



## SUMMARY

Metrocall, Inc. (“Metrocall”) respectfully submits its reply comments regarding the recommendations published in the Spectrum Policy Task Force Report (“Report”). The Report contains numerous recommendations concerning updating and revising the Commission’s current spectrum management policies. Of particular concern to many of the commenters, including Metrocall, are the Task Force’s proposals for permitting the sharing of exclusive frequencies.

Numerous comments were filed in this proceeding. Some of the commenters, particularly unlicensed service providers, advocate spectrum management policies that include allowing new users to utilize exclusive frequency bands. Metrocall submits that the Commission should not adopt any proposal that includes sharing of exclusive messaging frequencies.

Messaging operations are very susceptible to harmful interference. Any additional users on exclusive messaging frequencies would severely degrade the transmission, coverage, and capacity of messaging networks. This would result in messaging customers missing critical communications, and would impose substantial costs on messaging providers.

For example, many public safety entities, particularly doctors, hospitals, and other safety of life professionals rely on messaging services. The interference that would result from spectrum sharing would put their critical communications at severe risk.

Consequently, the Commission must not allow the reliability of messaging services to be compromised. This requires diligent protection of the exclusivity interests of incumbent messaging licensees.

**Table of Contents**

	<b><u>Page</u></b>
<b>I. Summary of Comments.....</b>	<b>1</b>
<b>II. Sharing of Exclusive Messaging Frequencies Would Severely Degrade the Efficiencies of Messaging Services.....</b>	<b>2</b>
<b>III. The Interference Temperature Should not be Used to Permit Sharing of Messaging Channels .....</b>	<b>4</b>
<b>IV. The Use of “Smart Equipment” to Mitigate Interference is Inapplicable to Messaging Services.....</b>	<b>8</b>
<b>V. Permitting Sharing of Messaging Frequencies Would Severely Jeopardize Public Safety Entities that Rely on Messaging Services .....</b>	<b>9</b>
<b>VI. The Reliance Interests of Incumbent Messaging Carriers Must Be Protected.....</b>	<b>10</b>



users such as unlicensed operators to obtain usage rights in those bands;<sup>4</sup> and (b) an “interference temperature” metric which will allow the raising of interference “noise” thresholds in various bands and permit new users to share those bands if they do not exceed the thresholds.<sup>5</sup>

The commenters are divided on the frequency sharing issues. The unlicensed operators generally favor “wide open” sharing of licensed spectrum to allow them access to exclusive frequencies. Incumbent licensees are opposed to the sharing of their frequencies. They contend that allowing other users to utilize their spectrum will adversely affect their coverage and system capacities.

Messaging carriers such as Metrocall are especially concerned about these matters. Any potential encroachment on their frequencies would have devastating consequences for messaging carriers and their customers because, *inter alia*, their systems are particularly vulnerable to harmful interference, and their services are widely utilized by public safety entities that cannot afford to risk the degradation in service that would result from frequency sharing. Accordingly, the exclusivity rights of incumbent messaging carriers must be protected in any spectrum policy revision adopted by the Commission.

## **II. Sharing of Exclusive Messaging Frequencies Would Severely Degrade the Efficiencies of Messaging Services**

The Report states that the primary reason for revising the Commission’s spectrum management policies is to maximize efficient use of spectrum.<sup>6</sup> Consequently, any

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<sup>4</sup> See Report at 56.

<sup>5</sup> Id. at 27.

<sup>6</sup> Id. at 15.

spectrum management policy revision must not negatively impact existing services that utilize the spectrum efficiently.

As Metrocall explains in its comments, because of messaging's ability to support a tremendous amount of traffic on narrow channels, its low cost for consumers, and its reliability, messaging is perhaps the most spectrum-efficient wireless service extant.<sup>7</sup> Metrocall agrees with the comments of Arch Wireless Operating Company, Inc. ("Arch"), which state that, because messaging is already a spectrally efficient service, "there is no clear policy or technical reason for altering the current spectrum management model as applied to messaging."<sup>8</sup>

Consequently, Metrocall strongly disagrees with commenters such as the Wi-Fi Alliance ("WFA"), who argue for a "commons" model in all frequency bands. WFA contends that "a commons approach" in "the creation of 'underlay' rights for low-power, low-impact unlicensed devices across the entire range of spectrum" would be an efficient use of spectrum because it will provide unlicensed operators access to new spectrum.<sup>9</sup>

Adoption of a commons model "across the entire range of spectrum" would undoubtedly impact exclusive messaging frequency bands,<sup>10</sup> and would greatly decrease the efficiency of messaging services. Indeed, permitting any sharing of exclusive messaging frequency bands would result in extreme inefficiencies for messaging services.

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<sup>7</sup> See Comments of Metrocall, Inc., ET Docket No. 02-135, January 27, 2003 ("Metrocall Comments") at 3-4.

<sup>8</sup> See Comments of Arch Wireless Operating Company, Inc., ET Docket No. 02-135, January 27, 2003 ("Arch Comments") at 6.

<sup>9</sup> See Comments of the Wi-Fi Alliance, ET Docket No. 02-135, January 27, 2003 ("WFA Comments") at 4-5.

<sup>10</sup> Messaging systems contain many exclusive channels in the following bands: 35-36 MHz; 43-44 MHz; 152-159 MHz; 454-460 MHz, and 929-931 MHz. See In re Revision of Part 22 and Part 90 of the

Metrocall agrees with Arch's comments, which state that messaging is very susceptible to interference; allowing other users to share exclusive messaging frequencies would force messaging providers to "deploy more complicated protocols, consume more spectrum to provide for sophisticated monitoring functions, and deploy more transmitters to overcome interference from additional users on the spectrum."<sup>11</sup> Metrocall also agrees with the comments of Weblink Wireless, Inc. ("Weblink"), which state that allowing sharing of messaging frequencies would force messaging carriers to reengineer their systems to mitigate interference that would limit the carriers' technical and service options.<sup>12</sup>

Because spectrum sharing would substantially decrease the efficiency of messaging services, any spectrum allocation policy that includes underlays, easements, or any other type of sharing of messaging bands would contradict the Commission's goal of maximizing spectrum efficiency. Accordingly, any revision of the Commission's spectrum allocation policies must not permit the sharing of exclusive messaging frequency bands.

### **III. The Interference Temperature Should not be Used to Permit Sharing of Messaging Channels**

Some commenters argue that use of the interference temperature metric to raise the interference threshold will permit unlicensed operators to extensively share exclusive frequencies, while simultaneously alleviating interference problems of spectrum incumbents. Microsoft Corporation ("Microsoft"), for example, contends that unlicensed

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Commission's Rules to Facilitate Future Development of Messaging Systems, 14 FCC Rcd 10030, ¶ 2 (1999).

<sup>11</sup> See Arch Comments at 6.

<sup>12</sup> See Comments of Weblink Wireless, Inc., ET Docket No. 02-135, January 27, 2003 ("Weblink Comments") at 8.

devices “as they become ever more intelligent, are ideally suited to take advantage of temporarily used spectrum and underlays.”<sup>13</sup> Microsoft further asserts that any spectrum use that does not exceed a maximum interference temperature threshold “should ‘presumptively’ be made available for unlicensed services.”<sup>14</sup> Microsoft’s recommendation includes spectrum in the lower bands,<sup>15</sup> which are utilized by many incumbents, including messaging carriers.<sup>16</sup>

Metrocall disagrees with Microsoft’s comments, particularly as they apply to messaging frequencies. It bears stating that Microsoft has no experience operating a wireless, nationwide network, while messaging carriers who are concerned about the interference potential of these proposed operations have more than fifty years of real-world experience with these services. From that real-world perspective, Metrocall avers that use of the interference temperature to permit additional users to operate in messaging bands would be unworkable.

Metrocall agrees with the comments of Cingular Wireless LLC (“Cingular”), which state that many incumbent licensees cannot tolerate any raising of the noise floor, because they provide services that have a heightened sensitivity to noise and interference, and are “optimally engineered through reliance on a combination of the existing noise floor and the use of technologically advanced equipment and careful engineering and management techniques.”<sup>17</sup> This is especially true for messaging networks, which consist of transmitters and receivers that have been designed to provide reliable service

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<sup>13</sup> See Comments of Microsoft Corporation, ET Docket No. 02-135, January 27, 2003 (“Microsoft Comments”) at 7.

<sup>14</sup> Id.

<sup>15</sup> Id.

<sup>16</sup> See *supra* n.10.

<sup>17</sup> See Comments of Cingular Wireless LLC, Docket No. 02-135, January 27, 2003 (“Cingular Comments”) at 21.

over specific geographic areas, including densely populated urban areas, based on the expected noise floor.<sup>18</sup>

Because of their narrow channels and limited bandwidth, messaging networks are very susceptible to interference, but have limited capacity to recognize it.<sup>19</sup> Any additional user of a messaging frequency, including unlicensed low-power operations, would raise the noise floor and cause harmful interference, which would have severely adverse consequences for messaging systems and their customers with respect to coverage, reliability, and system capacity.<sup>20</sup>

Accordingly, Metrocall strongly disagrees with the comments of Shared Spectrum, which contends that raising the noise floor by several decibels “is not a key factor in the adoption of new spectrum access techniques.”<sup>21</sup> Metrocall also disagrees with Microsoft’s comments about “ever more intelligent” unlicensed devices easing the way to spectrum sharing.<sup>22</sup> Microsoft presumes that future devices may be able to efficiently share spectrum with incumbents. Regardless of what new unlicensed innovations may be developed in the future, messaging operations and the millions of messaging devices in service today simply cannot tolerate the raising of the noise floor.<sup>23</sup>

It is important to note the comments of Weblink, which explains that the Task Force based its interference temperature “proxy” on a voice implicit model, which does not take into account the interference-avoidance problems inherent in messaging

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<sup>18</sup> See Metrocall Comments at 9.

<sup>19</sup> See Weblink Comments at 4.

<sup>20</sup> Id. at 8; see also Metrocall Comments at 9, citing “FCC Notice on UWB Stresses Caution, Questions,” Global Positioning News, May 17, 2000, p.2; In the Matter of Amendment of the Commission’s Rules in the 3650-3700 Band, 22 CR 2033, n.44 (2000).

<sup>21</sup> See Comments of Shared Spectrum, ET Docket No. 02-135, January 27, 2003 (“Shared Spectrum Comments”) at 7.

<sup>22</sup> See Microsoft Comments at 7.

<sup>23</sup> See Weblink Comments at 4-5.

systems.<sup>24</sup> As Weblink explains, when a wireless voice communication experiences interference, it will first attempt to “smooth over” degraded frames, then present the parties with noise, then attempt to hand-over to a better channel, before dropping the call.<sup>25</sup>

Messaging transmissions, by contrast, do not have the capacity that voice services do to tolerate interference. Even a small amount of interference to a messaging transmission could cause message failure, and the intended recipient would not know that he or she missed a message.<sup>26</sup> Accordingly, the adverse impact on messaging communications likely to occur by raising the noise floor is much more serious than any analysis contained in either the Report, or comments such as those submitted by Shared Spectrum and Microsoft

Raising the noise floor in messaging bands would also impose costly problems for messaging providers, as they would be forced to invest in expensive RF equipment at their transmitter sites to monitor the use of their channels and locate the source of the interference.<sup>27</sup> Even if messaging providers could absorb the costs of purchasing and installing the RF equipment - which would be prohibitive for carriers such as Metrocall, who have extensive nationwide messaging systems - it is doubtful that they could locate the source of interference, because unlicensed devices have no ID and are not confined to a fixed location.<sup>28</sup> By their nature, most unlicensed devices are portable, and may be used in any location of the customer’s choosing. Consequently, it would be extremely

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<sup>24</sup> Id.

<sup>25</sup> Id.

<sup>26</sup> See Metrocall Comments at 7-8.

<sup>27</sup> See Weblink Comments at 8.

<sup>28</sup> Id.

difficult for messaging carriers to alleviate interference problems caused by unlicensed devices.

**IV. The Use of “Smart Equipment” to Mitigate Interference is Inapplicable to Messaging Services**

Metrocall disagrees with commenters who advocate requiring incumbent licensees to use “smart” equipment to filter out harmful interference caused by spectrum sharing. The Radio Regulatory Technical Advisory Group (“RR-TAG”), for example, argues that spectrum incumbents should be required to use smart receivers to “improve the robustness of their systems” which they contend will mitigate interference and enable efficient spectrum sharing.<sup>29</sup> The Electronic Frontier Foundation (“EFF”) avers that the Commission should mandate that incumbents use equipment that “accept[s] high, but not insurmountable, levels of interference from easement and overlay users [thus allowing] for low-powered conversations within [an incumbent’s] coverage region.”<sup>30</sup>

As Metrocall and Arch point out, no messaging devices exist that can measure and instantaneously adjust their operating parameters to remain within the applicable interference temperatures.<sup>31</sup> Hence, there would be a substantial delay in obtaining any new device that might be able to operate with increased interference. Even if such devices become available in the future, messaging carriers would have to make substantial expenditures for the higher cost units, which they would be forced to pass on to their customers. Under those circumstances, many messaging customers would likely abandon the service, as messaging carriers would be forced to charge them more for

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<sup>29</sup> See Comments of IEEE 802.1, ET Docket No. 02-135 (undated) (“RR-TAG Comments”).

<sup>30</sup> See Comments of the Electronic Frontier Foundation, ET Docket No. 02-134, January 27, 2003 (“EFF Comments”) at 4.

<sup>31</sup> See Arch Comments at 3; Metrocall Comments at 10.

providing the same service, with no additional features to justify the increased costs.<sup>32</sup>

This would cause severe financial strains on an already economically strapped industry.<sup>33</sup>

**V. Permitting Sharing of Messaging Frequencies Would Severely Jeopardize Public Safety Entities that Rely on Messaging Services**

One extremely important issue that is virtually ignored by the advocates of spectrum sharing is the devastating consequences that sharing would have on the health care and public safety customers that rely on messaging services. As explained by Metrocall and Arch, messaging's reliability and its unique ability to penetrate buildings has made it the technology of choice for doctors, hospitals and other safety of life professionals that require anytime, anywhere communications capability.<sup>34</sup> Metrocall alone provides messaging service to more than 700 hospitals in the United States; more than 400,000 Metrocall messaging units are used by health care facilities nationwide.<sup>35</sup>

As discussed herein, messaging's susceptibility to interference means that its reliability would be severely jeopardized by any type of sharing. Because of its ubiquitous use by health care providers and other public safety entities, the reliability of messaging services cannot be compromised.<sup>36</sup>

Messaging carriers are not the only commenters in this proceeding that have pointed out the public safety necessity of protecting the exclusivity rights of messaging services. The Public Safety Wireless Network Program ("PSWNP"), a federally funded initiative operating on behalf of local, state, federal, and tribal public safety entities, has

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<sup>32</sup> See Arch Comments at 6; Metrocall Comments at 11.

<sup>33</sup> See Metrocall Comments at 11, citing "The Bell is Tolling for the Beeper," New York Times, April 18, 2002, Section G at 1.

<sup>34</sup> See Arch Comments at 6; Metrocall Comments at 4.

<sup>35</sup> See Metrocall Comments at 7.

<sup>36</sup> See Arch Comments at 5; Metrocall Comments at 7.

acknowledged Metrocall's comments in stating that the Commission must "diligently enforce the rights" of spectrum incumbents.<sup>37</sup>

PSWNP emphasizes the specific importance of messaging services to the public safety, and asserts that messaging incumbents' rights must be protected. Said PSWNP:

The Commission should consider the comments of Metrocall, which recognize that time-sharing in exclusive messaging bands could undermine the reliability of paging services that are often used by medical personnel and other professions that work with the public safety community in emergencies. Ambulance services, physicians, nurses, and other health care professionals are among those most needed to respond to a catastrophic event, and communications among these providers cannot be jeopardized. Metrocall states that paging services are both very efficient and very susceptible to interference. The PSWN Program asserts that these wireless users, like the public safety community, are entitled to the Commission's most rigorous protection to ensure continued effectiveness and productivity of these services.<sup>38</sup>

The Task Force states that the current spectrum allocation model will be retained for where it is necessary to "accomplish important public interest objectives . . . ."<sup>39</sup>

As underscored by the comments of PSWNP, messaging is a service that provides critical public interest benefits. Accordingly, messaging should be afforded the same considerations as public safety operations if the Commission adopts any of the spectrum management revisions suggested by the Task Force.<sup>40</sup>

## **VI. The Reliance Interests of Incumbent Messaging Carriers Must Be Protected**

The Task Force states that it is important to consider the "reliance interests of existing spectrum users, including their investments and reasonable expectation interests,

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<sup>37</sup> See Reply Comments of the Public Safety Wireless Network Program, ET Docket No. 02-135, February 10, 2003 ("PSWNP Reply Comments"), at 3, citing Metrocall Comments at 2.

<sup>38</sup> Id. at 5, citing Metrocall Comments at 5-7.

<sup>39</sup> See Report at 41.

<sup>40</sup> See Arch Comments at 7; see also Comments of the Public Safety Wireless Network Program, ET Docket No. 02-135 January 27, 2003 ("PSWNP Comments") at 10-11. "[T]he PSWN Program strongly agrees with the SPTF recommendation to reserve use of the spectrum 'command-and-control' model 'for situations where prescribing spectrum use by regulation is necessary to accomplish important public

in order to make sure any transition to new uses is equitable.”<sup>41</sup> Metrocall agrees with the comments of the Rural Commenters (an organization representing the interests of rural telephone companies that are trying to bring advanced telecommunications services to rural areas), who state that in many instances spectrum incumbents “have paid substantial sums for their licenses at auction, and have expended even greater resources on equipment, engineering, site acquisition, and other construction costs. It would be inequitable and adverse to the public interest to compromise their operations in any way.”<sup>42</sup>

Metrocall has paid tens of millions of dollars for its paging and NPSC licenses. It has spent millions more in infrastructure costs in building the second largest messaging network in the nation. Metrocall made these expenditures based on the technical and service rules in place, and expected to have a stable operating environment going forward, *i.e.*, it designed and deployed its messaging network based on the expectation of exclusive use of its frequencies. Moreover, millions of Metrocall customers purchased their messaging units with the same expectations.

Metrocall and other messaging carriers must be assured that they will be protected from costly changes to their networks caused by future regulatory action. Because the Report emphasizes the importance of considering the reliance interests of incumbent spectrum users, the Commission must consider the adverse consequences to messaging carriers and their customers that would arise from any major change to the exclusive

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interest objectives’ and ‘to ensure provision of essential life-and-safety services.’” *Id.*, citing Report at 5-6, 41.

<sup>41</sup> See Report at 11.

<sup>42</sup> See Comments of the Rural Commenters, ET Docket No. 02-135, January 27, 2003 (“Rural Commenters Comments”) at 11.

messaging bands. Accordingly, the Commission must diligently protect the exclusivity interest of incumbent messaging licensees.

Respectfully submitted,

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