

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

In the matter of)
)
Establishment of an Interference Temperature)
Metric to Quantify and Manage Interference and) ET Docket No. 03-237
to Expand Available Unlicensed Operation in)
Certain Fixed, Mobile and Satellite Frequency)
Bands)

To: The Commission

**EX PARTE COMMENTS OF
PROMETHEUS RADIO PROJECT
CONSUMER FEDERATION OF AMERICA
PUBLIC KNOWLEDGE, CHAMPAIGN-URBANA COMMUNITY
WIRELESS PROJECT, BENTON FOUNDATION, ELECTRONIC FRONTIER
FOUNDATION, NEW AMERICA FOUNDATION, THE DANDIN GROUP
WIRELESS TECH RADIO
AND
NYCWIRELESS**

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Commenters Prometheus Radio, *et al.* represent a mix of licensees, non-commercial facilities-based unlicensed broadband providers using unlicensed spectrum to deploy broadband or other advanced telecommunication services to all Americans, commercial users of unlicensed spectrum, end users of consumer devices, and citizens who wish to exercise their First Amendment freedom to speak through the use of the electromagnetic spectrum. For the reasons set forth below, the Commission should move quickly to adopt the proposed interference temperature metric and to permit the use of unlicensed operation in the bands designated by the Commission as proposed testbeds.

SUMMARY

The initial commenters consisted overwhelmingly of incumbent licensees and manufacturers of equipment for these licensees. It is not surprising that they overwhelmingly opposed the Commission's proposal. Their objections fall into the following general categories: a) the Commission should not adopt any metric; b) the Commission should not adopt *this* metric; c) the Commission should not use the bands designated for testbed, or must protect services not even suggested as testbed services; d) the technology proposed in the *NPRM* does not exist, cannot be built, and enforcement of limitations is impossible; and e) the Commission lacks statutory authority to adopt any metric that facilitates spectrum sharing.

Prometheus Radio, *et al.* urge the Commission to reject each of these arguments. As the Commission found in the *NPRM*, use of a neutral metric to measure the risk of harmful interference will benefit both licensees and users of unlicensed spectrum access. Furthermore, the Commission should move expeditiously to adopt the *NPRM*. While any proposed metric can always be subject to theoretical criticisms, the only way the Commission can ensure development of the technologies is by permitting deployment in a suitable testbed. The proposed bands have few users and the positions of transmitters and the traffic they bear is well known, making it relatively easy to establish the necessary background measurement and the tolerance of the licensed systems in the targeted bands. If widespread problems emerge, the Commission can refuse to grant new certifications of equipment in the relevant bands and take other necessary steps to prohibit further deployment until issues are resolved.

By contrast, the characteristics of the unlicensed underlay bands make them wholly unsuitable as testbeds. Those bands have too many unknown and unknowable transmitters to serve

as a useful testbed. Worse, from the Commission’s perspective, they have no exclusive licensed services. Furthermore, a critical aspect of the testbed, to measure the effectiveness of interference temperature as a means of managing interference risk for licensed services, cannot happen in the absence of a licensed service.

Those objecting to the lack of an existing technology to allow unlicensed access on a shared basis seek to trap the Commission in a classic “chicken and egg” conundrum. Until the Commission proposed interference temperature and committed in the NPRM to permitting a real test, no manufacturer or entrepreneur had the least incentive to create or fund the development of such technologies. To the contrary, FCC history provides numerous cautionary tales to anyone willing to invest years and millions of dollars in new spectrum technologies that challenge the dominance of the current incumbents. Yet, incumbents try to point to this very chilling effect on innovation as evidence that the current regime is superior to what the Commission proposes.

Finally, the Commission should reject the argument that it lacks authority to authorize new sharing of previously exclusive spectrum as entirely without merit. Nor should the Commission give credence to the vague argument that interference temperature will somehow discourage licensees from developing more efficient, innovative or robust technologies. To the contrary, creation of the interference temperature metric and permitting further direct access by citizens will directly serve the goals of the Communications Act by providing new opportunities to develop spectrum technologies, 47 U.S.C. §157, §303(g), encourage deployment of advanced telecommunications services to all Americans, with an emphasis on serving rural Americans and educational institutions, Telecommunications Act of 1996 §706, and facilitate entry by new competitors and small businesses by removing regulatory barriers to entry. 47 U.S.C. §257.

More importantly, the interests of the First Amendment clearly favor minimizing the burden on the public's free speech rights created by licensing. While Commenters do not argue that the First Amendment *requires* the Commission to adopt any specific policy, the Commission has an explicit obligation to consider the impact of its decisions on the public's First Amendment rights. *See, e.g., Columbia Broadcasting System, Inc. v. FCC*, 412 U.S. 94, 122 (1973). In weighing the First Amendment value of increasing direct communication between citizens against that offered by licensed intermediaries, particularly in the proposed testbed bands, the proper course under the First Amendment is clear. The Commission should adopt the interference temperature metric and permit speech consistent with the safe operation of licensed services to take place.

The Commission would do well to recall the history of unlicensed access. In 1987, when the Commission first proposed the current Part 15 regime, wi-fi did not exist. No one was manufacturing technologies to take advantage of the Commission's then-radical proposal to simplify the rules for unlicensed devices. Then, as now, incumbents marshaled arguments against the Commission's proposal on the grounds that it was too theoretical, relied on untested technologies, and placed licensees at too great a risk of harmful interference. The Commission wisely chose to proceed, confident that its certification procedures would provide adequate protection and that the unleashed creativity of the American people would find a way to profitably exploit the new opportunities Part 15 created.

History has validated the Commission's action. A multibillion dollar industry now thrives in the space created, with the continued promise of new services that benefit all Americans from the richest to the poorest. The Commission should once again dare to break the paradigm of traditional spectrum management and trust in its own engineers and in the unleashed creativity of the American

people.

COMMENTERS

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>

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 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>

The Benton Foundation's mission is to articulate a public interest vision for the digital age and to demonstrate the value of communications for solving social problems. <http://www.benton.org>

Electronic Frontier Foundation is a member-supported nonprofit organization devoted to upholding civil liberties in technology policy, law and standards. With over 12,000 dues-paying members, EFF is one of the oldest and best-established advocates for traditional civil liberties in nontraditional, technological realms. <http://www.eff.org>

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>

The Dandin Group is a for-profit enterprise providing high speed Internet access to remote locations using advanced wideband wireless technologies. Our goal is to develop and deploy products and services that provide high quality Internet access for people in remote, underserved locations. Although the company is young, its members have many years of experience in wireless communication and the deployment of wireless technologies. The scope of their experience includes

involvement in Part 15 and Part 97 Spread Spectrum regulatory issues; working with NSF grants to bring Internet access to Mongolia and rural schools in Colorado and various Native American Reservations in the Central U.S. ; participation on the FCC's Technological Advisory Council (TAC). <http://www.dandin.com>

Wireless Tech Radio is an information and education resource for the wireless industry that streams live and archived discussion of wireless technologies, industry events, interviews, instructional segments, and regulatory issues to US and international markets.

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>

ARGUMENT

I. ADOPTING A STANDARD METRIC FOR DEFINING AND MANAGING THE RISK OF HARMFUL INTERFERENCE WILL PROVE A BOON TO LICENSED SERVICES AS WELL AS UNLICENSED ACCESS USERS.

Adoption of a standard metric such as interference temperature will benefit licensees as well as users of unlicensed spectrum access. As an initial matter, incumbents have a lengthy history of using the existing lack of clarity surrounding interference risk management to create artificial barriers to new technologies that threaten incumbents business models. Recent examples include resistance to the introducing of ultra-wide band technologies, technologies for sharing Ku-band spectrum, and creation of a low power radio service. In all of these cases, incumbents succeeded in delaying introduction of innovative and competitive services and in scaling back the initial proposed services by exploiting the lack of any clear metric for interference risk management.

Second, the interference temperature metric will help to resolve interference disputes, particularly between primary and secondary services. The absence of any standard metric for measuring harmful interference can provide a primary licensee with a means of prolonging the dispute, wearing down the secondary service licensee through a war of attrition even if no harmful

interference exists. Use of the interference temperature metric to resolve these disputes quickly and easily by recourse to an established and objective standard – and with measurements obtainable by the challenged licensee – will provide both secondary service licensees and the Commission with relief from frivolous complaints.

Finally, licensees will benefit from the ability to gauge their own tolerance for interference risk should they wish to utilize the Commission’s *Secondary Market Order. Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, 18 FCC Rcd 24817 (2003). While larger, sophisticated licensees have dismissed this value of a standard metric, it is of great interest and importance to small licensees and to entrepreneurs or consumers wishing to use secondary markets. A standard metric will facilitate the development of off-the-shelf technology that will allow small businesses to buy and sell spectrum access easily. *See Reply Comments of Shared Spectrum* at 3.

A. Adoption of Interference Temperature Will Assist In Creating New Licensed Services.

Prometheus Radio Project can speak first hand to the value to licensees of a clear metric to define “harmful interference.” When the Commission first proposed the low power FM service, incumbents claimed that the new service would create harmful interference. When the FCC addressed these claims in its *First Report and Order, Creation of Low Power Radio Service*, 14 FCC Rcd 2471 (1999), incumbent licensees lobbied Congress. The lack of an adequate metric to measure interference risk allowed incumbents to create an atmosphere of fear, uncertainty and doubt about the introduction of the LPFM service, shamelessly exploiting the technical nature of the engineering analysis to deceive legislators. As a consequence, the creation and deployment of LPFM has been handicapped by the so-called Radio Broadcasting Preservation Act of 2000,¹ despite the fact that no real risk of harmful interference ever existed.²

Existence of a generally applicable, neutral metric for measuring the risk of harmful interference such as the proposed interference temperature would have benefitted Prometheus Radio and other proponents of LPFM enormously, and still would today. LPFM supporters spent thousands of hours and huge sums (trivial perhaps to commercial broadcasters, but devastating to noncommercial would-be broadcasters) arguing the definition of “risk of interference” and “harmful interference.” Had interference temperature existed, this wasteful effort could have been avoided. More importantly, reference to the standard would have allowed LPFM advocates to explain the issue clearly to members of Congress, and the current legislative restraints on a service valuable to

¹ **Pub. L. No. 106-553.**

²See *Experimental of the Third Adjacent Channel Impacts of Low Power FM Stations*,” Docket No. MM 99-25 (rel. July 11, 2003).

the public avoided.

LPFM is only one of a host of new services, licensed and unlicensed, to suffer from the lack of a standard interference metric. *See generally* Paul Margie, “Can You Hear Me Now? Getting Better Reception From the FCC’s Spectrum Policy,” 2004 Stanford Tech. L. Rev. 5 (2004). To consider only the most egregious examples, the Commission spent more than seven years reviewing the petition of CD Satellite Radio that ultimately led to the establishment of the Satellite Radio service. *Establishment of Rules and Policies for the Digital Audio Radio Service*, 12 FCC Rcd 5754 (1997). The Commission spent five years (if one includes the initial petition filed by Skybridge) creating a plan to permit sharing the Ku-band. *Amendment of Parts 2 and 25 of the Commission’s Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band*, 17 FCC Rcd 9614 (2002) (“*MVDDS Second R&O*”). The Commission spent even longer resolving the rules for ultra-wideband technologies. *Revision of Part 15 Regarding Ultra-Wideband Transmission Systems* 17 FCC Rcd 10505 (2002)³ (“*UWB Order*”). Even when the Commission finally determines the appropriate level of interference risk, the lack of any clear standard can lead to reversal in the courts, starting the whole process over. *See AT&T Wireless Services, Inc. v. FCC*, 270 F.3d 959 (D.C. Cir. 2001) (remanding for further explanation of harmful interference standard).

In all of these proceedings, those arguing the fiercest that new entrants would create unbearable risk of harmful interference were incumbent licensees determined to exclude new entrants. Incumbents pitched their arguments in terms of the risk of interference, however, rather

³Although the *NPRM* on ultra-wideband systems was released in 2000, the question of rules for ultra-wideband systems was first raised in the Commission’s 1996 proceeding on the Unlicensed National Information Infrastructure Rulemaking. 11 FCC Rcd 7205 (1996). The Commission deferred consideration of ultra-wideband systems pending a separate rulemaking. 12 FCC Rcd 1576 (1997).

than the less attractive anticompetitive argument of excluding new entrants. The need to define suitable interference measurements for new entrants from scratch in each of these proceedings acted to unfairly reward incumbents for their foot-dragging. As the proceedings continued, would be service providers suffered. The uncertainty made it increasingly difficult to raise funds, and the endless testing demanded by incumbents acted as a further drain on resources. In the end, consumers and new entrants suffered while incumbents continued to protect their marketshare.

The presence of a standard metric such as interference temperature would therefore be an enormous saver of time and resources for both new entrants and policymakers. By providing a common frame of reference, all parties, the Commission, and Congress could know what to expect and how to demonstrate whether a new technology poses a real risk of harmful interference.

B. Interference Temperature Will Help Licensees, Particularly Those Licensed on a Secondary Basis, to Resolve Interference Disputes.

Importantly for LPFM (and all users of secondary licensed services), interference temperature will prove a valuable tool in resolving interference disputes. Licensees who argue that such matters can be resolved better through private negotiation both ignore the issue of secondary licensed services (with whom primary licensees need not negotiate), and the disparity of bargaining power between licensees. As the Commission well knows, a licensee in a primary service can require a licensee in a secondary service to abate any interference problems. Similarly, a licensee in a secondary service can require an unlicensed user to abate interference. Conflicts can also occur between two co-equal services. Resolution of these conflicts can depend more on the difference in financial resources between the parties than on the merits of the interference complaint.

Given that the Commission lacks resources to conduct field tests whenever a dispute arises,

filing a complaint or defending against a complaint necessarily involves the same expensive *ad hoc* approach as the approval of new services. Primary service licensees, particularly large incumbents, have a huge advantage on such a playing field. These licensees can simply assert the presence of interference, requiring the smaller secondary service to produce expensive studies to rebut these claims. Without recourse to a standard measurement, this process quickly becomes expensive and highly subjective. Wealthier incumbents can engage in a war of attrition, requiring weaker licensees to drop complaints or agree to demands from sheer exhaustion.

A standard metric would do much to alleviate this problem by removing the ability of wealthier incumbents to delay proceedings indefinitely with new definitions of “harmful interference” supported by new studies. Prometheus Radio, *et al.* also expect that a standard metric will simplify the complaint process and encourage the Commission to move expeditiously. Too often, the Commission staff take so long to process the voluminous record of a complaint that the smaller licensee suffers extensive harm to its listener base and its finances. A standard metric should reduce the processing time and facilitate the speedy administration of such complaints.

Finally, the use of a standard metric will help parties to resolve conflicts privately. The existence of a standard metric will allow parties acting in good faith to measure interference risk within their coverage areas. Confidence in these objective measurements will allow parties to trust each other both as to the nature of any risk and as to compliance with any agreement.

This issue becomes particularly critical for users of unlicensed spectrum building facilities based competitors to incumbent services. The existence of an objective measure for interference, rather than the subjective claim by a commercial competitor that a system causes harm, will make operation of unlicensed networks that much more economically viable.

In short, while larger incumbents may express both satisfaction with the current *ad hoc* system for resolving spectrum disputes and faith that the market will provide, smaller incumbents and users of unlicensed spectrum do not share these feelings. Introduction of a standard frame of reference for interference risk, such as the proposed interference temperature, will go a long way toward easing the current disparities in the resolution of interference complaints.

C. Adoption Of A Standard Metric Such As Interference Temperature Is Critical To Obtaining The Benefits The Commission Foresees In the *Secondary Markets Order*.

Those opposing any metric also fail to appreciate the value of interference temperature to secondary markets. Commenters here do not share a unified view on whether the Commission's secondary market order serves the public interest. Significantly, however, all Commenters agree that if the Commission permits secondary markets, that these markets should function to further the goals of the Communications Act: "favoring diversity of media voices, vigorous economic competition, technological advancement, and the public interest, convenience and necessity." Section 257(b)(1). This is impossible without a standard metric such as interference temperature.

Arguments in favor of secondary markets are premised on a smoothly functioning system in which spectrum access can be bought and sold with minimal transaction cost, turning access rights into a commodity. This is critical to realizing the efficiencies and benefits for small license holders and potential users envisioned by the Commission. Commoditizing spectrum in this fashion also mitigates the danger that any single entity or group of entities can dominate the secondary spectrum market.

For small licensees to take advantage of secondary markets, they must have simple and convenient tools to measure their tolerance for sharing spectrum (preferably in real time). The need for a single, uniform standard is even more urgent for the would be buyer and for the equipment

manufacturer who wishes to provision both licensees and would be buyers. Without a single interference standard, how can users hope to accumulate sufficient spectrum access on a national or even regional basis without being locked into a single class of licensee? How can equipment manufacturers design generically applicable equipment that applies across all usable frequencies without a standard metric? And, if manufacturers cannot design equipment for a national market of would be users, how can manufacturers achieve the economies of scale necessary to produce affordable equipment?

These concerns do not trouble larger licensees, which have the resources and market power to take advantage of secondary markets through direct negotiations. From Nextel's point of view, it may appear that interference temperature is "a solution in search of a problem."⁴ But to smaller licensees and would be users of spectrum access, a metric such as interference temperature offers a host of advantages.

D. Smaller Licensees Will Benefit From Unlicensed Sharing Based On The Interference Temperature Metric.

As Shared Spectrum notes in its replies, many of those opposing use of a metric have clearly stated that their opposition emanates from their hostility to unlicensed access – which competes with these licensees. *Reply Comments of Shared Spectrum* at 9-12.

Smaller incumbents, however, have no fear of this competition. To the contrary, Prometheus Radio Project is in the process of investigating whether it can use unlicensed spectrum access to supplement licensed technologies. Because of the limited range of low power FM, LPFM licensees frequently have difficulty reaching the entire community they wish to serve. Unlicensed repeaters

⁴*Comments of Nextel Communications, Inc.* at 1.

may provide a possible solution, allowing listeners to receive LPFM broadcasts through their computers or through special attachments to their radios. Nor is Prometheus Radio Project alone in investigating this possibility. For example, Bonneville, owner of WTOP in Washington D.C., is investigating whether it is feasible to use WiMax transmitters to broadcast its internet radio station, Federalnewsradio.com.⁵

E. The Commission Should Consider Not Merely the Interests of Large Incumbents, But Must Consider the Interests of Smaller Incumbents and Users of Unlicensed Spectrum.

Larger incumbents thrive on the existing ambiguity in defining and managing interference risk. Historically, these incumbents have used this ambiguity to resist the introduction of competing new services and leverage their greater resources in spectrum interference disputes. Further, if the same conditions of ambiguity persist, these large incumbents will dominate the new secondary markets to the detriment of small businesses, entrepreneurs, and the public.

The Commission has a duty to look beyond the needs of large incumbents and their equipment manufacturers. The Communications Act directs the FCC to remove regulatory barriers to small entities wishing to offer telecommunications services. 47 U.S.C. §257. The Commission must also structure its spectrum policies to promote new advanced telecommunication services – particularly by and to small businesses, diverse owners, rural users and non-commercial entities. *Id.*; 47 U.S.C. §309(j)(3)(B); Telecommunications Act of 1996, §706.

Implementation of a standard metric will help to achieve these goals of the Communications Act. For these reasons, the Commission should move expeditiously to adopt a standard interference

⁵<http://wifi.weblogsinc.com/entry/2757643664353965/>

metric.

II. THE METRIC PROPOSED BY THE COMMISSION IS REASONABLE AND SHOULD BE ADOPTED EXPEDITIOUSLY, WITH AN UNDERSTANDING THAT IT WILL BE ADJUSTED AFTER DEPLOYMENT IN THE TESTBED BANDS.

The Commission did not pull interference temperature out of thin air. It builds on the substantive work done by the Spectrum Policy Task Force, refined by the technical expertise of the Commission's staff and numerous consultations with leading experts in the field. Prometheus Radio, *et al.* fully support adoption of the proposed metric.

A. The Metric Adopted Is Reasonable and The Bands Selected For The Testbed Are Reasonable.

Several Commenters have raised specific concerns with regard to the calculation of interference temperature. These concerns, however, create no bar to deployment and implementation of the interference temperature metric. Theoretical debate is inherently limited, and theoretical objections and exceptional cases can always be raised. To truly test the concept, field deployment is necessary.

The Commission should reject comments about the unsuitability of various bands never mentioned in the *NPRM* and the general antipathy toward unlicensed access expressed by some licensees as irrelevant. If CMRS or other bands are unsuitable to unlicensed sharing – a highly disputable assertion – then, under the Commission's proposal, no sharing will occur. Objections based on the general fear of incumbents that someday they may, when the technology matures, yield their exclusivity to increase efficiency and public benefits does not address the question of whether interference temperature itself is a good idea.

With regard to the bands actually discussed in the *NPRM*, despite dire predictions of incumbents, the bands selected by the Commission are eminently reasonable. As the Commission

observed, these are point to point bands aimed at the sky and back again at the ground. As a consequence, the narrowness of the beams creates vast amounts of “white space” that can be more productively filled with other activity. This clearly furthers the Commission’s statutory responsibility to “generally encourage the larger and more effective use of radio in the public interest.” 47 U.S.C. §303(g). As a further protection, the licensees have no upper power limits. This will allow them to “blast through” any interference that unlicensed operation may cause.

By contrast, attempting to use the unlicensed band as a testbed will do little to advance the interference temperature concept. The bands are congested with an unknown number of transmitters and receivers of varying configuration and strength, making it impossible to even determine a background RF temperature. Because there are no meaningful licensed services to protect, the applicability of the measure to licensed services will remain in doubt even after deployment in the testbed. Since applicability to licensed services is one of the primary goals of implementing the interference temperature metric, a testbed which does not involve licensed services would be pointless.

Nor could the Commission reasonably be expected to construct an artificial licensed service in the unlicensed bands for the sole purpose of testing the metric. As an initial matter, such a course would violate Section 3002(c)(1)(C)(v) of the Balanced Budget Act of 1997, Pub. L. No. 105-33. As this section makes clear, Congress instructed the Commission to *protect* existing Part 15 unlicensed allocations from the introduction of new, exclusive licensed services. But even if it were legal for the Commission to create a new licensed band in the existing 2.4 GHz band, such a course would serve no purpose but to artificially delay deployment of this valuable metric and the new services that could be offered in licensed bands. Indeed, the administrative costs alone of attempting

to create a licensed service for the existing underlay bands, or otherwise construct a testbed in the underlay bands that would provide any useful information, justifies selecting a licensed band rather than the 2.4 GHz band as the testbed.

It would be ironic indeed if the Commission delayed creating a metric that will curtail incumbents' ability to stymie new entrants with frivolous interference fears by bowing to the incumbents' frivolous interference fears. Rather, as the Commission concluded, a testbed involving licensed services is required, and the Commission has selected appropriate bands for the testbed.

B. Objections Based On The Experimental Nature of Interference Temperature Technology Create A Classic “Chicken and Egg” Dilemma Which The Commission Can Resolve Only By Adopting The Metric And Proceeding To The Testbed Stage.

Numerous commenters object to moving forward with the testbed proposed in the *NPRM* until the Commission can answer every possible question or objection and can demonstrate that the proposed technology will operate in complete compliance with the theory proposed. These parties misconceive the purpose of a testbed.

The Commission has not proposed to allow unlimited access based on interference temperature willy nilly, as commenters seem to believe. The Commission has proposed a much needed tool for managing interference risk and proposed to adopt a clear road map for how to develop this concept.

To translate interference temperature from theory to fact will require significant investment of time and resources. The Commission cannot logically expect anyone to make this significant investment without first receiving assurance from the Commission that the technology has some

hope of adoption. But the recent history of spectrum innovation gives entrepreneurs and innovators strong reason to believe that such investments will be at best wasted, and at worst benefit only commercial rivals.

Consider the Commission's Ultra-Wideband proceeding. Many innovators and investors spent years and millions developing technology before Commission approval. So much time passed, and so high was the cost, that many of these early pioneers either went bankrupt or switched to other technologies.⁶

These applicants at least fared better than Northpoint (aka Broadwave USA). Northpoint invested millions in developing a potential rival to DBS and cable – a technology that could introduce much needed competition in the MVPD market. The Commission required the technology to undergo rigorous testing and overcome the objections of its commercial rivals. This added even lengthier delays and millions more in costs. What was Northpoint's reward for this investment? The Commission found that it would require Northpoint to bid for licenses.

Whether this was the proper decision under the statute is not the point. Rather, Prometheus Radio, *et al.* ask what innovator or financier will develop technology to test, develop and implement new technologies and approaches for interference temperature without solid assurance that these technologies will be deployed?

For this reason, the Commission must adopt the *NPRM*. Only by designating a band for testbed deployment and explaining to would-be developers how they can expect to bring products to

⁶*See, e.g.*, Steve Stroh, "Ultra-Wideband: Media Unplugged," IEEE Spectrum 24-27(September 2003).

market can the Commission provide the degree of certainty needed to spur development of the technologies that will implement interference temperature and demonstrate the validity of low-powered shared access in licensed bands. Heeding the objections of those who demand that would-be innovators must develop and mature the interference temperature technologies first will only ensure that such technologies will never emerge.

C. The Commission Should Avoid Mandating Any Specific Technology or Method for Determining Ambient RF Temperature or for DFS, But Should Instead Set General Criteria For Certification.

The Commission does not propose to send these technologies out into the world untested or without adequate protections for licensees. Any manufacturer that claims to comply with the NPRM – *i.e.*, that its device is capable of realtime dynamic power adjustment and frequency sharing, and will have safeguards built in that prevent the device from interfering with licensed services – must prove these claims to the Commission’s engineers before it can receive certification under Part 15.

The success of the Part 15 regime has flowed from two factors: its simplicity and the refusal of the Commission to dictate specific technologies or standards for devices. The Commission’s Part 15 rules require that devices show they comply with the requirement and limitations set forth in the rules. **How** the devices comply is irrelevant. If an applicant for Part 15 certification can demonstrate to the satisfaction of the Office of Engineering and Technology that a device complies with the rules, it receives a certification.

At all costs, the FCC should avoid setting specific standards or mandating specific technologies. Nor should the Commission give incumbents an effective veto over the introduction of new devices by requiring notice and comment for each new technology or device that applies for certification. The history has shown that the existing equipment certification regime provides

adequate protection for licensees, and the history of FCC standard settings and incumbent resistance to new entrants warns against giving incumbents such opportunities for profitless foot dragging.

As anyone who has participated in an FCC industry standards proceeding knows full well, FCC supervised standard making is slow, inefficient and expensive. This is not because of any deficiency on the part of the FCC. This is simply the nature of a process in which participants have incentives to promote their own proprietary products and technologies regardless of the technical merit of their products or those of their rivals.

Unlike television receivers, set top boxes, or other technologies where it is imperative for the industry to have a single standard, the object here is not uniformity to promote interoperability. The Commission wants to protect licensed services and, in the NPRM, permit unlicensed sharing in the testbed. Commenters therefore urge the Commission to give interested parties the greatest flexibility to develop innovative solutions rather than to mandate a single solution and create an open process that would once again leave new entrants at the mercy of incumbent licensees determined to find fault.

Commenters foresee that it may be necessary to modify the existing certification regime by granting experimental licenses and limited licenses to emulate the services that exist in the testbed bands. For example, a company developing a technology to implement the NPRM might need a license to operate at the relevant frequencies at very low power in order to run field tests prior to certification. The Commission has, of course, complete legal authority to grant whatever limited licenses are necessary to ensure that the tests used provide sufficient confidence in the results to warrant certification.

Commenters stress again, however, that it should be the Commission that certifies devices,

not incumbents. While the Commission may wish to solicit comment on particular devices or solutions, the certification process should *not* include a requirement of public notice and comment for each new device. Such a notice and comment requirement would inevitably delay deployment of new technologies to the detriment of the public.

Licensees will still enjoy their primary protection and will still be able to demand that any interfering activity cease. The Commission could make its power to withdraw certification and demand the recall of any device that produces significant interference when deployed clear to any applicant for certification, and require that they sign a statement that they understand that the Commission may take these steps if necessary. The Commission might also wish to limit the number of devices manufactured pursuant to an interference temperature metric standard for a period of time, to confirm that the devices operate as expected.

The Commission would do well to remember the history of the Part 15 rules. Creation of new opportunities for unlicensed access have always faced dire warnings from licensees that compliance with interference limits will prove impossible to enforce and that as a consequence of the Commission's actions, licensees will suffer debilitating interference. But these doomsday predictions have never come to pass. To the contrary, the creation of new opportunities has promoted new spectrum technologies that do not compromise the integrity of licensed services. Indeed, in the fullness of time, the licensees adopt and benefit from the revisions they resisted.

The Commission's major revision of the Part 15 rules in 1989, and its adoption of the Unlicensed National Information Infrastructure (UNII) rules in 1997, demonstrate that the Commission has never required a record of the kind demanded by some Commentors here. Indeed, the existing record compiled during the Spectrum Task Force so far exceeds the record that

supported those rule changes that requiring a record of the kind demanded by some commentators would represent an arbitrary and capricious change in policy.

In 1987, the Commission issued a proposal to simplify the Part 15 rules. *In re Revision of Part 15 of the Rules Regarding the Operation of Radio Frequency Devices Without Individual License*, 2 FCC Rcd 6135 (1987) (“1987 Part 15 NPRM”). As part of this proposal, the Commission proposed to allow operation on numerous new bands and for any purpose, provided the devices complied with general strictures imposed in the rule. *Id.* at 6135-38.

The Commission faced virtually the same arguments raised here by incumbents, and rejected them. The Commission required no new testing or experimental service, relying instead on its technical expertise and real world experience in administering other unlicensed services. *In re Revision of Part 15 of the Rules Regarding the Operation of Radio Frequency Devices Without Individual License, First Report & Order*, 4 FCC Rcd 3493, 3494-95 (“1989 Part 15 R&O”). In response to complaints in protected service bands that expansion was unnecessary because unlicensed devices had more than enough room under existing allocations and the risk of interference was too great, the Commission stated: “We believe that manufacturers, if given the opportunity to use the ISM frequencies, will develop many new and practical uses of Part 15 devices.” *Id.* at 3502.

Throughout the 1989 proceeding, the Commission explained that the public interest demanded a balance between the risk of interference to licensed services and the tremendous potential to the public in expanded unlicensed access. As the Commission concluded:

The actions being taken in this *Report and Order* represent the Commission's best judgments as to the trade-offs between beneficial low power spectrum use and

possible interference to the authorized radio services. We recognize that certain increased risks of interference to authorized devices may result from altering our regulations.....On balance, we believe that the public interest benefits of the rule changes being adopted outweigh the potential for increased interference.

Id. at 3519.

Similarly, when the Commission proposed to create the Unlicensed National Information Infrastructure (UNII) Band, it acted proactively to encourage the development of new technologies. *In re Commission's Rules to Provide for Unlicensed NII/Super Net Operations in the 5 GHz Frequency Range*, 11 FCC Rcd 7205 (1996). The Commission observed the growing interest in wireless technologies by would-be users and found that advances in processor speed and digital technologies provided a firm basis for expecting that new uses of the spectrum would emerge to the benefit of the public. *Id.* at 7206, 7216. The Commission also noted that increasing the availability of unlicensed spectrum would further the Commission's mandate under Section 706 of the Communications Act to encourage deployment of advanced telecommunications capabilities to all Americans. *Id.* at 7206. The Commission reaffirmed this reasoning in its final *Order*, also finding that additional unlicensed spectrum "will further the Commission's mandate, in Section 257(b) of the Communications Act, to promote vigorous competition and technological advancement." *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) ("UNII R&O").

Again, the Commission explicitly rejected calls from incumbents to ensure absolutely no interference, and rejected the need to build a record through experimental licensing. *Id.* at 1580-85. The Commission also rejected arguments that sufficient unlicensed spectrum already existed to

meet the needs of the public for unlicensed access. *Id.*

History has borne out the Commission's judgment in both cases. The Commission's prediction that making a sufficient amount of spectrum available would prove a driver for innovation, deployment of broadband data services, and a boon to small business and noncommercial users has proven true.

By contrast, where the Commission has yielded to the fears of incumbents in exchange for the promise of new services, the Commission has been disappointed. In 1989, the Commission declined to extend the Part 15 Rules to the television broadcast spectrum even though the Commission was "satisfied that our proposed limits are adequate to prevent harmful interference" because "more intensive use of these bands may occur with the introduction of various forms of High Definition Television (HDTV)." *1989 Part 15 R&O*, 4 FCC Rcd at 3501.

In other words, the Commission prohibited unlicensed access to potentially the most productive and useful spectrum, despite the fact that the proposed uses would cause no harmful interference, based on the promises of incumbents to roll out superior services and the fear that unlicensed would interfere with these services. It is difficult to see today, however, how the introduction of Part 15 devices to analog broadcast spectrum could have delayed the offering of HDTV any more than the current incumbents have done in the absence of Part 15 devices.

The Commission should take this lesson to heart. It should ignore the weary arguments of incumbents, trusting instead the entrepreneurs, and noncommercial users that continue the virtuous cycle of innovation and deployment begun by the Commission in 1989.

D. The Commission Should Make Clear That Interference Temperature Is An Evolving Concept and Adopt a Regular Schedule of Assessments With A Bias In Favor of Increasing Access To Spectrum For All.

At the same time, however, the Commission should explicitly acknowledge that interference temperature may require some adjustment after deployment. This applies not merely to adjustments in the metric itself, but to the limitations imposed on spectrum sharing.

Prometheus Radio, *et al.* fully expect that, as the interference temperature metric gains wide acceptance and technology matures around it, additional bands will prove themselves suitable for unlicensed sharing. The Commission should explicitly place licensees on notice that it intends regularly and on an ongoing basis to assess the interference temperature metric and the suitability of other bands for shared use.

To provide regularity to this process, Prometheus Radio, *et al.* recommend that the Commission announce a regular review of interference temperature and review of the suitability of bands for sharing. This review could be incorporated into existing reviews, such as the Commission's regular review under Section 257 for the removal of regulatory obstacles for small businesses.

III. THE COMMISSION HAS AMPLE AUTHORITY TO ADOPT THE INTERFERENCE TEMPERATURE METRIC AND PERMIT UNLICENSED ACCESS, AND DOING SO WOULD SERVE THE PURPOSES OF THE COMMUNICATIONS ACT AND THE VALUES OF THE FIRST AMENDMENT.

Several Commenters, most notably the Wireless Communications Association International ("WCAI"), challenge the Commission's authority to create an interference temperature metric and use it to facilitate unlicensed access. This is wholly without merit. Not only does the

Communications Act authorize the Commission to adopt the metric and use it to facilitate unlicensed, but doing so will further the goals of the Act.

More importantly, the public interest analysis the Commission must conduct requires the Commission to consider the First Amendment as well as the Communications Act when formulating policy. While the goals of the First Amendment do not dictate a particular policy *per se*, failure to consider whether the proposal furthers the goals of the First Amendment would result in reversal. In this case, the hostility of the First Amendment to countenance burdening the speech of citizens with unnecessary limitations tips the scales heavily in favor of policies that release spectrum directly to citizens.

A. The FCC Has More Than Adequate Authority to Implement the NPRM.

WCAI and others argue that the introduction of the interference temperature metric and the use of interference temperature to permit frequency sharing would violate the rights of licensees and be contrary to the goals of the Communications Act. WCAI Comments at 14. These arguments have been raised in other proceedings, and have been rejected by the Commission. The Commission should likewise reject them here.

While the Communications Act is rarely a model of clarity, it is utterly unambiguous on this issue: no licensee has anything in the nature of a property interest in a license. 47 U.S.C. §301. Licensees must explicitly waive any claim based on prior use “against the regulatory power of the United States.” §304. Licensees have no rights beyond those explicitly detailed on the face of the license and a guarantee of protection from *harmful* interference. 47 U.S.C. §309(h)(1). The Commission may unilaterally alter the terms of a license or class of licenses if it finds that doing so would serve the public interest and it protects the due process rights of the licensee. 47 U.S.C.

§303(f); §316.

Even within the scope of use under a license, the Act imposes limitations on licensees. A licensee may not use more than the minimum power “necessary to carry out the communication desired.” 47 U.S.C. §324. Nor can a licensee deliberately act to interfere with any secondary or unlicensed access user, despite its primary status. 47 U.S.C. §333. Indeed, the Commission may revoke the license of an operator who “has willfully or maliciously interfered with any other radio communications or signals.” 47 U.S.C. §303(m)(1)(E).

As a final precaution, to prevent licensees from making precisely the argument advanced by WCAI, the Act explicitly states that a licensee who receives a license as a result of winning an auction has no greater claim to any right or privilege than any other licensee. 47 U.S.C. §§309(j)(6)(C)-(6)(D). In addition, Congress has expressed its concern that licensed services sold at auction not interfere with the rights of unlicensed users, rebutting any argument that Congress could not have intended to extend these protections to unlicensed spectrum users. Balanced Budget Act of 1997, §2002(c)(1)(C)(v).

Thus, in the past, the Commission has exercised its power to require broadcasters to divest newspapers in the same market area, even though the cross-ownership ban was not in effect when the effect at the time of the acquisition of the newspaper or broadcast licenses. *National Citizens Committee For Better Broadcasting v. FCC*, 436 U.S. 775, 814 (1978). The Commission has ordered the involuntary relocation of licensees, pursuant to compensation schemes determined by the Commission. *In re Redesignation of the 17.7-19.7 GHz Frequency Band*, 15 FCC Rcd 13430 (2000), *affirm'd sub nom Teledesic L.L.C. v. FCC*, 275 F.3d 75 (D.C. Cir. 2001). The Commission has retroactively extended repayment schedules to the detriment of losing bidders, *U.S. Airwaves*,

Inc. v. FCC, 232 F.3d 227 (D.C. Cir. 2000), and determined that it would use auctions to distribute available DBS channels despite previously informing licensees that it would distribute the excess capacity among the existing licensee pool. *DirecTV, Inc. v. FCC*, 110 F.3d 816 (D.C. Cir. 1997). In all these cases, the courts have upheld far more drastic restructuring of settled licensee expectations than that affected by the NPRM.

Furthermore, all of the statutory provisions limiting licensee authority and giving the Commission authority to make changes necessary to serve the public interest over the objections of the licensees were part of the Communications Act prior to the first spectrum auction. Given the Act's explicit statement that any distribution by auction shall not "diminish the authority of the Commission under the other provisions of this Act to regulate or reclaim spectrum licenses," Section 309(j)(6)(C), licensees can hardly claim surprise when the Commission exercises its regulatory authority and reclaims unused spectrum. The licensees are presumed to have read the statute and properly discounted their bids against the uncertainty that the Commission might someday alter the regulatory scheme.

It is not the Commission's fault if the licensees bid in the irrational expectation that the Commission would never exercise its broad statutory powers. Would the licensees argue that the Commission had "retroactively altered the terms of the auction" if the Commission authorized an advanced wireline service that competed with licensees? Do changes in the economy constitute a "retroactive change" because the licensees bid in an expectation that the Internet bubble would never burst? To what extent can the licensees expect the Commission to freeze all environmental factors to avoid a "retroactive change" in the basic premises under which the licensees made their bids?

In any event, the Commission does not even propose to alter the licenses. Licensees will still

enjoy exactly what Section 309(h)(1) promises: the right to operate on the designated frequency in accordance with the terms on the face of the license. To the extent licensees enjoyed exclusivity as a consequence of the general prohibition on operation without Commission approval inherent in Section 301, that was simply a byproduct of the extant regulatory scheme.

The Commission has rejected arguments virtually identical to those raised by WCAI. In the Ultra-Wideband Order, Sprint argued that its payment of \$3 Billion entitled it to exclusive use of PCS spectrum. The Commission soundly rejected the idea that licensees had any expectation of exclusivity regardless of the amount paid at auction. *UWB Order*, 17 FCC Rcd at 7525-26. As the D.C. Circuit has stated: “Absent harmful interference, [competitor’s] new system does not trammel upon petitioners’ rights as licensees.” *AT&T Wireless, Inc. v. FCC*, 270 F.3d 959, 964 (D.C. Cir. 2001).

Indeed, it is difficult to see how the changes proposed by the Commission even compromise the exclusivity the licensees claim is their due. The Commission does not propose to allow any service even remotely comparable to that employed in the testbed. Even if licensees were entitled to some kind of protection from competition, this proceeding would not raise such concerns. *Id.*

The Commission has also explicitly rejected the idea that licensees somehow have a right in the first instance to “mine” the value of their spectrum allocation in the manner suggested by some Commenters. To the contrary, the Commission has always made clear, in accordance with Section 324 of the Act, that a licensee is only entitled to the spectrum necessary to perform the function licensed by the Commission. For example, in the Commission’s 1996 *Report & Order* on cost sharing for relocation of microwave licensees displaced by PCS licensees, the Commission explicitly rejected the idea that licensees would receive the same quantity of spectrum in the new band.

Rather, each licensee would receive sufficient bandwidth to accommodate the *current, existing* network operational needs. *Amendment to the Commission's Rules Regarding A Plan for Sharing the Costs of Microwave Relocation*, 11 FCC Rcd 8825, 8840-41 (1996). In other words, the relocated microwave licensees had absolutely no right or expectation to the unused potential of their authorized spectrum, let alone uses not yet authorized, as licensees claim here.

It is instructive to note that many of the PCS licensees or their successors in interest who benefitted from the *Relocation Order* now reiterate the very arguments that they previously urged the Commission to reject. It is not, of course, surprising that incumbents, once established, suddenly reverse themselves based on their new interests. But the Commission should recognize this for what it is and weigh these arguments accordingly.

Nor do the cases cited by WCAI hold otherwise. WCAI Comments at 12-14. To the contrary, these cases hold that the Commission has the authority to make regulatory changes, even when they alter the economic landscape. In *U.S. Airwaves, Inc. v. FCC*, the case most heavily relied upon by WCAI, the D.C. Circuit rejected a challenge to the FCC's ability to alter the rights of auction winners and losers. *U.S. Airwaves*, 232 F.3d at 235-36. WCAI accurately quotes the Court that an agency "cannot, in fairness, radically change the terms of an auction after the fact." In the next sentence, however, the Court makes plain that "at the same time, an agency must be allowed to adjust its policies to changing circumstances." *Id.* The expectation of licensees must always be balanced against the public interest. *Id.* While the Commission must consider any unfairness to any party as part of its public interest determination, *Id.*; *Mobile Communication Corp. of America v. FCC*, 77 F.3d 1399 (D.C. Cir. 1996), it is "the public, not some private interest, convenience or necessity" that governs regulation of FCC licenses. *Ashbacker Radio Corp. v. FCC*, 326 U.S. 327,

334 (1945).

WCAI's Fifth Amendment takings claim has been consistently rejected by the FCC and the courts. Since the Supreme Court first considered the issue, there has never been any form of property right or expectation in an FCC license. *FCC v. Sanders Bros. Radio Station*, 309 U.S. 470, 475 (1940). It is not surprising that WCAI fails to cite a single case pertaining to telecommunications licenses in support of its Fifth Amendment claim. WCAI comments at 14.

B. Implementation of the NPRM Would Further the Purposes of the Communications Act.

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. Both will continue to exist quite comfortably, and even complementary to one another, after adoption of the NPRM. But the Commission should clearly reject any argument that exclusive licensing alone serves the interests of the Act, or that creating further opportunities for access would somehow contravene the purposes of the Act. Accordingly, the arguments by WCAI and others that adopting the *NPRM* contravenes the goals and policies of the Communications Act should be rejected as meritless.

As an initial matter, unlicensed access has been an consistent driver of technological development, economic growth, and valuable social services.⁷ The idea that permitting greater

⁷*See, e.g.*, Kenneth R Carter, Ahmed Lahjouji, & Neal McNeil, 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

unlicensed access will somehow diminish the innovation the Act seeks to encourage is ludicrous in light of the innovation taking place in the existing unlicensed space.

Nor does WCAI explain how competition from unlicensed access will diminish the incentive of licensees to innovate, when competition is universally recognized as a powerful *incentive* to innovate. If licensees fear that unlicensed access will provide consumers with a host of alternate services, licensees will need to differentiate themselves via innovation, new services, and higher quality of service.

To the extent WCAI seems to argue that interference temperature will “punish” licensees for spectral efficiency, this argument lacks merit. The Commission merely proposes to allow transient spectral activity where doing so interferes with no one. If licensees develop new technology to enhance their efficiency, they remain free to capitalize on this efficiency in precisely the same way they do now. For example, through increased efficiencies, licensees can offer better quality of service. They can use increased capacity to add more customers. They can use the newly available capacity to offer new services. They can sell the excess capacity in secondary markets. These are the rewards that licensees currently enjoy for increasing efficiency, and they will remain unaffected by the adoption of the NPRM.

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).

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 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).

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.⁸ Others, such as the New

⁸See, e.g., UNLICENSED AND UNSHACKLED, *supra* n. 7; *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.

America Foundation, have likewise extensively documented the benefits of unlicensed access.⁹

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

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). As a general matter, 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). Licensing of spectrum is fundamentally different, however. Because unregulated use of the electromagnetic spectrum by *everyone* would make impossible the effective use of the spectrum by *anyone*, the Supreme Court has consistently upheld the right of 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). This does not, however, 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.

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); *accord FCC v. League of Women’s Voters of California*, 468 U.S. 364, 376 n. 11 (1984). As technology continues to advance, and the need for exclusivity diminishes, it serves the interests of

⁹See sources cited *supra* n. 7.

the First Amendment to permit as many citizens as possible to access the 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). Permitting broader access serves the First Amendment both by creating more opportunities for people to speak and, concomitantly, more sources for people to hear.

Here, the Commission proposes to take an important step in allowing citizens to freely communicate with one another. It proposes to do this in a manner that will not interfere with existing licensed services. Such a course of action clearly serves the goals of the First Amendment. By contrast, simply abandoning the *NPRM*, as suggested by numerous incumbents, is plainly contrary to the First Amendment. To do so violates not only the First Amendment principles inherent in *Preferred Communication*, but the fundamental public interest considerations of the Communications.

CONCLUSION

The Commission has proposed a course of action which, if adopted, holds enormous promise for furthering the goals of the Communications Act and the purposes of the First Amendment. While many technical questions remain to be resolved, the Commission has chosen a careful and considered course of action that achieves the goals of promoting broader communication and more effective use of spectrum while protecting the users of existing services. The Commission should not yield to the endless protests of those who benefit from the status quo. Rather, the Commission should move expeditiously to adopt the *NPRM* and move forward with development and use of the interference temperature metric.

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