Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of:	)	
	)	
Commission Seeks	)	
Public Comment on	)	ET Docket No. 02-135
Spectrum Policy Task Force	)	
Report	)	

To: The Commission

COMMENTS OF METROCALL, INC.

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Metrocall, Inc. ("Metrocall"), by its attorneys, hereby submits comments on the Spectrum Policy Task Force Report ("Report"), issued on November 15, 2002.[1] In support hereof, the following is respectfully shown:

I. Statement of Interest

Metrocall is a Commercial Mobile Radio Service ("CMRS") licensee with facilities throughout the United States. Metrocall, the second largest messaging carrier in the United States, provides various wireless services throughout the country, including one-way and two-way messaging services. Metrocall has been an active participant in many FCC rule making proceedings pertaining to CMRS messaging issues.

As an incumbent licensee that depends upon unimpeded access to the radio spectrum, Metrocall's business will be greatly impacted by implementation of the Task Force's recommendations. Accordingly, Metrocall has standing as a party in interest to file comments in this proceeding.

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[1] The Commission formally sought comment on the Report by Public Notice FCC 02-322, Commission Seeks Public Comment on Spectrum Policy Task Force Report (Nov. 25, 2002).

II. Summary of the Report

The Report contains the findings and recommendations of the FCC's Spectrum Policy Task Force ("Task Force") concerning updating the Commission's current spectrum management system. The Task Force's objective is to promote technologically innovative and economically efficient uses of the radio spectrum. To that end, the Task Force recommends that the Commission move toward more flexible and market-oriented spectrum management policies.

In order to accomplish its objective, the Task Force suggests that the Commission implement a number of changes to its existing spectrum management system. Most of those changes would be accomplished under the framework of two new spectrum usage models: the "commons model" and the "exclusive use" models; both of which permit varying degrees of spectrum sharing with incumbents.

III. Summary of Metrocall's Comments

Metrocall agrees with the Task Force that the Commission should utilize market-oriented spectrum policies whenever possible. But, in order for the market for spectrum to function properly, the Commission must establish clear rights for incumbent licensees and diligently enforce those rights. Specifically, the Commission should ensure that any new spectrum management regime includes strict protection against harmful interference for incumbents.

Accordingly, the Commission should not adopt any proposal that allows new entrants to share exclusive spectrum with incumbents, particularly messaging licensees. If new entrants are given shared access to occupied spectrum, the potential for harmful

interference is exponentially increased, which would severely denigrate the incumbents' core services, and inhibit them from acting in accordance with market forces.

Metrocall suggests that, as an alternative to spectrum sharing, the Commission should establish additional bands for new entrants, many of which are unlicensed services. As the Task Force notes, the higher spectrum bands have the propagation characteristics that favor unlicensed operations. Hence, the Commission should allocate new spectrum in the higher bands for unlicensed services, instead of permitting them to share spectrum with incumbents.

IV. Messaging Carriers Utilize the Spectrum Very Efficiently

The main idea behind the Task Force's spectrum reform proposals is to promote "efficient uses of spectrum." Report at 15. The Task Force defines "spectrum efficiency" as "the maximum amount of information transmitted within the least amount of spectrum." Id. at 21. "Economic efficiency " is defined as deploying service "in a manner that generates the most value for consumers." Id. Messaging operations are already extraordinarily efficient under both of the Task Force's definitions.

Messaging is probably the most spectrum-efficient commercial wireless service extant. Utilizing very narrow channels, 12.5 kHz – 25 kHz, messaging carriers can support a tremendous amount of traffic. For example, in a medium-sized metropolitan area, Metrocall provides service to an average of 150,000 customers simultaneously on a single 25 kHz channel. Metrocall estimates that it could carry up to 670,000 customers on a 25 kHz channel. No other wireless service utilizes the spectrum so efficiently.

Messaging also provides great value for its customers. Studies have shown that the average messaging bill is $10 per month, compared with the $61 average monthly bill

for cellular/PCS telephones.[2] Because of its reliability and its capacity to penetrate buildings where other wireless services cannot,[3] messaging is the first choice among customers when their ability to send and receive messages is critical. Accordingly, hospitals are one of the biggest users of messaging services.[4]

Because messaging is perhaps the most efficient commercial wireless service, the Commission should be especially vigilant in protecting incumbent messaging carriers' rights. Accordingly, in considering the Task Force's new spectrum management models, the Commission must ensure that messaging carriers are protected from harmful interference.

V. The New Spectrum Management Models Should not Include Sharing of Exclusive Messaging Frequencies

The Task Force suggests that licensed spectrum users and unlicensed device operators should be granted the "maximum flexibility" of spectrum use. Id. at 16, 21. A key element of this proposal is to facilitate the co-existence of multiple spectrum users in common and adjacent bands. Id. To that end, the Task Force recommends that the Commission limit use of its traditional "command and control" spectrum usage model (wherein the FCC allocates and assigns frequencies to limited categories of spectrum users for specific uses), and replace it with:

> (1) the commons model, which allows unlimited numbers of unlicensed users to share frequencies, with usage rights governed by technical standards to mitigate potential interference, but with no right to interference protection; and
>
> (2) the exclusive use model, wherein a licensee has exclusive and transferable rights to use specified spectrum within a defined geographic area with flexible use rights, but is subject to, inter alia, unlicensed operators' "underlays" into exclusive use frequency bands. Id. at 35, 37.

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[2] See "The Bell is Tolling for the Beeper," New York Times, April 18, 2002, Section G, at 1.
[3] Id.
[4] Id.

A. The Commons Model

The Task Force suggests that the commons model should be applied in the portions of the spectrum where scarcity is low, and where propagation characteristics favor short-distance, line-of-site operation using narrow transmission beams that are well-suited to unlicensed devices. Id. at 39. Accordingly, the Task Force recommends that the commons model be applied in the higher spectrum bands, particularly those above 50 GHz. Id.

Metrocall agrees that, if the commons model is to be implemented at all, it should be restricted to the higher frequencies (above 50 GHz). For reasons discussed herein, messaging operations are highly incompatible with any form of spectrum sharing, and adoption of the commons model in the exclusive messaging bands[5] would have devastating consequences, not only for the messaging industry, but also for the public safety entities that rely on uninterrupted messaging service.

Moreover, as the Commission recently acknowledged, messaging spectrum is highly encumbered and the extensive and efficient operations of existing messaging carriers have resulted in very little remaining "white space."[6] Also, the propagation characteristics of the messaging bands favor high-power signal propagation over long distances. Hence, the commons model is entirely inappropriate for use in the messaging bands.

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[5] 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 Commission's Rules to Facilitate Future Development of Messaging Systems, 14 FCC Rcd 10030, ¶ 2 (1999) ("Third Report and Order").

[6] See Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Seventh Report, 17 FCC Rcd 12985, p. 68 (2002).

B. The Exclusive Use Model

The Task Force recommends that the exclusive use model be applied to "most spectrum." Id. at 38. It contends that the Commission should focus on implementing the exclusive use model for bands below 5 GHz; because of their versatile propagation characteristics, and because those bands tend to be crowded, they are "more likely to have a high market value [and the exclusive use] approach creates the strongest incentives for parties to put this spectrum to its highest valued use." Id.

The Task Force suggests that the Commission implement an exclusive use model with "flexible rules," allowing users maximum autonomy to use their spectrum to the "highest value" subject only to interference rules. Id. at 38-39. This model includes permitting unlicensed "underlays" into exclusive spectrum bands. Id. at 37. Underlays are essentially spectrum "easements" whereby unlicensed device operators may acquire spectrum usage rights in exclusive bands. Id. at 56. This model could also permit access to exclusive spectrum by other methods such as time-sharing. Id. at 20.

Metrocall submits that because messaging is already a very efficient use of the spectrum, messaging carriers are now using their frequencies to their fullest and highest value. Additionally, because of its narrow channels and limited bandwidth, messaging networks are highly susceptible to interference. Accordingly, Metrocall is strongly opposed to permitting new users to co-exist with incumbents on messaging frequency bands.

For example, due to narrow bandwidth allocations, messaging networks have a very limited capacity to recognize and reduce harmful interference. Even a small amount of interference from a co-channel or adjacent channel user could cause message failure,

and the intended recipient would not know that he or she missed a message. This could have devastating consequences particularly for health care and safety customers who rely on messaging service.

As noted above, hospitals are one of the biggest users of messaging services. Metrocall itself provides messaging service to more than 700 hospitals in the United States. More than 400,000 Metrocall messaging units are currently utilized in health care facilities throughout the nation.

Metrocall also provides service to many police, fire, and emergency services around the country.[7] Following the terrorist attacks of September 11, 2001, landline and mobile telephone communications were overwhelmed and in many instances rendered virtually inoperable. But, Metrocall's messaging services performed reliably, and provided vitally important communications support to health care, search and rescue, as well as security personnel responding to the events in New York and Arlington, Virginia.[8]

Because of its ubiquitous use by health care providers and other public safety entities, the reliability of messaging service cannot be compromised. Consequently, the Commission should not adopt any policy that would increase the possibility of harmful interference occurring in messaging channels, including permitting new entrants to share messaging frequencies. If the Commission is going to adopt the exclusive use model, messaging incumbents and their customers' rights must be protected.

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[7] See "Fairfax County Police Look to Metrocall Wireless to Improve Communications of Patrol Force," Metrocall News Release, January 7, 2003 ("News Release"). A copy of the News Release may be found on Metrocall's website at www.metrocall.com.
[8] Id.

VI. The Interference Temperature Should not be Used as a Method to Permit the Sharing of Messaging Channels

The Task Force recommends that the Commission change its methodology of interference management, which is now generally accomplished by setting limits on in-band and out-of-band transmitter power. Id. at 27. While noting that the FCC's current interference management process has been effective, the Task Force declares that the "increasing flexibility" of spectrum-based services, and "more intensive use" of the spectrum require the Commission to adopt a different approach to interference avoidance. Id. at 26. The Task Force suggests that the Commission adopt an "interference temperature" metric, i.e., measuring the RF "noise power" available at receiving antennas, to quantify and manage interference under the new spectrum management regime. Id. at 27.[9]

The interference temperature metric would be used to determine the "maximum permissible levels of interference" in which receivers would be expected to operate, thus allowing the Commission to set different interference threshold levels for each band, region, or service. Id. The Task Force suggests that the interference temperature could be used to increase access to spectrum, in that additional users would be able to operate in a given band as long as the maximum interference threshold is not reached. Id. at 30. The Task Force cautioned that the RF "noise floor" is a key factor regarding the interference temperature and the establishment of appropriate interference thresholds. The Task Force stated that the condition of the noise floor in each band must be studied before any interference threshold could be aptly set. Id. at 28.

[9] The Task Force states that: "In general, it is the ability of a receiver to select and receive a particular signal that determines whether the signal has been degraded by interference." Notice at 27.

Metrocall does not believe that the Commission's interference management methodology needs to be changed at this time, particularly as it applies to messaging frequencies. Exclusive messaging systems are protected from interference by a variety of rules that govern, inter alia, transmitter height and power, distance between transmission stations, and a licensee's protected service area.[10]

Those rules developed over long periods of time, through various rulemaking proceedings, and have been effective in preventing harmful interference to messaging networks and other licensees.[11] The rules have also proven versatile in allowing for variations in the types of facilities used, the power levels needed for different types of transmissions, and have generally promoted spectrum efficiency under diverse circumstances.[12] Because the existing messaging interference methodology has been shown to be effective and adaptable to different conditions within the messaging spectrum, there is surely no need to change it.

Metrocall also opposes use of the interference temperature metric as a method to allow other users to operate in messaging bands. Metrocall's messaging network is dependent upon the existing noise floor; its transmitters and receivers have been designed to provide reliable service over specific geographic areas, based on the expected noise floor. Any additional user of a Metrocall messaging frequency, including unlicensed low-power operations, would raise the noise floor and cause harmful interference to Metrocall's messaging network.[13]

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[10] See Third Report and Order at ¶ 42.
[11] See Revision of Part 22 and Part 90 of the Commission's Rules to Facilitate Future Development of Paging Systems, 11 FCC Rcd 3108, ¶¶ 46-64 (1996).
[12] Id. at ¶¶ 57-61.
[13] See "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).

Any raising of the noise floor, even by a few decibels, would adversely affect Metrocall's coverage and system capacity. If the Commission were to utilize the interference temperature to set new "interference thresholds" for Metrocall's network that involved raising the noise floor (which would invariably occur if other users were permitted to share Metrocall's exclusive channels), Metrocall and its customers would be negatively impacted.

Metrocall has a very large customer base; it provides service to approximately four million subscribers.[14] Metrocall built its customer base because of the reliable, low-cost service it provides. Metrocall has been able to keep its costs down in part because it provides low-cost, efficient devices to its customers. While those devices are reliable, they are very susceptible to both co-channel and adjacent channel interference.

If the noise floor is raised, Metrocall would be forced to make substantial expenditures for higher-cost units to provide its customers with the ability to filter out the increased interference. That cost would have to be passed on to Metrocall's customers, who would be required to purchase the higher-cost replacement units. Those customers' existing units would be rendered useless, and there would be no new or improved service offerings to justify the customers' investments in these new units.

Moreover, no manufacture of messaging equipment has developed a device that would have the necessary technical attributes to operate in a higher noise environment. Because of this, there would be substantial delay in obtaining any new device that might be able to operate with increased interference, and, that device would come at a higher cost.

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[14] See News Release.

Metrocall would surely suffer adverse financial consequences if it were forced (due to ill-advised regulatory action) to charge its customers substantially more each month for the same service they now enjoy at a low cost. The number of messaging customers has already dropped precipitously,[15] and any significant loss in its customer base would likely put severe financial strains on Metrocall.[16]

Raising the noise floor in the messaging bands would cause additional costly problems for Metrocall, as it would have to invest in expensive RF site equipment to monitor the use of its channels by new users and locate the source of the increased interference. In Metrocall's regional service areas it is not unusual for a single message to involve numerous transmitters encompassing thousands of square miles of coverage. Metrocall would require a lot of new equipment to monitor those sites for interference caused by raising the noise floor.

Even if Metrocall were to make the enormous investment in the necessary monitoring equipment, there is still no guarantee that it could locate the source of interference caused by unlicensed operations. By their nature, unlicensed devices are deployed in unknown and varied locations. Hence, it would be difficult or impossible to remedy interference caused by unlicensed operations in Metrocall's bands.

VII. Messaging Networks do not Permit Time-Sharing

The Task Force recommends that, in addition to spectrum underlays, the Commission should consider implementing time-sharing as a method of increasing access

[15] See "The Bell is Tolling for the Beeper" at 1.

[16] This also applies to the Task Force's recommendation that Commission consider requiring "smart receivers" to control interference as an interim measure until the Commission implements new interference thresholds. Report at 31. The costs involved for Metrocall and other wide-area messaging carriers to provide their customers with "smart receivers" would be highly prohibitive and would likely result in large losses in their customer bases.

to spectrum. Id. at 20. One suggestion is that the Commission should permit unlicensed operators to use licensed spectrum on an "interruptible basis," i.e., allowing those operators to utilize that spectrum when it is not in use by the primary licensee, but requiring them to suspend operations while the licensee is transmitting. Id.

Messaging networks typically process a tremendous amount of traffic volume on a 24/7 basis, with virtually no down time. Metrocall's two-way messaging network, for example, transmits more than a million messages per day. Hence, Metrocall's messaging network is simply not compatible with time-sharing.

The Commission has previously warned against the danger of permitting such use of crowded messaging channels. Said the Commission: "the allotment of air time to multiple licensees [on exclusive messaging frequencies] imposes significant constraints on the efficiency and quality of services in crowded markets."[17] Accordingly, the Task Force's recommendation to permit time-sharing should not be adopted for messaging frequencies.

VIII. The Commission Should Allocate Separate Bands for Unlicensed Services

Metrocall recognizes that unlicensed devices play an important role in the communications marketplace, and the Commission should ensure that they have adequate frequency bands, so that they may operate without causing harmful interference to incumbent licensees. As the Task Force noted, the higher bands contain suitable propagation characteristics for unlicensed operations (Id. at 39), and the Commission should consider allocating more spectrum in those bands for use by unlicensed operations.

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[17] See Amendment of the Commission's Rules to Provide Channel Exclusivity to Qualified Messaging Systems, 8 FCC Rcd 8318, ¶ 6 (1993).

Allocating additional spectrum for unlicensed services is a much preferred alternative to spectrum sharing. The Commission has a statutory duty to ensure that incumbent licensees on exclusive frequencies are protected from harmful interference,[18] and it should not permit spectrum sharing in exclusive messaging bands.

Allowing unlicensed spectrum use will increase the noise floor, particularly when unlicensed use of a given band is widespread. To avoid compromising the integrity of messaging services, the Commission should not authorize shared access to messaging frequencies.

Respectfully submitted,

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[18] See 47 U.S.C. § 303(f).