9



externalities linked with Arqiva's current spectrum use (smart water meters and connectivity to hospitals) could be lost if the ALF is set too high.

4.12 Our consideration of these responses is outlined below.

## Securing the optimal use of spectrum

4.13 As set out in our consultation document and the SRSP, the purpose of AIP is to provide users with a sustained long-term signal of the value of spectrum as indicated by its opportunity cost in the next highest use and, as a result, to give them incentives to use it in a way that maximises benefits for society over time. If the price charged for any limited resource does not reflect its opportunity cost, there will be less incentive to use it efficiently and this can result in wasteful use of resources which ultimately impacts consumers. Whilst operators may be incentivised to make the most efficient use possible of spectrum they currently hold even without fees set at market value, this does not necessarily mean that they are the highest value user of the spectrum.

4.14 Whilst spectrum users can trade<sup>60</sup> or acquire spectrum licences and in theory this creates incentives for users to only hold licences for which they are the highest value user, we believe there is a risk that users may be less responsive to the opportunity cost of holding spectrum than to ALFs based on market value. As a result, trading by itself may not be enough to ensure that spectrum is allocated most efficiently. Although Arqiva/Airwave as the licence holder may be a particularly high value user of the 412 MHz spectrum, efficient use of this spectrum may also come from other users being able to access it in the future.

4.15 We therefore consider that setting an ALF at market value is likely to secure optimal spectrum use by creating appropriate incentives to hold or release spectrum and that in general terms, benefits to society will be maximised over time if spectrum is priced to reflect opportunity cost, and that AIP fees set in this way have an effect similar to the prices that would emerge in a well-functioning spectrum market.<sup>61</sup>

4.16 Notwithstanding our general view regarding the value of ALFs set at market value in incentivising efficient use of the 412 MHz spectrum, we have considered the risks to spectral efficiency of using our estimate of market value and, in particular, the risk of setting fees too high or too low. We note, in this regard, that a number of stakeholders did comment on the risks of setting fees in this case too high.

4.17 We recognise that fees set *above* market value would not secure the optimal use of spectrum. We also recognise however that fees set *below* market value risk spectrum not being efficiently utilised, and that higher value users may be prevented from obtaining access to spectrum because the fee level is too low to encourage existing users to consider other options. In this context, we note that setting ALFs below market value would

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<sup>60</sup> We note that spectrum trading has occurred in this band in the past, with Arqiva and Airwave completing a concurrent trade in 2008 which resulted in them becoming co-licensees. FE indicated in the annex to Arqiva's consultation response that Arqiva leases part of its spectrum to Telnet in some parts of the country

<sup>61</sup> [June 2021 consultation](#), paragraphs 4.10–4.11 and [SRSP: The revised Framework for Spectrum Pricing](#), 17 December 2010, paragraph 3.41

effectively give the licensees a subsidy. We consider this point further in paragraph 4.24 below.

- 4.18 Identifying the market value of spectrum necessarily involves us exercising regulatory judgement when considering the evidence. In this specific case, however, we do not consider that the fees that we are proposing are too high or low. As set out in Section 3, we consider that our estimate of market value is likely to be a conservative estimate. We have carefully considered its technical capabilities and have no reason to consider that the market value of the 412 MHz spectrum would be lower than the amount paid by Business Radio users for UK-wide Area Defined licences as well as other users in the adjacent UHF 1 and 2 bands. We are satisfied that the fees paid by Business Radio users provide a reliable but conservative proxy for the market value of the 412 MHz spectrum, and we would not expect that ALFs based on this would likely be too high or too low. We have therefore sought to mitigate any risks to optimal use of the band from setting the fees too high.
- 4.19 We are also of the view that setting the fee at a level which reflects market value should ensure that the spectrum is used by the users who have the highest value for it. We noted in paragraph 4.8 that several respondents suggested that Ofcom should consider making the 412 MHz spectrum available to other utility<sup>62</sup> users instead, and that this would better fulfil our duties under Section 3(4) of the Communications Act.
- 4.20 If it were the case that Airwave/Arqiva did not place a value on the 412 MHz spectrum at the proposed ALF level, they would have an incentive to surrender or trade some or all of their spectrum, which could then be made available to other users who have a higher value for it. In this way, setting the fee at the market value incentivises efficient use of the spectrum. This would not be the case if the fee were set below market value.
- 4.21 Our view is therefore that setting ALFs based on our estimate of market value will secure the optimal use of the 412 MHz spectrum.

### Impact on citizens and consumers

- 4.22 In general, and consistent with our wider policy on spectrum fees, we consider that retail prices should reflect the input cost of spectrum, and that this does not reflect a market failure, or markets failing to work in the interests of consumers. As such, we do not consider that it would be appropriate to maintain the price of spectrum below its market value in order to artificially suppress consumer prices through a spectrum subsidy.
- 4.23 Rather, we consider that setting ALFs in accordance with market value will provide efficient price signals for the use of scarce spectrum which will overall benefit consumers by ensuring that spectrum is used in the most efficient way for the provision of downstream services for which there is greatest value. We note that if the price of spectrum was below

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<sup>62</sup> Ofcom has [ongoing work](#) looking at spectrum requirements for the utility sector, noting that demand for nationwide spectrum access could not currently be accommodated within the UHF 1 and 2 bands, and we continue our engagement with the sector as part of this work. Interested parties that are not already aware of this work are encouraged to contact us for more information.

the opportunity cost, there would be a risk that it would continue to be held by Arqiva/Airwave even if it was not the highest value user of that spectrum, which could be harmful to consumers and society more widely.

4.24 As noted in paragraph 4.11, several respondents suggested that the current use of the spectrum for smart metering generated positive externalities (for example, energy and water saving and a reduction in greenhouse gas emissions) which benefit UK society, and that we should ensure that the level of fee set did not lead to the loss of these externalities. Arqiva claimed that if the ALF for 412 MHz spectrum is set too high, there is a risk that these positive externalities will be forgone.<sup>63</sup>

4.25 Whilst we recognise that the services provided by this spectrum may generate positive externalities, we remain of the view that it would not be appropriate to maintain the ALF of the 412 MHz spectrum below its market value in order to artificially suppress consumer prices. As we set out in the SRSP:

*“We believe that if it is considered that a subsidy should be provided to support wider policy objectives, it is more efficient for those services to be explicitly subsidised by government from general taxation, leaving those providing them to have the same incentives to use resources, such as spectrum, efficiently, rather than seeking to provide such services through concessions on the fee charged.”<sup>64</sup>*

4.26 We do not therefore consider that the nature of the services provided by Arqiva and Airwave justify a decision to set the ALF below market value, and our view remains that setting an ALF based on our estimate of the market value will provide efficient price signals, which in general should lead to better welfare outcomes.

### Impact on competition

4.27 As set out in the consultation and the SRSP, our general view on spectrum fees and competition is that fees are unlikely to introduce distortions to competition in downstream markets where they reflect the opportunity cost of spectrum. We did not identify any reasons in our consultation why it might be appropriate to discount 412 MHz fees below the market value of the 412 MHz spectrum in order to promote competition.

4.28 In its response, Arqiva suggested that there is a risk of undermining competition in the downstream market in which it operates (in particular, for smart metering services) if Ofcom overstates the value of the 412 MHz spectrum. Arqiva emphasised that it competes against other providers with different cost structures, and who will not be affected by the introduction of the 412 MHz spectrum ALF, and that Arqiva would therefore struggle to pass on cost increases to its customers (which risks undermining competition in downstream markets).<sup>65</sup>

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<sup>63</sup> [Arqiva response to June 2021 consultation](#), p. 5

<sup>64</sup> Ofcom, [SRSP: The revised Framework for Spectrum Pricing](#), 17 December 2010, paragraph 4.230.

<sup>65</sup> [Arqiva response to June 2021 consultation](#), p. 5

- 4.29 We agree that if the 412 MHz ALF were set above the opportunity cost of that spectrum, this could have a detrimental effect on competition, especially in the case where not all providers in the market are liable to pay the fee. Equally, however, we consider that if the fee were set below the opportunity cost of the spectrum this could also have a detrimental effect on competition as it would effectively give Arqiva/Airwave as the licence holder a subsidy. This has the potential to distort economic incentives in terms of pricing and investment decisions, for instance by causing prices to deviate from the true cost of supply, or by distorting the efficient choice between spectrum-related investment and other investments.
- 4.30 We consider that setting the 412 MHz ALF based on our conservative estimate of market value is consistent with promoting competition.

### Impact on investment and innovation

- 4.31 As set out in our consultation and the SRSP, our general view is that investment decisions should reflect the true cost of inputs. This will be achieved where ALFs are set based on market value, as operators are required to pay the opportunity cost of their spectrum holdings. We believe, however, that it is important to distinguish between efficient and inefficient investment and to consider the impact on efficient investment only.
- 4.32 We recognise that setting ALFs at market value could in theory reduce the ability of existing licence holders to make investments that they would otherwise have made. However, we consider that outcome is likely to be efficient because the licence-holder will either pursue alternative, more efficient solutions (taking account of the true cost of all inputs) or choose not to invest (thereby avoiding over-investment in spectrum-based solutions). We note Arqiva indicated its competitors use licence exempt spectrum for similar applications.
- 4.33 As set out above, several respondents (including Arqiva) expressed concerns that the introduction of ALFs for the 412 MHz spectrum could potentially delay or prevent the rollout of smart metering. We have not seen evidence to suggest that setting the 412 MHz ALF based on our estimate of market value would have a significant impact on investment by Arqiva or more generally in the smart meter sector but, even if it were the case that investment were reduced, we do not consider that this by itself would be a reason to set ALFs below market value. Where there is a positive externality effect associated with investment, this can be encouraged through other means, as outlined in paragraph 4.25.
- 4.34 We also consider that ALFs set at market value could encourage the existing licensees to innovate and utilise their 412 MHz spectrum more efficiently.
- 4.35 We also note that Arqiva could consider reducing the level of its fee (and therefore increasing funds available for investment) by varying its licence to cover only those geographic areas where it is needed, or consider the use of alternative technologies.
- 4.36 Therefore, our view remains that setting the ALF based on our estimate of market value will promote efficient investment and innovation.

## Our decision

- 4.37 For the reasons set out above, we consider that setting ALFs for the 412 MHz spectrum at £396,000 per MHz:
- a) will secure the optimal use of spectrum, which we consider to be in the interests of UK citizens and consumers;
  - b) will benefit consumers in the long run by ensuring that spectrum is used in the most efficient way for the provision of downstream services for which there is greatest value;
  - c) is consistent with promoting competition; and
  - d) can be expected to promote efficient investment and innovation.
- 4.38 In addition, we note that setting the ALF for the 412 MHz spectrum equal to the UK-wide Business Radio fees charged in the adjacent bands (which relate to technically substitutable spectrum) would be consistent with the efficient management of spectrum, and with our duty under section 3(3) of the Communications Act to have regard to the principle under which regulatory activities should themselves be consistent.
- 4.39 We therefore conclude that it is appropriate, taking account of our statutory duties, to set the ALF for the 412 MHz spectrum at **£396,000 per MHz**.<sup>66</sup>

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<sup>66</sup> Consistent with our approach to setting annual licence fees for spectrum (other than mobile spectrum), the Business Radio fee is fixed in nominal terms and not adjusted for inflation. We are adopting the same approach and keeping the 412 MHz annual licence fee fixed in nominal terms.

## 5. Conclusion and implementation

### Level of ALF

- 5.1 As set out in Section 4, we consider that it is appropriate, taking account of our statutory duties, to set the 412 MHz ALF based on our estimate of market value. We are therefore setting ALFs for the 412 MHz spectrum at £396,000 per MHz, which is equivalent to **£1,584,000 per year** for Arqiva/ Airwave's 412 MHz licence.

### Implementation

- 5.2 This section sets out how we have decided to implement the revised fees, including:
- a) phasing in; and
  - b) application of the revised fees.

### Phasing in

#### What we proposed

- 5.3 In our consultation, we considered whether it would be appropriate to phase in the proposed fee rates over time. Our provisional view was that there should not be a phase-in period for these new fee rates, with the full fees becoming payable from Arqiva and Airwave's fee payment date of 5 October 2021.

#### Consultation responses

- 5.4 The JRC agreed with Ofcom that there was no need to phase in fees.
- 5.5 Airwave, Anglian Water, Arqiva, Smart DCC Ltd, Thames Water, Waterwise and Yorkshire Water suggested that we should phase in the introduction of fees in this band. Airwave<sup>67</sup> and Arqiva said that this would be reasonable as we had phased in fees in previous cases, and Arqiva<sup>68</sup> specifically used the example of aeronautical licensing, where fees were phased in over 5 years. Anglian Water, Thames Water and Waterwise all said that the rollout of smart metering in the water sector was a gradual process, and was at a much earlier stage than in the energy sector, and along with Smart DCC Ltd and Yorkshire Water argued that it would be appropriate to phase fees in over time so as not to jeopardise the benefits of smart water meter rollout.
- 5.6 Arqiva also argued in its response that it had no way to predict that fees would be set at the level we proposed, and that therefore fees ought to be phased in to allow it to adapt to

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<sup>67</sup> [Airwave response to June 2021 consultation](#), p. 3

<sup>68</sup> [Arqiva response to June 2021 consultation](#), p. 6 and p. 10

the fee and minimise the impact on ongoing investments in infrastructure.<sup>69</sup> It added that because it could not predict the level of fee it was unable to factor this cost into its contracts or investment decisions. In the annex to Arqiva's response, FE argued that if there was uncertainty around future ALFs and no glidepath to introduce these, licensees may be reluctant to enter into new long-term contracts until there is greater clarity.

### Our decision

- 5.7 When considering whether or not to phase in the introduction of licence fees, Ofcom does so in a holistic way, considering the circumstances of each individual case.
- 5.8 As an example, when we set the annual licence fees for UK Broadband's 3.4 and 3.6 GHz spectrum in 2019, we phased in the introduction of the 3.6 GHz fee, but not the 3.4 GHz fee. This was because in the case of the 3.6 GHz band, UK Broadband was subject to short-term constraints on its ability to deploy (due to the presence of incumbent users in the process of having their licences revoked); and because we had proposed the introduction of fees sooner than we had originally indicated. For the 412 MHz spectrum, neither of these particular factors apply.
- 5.9 Our view is that, overall and in the longer term, any welfare effects from AIP-based fees are likely to be more than offset by the expected net benefits to society at large from those fees. Nevertheless, we also recognise that changes to the basis upon which licence fees are paid might have inherent risks, particularly in the short term, which should be managed to avoid adverse impacts on society. We recognise, in particular, that if fees increase too quickly before action can be taken to reduce spectrum costs and if total cost changes cannot efficiently be passed through to service users, or temporarily absorbed within the business, the financial viability of licensees may be temporarily adversely affected, such that some marginal services could be put at risk and, in the most extreme cases, inefficiently withdrawn. In the extreme scenario, the value of the marginal services could then be forgone temporarily or even permanently, resulting in a loss of benefits for both citizens and consumers.
- 5.10 In the case of the aeronautical sector, as referenced by Arqiva, we note that AIP impacted a diverse set of users in the sector who and ranged from large airlines to individual private users with a single light aircraft. We deemed it appropriate in that case to phase in fees over a 5-year period, recognising the potential adverse short term economic impacts of suddenly imposing fees on the users and their continued operations.<sup>70</sup>
- 5.11 Whilst we have considered the arguments put forward by respondents on the issue of phasing, we are not satisfied in this particular case that it would be appropriate to adopt a phasing in of the 412 MHz ALF.

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<sup>69</sup> In the annex to Arqiva's response, Frontier Economics argued that it was reasonable for Arqiva to expect that Ofcom would follow a similar approach to the one adopted for setting the ALF for 900 MHz and 1800 MHz, which it argued would have led to a much lower fee.

<sup>70</sup> Ofcom, [Bespoke licence fees for aeronautical VHF communications frequencies: A statement](#), 7 June 2011

- 5.12 The existing licensees have known for a long time that fees would be introduced<sup>71</sup> and when this would occur, and the existing pricing structure in place in the adjacent UHF 1 and 2 bands (which covers both regional and national Area Defined licenses<sup>72</sup>) should have provided a signal regarding the potential level of the fee. We also note that Arqiva holds an Area Defined Business Radio licence in the UHF 2 band and, as such, would be aware of the pricing framework on which we are basing our decision. Airwave is also paying the same level of fee in the 380 MHz spectrum for emergency services.
- 5.13 Further, even if the licensees could not reasonably foresee the level of ALF which we have decided to set, we are not satisfied that there are short-term risks associated with the immediate introduction of the full fees which justify phasing in.
- 5.14 We note, in this regard, that whilst Airwave (as one of the licensees) asked Ofcom to consider phasing in the fees, it did not provide any detailed reasoning in support of this view.
- 5.15 We appreciate that a number of stakeholders (including Arqiva) did raise concerns about the impact of introducing the new fees on the rollout of smart metering services. Our understanding is that these stakeholders are concerned about the following scenarios arising if Ofcom does not phase-in fees for the 412 MHz spectrum:
- a) Arqiva seeking to pass its increased costs on to its existing or future customers, thereby adversely impacting the roll-out of smart metering services and by extension adversely impacting consumers; or
  - b) Arqiva being unable to recover the additional costs of its 412 MHz fees across its existing contracts, and therefore experiencing reduced profits (or, in the most extreme case, becoming loss-making), thereby adversely impacting competition and investment in smart metering services.
- 5.16 Whilst we recognise the potential importance of smart metering services going forward to the utility sector (and for consumers and the environment), we remain of the view that these do not give us sufficient reason to phase in the introduction of the 412 MHz ALF. In particular:
- a) regarding the risk and potential impacts on consumers from Arqiva passing on its increased costs to existing or future customers, we note that – even if phasing in were adopted in this case – this risk would likely reappear once the full fees became payable (i.e., at the end of the phasing in period). Put simply, this is not a short-term risk which phasing in would necessarily address in full. Further, and as set out in paragraph 4.25, we do not agree with stakeholders that this potential risk provides us with sufficient

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<sup>71</sup> We noted in our 2006 statement regarding the award of the 412 MHz spectrum that, at the end of the 15-year minimum licence term, there “*may be additional charges in line with Ofcom’s policy on spectrum pricing at that time*”, and that we published our revised framework for spectrum pricing (the SRSP) in 2010. The licensees have therefore had a long notice period that they would be liable for fees from October 2021, and that Ofcom would take the approach outlined in the SRSP in setting these fees.

<sup>72</sup> Ofcom, [Business Radio Licence Fee Guide](#)



reason to set ALFs below market value. As such, we do not consider that it gives us sufficient reason to phase in ALFs for the 412 MHz spectrum; and

- b) regarding the risk and potential impact on competition and investment in smart metering services in the short term from the full fees, we note that Arqiva did not provide evidence in its response that its financial viability would be temporarily affected (such that its smart metering services could be put at risk or inefficiently withdrawn) in the absence of a phasing in period, and nor did FE suggest this in the annex to Arqiva's response. We also note that, in the regulations implementing our decision (provided at Annex A3), we are providing Arqiva and Airwave with the option to pay their annual licence fees across ten equal monthly instalments (rather than as a single, upfront payment).

If it is the case that introducing the full fee immediately means that a licensee is going to make less of a profit, we would not see this as a sufficiently compelling reason to phase in fees. To do so would in effect be to provide a subsidy to the licensee. As we have explained in Section 4, we consider that creating such a subsidy could potentially be detrimental to competition in downstream markets and lead to an inefficient allocation of spectrum.

Further, to the extent that the risk to competition and investment raised by stakeholders is a longer-term risk, we have explained in Section 4 above why we do not agree with stakeholders that this potential risk provides us with sufficient reason to set ALFs below market value. As such, we do not consider that it gives us sufficient reason to phase in ALFs for the 412 MHz spectrum.

- 5.17 We would also dispute FE's argument that in the absence of a phasing-in period for the new fees, licensees would be reluctant to enter new contracts due to the uncertainty around the ALF. We are, in this statement, confirming the level of the ALF and that we have concluded that no phasing-in period is necessary, providing certainty to licensees and any current or potential customers around the details of the fee.
- 5.18 For the reasons set out above, we maintain that in this case it is appropriate for the full fee to be payable from 31 October 2021.

## Application of the annual licence fees

- 5.19 The annual licence fees that we have decided to set in this document will become payable from 31 October 2021. A copy of the revised fee regulations is provided in Annex A3<sup>73</sup>.

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<sup>73</sup> We note that, due to the timing of our final statement, we have prescribed a new annual fee payment date of 31st October rather than 5th October. This has resulted in us amending the regulations on which we previously consulted. Specifically, in our consultation, we had proposed to implement the new 412 MHz ALF by an amendment to the Wireless Telegraphy (Licence Charges) Regulations 2020 (the "2020 Regulations") and, in particular, by the inclusion of a new row in Schedule 2 of the 2020 Regulations. The final version of the regulations that we have now made provides instead for a new

## Setting licence fees for 412 MHz spectrum

- 5.20 We note that, consistent with our consultation, we are providing the licensees with the option to pay the 412 MHz ALF across ten equal monthly instalments. We would encourage the licensees to contact us as soon as possible, and in any event, before 31 October, should they wish to avail themselves of this option.
- 5.21 The fee set in these regulations will remain applicable until we amend or revoke it. This means that, in effect, the ALF is set for an indefinite period and is not time limited. We consider that there is benefit in a period of relative certainty for licensees. We would therefore be unlikely to review the ALF in the next five years save in very exceptional circumstances and would also propose to retain it beyond that date unless there were grounds to believe that a material misalignment had arisen between the level of this fee and the value of the spectrum, in keeping with our general policy on fee reviews.

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regulation 8 to be inserted into the 2020 Regulations. This is different presentationally to the amendment on which we consulted although (other than the modified fee payment date) the underlying fee payment obligations are the same.”

# A1. Legal framework

## Ofcom's power to set fees

- A1.1 Under section 12 of the Wireless Telegraphy Act 2006 (the “Wireless Telegraphy Act”), Ofcom has the power to require licensees to pay fees to Ofcom on the grant of a licence and subsequently. The requirement to pay fees at times after the grant of a licence must be imposed by way of regulations made by Ofcom. The timing of the fee payment must be set out in the regulations, and the amount of the fee can be prescribed in the regulations, or alternatively the regulations may provide for the amount to be determined by Ofcom in accordance with the regulations.
- A1.2 Section 12(5) of the Wireless Telegraphy Act provides that, where a licence has been awarded as part of an auction process (as was the case for the 412 MHz spectrum), fees cannot ordinarily be charged for that licence. This is however subject to section 12(6) of the Wireless Telegraphy Act which provides that fees may be payable, even in respect of auctioned spectrum, in specific cases. This includes where provision has been included in the licence with the consent of the holder of that licence for fees to apply. Paragraph 8 of Arqiva and Airwave's licence for the 412 MHz spectrum provides that, on or after 5 October 2021, annual fees will become payable in respect of that licence (failing which Ofcom may revoke the licence).
- A1.3 Section 13 of the Wireless Telegraphy Act provides for Ofcom to set fees at an amount that is higher than the cost to us of carrying out our radio spectrum functions. This power may be exercised if we think fit in the light (in particular) of the matters to which we must have regard under section 3 of the Wireless Telegraphy Act.
- A1.4 Section 122 of the Wireless Telegraphy Act is a general provision about matters relating to Ofcom's powers to make statutory instruments (including fees regulations under section 12 of that Act). It includes a requirement that where we are proposing to make regulations we must publish a notice setting out the general effect of the regulations and give a period of at least one month within which representations on the proposed regulations may be made to us.
- A1.5 The legal framework for the setting of fees derives from the Communications Act 2003 (the “Communications Act”) and the Wireless Telegraphy Act. We set out below our statutory duties under the Communications Act and the Wireless Telegraphy Act.

## The duties imposed by the Communications Act

- A1.6 Section 3 of the Communications Act sets out Ofcom's general duties, including its principal duty:
- a) to further the interests of citizens in relation to communications matters; and
  - b) to further the interests of consumers in relevant markets, where appropriate by promoting competition.

- A1.7 In carrying out its functions, section 3(2) provides that Ofcom is required, amongst other things, to secure the optimal use for wireless telegraphy of the electromagnetic spectrum, the availability throughout the UK of a wide range of electronic communication services and the availability throughout the UK of a wide range of television and radio services.
- A1.8 Section 3(3) of the Communications Act provides that, in performing its duties, Ofcom must in all cases have regard to the principles of transparency, accountability, proportionality and consistency, as well as ensuring that its actions are targeted only at cases in which action is needed.
- A1.9 Section 3(4) of the Communications Act requires Ofcom, in performing its duties, to have regard to a number of factors as appropriate, including the desirability of promoting competition, encouraging investment and innovation in relevant markets, encouraging the availability and use of high speed data transfer services throughout the UK, the different interests of persons living in rural and in urban areas and the different needs and interests of everyone who may wish to use the spectrum for wireless telegraphy.
- A1.10 In performing our duty under section 3 of furthering the interests of consumers, we must have regard, in particular, to the interests of those consumers in respect of choice, price, quality of service and value for money.
- A1.11 Section 4 of the Communications Act requires Ofcom to act in accordance with six requirements when carrying out certain specified functions, including our functions under the Wireless Telegraphy Act. These include a requirement to promote competition in relation to the provision of electronic communications networks and electronic communications services, and to take account of the desirability of carrying out its functions in a manner which, so far as practicable, does not favour one form of electronic communications network, electronic communications service or associated facility, or one means of providing these, over another.

### **The duties imposed by the Wireless Telegraphy Act**

- A1.12 Section 3 of the Wireless Telegraphy Act imposes a number of further duties relating to spectrum management. Amongst other things, in carrying out its spectrum functions Ofcom is required to have regard to:
- a) the extent to which spectrum is available for use, or further use, for wireless telegraphy;
  - b) the demand for use of the spectrum for wireless telegraphy; and
  - c) the demand that is likely to arise in future for the use of the spectrum for wireless telegraphy.
- A1.13 Section 3 of the Wireless Telegraphy Act also requires Ofcom to have regard to the desirability of promoting:
- d) the efficient management and use of the part of the electromagnetic spectrum available for wireless telegraphy;

**Setting licence fees for 412 MHz spectrum**

- e) the economic and other benefits that may arise from the use of wireless telegraphy;
- f) the development of innovative services; and
- g) competition in the provision of electronic communications services.

## A2. List of consultation respondents

A2.1 A total of 12 responses were received to the June 2021 consultation including one confidential response. Organisations that submitted responses are listed below:

- Airwave Solutions Limited
- Anglian Water
- Arqiva
- ESB Networks
- European Utilities Telecoms Council
- Joint Radio Company Limited
- Motorola Solutions
- Smart DCC Ltd
- Thames Water
- Waterwise
- Yorkshire Water

A2.2 All non-confidential responses are available to view [on the Ofcom website](#).

## A3. Copy of Regulations

*This is a copy of the Regulations made by the Office of Communication as submitted for registration and publication. The final version of these Regulations will be registered and published on [legislation.gov.uk](http://legislation.gov.uk) in due course.*

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### STATUTORY INSTRUMENTS

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**2021 No. 0000**

## **ELECTRONIC COMMUNICATIONS**

### **The Wireless Telegraphy (Licence Charges) (Amendment) Regulations 2021**

*Made - - - - 6th October 2021*

*Coming into force - - 27th October 2021*

The Office of Communications (“OFCOM”), in exercise of the powers conferred by sections 12, 13(2) and 122(7) of the Wireless Telegraphy Act 2006<sup>(74)</sup> (the “Act”), make the following Regulations.

Before making these Regulations, OFCOM have given notice of their proposal to do so in accordance with section 122(4)(a) of the Act, published notice of their proposal in accordance with section 122(4)(b) of the Act, and have considered the representations made to them before the time specified in the notice in accordance with section 122(4)(c) of the Act.

#### **Citation and commencement**

1. These Regulations may be cited as the Wireless Telegraphy (Licence Charges) (Amendment) Regulations 2021 and shall come into force on 27th October 2021.

#### **Amendment to the Wireless Telegraphy (Licence Charges) Regulations 2020**

2.—(1) The Wireless Telegraphy (Licence Charges) Regulations 2020<sup>(75)</sup> (the “principal Regulations”) shall be amended in accordance with paragraphs (2) and (3).

(2) In regulation 4 (Licence charges and time of payment) of the principal Regulations—

- (a) in sub-paragraph (6)(a) for the words “under paragraph (1) or regulation 7(1)” substitute “under paragraph (1), regulation 7(1) or regulation 8(1)”;
- (b) delete the word “or” at the end of sub-paragraph (6)(b)(vi);
- (c) insert the word “or” at the end of sub-paragraph (6)(b)(vii); and
- (d) after sub-paragraph (6)(b)(vii), insert the following sub-paragraph—

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<sup>(74)</sup> 2006 c.36

<sup>(75)</sup> S.I. 2020/1068

“(viii) the class “Spectrum Access Licence 412 MHz Band” under regulation 8(1).”

(3) After regulation 7 of the principal Regulations, insert the following regulation—

**“Licence charges payable for the 412 MHz frequency band**

**8.—(1)** On 31st October 2021 and on each anniversary of that date, each holder of a licence of the Spectrum Access Licence 412 MHz Band licence class shall pay to OFCOM the total sum specified in paragraph (2).

(2) The total sum to be paid is £396,000 for each authorisation under the licence of the use of a 1 MHz national channel within the frequency bands 412.0 – 414.0 MHz and 422.0 to 424.0 MHz.”

6th October 2021

*Philip Marnick*  
Group Director, Spectrum Group  
For and on behalf of the Office of Communications

**EXPLANATORY NOTE**

*(This note is not part of the Regulations)*

These Regulations amend the Wireless Telegraphy (Licence Charges) Regulations 2020.

These Regulations set the level of charges payable to the Office of Communication (“OFCOM”) in respect of the Spectrum Access Licence 412 MHz Band licence class, for licences granted under section 8 of the Wireless Telegraphy Act 2006 which authorise the use of the frequencies in the bands 412.0 to 414.0 megahertz and 422.0 to 424.0 megahertz.

A regulatory impact assessment of the effect of these Regulations has been prepared and is available to the public from the OFCOM Library at Riverside House, 2a Southwark Bridge, London SE1 9HA (Tel: 020 7981 3000) and on OFCOM’s website at [www.ofcom.org.uk](http://www.ofcom.org.uk). Copies of the impact assessment have been placed in the libraries of both Houses of Parliament.