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

In the matter of	)	
	)	
Unlicensed Operation in the Band 3650-3700 MHz	)	ET Docket No. 04-151
	)	
Additional Spectrum for Unlicensed Devices)		ET Docket No. 02-380
Below 900 MHz and in the 3 GHz Band	)	
	)	
Amendment of the Commission's Rules With	)	ET Docket No. 98-237
Regard to the 3650-3700 MHz Government	)	
Transfer Band	)	

To: The Commission

OPPOSITIONS OF

CHAMPAIGN URBANA COMMUNITY WIRELESS NETWORK
NEW AMERICA FOUNDATION, EDUCAUSE,
TRIBAL DIGITAL VILLAGE
AND
FREE PRESS

Champaign Urbana Community Wireless Network, New America Foundation, EDUCAUSE, and Free Press oppose the various Petitions for Reconsideration filed in this proceeding. The Commission's rules for non-exclusive use in the 3650-3700 MHZ band create an environment which will facilitate the deployment of advanced telecommunications services to all Americans and "encourage the larger and more effective use of radio in the public interest." Section 303(g).

THE PARTIES

The parties to this Opposition have strong institutional interests to preserve the rules.

Champaign-Urbana Community Wireless Network. CUWN operates and administers a municipal wireless network for the City of Champaign, IL using open source mesh technology that it has developed and released to the public. Thousand of people from around the world have downloaded this software to implement commercial and noncommercial mesh networks in environments from the largest American cities to isolated villages in developing nations. CUWN is a recognized leader in the open source community for the development of wireless mesh solutions and provides advice to community wireless networks both in the United States and abroad. Http://www.cuwireless.net.

New America Foundation. NAF is a nonpartisan, non-profit public policy institute based in

Washington, D.C., which, through its Spectrum Policy Program, studies and advocates reforms to improve our nation's management of publicly-owned assets, particularly the electromagnetic spectrum. http://www.newamerica.net.

EDUCAUSE is a nonprofit association whose mission is to advance higher education by promoting the intelligent use of information technology. Membership is open to institutions of higher education, corporations serving the higher education information technology market, and other related associations and organizations. EDUCAUSE programs include professional development activities, print and electronic publications, strategic policy initiatives, research, awards for leadership and exemplary practices, and a wealth of online information services. The current membership comprises nearly 1,900 colleges, universities, and education organizations, including more than 180 corporations, and more than 13,000 active member representatives. EDUCAUSE members are extensive users of wireless networks. In addition, faculty and departments at EDUCAUSE members schools are among the leading edge innovators in wireless network development and deployment. Several EDUCAUSE members work in partnership with local communities to provide wireless broadband access as a community resource. Http://www.educause.edu

Tribal Digital Village TDV uses a wireless network combining "hub and spoke" architecture and CUWN's mesh software to connect over 7,600 Native Americans in 18 separate reservations scattered over 150 miles of arid mountainous terrain in San Diego County and Riverside County, California. TDV's network provides educational and economic opportunities to a rural community where more than 30% of the population live below the federal poverty line.

Free Press a national nonpartisan organization working to increase informed public participation in crucial media policy debates, and to generate policies that will produce a more competitive and public interest-oriented media system with a strong nonprofit and noncommercial sector. Free Press serves as a resource to community wireless networks and the community wireless movement. http://www.freepress.net/

CUWN and several of EDUCAUSE members have confidence that, if the rules remain stable, they can develop open source and proprietary software that will allow widespread use of the 3650 MHZ band.[1] CUWN has a proven track record as a leader in the development of innovative mesh software. In addition, CUWN's work in the open source community has provided experience

[1]Subject, of course to the ability to attract funding. Uncertainty as to the permanence of the existing rules does not make it easier to attract funding. The Commission should consider the public interest value in maintaining the stability of its rules so that developers can attract funding and develop technologies with confidence that the requirements will not change midstream.

in the development of standards and software through voluntary coordinated efforts.

The Commission developed the current rules through extensive consultation with the wireless community. The Commission received comments from hundreds of commercial and noncommercial network operators in support of rules that maximized flexibility and provided for shared, non-exclusive use of the band. Most particularly, both commercial and noncommercial providers of wireless network services urged the Commission to adopt rules that relied on contention-based protocols, voluntary coordination, and – above all else – rules that did not convey any rights based on prior use. Such an approach meets the need of network operators for stability, while preventing the first few operators from occupying the available space with always-on wide-area broadcast transmitters.

To its credit, the Commission adopted this approach. The Commission's minimalist approach represent a further evolution of the Commission's progression away from command and control licensing toward a more flexible and deregulatory system that encourages innovation and flexibility while maximizing the number of independent providers of wireless services.

I. THE RULES ADEQUATELY ADDRESS THE CONCERNS OF INCUMBENTS.

SIA, continues to object that the Commission has not imposed sufficient safeguards to protect the operations of its members. Specifically, SIA maintains that out of band emissions will cause harmful interference and that the Commission failed to protected LNBs operating close to 3700 MHZ. The safeguards mandated in the *Order* adequately address these concerns.

First, the Commission has mandated geographic exclusion zones – protecting the incumbents from OOB emissions by . Second, although terrestrial operators will be licensed operators under Part 90 rather than unlicensed operators under Part 15, new terrestrial users will have secondary

status to existing licensed incumbents. As the Commission observed, the registration requirement will allow any current incumbent to immediately locate the source of the interference and require abatement and subsequent good faith coordination, even if the interference comes from outside the exclusion zone. Finally, the Commission has expressly reserved the right to revisit the OOB emission standards if these safeguards prove insufficient.

SIA argues on reconsideration, essentially, that something could still go wrong, SIA members provide critical services, and no terrestrial users sharing the band is infinitely safer. The Commission considered the importance and sensitivity of these operations in the *3650 Order*, and struck a balance between the risk of interference and the public interest in facilitating the deployment of new wireless services. The Commission's final rules both protect the services provided by the incumbents and open new opportunities for spectrum use and innovation.

SIA also protests that the Commission failed to consider the issue of how network operators could interfere with LNBs operating in the neighboring 3700-4200 MHZ band. These licensed stations enjoy protection from interference and those deploying networks in the band must coordinate with the licensees. SIA's proposed scenario of a "full power WISP" ignoring potential interference with LNB and blasting at the fully authorized 25 watts is already prohibited under the existing rules. The required use of contention based protocols for new terrestrial operators will also protect LNB stations. There is no need to hobble all terrestrial network providers with power limits and different emission standards within the band to address a contingency the Commission has adequately addressed in the rules.

CUWN, *et al.* do note that, while not required, LNBs can and should coordinate operations with terrestrial operators in the 3650 Band. This will minimize interference risk and maximize

efficient use of spectrum.

II. THE COMMISSION SHOULD REJECT THE ARGUMENTS FOR LICENSING ANY PORTION OF THE BAND.

A number of Petitioners repeat arguments previously rejected by the Commission to reconsider exclusive licensing in the band.[2] To a considerable extent, these Petitions merely repeat arguments about the difficulty of coordination, the unproven nature of the technology, and the superior ability of licensing to attract investment that the Commission rejected in the *3650 Order*. Seizing upon the Commission's numerous comments with regard to rural deployment, Petitioners argue that even if the rules will encourage deployment in rural areas, poor QoS and an inability to coordinate in "congested" areas require licensing for effective use in cities and suburbs.

CUWN, *et al.* take strong exception to Petitioners argument that congested urban areas cannot effectively use the spectrum under the current rules. As an initial matter, CUWN, *et al.* reject the argument that shared spectrum cannot provide the same QoS as exclusive licensed spectrum – particularly given the rules the Commission has created to resolve issues that make network administration in the existing Part 15 bands a challenge.

The growing popularity of urban community wireless networks, municipal wireless networks (such as the one in Champaign, IL managed by CUWN), local public hotspots, and the growing

[2] *See, e.g.*, Petition of Intel, Redline Communications, and Alvarion (proposing exclusive licensing for top 50 DMAs); Petition of Motorola (proposes dividing band into two 25 MHz bands – one with exclusive licensing, one without); Petition of WCAI (exclusive licensing for more congested areas). *See also* Petition of WiMax Forum (arguing against non-exclusive in "congested" areas).

number of commercial WISPs in cities, all using the existing unlicensed spectrum belies the argument that no one in urban areas will use the 3650 MHZ band effectively. Many EDUCAUSE members deploy wireless networks using Part 15 spectrum on their campuses. A growing number use wireless and to extend their networks off campus to students, faculty, and to the broader community. Because the 3650 band will remain uncluttered by consumer electronic devices such as cordless phones, and because the rules require use of contention based protocols and coordination among terrestrial providers, the rules adopted in the *3650 Order* will create an ***increase*** in the QoS, ease network management issues, and encourage broad and immediate deployment of wireless services in urban areas. That educational institutions and underserved communities will be among the first to adopt and deploy these new networks should weigh heavily in rejecting the *Petitions*.

Similarly, the dozens of commercial vendors offer networking equipment for existing unlicensed spectrum – including many of the parties that have filed petitions for reconsideration – casts doubt on predictions that no one will develop products for the band under the current rules. Indeed, the Commission has already received one request for certification under the existing rules. However, if established manufacturers wish to yield first mover advantage to entrepreneurs such as Tropos (which filed in support of shared access and has not sought reconsideration) or to open source developer such as CUWN, or to educational institutions such as members of EDUCAUSE, that is their right. But the Commission should not deprive those who wish to invest and deploy the technology of the chance to do so.

Finally, CUWN note the growing popularity of municipal networks, such as the one proposed by the city of Philadelphia, using existing unlicensed spectrum. Petitioners offer no plausible explanation why municipalities that have embraced Part 15 spectrum will spurn the less

congested Part 90 spectrum the Commission has made available.

To the extent Petitioners argue that urban areas do not need additional broadband options, they vastly overstates the availability of competitive affordable broadband in urban areas. *See* S. Derek Turner, "Broadband Reality Check," Free Press, Consumers Union, And Consumer Federation of America (2005).[3] Indeed, providing additional competition to cities served by broadband monopoly or duopoly is a powerful reason to deny the Petitions for reconsideration. Finally, even where broadband is available in urban areas, it remains unaffordable to many – particularly in underserved communities. *See, e.g., Comments of NYC Wireless*, *et al.* (filed July 28, 2004). Wireless networks using 3650-3700 MHZ spectrum provide an affordable alternative to DSL and cable, and a much needed does of competition in light of the Commission's recent actions to eliminate the requirement to resell DSL.

In addition, proposals to create a licensed band subject to auction blithely ignore the enormous difficulties involved in creating new service rules that adequately protect incumbents. Given that the exclusion zones needed to protect incumbent users eliminate access to the most profitable markets, CUWN, *et al.* question why anyone would either bid on such spectrum or if they would achieve sufficient economies of scale to make affordable equipment. Beyond that, creating service rules, auction rules, and conducting the auction will create years of delay before licensees receive construction permits to begin deployment.

By contrast, individual terrestrial network operators can attempt to negotiate with individual incumbents for deployment of systems within the exclusion zone. While many incumbents may not

[3]Available at http://www.freepress.net/docs/broadband_report.pdf.

wish to engage in such negotiations, other incumbents may have no objection to deployment of specific systems where a terrestrial provider satisfies the incumbent that the network will cause no interference. The Commission should consider that it may actually see more deployment in exclusion zones as a consequence of allowing such negotiations than it would see if it attempted to create a uniform licensing regime compatible with all incumbents.

III. THE COMMISSION SHOULD REQUIRE CONTENTION BASED PROTOCOLS.

A number of Petitioners object to the contention-based protocol requirement. In addition to arguments already rejected by the Commission that contention based protocols are either too speculative or otherwise unsuited to the band, Petitioners ask for reconsideration to accommodate WiMax. Because WiMax was designed primarily for use in licensed spectrum, it does not use contention based protocols.

This objection may no longer be tenable. Alvarion director Mariana Goldhammer recently became chair of the IEEE 802.16h working group. This working group, will adapt the WiMax standard to work compatibly with license exempt bands. According to Alvarion's press release: "This protocol will also provide a solution for the so-called 'contention-based protocol,' requested by the newly released FCC Rules that allow for non-exclusive licensing in the 3650-3700 MHZ band."[4]

In any event, even if WiMax is not compatible with a requirement for contention based

[4] http://www.unstrung.com/document.asp?doc_id=77324&WT.svl=wire1_1. Alvarion was involved in the preparation of several of the Petitions to Deny. Presumably, its objections to use of contention based protocols are now satisfied.

protocols, that does not provide a suitable reason to abolish the requirement. The Commission received substantial evidence from a number of Petitioners that a chief problem with coordination in Part 15 bands lies in the growing number of "always on" devices that do not use contention based protocols. It takes only one poorly deployed system, or one bad actor who refuses to participate in coordination, to destroy the hard work of numerous operators working together to minimize interference. Contention based protocols provide a necessary safe guard and will facilitate coordination be assuring all operators that they will have "air time" if they cooperate with each other. In short, the requirement for contention based protocols will prevent the proliferation of the "arms race" that has made coordination in existing Part 15 bands so difficult.

IV. THE COMMISSION SHOULD PREFER PRIVATE NEGOTIATION TO COMMAND AND CONTROL.

Several Petitioners maintain that they cannot deploy or develop technology for the band without further guidance from the Commission. Accustomed to the comfortable world of command and control licensing, these Petitioners cannot imagine that private negotiation and flexibility will work. They imagine inevitable "tragedies of the commons"[5] scenarios and beg the Commission to relieve them of the burden of negotiation.

The Commission should reject these efforts to return to the comfort of an FCC nanny that will relieve the timid of the need to face a new world. For years, scholars and entrepreneurs have urged the Commission to rely on the combination of enlightened self-interest and advances in

[5]Interestingly, the actual commons survived as an economic model based on cooperation for centuries until English landlords privatized the commons by foreclosure of the pastures. The term "tragedy of the commons" came from the environmental movement and did not derive from any serious economic study of the commons or an understanding of the self-policing mechanisms that preserved it until outside forces destroyed the commons with by transferring it the a few wealthy incumbents in the name of economic efficiency.

technology to make spectrum available to everyone, not merely a privileged few licensees. The Commission must consider the strong public interest value in "generally encourag[ing] the larger and more effective uses of radio in the public interest. 47 USC §303(g).

In the end, if parties using the 3650-3700 MHZ band cannot utilize it effectively, the Commission can reclaim the band for licensed uses or impose a particular technology. Given the congestion in all other frequency bands, the 3650-3700 MHZ band represents a rare chance to try a new, deregulatory approach. The Commission has received hundreds of comments that developers stand ready to create the needed equipment, and network operators will deploy in urban and rural environments as soon as they can. The Commission should not allow the timidity of a few incumbents to deprive the broader community of this opportunity.

CONCLUSION

WHEREFORE, the Commission should deny the Petitions to Deny filed in this proceeding.

Respectfully submitted,

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