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 Below 900 MHz and in the 3 GHz Band	)	ET Docket No. 02-380
	)	
Amendment of the Commission's Rules With Regard to the 3650-3700 MHz Government Transfer Band	)	ET Docket No. 98-237

To: The Commission

COMMENTS OF
NYCWIRELESS, NEW AMERICA FOUNDATION,
FREE PRESS, PROMETHEUS RADIO PROJECT,
CENTER FOR DIGITAL DEMOCRACY, MEDIA ALLIANCE,
THE DANDIN GROUP, CONSUMER FEDERATION OF AMERICA,
PUBLIC KNOWLEDGE, THE ELECTRONIC PRIVACY INFORMATION CENTER,
AND
THE CHAMPAIGN-URBANA COMMUNITY WIRELESS PROJECT

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SUMMARY

Commentors applaud the Commission for proposing to open the 3650-3700 MHz band to unlicensed operation under the Part 15 rules. Commentors agree with the Commission's tentative conclusion that opening this band to unlicensed access will provide far greater benefits to the public than creation of another licensed service in the band. In addition to the First Amendment benefits that accrue whenever the Commission increases the ability of citizens to communicate with each other directly rather than through licensed intermediaries, the Commission has chronicled on numerous occasions how unlicensed spectrum access has fulfilled the goals of the Communications Act to foster innovation and new technology, [Section 7 & 303(g)], creates new opportunities for small businesses and entrepreneurs to deploy new spectrum services, [Section 257], and fosters deployment of advanced telecommunications services to all Americans [Section 1, 1996 Act Section 706].

Nevertheless, Commenters wish to express their concern with regard to certain aspects of the Commission's proposal.

1. The Commission Should Not Adopt A "Professional Installer" Certification.

Commentors vigorously oppose the creation of any "professional installer" certification requirement. Such a requirement would impose a very real and significant limitation on the ability of noncommercial community networks to deploy high-power systems. New commercial entrants would also face a significant start up cost and disadvantage. Adoption of such a requirement would therefore undermine the very benefits the Commission intends to foster.

In addition to the cost imposed on users, certification systems have numerous problems. First, as the NPRM observes, no one has agreed on what criteria would constitute a "professional installer." *NPRM* ¶41. Even if the Commission can develop suitable criteria for 2004, these requirements will quickly become dated and useless. Furthermore, allowing a private organization to administer the

certification, as the NPRM suggests, invites the private organization to impose ever increasing requirements as a means of screening out potential competitors.

The Commission has already proposed adequate safeguards against interference by high-power systems in the form of mandatory dynamic frequency and power modulation (DFPM) and identification beacons. Mandatory DFPM should render it impossible for a system to interfere with a licensee absent deliberate manipulation, something no certification requirement can address. Furthermore, in the event interference actually occurs, identification beacons (for high-power systems) will allow licensees to quickly identify any source of interference and require an abatement. The Commission therefore does not need to impose a certification requirement.

If the Commission does require some kind of certification, the Commission must ensure that the certification imposes minimal burdens on those seeking to use high power systems. The Commission should administer the certification itself, to prevent any private organization from creating artificial barriers to entry.

2. The Commission Should Not Require Locator Beacons In Mobile Devices.

Although locator beacons serve a reasonable purpose in high power, stationary installations, they serve no purpose in low power mobile devices. Low power devices with DFPM or geographic awareness pose no threat to the licensees.

By contrast, requiring personal beacons in mobile devices creates a very real privacy concern and invites all sorts of identity theft. Users taking advantage of the new spectrum should not have to carry what will amount to a personal tracking device that, in addition to allowing anyone to track where they go, tells potential thieves where they live and potential spammers or scammers how to contact them.

3. The Commission Must Consider the First Amendment Value of Unlicensed Access and Avoid Conferring Windfalls To Licensees.

To ensure a complete record, the Commission requests comment on whether a new licensed service or increasing flexibility to existing licensees would serve the public interest better than opening the band to unlicensed access as proposed in the *NPRM*. Opening the band to unlicensed without creating a new, licensed service would better serve the purposes of the First Amendment and of the Communications Act than creating a new, licensed service. Creating a new licensed service would also impose administrative costs on the Commission, delay deployment of new technologies in the relevant bands, and impede efficient use of spectrum.

4. The Commission Should Conduct A Regular Review of Activity In The Band to Determine Whether It Can Increase Power and Availability of Unlicensed In The Band.

As deployment takes place in the band, the Commission may well find that it can increase the power levels available to fixed or unfixed unlicensed devices operating in the band. In addition, protections such as beacons may prove unnecessary. The Commission should therefore put licensees on notice that it will regularly review activity in the band to determine whether to increase power or make other changes that would facilitate broader use of unlicensed spectrum technologies. For efficiency, the Commission could explicitly incorporate this review into its existing Triennial Review under Section 257.

TABLE OF CONTENTS

NATURE OF COMMENTORS

NYCWireless serves as an advocacy group for wireless community networks providing free, public wireless Internet service to mobile users in public spaces throughout the New York City metro area. These public spaces include parks, coffee shops, and building lobbies. NYCWireless also works with public and nonprofit organizations to bring broadband wireless Internet to under-served communities. http://www.nycwireless.net

New America Foundation 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.

Prometheus Radio Project is a Philadelphia-based unincorporated collective of radio activists committed to expanding opportunities for the public to build, operate and hear low power FM radio stations. http://www.prometheusradio.org

Free Press is 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. http://www.freepress.net/

The Center for Digital Democracy is a nonprofit public interest organization committed to preserving the openness and diversity of the Internet in the broadband era, and to realizing the full potential of digital communications through the development and encouragement of noncommercial, public interest content and services. http://www.democraticmedia.org/

Media Alliance is a twenty-eight year old media advocacy and resource center in San Francisco working on behalf of media professionals, community-based organizations and under-represented communities for greater accountability, ethics and diversity in our media system. http://www.media-alliance.org/

The Dandin Group is a for-profit enterprise providing high speed Internet access to remote locations using advanced wideband wireless technologies. Its goal is to develop and deploy products and services that provide high quality Internet access for people in remote, underserved locations. http://www.dandin.com

Consumer Federation of America is the nation's largest consumer advocacy group, composed of two hundred and eighty state and local affiliates representing consumer, senior, citizen, low-income, labor, farm, public power and cooperative organizations, with more than fifty million individual members. http://www.consumerfed.org

Public Knowledge is a public interest advocacy organization dedicated to fortifying and defending a vibrant information commons. PK works with a wide spectrum of stakeholders to promote the core conviction that some fundamental democratic principles and cultural values – openness, access, and the capacity to create and compete – must be given new embodiment in the digital age. http://www.publicknowledge.org

The Electronic Privacy Information Center (EPIC) is a public interest research center in Washington, D.C. Established in 1994 to focus public attention on emerging civil liberties issues and to protect privacy and free speech, the staff of EPIC have been involved in many of the cutting edge privacy issues addressed by the FCC, including Caller ID, the TCPA, CALEA, CPNI, location privacy, and the adoption of the Do Not Call regulations.

The Champaign-Urbana Community Wireless Project, a project of the Urbana-Champaign Independent Media Center Foundation, has deployed an extensive mesh network using Part 15 spectrum in the Champaign-Urbana metro area. The three-part mission is to (a) connect more people to Internet and broadband services; (b) develop open-source hardware and software for use by wireless projects world-wide; and, (c) build and support community-owned, not-for-profit broadband networks in cities and towns around the globe. http://www.cuwireless.net

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ARGUMENT

The above captioned rulemaking represents the Commission's latest positive step in broadening the access of the American people to unlicensed spectrum. As the Commission has noted, this directly serves the goals promoting broadband deployment to all Americans pursuant to Section 706 of the Telecommunications Act of 1996. *NPRM* ¶2. As demonstrated in numerous prior dockets, commercial WISPs, noncommercial community networks, municipalities, school systems, public safety officials, and countless others have used unlicensed wireless networks to bring affordable broadband to communities ignored by wireline or licensed wireless providers.[1]

The NPRM, however, proposes several departures from the Commission's highly successful Part 15 regime. It falls into the trap of customizing unlicensed access in this band along the lines of today's technology. As a consequence, the *NPRM* envisions a model wherein commercial rural WISPs use high power devices to provide Internet access to roving laptops.

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[1] *See, e.g.*, Matt Barranaca, "Unlicensed Wireless Broadband Profiles: Community, Municipal and Commercial Success Stories," New America Foundation (2004).

The Commission ignores the very real burdens and restrictions the proposed rules would impose on noncommercial deployment, municipal systems, and isolated commercial start up. The *NPRM* compromises the flexibility and ease of deployment that has made unlicensed spectrum access such a success story by proposing a certification requirement, and requiring i.d. beacons for mobile devices. The first imposes unnecessary burdens on those least able to meet them. The second asks citizens to consent to broadcast their personal contact information and realtime location in exchange for access to bandwidth.

While noncommercial and commercial deployment share many similar issues and concerns, noncommercial applications are particularly cost sensitive. They are also more likely to be run by volunteers who may or may not have broad technical backgrounds. As described by one handbook for community networking:

> The desire to end this separation of "those in the know" from "those who want to know" is helping to bring people away from their computer screens and back into their local neighborhoods. In the last year, hundreds of independent local groups have formed with a very similar underlying principle: get people connected for the lowest possible cost...Wherever possible, ingeniously simple and inexpensive (yet powerful) designs are being drawn up and given away. Thousands of people are working not for a profit motive, but for the benefit of the planet.

Rob Flickenger, BUILDING WIRELESS COMMUNITY NETWORKS, 2nd Ed. O'Reilly (2003) at 7.

The Commission's proposal to require "professional installer" certification jeopardizes this emerging community. It imposes new costs and new burdens on this army of volunteers and those they train.

Nor will only noncommercial users suffer. A new certification requirement will also make it that much harder for the private entrepreneur or municipality in an area that does not have access to broadband to simply buy equipment, learn the technology, and deploy.

The *NPRM* proposes sufficient other safeguards to protect incumbent licensed services. The Commission should not distort the open and empowering character of Part 15 which has enabled communities to deploy their own broadband. To do so would deny the benefits of the rules changes to those communities which need them most, and would set a dangerous precedent for excluding these communities from future innovations in unlicensed access.

I. THE COMMISSION SHOULD NOT CREATE A 'PROFESSIONAL INSTALLER' CERTIFICATION AS A CONDITION OF USING HIGHER POWER FIXED DEVICES.

The NPRM states: "to ensure that fixed unlicensed devices are established and operated in a manner that will avoid causing interference to FSS earth stations, we propose to require that such devices be installed by a professional." *NPRM* ¶41. The Commission should not adopt this proposal, which breaks with 25 years of successful precedent in Part 15 devices. The NPRM already proposes adequate safeguards to protect the relatively few incumbents potentially effected. At the same time, the proposed certification imposes significant new costs that will significantly impede deployment of high power devices.

A. The Cost of Certification Will Significantly Impede Deployment By Noncommercial Users, Isolated Entrepreneurs, and Municipalities.

The noncommercial community relies heavily on volunteers who devote personal time to maintaining community networks. Typically, these volunteers train more volunteers – including non-English speakers – who then handle the day-to-day administration of the network. Because Part 15 equipment use is unregulated, these communities have the capacity to create networks that meet their own needs, and can deploy broadband in areas that remain unserviced by traditional telephone, cable and licensed wireless providers.

Requiring "professional certification" as a precondition of installing and operating a high power stationary system imposes a very real, and in some cases insurmountable, burden to noncommercial users. Financially, paying for and maintaining a certification creates an initial hurdle to volunteering. Even a fee of $50 can represent a significant investment for volunteers in some communities.

But beyond financial barriers is a very real psychological barrier. It is one thing for someone to volunteer to help build a network and learn the necessary skills to connect their community. Ask them to study and take a test first, with no guarantee that they will pass on the first try, and the number of volunteers quickly diminishes. This hurdle increases in the case of volunteers from linguistic minority communities or communities with a strong distrust of government. These communities stand to experience the greatest benefit from the expanding the existing unlicensed regime with its concomitant improved broadband access. The Commission should not undermine this effort with an unnecessary certification requirement.

Within the community networking movement, volunteers try to create a "learning by doing" ethic. Installation of customer premise equipment is often taught to new volunteers by experienced volunteers. Emphasis is placed on treating each network as a unique combination of equipment, geography, and community need. Certification would create a psychological barrier between those certified and those uncertified, making this transmission of knowledge and preservation of a community ethic based on deployment even harder.

These barriers will also act to limit isolated municipalities and cash-strapped entrepreneurs from deploying new services. The imposition of any new requirement, particularly one that may

require significant study and expense as a condition of even taking the exam, will discourage communities or individuals from investing in unlicensed technologies as a broadband solution.

At the same time, the Commission does not appear to appreciate the cost of administering a certification system or the cost of certification to users. *NPRM* ¶42 ("[w]e believe it will be straightforward for professional installers to obtain the information necessary to meet their responsibilities" and referencing only the geographic location of every licensee). As part of its public interest evaluation, the Commission should carefully consider the cost of maintaining a certification system. Even if the Commission delegates responsibility for certification to a private organization, how will the Commission ensure that certification requirements remain current? That they are not applied in an anticompetitive fashion? That certification in fact serves a useful purpose?

NYCWireless, *et al.* respectfully suggest that the Commission should consider these cost issues carefully. One advantage of relying exclusively on device certification has been ease of administration. Before the Commission adds to the burdens of users or to the Commission's own administrative burdens (which it will pass through to those seeking certification in the form of fees) by imposing a user certification requirement, the Commission would do well to question whether the potential protection against interference is worth it, particularly in light of the other measures proposed by the Commission.

B. The *NPRM* Already Proposes Adequate Safeguards.

NYCWireless, *et al.* note that the Commission has two outstanding *NPRMs* that bear directly on the question of relevant safeguards. The Cognitive Radio proceeding, Docket No. 03-108, and the Interference Temperature proceeding, Docket No. 03-237, have proposed appropriate general

safeguards for sharing spectrum with licensed services. These proceedings may render the need for any additional safeguards in the 3650-3700 MHz band unnecessary.

Even without adoption of either the Cognitive Radio *NPRM* or the Interference Temperature *NPRM*, the Commission proposes sufficient safeguards here to protect incumbent licensees. For 25 years, the FCC has successfully relied upon technical certification of devices as the primary means of protecting incumbent licensees. Certification of devices ensures that devices will not interfere with neighboring licensed services unless a user deliberately tampers with the device. As a consequence, the Commission receives very few complaints from licensees that improper use or improper deployment of systems causes interference. Certification of users has proven largely unnecessary to prevent accidental interference.

By contrast, deliberate alterations of systems by users may cause interference, but requiring certification of users will not address deliberate modifications. Users with sufficient technical expertise to hack equipment will most likely have sufficient knowledge to pass certification examinations.

The *NPRM* proposes several safeguards that make accidental interference by fixed, high power systems almost impossible. First, the Commission will require mandatory dynamic frequency and power modulation (DFPM). *NPRM* ¶38. A properly certified ***system*** will therefore automatically sense the presence of an active licensee and adjust its power and frequency to avoid any interference without certification of the ***installer*** or ***user.***

Indeed, the *NPRM* suggests that the only data an installer will need is the location of licensees in the band. *NPRM* ¶42. This information can be stored on the device itself, and incorporated into the DFPM system.

The Commission has also proposed that high power fixed systems have identity beacons that would allow any licensee or user of an unlicensed system to locate the party responsible for the interfering system and resolve the interference issue. *NPRM* ¶60-62. Any licensee experiencing interference as a consequence of an unlicensed system can immediately find the responsible party and require abatement of any interference. The Commission has observed before that the ability of licensees to require Part 15 device operators to cease operation provides very significant protection. *In Re Amendment of Part 15 To Allow Certification of Equipment in the 24.05-24.25 GHz Range*, 16 FCC Rcd. 22,337, 22,341 (2001) ("Furthermore, all Part 15 devices operate under the condition that transmission must cease if the Part 15 device causes harmful interference. This operating condition is an adequate measure to ensure that authorized services will not receive interference from unlicensed devices"). As an additional benefit, Commentors anticipate that identity beacons will reduce the already minimal number of operators who deliberately alter systems, since the knowledge that any interference can be tracked to the source will discourage such practices.[2]

If licensees continue to express concern, the Commission can require equipment to recognize a signal from an FSS licensee that the frequency is in use and that the unlicensed user must modify its power use accordingly. *NPRM* ¶71-74. To the extent the Commission has concerns that this imposes unfair additional cost on licensees, *id.* at ¶74, the Commission should recall that FSS licensees receive free access to public airwaves. The minor cost of preserving this free public access can be born by the licensee, particularly where the licensee seeks to limit public access to a public

[2]Although Commentors oppose identity beacons for low power mobile devices because they constitute both a security risk and a privacy concern, *see* Part II *infra*, these concerns do not apply to fixed, high power devices. Furthermore, identity beacons for high power devices will assist unlicensed operators in coordinating with each other to avoid interference voluntarily.

resource. Licensee beacons would promote even more efficient spectrum sharing, and thus further the goals of the Communications Act and the benefit to the public.

If the Commission still has doubts about the equity of imposing even minimal costs on licensees, however, it can require unlicensed devices to recognize such beacons while making use of the beacons by licensees voluntary. In this way, only those licensees that feel they need the additional protection will pay for them, although the cost of the system will be borne by all unlicensed devices.

Commentors suggest that "licensee beacons" could transmit the location of the FSS Licensee, the frequency used, and the power the licensee will use. The beacon would stop transmitting when the licensee stopped transmitting. Unlicensed units would adjust their power and frequency in real time. The Commission should make clear, however, that use of beacons by licensees to deliberately disrupt operation of unlicensed systems rather than for legitimate purposes constitutes a violation of 47 U.S.C. §333.

Again, Commentors stress that certification of DFPM technology makes a system of "licensee beacons" redundant. But if the Commission feels it must, out of an abundance of caution, make further protections available to licensees, the added cost of licensee beacons is justified for both licensees and unlicensed operators.

Finally, the Commission can further buttress protection for licensees by requiring high power systems to have geographic awareness. *NPRM* ¶¶64-66.[3] Geographic awareness is a very blunt tool, since it would require reduced power levels or prohibit use of frequency bands for general public

[3] The *NPRM* makes reference to GPS, a specific type of technology. Commentors urge the Commission not to adopt any specific technology. Commentors use the term "geographic awareness" to mean that the device "knows" its location and position relative to all licensees.

access even when such access would engender no risk of harmful interference. Commentors therefore urge the Commission to rely on DFPM and identification beacons alone. However, even the burden and expense of geographic awareness is preferable to a user certification requirement, which would impose a uniform burden on all users no matter where located.

In short, the proposal to burden noncommercial, municipal, and small start ups wishing to deploy the proposed high power systems with a professional certification requirement has no justification. The Commission has proposed more than adequate means to protect licensees. Breaking with 25 years of tradition and adding a certification requirement for unlicensed ***users***, rather than simply certifying devices themselves, adds nothing but expense.

C. The Commission Must Not Delegate Certification to Private Organizations

The Commission asks, if it adopts a certification requirement, whether to delegate certification to private organizations such as the National Association of Radio Telecommunications Engineers (NARTE) or Part-15.org. *NPRM* ¶41. NYCWireless, *et al.* oppose this proposal.

Certification requirements administered by private organizations have a history of manipulation by incumbents to limit potential competition. For example, that the State of Maryland requires would-be plumbers, electricians or HVAC engineers to take a lengthy exam before receiving even an application to apply for a license. In addition to the cost of studying and preparing for the exams, would be professionals must also work thousands of hours in lower-paid "apprenticeship" positions under a licensed professional. The exam requirements and apprenticeship requirements are set by organizations of incumbent plumbers, electricians and HVAC engineers.[4] Similar requirements

[4]Source: http://www.contractors-license.org/md/Maryland.html#md1

apply to such diverse professions as pharmacy and pharmacy technicians,[5] accountants,[6] and, of course, lawyers.[7]

There is no reason to suppose that professional wireless organizations will prove less susceptible than other professional organizations to the temptation to make certification requirements more expensive and more difficult over time. If the Commission does chose to create a certification requirement, it should not delegate certification to any private organization. To the contrary, the Commission must maintain control over the certification process to ensure that certification remain competitively neutral and imposes the least cost in terms of time and money.

Commentors stress that they do not question the integrity or professional character of NARTE, Part-15.org, or any other professional organization the Commission may propose. The concerns expressed here relate not to any particular organization; they stem from a recognition of the history of certification requirements and the natural temptation in ***any*** industry organization to impose ever more stringent licensing requirements for the ostensible purpose of protecting the public. If professions as diverse as electricians, plumbers, pharmacists, and accountants can fall prey to such temptations, the Commission cannot rely on wireless technicians to be the one exception.

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[5]Examination and 1560 internship hours. *See* The Maryland Board of Pharmacy website at: http://www.dhmh.state.md.us/pharmacyboard/forms/examsummary.htm.

[6]150 Semester hours of education and passage of multi-day professional examination. *See* Maryland State Division of Occupational and Professional Licensing website at: http://www.dllr.state.md.us/license/cpa/cpaapply.htm

[7]Attendance at ABA accredited law school, pass two day examination, requirements available from the State of Maryland Supreme Court at http://www.courts.state.md.us/ble/baradmissionrules.pdf.

In conclusion, the proposed professional installer certification requirement provides no additional protection to licensees or other users, imposes significant costs on users that may deprive the public of the vast public interest benefits of opening the band to unlicensed access, will increase the Commission's administrative burden, and – if delegated to a private organization – opens the door to anticompetitive behavior by incumbents. The Commission should therefore abandon this proposal.

II. THE COMMISSION SHOULD NOT REQUIRE PERSONAL BEACONS IN LOW POWER MOBILE DEVICES.

The Commission proposes to require all unlicensed devices, both fixed and mobile, "to broadcast identification information at regular intervals. At a minimum, the transmitted data should consist of contact information of the owner/operator of the device." *NPRM* ¶¶60-61. NYCWireless, *et al.* oppose applying this requirement to mobile devices.[8] This requirement will transform laptops and consumer devices into a personal RFID tag, will broadcast personal contact information to those who have the capacity to abuse it, and may create security issues for network operators.

At the same time, it is difficult to see how requiring mobile devices to broadcast such information will serve the public interest. A single lap top cannot possibly interfere with an FSS Earth Station given the restrictions on mandatory power levels and the intelligence built into each device. FSS Earth Stations do not have hidden node issues or other problems that might cause a user to inadvertently wander across the path of one and disable it.

To the extent licensees have expressed significant concern from mobile devices, it derives from whether a sufficient population of mobile devices could raise the ambient RF temperature to a level that would cause interference. *NPRM* at ¶17 (recounting comments of licensees). This is not

[8]As discussed above in Part I.B *supra*, NYCWireless, *et al* support this requirement for fixed high power devices.

a problem addressable by broadcasting identification information. Indeed, by the time the population of mobile devices could reach this level, constant broadcast of identification information would be part of the problem.[9]

By contrast, users have a very legitimate reason not to want their contact information broadcast to the world at regular intervals. This requirement will make every laptop or other consumer device using 3650-3700 MHz band a personal RFID tag accessible to anyone who wishes to follow a user. Worse, an identity thief could sit in any open, public area and capture the name and address of the owner of a potentially valuable laptop. While not as dangerous, but certainly annoying from a user perspective, third parties could use the contact information required by the Commission to send users unwanted solicitations.

Furthermore, the Commission may open a significant security hole, depending on how it requires networks to operate. On the Internet, a common attack is a "denial of service" (DoS) attack. This exploits the requirement built into the network that a server will identify itself if asked. The DoS attacker "pings" the server repeatedly, preventing it from answering real queries.[10] The Commission should take great care that it does not require equipment to embed a similar weakness.

Finally, the Commission should consider the marginal cost of requiring an identification beacon. While the cost is relatively small for a fixed, high power device, it becomes much more

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[9]NYCWireless, *et al.* observe that the *NPRM* adequately addressed this concern, based on input already received. Because FSS Earth Stations are large installations that point up, and receive information from satellites orbiting well above the background radiation, FSS Earth Stations are unlikely to experience any interference either from random mobile devices or from an increase in ambient noise. In any event, DFPM and other mitigation measures will prevent any rise in the interference temperature to levels that would create a significant risk of interference.

[10]*See* "CERT Advisory CA -1997 IP Denial of Service Attacks," available at http://www.cert.org/advisories/CA-1997-28.html

significant for a low power mobile device. Given the truly minimal value to licensees of identifying mobile devices, the Commission should not require mobile devices to broadcast identification information.

III. OPENING THE BAND TO UNLICENSED SHARING RATHER THAN EXCLUSIVE LICENSING WOULD FURTHER THE GOALS OF THE COMMUNICATIONS ACT AND THE FIRST AMENDMENT.

In the interest of ensuring that the Commission considers "all possible approaches for achieving [the] goals of maximizing efficient use fo the 3650 MHz band and the provision of new and advanced services," the Commission solicits comment on whether it should designate the band for licensed, rather than unlicensed, use. NYCWireless, *et al.* urge the Commission to reject any additional licensing regimes and to adopt the *NPRM* with the modifications suggested above.

It is important to note that the Commission is not asked here to make a choice or value judgment between exclusive licensing and shared access regimes generally. Both will continue to exist quite comfortably, and even complementary to one another, after adoption of the *NPRM*. Rather, the Commission must address the very narrow question of what best serves the public interest for this particular band. At the same time, however, the Commission must consider broader policy implications as part of its consideration of what serves the public interest in this particular band.

A. The 3650-3700 MHz Band Provides A Unique Opportunity For The Commission To Test The Potential of High Power Unlicensed Devices.

The vast majority of available spectrum is allocated to licensed services. Only a fraction of the available spectrum represents opportunities for relatively high powered unlicensed use. To date, the Commission has not found a band suitable for the power levels proposed in the *NPRM*. While recent actions have created the opportunity for higher power transmission in the existing 2.4 GHz

band, *see In re Modification of Parts 2 and 15 of the Commission's Rules for Unlicensed Devices and Equipment Approval*, ET Docket No. 03-201 (released July 12, 2004) (authorizing EIRP of 8 watts for certain antenna types), the Commission has never proposed to allow an opportunity to further explore the potential of unlicensed access as a broadband solution with higher power level. Nor, given the resistance to the Interference Temperature and Cognitive Radio proceedings, does it seem likely that the Commission will find as promising a band in the future.

Furthermore, as the Commission has observed, the 3650-3700 MHz band is significantly underutilized. Huge tracts of space throughout the country have no licensed activity to protect. Nor is the band populated with a plethora of unlicensed devices. By contrast, even the existing underlay bands with sufficient power for networking are crowded either with numerous other devices (such as in the 2.4 GHz band) or with government users that impose significant limitations for purposes of sharing (such as the new bands above 5 GHz). This band therefore provides a rare opportunity to explore the potential of Part 15 devices in a relatively "clean" environment.

The Commission has sound reason to explore the potential of unlicensed access at higher power levels. Unlicensed access has been an consistent driver of technological development, economic growth, and valuable social services.[11] The Commission has compiled an extensive record from WISPs and others demonstrating that a wide variety of operators and equipment manufacturers

[11] *See*, *e.g.*, Kenneth R Carter, Ahmed Lahjouji, & Neal McNiel, UNLICENSED AND UNSHACKLED: A JOINT OSP-OET WHITE PAPER ON UNLICENSED DEVICES AND THEIR REGULATORY ISSUES, OSP Working Paper #39 (2003); Matt Barranca, UNLICENSED BROADBAND PROFILES: COMMUNITY, MUNICIPAL, AND COMMERCIAL SUCCESS STORIES, New America Foundation (2004); William Lehr, THE ECONOMIC CASE FOR DEDICATED UNLICENSED SPECTRUM BELOW 3 GHZ, New America Foundation (2004); James H. Johnson & J.H. Snider, BREAKING THE CHAINS: UNLICENSED AS A LAST MILE BROADBAND SOLUTION, New America Foundation (2003).

stand ready to utilize the band as soon as the Commission liberalizes the access rules. Opening the band to unlicensed access therefore promises to provide the public with new networks and technologies swiftly.

In contrast, the marginal value of adding a new licensed service is minimal. The Commission has recently expanded the opportunities for exclusive licensing through numerous spectrum auctions and its *Secondary Markets* proceedings. While an additional licensed service would perhaps be better than no new service in the band at all, since it generally serves the public interest to increase the availability of spectrum to the public, a new licensed service would not allow the Commission to experiment with new types of spectrum management that "generally encourage the larger, more effective use of radio in the public interest." 47 U.S.C. §303(g).

B. History Demonstrates That Deployment of Unlicensed Wireless Networks Will Happen Faster and In More Diverse Communities Than Deployment of A New Licensed Service.

Furthermore, creation of a new licensed service will significantly delay deployment of much needed broadband services. Creation of a licensed service requires creating new service rules, setting an auction date, holding the auction, and awaiting licensees to conduct a build out and build new consumer equipment capable of receiving the licensed frequencies. This process would take years.

Furthermore, licensees offering broadband or other new, advanced telecommunications services traditionally focus their attention on the wealthiest markets. *See* Leonard M. Banes, "Deregulatory Injustice and Electronic Redlining: The Color of Access to Telecommunications," 56 Admin. L. Rev. 263 (2004). Furthermore, although the Communications Act directs the Commission to use auctions to promote "economic opportunity and competition ... by avoiding excessive concentration of licenses and by distributing licenses among a wide variety of applicants, including

small businesses, rural telephone companies, and businesses owned by members of minority groups and women," 47 U.S.C. §309(j)(3)(C), ownership of telecommunications facilities remains excessively concentrated in the hands of a few, large corporations. Eli Noam, "The Effect of Deregulation on Market Concentration: an Analysis of the Telecom Act of 1996 and the Industry Meltdown." Working Paper. Columbia Business School, Columbia Institute for Tele-Information (2002). Despite the Commissions consistent efforts to develop bidding criteria that will promote minority and small business ownership, spectrum auctions continue to fail in these goals. *See* Leonard M. Banes & C. Anthony Bush, "The Other Digital Divide: Disparity In the Auction of Wireless Telecommunications," 52 Cath. U. L. Rev. 351 (2003).

By contrast, unlicensed access creates immediate opportunity for deployment in any community by any entity. The Commission has in the past observed how unlicensed access assists removes regulatory barriers to minority and small business ownership. *See Section 257 Report To Congress*, 19 FCC Rcd 3034, 3077 (2004); *Section 257 Report to Congress*, 15 FCC Rcd 15376, 15432 (2002). Nor will communities economically unattractive to incumbents need to wait for deployment by others. These communities will be able to do what so many other communities are already doing, deploy systems themselves.

Commenters will not weary the Commission with further recitation of the benefits expanded unlicensed access has brought to rural America, inner city and minority communities, and Americans of every walk of life. The Commission and individual commissioners have recognized these benefits

in numerous studies, reports, notices, orders, and speeches.[12] Others, such as the New America Foundation, have likewise extensively documented the benefits of unlicensed access.[13]

In weighing between creating a new licensed service or increasing opportunities for unlicensed access, the Commission must consider this deployment history. Unlicensed access will generally facilitate deployment of advanced telecommunications services faster than creation of a new licensed service from scratch in this band. Furthermore, it will facilitate speedy deployment in those communities that traditionally must wait the longest for licensed services to deploy. Accordingly, the public interest demands that the Commission adopt *NPRM* rather than create a new licensed service.

C. Opening the Band to Unlicensed Access Would Better Further The Goals of the Communications Act.

By contrast, creating further opportunities for unlicensed access on a dynamic basis where technologically feasible furthers the goals of the Communications Act. The Commission has recognized the benefits of unlicensed access to small businesses in furtherance of the goals of Section 257. *See Section 257 Report To Congress*, 19 FCC Rcd 3034, 3077 (2004); *Section 257 Report to Congress*, 15 FCC Rcd 15376, 15432 (2002); *Amendment of the Commission's Rules to Provide For Operation of Unlicensed NII Devices in the 5 GHz Range*, 12 FCC Rcd 1576, 1585 (1997) (authorizing new unlicensed services "will further the Commission's mandate, in Section 257(b) of the Communications Act, to promote vigorous competition and technological advancement"). The Commission has likewise acknowledged the growing role of unlicensed spectrum access in the

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[12] *See, e.g.*, UNLICENSED AND UNSHACKLED, *supra* n. 11; *The Harvest*: *Remarks of Commissioner Abernathy at the Wireless Communications Association International Annual Conference* (June 2, 2004); *Remarks of Commissioner Jonathon S. Adelstein, WISP Forum, South Dakota School of Mines and Technology*, May 25, 2004.

[13] *See* sources cited *supra* n. 7.

deployment of broadband access to all Americans pursuant to the mandate of Section 706 of the Telecommunications Act of 1996. *Unlicensed Operation in the 3650-3700 MHz Band* ¶2 (released April 23, 2004).

In considering the value of unlicensed access to the Commission's Section 706 mandate, the Commission should consider that unlicensed access is an inherently deregulatory scheme. It frees all citizens to access spectrum with readily available consumer devices, rather than restricting the ability of citizens to access the public airwaves. By contrast, creation of a new licensed regi8me is an inherently regulatory step. It requires the Commission to develop a host of new rules and regulations with the sole purpose of restricting general access to spectrum. Licensee conduct, even if given total flexibility, cannot hope to enjoy the same deregulatory freedom as operators using unlicensed services.

Furthermore, the policy of geographic licensing limits the number of possible competitors in any geographic market. The Commission has traditionally limited the number of licensees in a geographic area to a mere handful at best. The prohibitive cost of licenses at auction and the high price of equipment acts to limit competition further. By contrast, there is no limit (other than that imposed by the economics of the marketplace) to the number of competitors using unlicensed spectrum access.

Accordingly, to the extent the Commission believes that the Telecommunications Act of 1996 requires the Commission to facilitate deployment through deregulatory means and open competition, unlicensed access provides a far more potent avenue than licensing. If the Commission is serious about deregulation as a means of promoting competition, rather than as a means of preserving

incumbent dominance, the Commission should adopt the *NPRM* rather than constrain competition in the 3650-3700 MHz band through the creation of a licensed service.

D. First Amendment Considerations Weigh Heavily In Favor of Adopting the *NPRM*.

As part of its public interest analysis, the Commission is not free to simply weigh the economic possibilities inherent in licensed and unlicensed. To the contrary, "the 'public interest' standard necessarily invites reference to First Amendment principles...and, in particular, to the First Amendment goal of achieving "the widest possible dissemination of information from diverse and antagonistic sources." *FCC v. National Citizens Committee for Broadcasting*, 436 U.S. 775, 795 (1978) (citations omitted). Indeed, the FCC has a fundamental responsibility to protect the public's "collective right to have the medium function consistently with the ends and purposes of the First Amendment." *Red Lion Broadcasting Co., Inc. v. FCC*, 395 U.S. 367, 390 (1969). Given the tremendous imbalance at the moment between spectrum allocated for unlicensed access by all citizens and spectrum assigned to exclusive licensees, the "reference to First Amendment principles" weighs heavily in favor of opening new spectrum to unlicensed access rather than creating yet another licensed service.

As an initial matter, permitting broader direct access to spectrum by the public serves the First Amendment both by creating more opportunities for people to speak and, concomitantly, more sources for people to hear. As technology continues to advance, and the need for exclusivity diminishes, it serves the interests of the First Amendment to permit as many citizens as possible to access spectrum as freely as possible. *See* Stuart Minor Benjamin, "The Logic of Scarcity: Idle

Spectrum As First Amendment Violation," 52 Duke L.J. 1 (2002); Stuart Buck, "Replacing Spectrum Auctions With Spectrum Commons," 2002 Stanford Technology L. Rev. 2 (2002).

More generally, discretionary licenses on the right to communication are repugnant to the First Amendment. *See Generally Watchtower Bible & Tract Society of New York, Inc. v. Village of Stratton*, 536 U.S. 150, 161-64 (2002). Only because unregulated use of the electromagnetic spectrum by ***everyone*** would make impossible the effective use of the spectrum by ***anyone*** has the Supreme Court permitted the Federal Government to license spectrum. *National Broadcasting Co v. United States*, 319 U.S. 190 (1943); *Federal Radio Commission v. Nelson Bros.*, 289 U.S. 266 (1933); *In re Nextwave Personal Communications, Inc.*, 200 F.3d 43 (2nd Cir. 1999).

But this does not give the government complete *carte blanche* in managing spectrum. *NBC*, 319 U.S. at 217. To the contrary, the FCC must manage spectrum so as to promote the goals of the First Amendment. *Red Lion*, 395 U.S. at 389-393. In light of the general antipathy of the First Amendment to discretionary licenses as a precondition of speech, the First Amendment imposes on the Commission a responsibility to consider whether direct access by citizens is technologically feasible. *Accord FCC v. League of Women's Voters of California*, 468 U.S. 364, 376 n. 11 (1984).

As the Supreme Court has found, the First Amendment prohibits the government from granting exclusive rights in communication unless the physical characteristics of the medium require exclusivity as a precondition for productive use. *City of Los Angeles v. Preferred Communications*, 476 U.S. 488 (1986). There, Preferred Communication did not take part in an auction for an exclusive franchise. Nevertheless, it applied for a franchise in competition with the winner of the auction. The City of Los Angeles denied the application. The district court upheld the power of the

city to award an exclusive license, but the Ninth Circuit Court of Appeals reversed on First Amendment grounds. *Id.* at 492-93.

The Supreme Court remanded for further fact finding on the question of whether any physical limitations required the city to limit the number of franchises. The Supreme Court explicitly held that the desire of the city to maximize revenue or maximize economic efficiency did not permit limiting the ability of citizens to speak through the new medium any more than the city could limit the number of newspapers in the name of economic efficiency. *Id.* at 494-95. Where the laws of physics no longer require exclusivity, exclusivity cannot be justified on economic or efficiency grounds alone.

Commentors do not argue here that technology has advanced to the point where the spectrum may accommodate all who wish to use it, and that therefore the days of exclusive licensing have passed. *Cf. League of Women Voters supra* (observing that technological advances might someday render exclusive licensing obsolete). Indeed, many applications, such as public safety, will continue to demand exclusivity for the foreseeable future. The ability of technology to provide unlicensed access to all citizens under some conditions does not render the underlying basis of *FRC v. Nelson Bros.* or *NBC* obsolete.

Rather, Commentors observe that the Commission in the *NPRM* has found that, in the 3650-3700 MHz band, it is possible for all citizens to access the electromagnetic spectrum freely without creating the harmful interference that justifies exclusive licensing. If the Commission nevertheless decided limit the right to speak through spectrum in this band to a single entity, for no better reason than to maximize revenue to the government or maximize economic efficiency, that decision would violate the First Amendment principles set forth in *Preferred Communication.*

IV. THE COMMISSION SHOULD CONDUCT A PERIODIC REVIEW OF THE 3650-3700 MHZ BAND TO DETERMINE IF IT CAN ALLOW HIGHER POWER OR OTHERWISE REMOVE BARRIERS TO UNLICENSED ACCESS.

Commentors anticipate that the Commission may well impose more conservative limitations on operation of unlicensed services in the band than will ultimately prove necessary. Furthermore, as technology continues to advance, the Commission may well decide that adjustments to facilitate further unlicensed access are warranted.

The Commission should therefore put all parties on notice that it will regularly review operation in the 3650-3700 MHz band and seek opportunities to further deregulate unlicensed use by removing unnecessary restrictions. In this way, the Commission can fulfill its obligations under the Communications Act and under the First Amendment to remove barriers to infrastructure development, encourage deployment of advanced telecommunications, enhance the opportunities for diversity of ownership and diversity of views, and facilitate direct communication among citizens via the electromagnetic spectrum.

The Commission should logically include this review in its Triennial Review conducted pursuant to Section 257(c). As discussed above, the Commission has consistently recognized that increasing opportunities for unlicensed access directly fulfills the goals of Section 257 to "remove market entry barriers for entrepreneurs and other small businesses in the provision and ownership of telecommunications services and information services." 47 U.S.C. §257(a). The three year cycle will also allow a suitable lead time for the development of new technologies, while occurring with sufficient frequency to keep the rules from growing stale. Furthermore, a regular review will serve the public far better than requiring *ad hoc* petitions for rulemaking.

CONCLUSION

Although the *NPRM* has two significant flaws that the Commission should remedy before adoption, the *NPRM* represents a positive step forward by the Commission in its stewardship of public spectrum. Adoption of the *NPRM*, after elimination of the proposal for professional installer certification and after elimination of the requirement of personal identification beacons in mobile devices, will serve the goals of the Communications Act and of the First Amendment.

Respectfully submitted,

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