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

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Federal Communications Commission  
Office of the Secretary

In re )  
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NetfreeUS, LLC )  
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Application for License and Authority to )  
Provide Wireless Public Broadband Service )  
in the 2155-2175 MHz Band )  
 )  
Petition of M2Z Networks, Inc. for )  
Forbearance Under 47 U.S.C. § 160(c) )  
Concerning Application of Sections 1.945(b) and )  
(c) and Other Regulatory and Statutory Provisions )  
 )  
M2Z Networks, Inc. )  
Application for License and Authority to Provide )  
A National Broadband Radio Service in the )  
2155-2175 MHz Band )  
 )  
To The Commission

File No. \_\_\_\_\_

WT Docket No. 07-30

WT Docket No. 07-16

**APPLICATION FOR LICENSE AND AUTHORITY  
TO PROVIDE WIRELESS PUBLIC BROADBAND SERVICE  
IN THE 2155-2175 MHZ BAND**

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IN THE 2155-2175 MHZ BAND**

NetfreeUS, a wholly-owned subsidiary of Speedus Corp. (“NetfreeUS”), hereby submits its application to construct and operate a nationwide broadband radio service in the 2155-2175 MHz band (the “Application”).<sup>1</sup> As further described herein, NetfreeUS proposes a unique secondary market licensing system to enable new entrants, entrepreneurs and municipalities to expeditiously provide free, wireless broadband radio services to the public on a “public commons” basis, with a

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<sup>1</sup> NetfreeUS expects that its application will be considered in the same proceeding as the application of M2Z Networks, Inc. (the “M2Z Application”). See *Public Notice*, “Wireless Telecommunications Bureau Announces that M2Z Networks, Inc.’s Application for License and Authority to Provide a National Broadband Radio Service in the 2155-2175 MHz Band is Accepted for Filing.” DA 07-492, rel. Jan. 31, 2007 (“Public Notice”). NetfreeUS is concurrently submitting a petition for forbearance (“Petition for Forbearance”) proposing a time-limited process by which the Commission can and should authorize the 2155-2175 MHz band without the need for auction. This application and Petition for Forbearance are being filed within 30 days from the release of the *Public Notice*. The petition for forbearance is hereby incorporated by reference.

minimum of Commission involvement. Grant of the Application will promote the public interest by adding new, viable competitors to the broadband marketplace, by facilitating ubiquitous coverage to the country (including rural areas), by fostering localism, by enabling new opportunities for entrepreneurs, and by providing the federal government with an ongoing revenue stream. As a wholly-owned subsidiary of Speedus Corp. (“Speedus”), a publicly-traded telecommunications and technology innovator that has pioneered new telecommunications services, NetfreeUS has the experience, the means and the qualifications to implement this proposal. Accordingly, NetfreeUS **asks** the Commission to accept the Application for filing and, consistent with the process described in its Petition for Forbearance, grant the Application consistent with the public interest, convenience and **necessity**.<sup>2</sup>

## **I. INTRODUCTION**

### **A. Background**

The Commission’s fundamental statutory mandate is to “make available, so far as possible, to all the people of the United States . . . a rapid, efficient, nationwide and world-wide wire and radio communication service with adequate facilities at reasonable charges . . . .”<sup>3</sup> In addition, Section **706** of the Telecommunications Act of **1996** requires the Commission to “encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans.”<sup>4</sup> In the early days of radio, television and cellular telephone service, the Commission ably met the mandate for universal access. It granted pioneering broadcasters spectrum so that Americans of all income levels could immediately gain access to services from the allocation of licenses by merit rather than by auction. Congress also authorized, public television and radio

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<sup>2</sup> Attached as Exhibit 1 is NetfreeUS’s FCC Form 601 and relevant schedules thereto, along with a copy of its electronically filed FCC Form 602. In Section V of this Application, NetfreeUS requests waiver of certain application filing requirements.

<sup>3</sup> 47 U.S.C. §151.

<sup>4</sup> See 47 U.S.C. §157(note).

stations to provide *free* over-the-air news, entertainment, public service and emergency alert content. The contributions that public broadcasting has made to the welfare of Americans cannot be denied.

Unfortunately, broadband deployment in the United States has lagged behind that of **other** countries. The International Telecommunication Union ranks the U.S. **16<sup>th</sup>** in the world in broadband penetration.<sup>5</sup> The Organization for Economic Co-operation and Development, a pro-democracy and pro-free market government organization, reported that the U.S. fell to 15<sup>th</sup> place among the 30 member-nations from 11<sup>th</sup> place in June **2004** and 4<sup>th</sup> place in **2001**.<sup>6</sup> Recent statements by FCC Commissioners acknowledge this situation and demonstrate a desire to place spectrum in the hands of private entities that are best positioned to deploy advanced wireless services quickly.<sup>7</sup>

The Commission could help stem this penetration deficiency by granting this Application and authorizing NetfreeUS as the manager of a nationwide "public commons" system to provide free and competitive broadband services. The accelerated deployment promised by NetfreeUS would significantly support President Bush's Technology Agenda and goal of universal broadband access.<sup>8</sup> It would also bring consumers with new choices in broadband access and would promote economic growth nationwide. NetfreeUS would also promote localism and the provision of service targeted to local interests and communities, as well as local business and economic development, through ubiquitous coverage provided by small-footprint networks. In addition, user-designated

<sup>5</sup> See "ITU's New Broadband Statistics for 1 January 2005," Press Release (rel. April 13, 2005).

<sup>6</sup> See OECD Broadband Statistics at [www.oecd.org](http://www.oecd.org) (rel. June 2005).

<sup>7</sup> See, e.g., America's Internet Disconnect, Commissioner Michael J. Copps, Washington Post at A27 (Nov. 8, 2006).

<sup>8</sup> See, e.g., "Promoting Innovation and Competitiveness - President Bush's Technology Agenda," Press Release. (rel. March 26, 2004). available at [http://www.whitehouse.gov/infocus/technology/economic\\_policy200404/chap4.html](http://www.whitehouse.gov/infocus/technology/economic_policy200404/chap4.html).

advertising would permit local customization of advertising, community and public-service messages to inform users about products and services of interest in the community.

NetfreeUS has reviewed the application filed by M2Z Networks, Inc. (“M2Z”) and applauds many of the initiatives and obligations described in its proposal. NetfreeUS acknowledges the many benefits cited by M2Z, including its economists’ views estimating that free, nationwide broadband service could save between \$8.4 billion and \$20.5 billion over **25** years because it will obviate the expansion of the Universal Service Fund (“USF”) and will thereby constrain the growth of USF.<sup>9</sup>

M2Z states that “an obligation to share the spectrum (by frequency, geographical division or in any other way) would prevent M2Z from fulfilling its business plan.”<sup>10</sup> The question for the Commission, however, is not whether M2Z can fulfill its business plan, but whether other alternatives can better serve the public interest than the single-license, single-provider approach urged by M2Z. In particular, NetfreeUS’s approach can accomplish the same objectives of providing free, nationwide broadband service, but with added benefits such as promoting entry by new local operators, by exploiting software-defined technology that will decrease consumer costs and by enabling an even more rapid build-out than proposed by M2Z. These additional benefits will, in turn, foster marketplace competition and innovation and lead to lower prices for broadband services. Further, as demonstrated below and its concurrently filed Petition for Forbearance, the Commission may afford M2Z, NetfreeUS and other applicants the opportunity *to* have their applications considered without being subject to auction or other time-consuming licensing processes in light of the significant benefits that will accrue.

<sup>9</sup> See M2Z Application at Appendix 5. 22

<sup>10</sup> *Id.* at 11

## B. Summary of the Application

NetfreeUS requests a nationwide authorization containing the following requirements and conditions:<sup>11</sup>

- **Free Broadband Service.** Like viewers of over-the-air television, consumers of NetfreeUS's Wireless Public Broadband ("WPB") service will never incur monthly fees. To access WPB, a consumer would need only to download free NetfreeUS-certified software from the Internet, a feature also available to users of existing IEEE 802.11 wireless devices. WPB would facilitate the deployment of software-defined radios for public use in a manner to permit software-based methods to detect and remedy potential harmful interference.
- **Secondary Market Deployments.** Unlike M2Z's closed proprietary system proposal, NetfreeUS desires to have others participate in the nationwide development of broadband services in the 2155-2175 MHz band. To enable such participation without the delays associated with a protracted license allocation process, NetfreeUS proposes the following:
  - NetfreeUS would hold a nationwide authorization for the 2155-2175 MHz band. Within 60 days of receiving its license, NetfreeUS would be required to offer to entrepreneurs, new entrants, municipalities and other members of the public the opportunity to lease the spectrum. NetfreeUS anticipates that there will be significant demand for leasing by entities resident in the local area they desire to serve.
  - Using existing secondary market rules and procedures, NetfreeUS and third-party lessees would apply to the Commission (if a *de facto* spectrum lease) or would notify the Commission (if a spectrum manager lease).<sup>12</sup> Initially, no lessee would be authorized to operate more than fifty (50) wireless access points ("WAPs").<sup>13</sup>
  - Any lease fees payable to NetfreeUS would be limited to NetfreeUS's transaction costs in negotiating any lease and in obtaining any required Commission approval of the leasing arrangement.
  - NetfreeUS could remain the licensee and service provider in the areas not leased to third parties, but NetfreeUS would be limited to a maximum number of fifty (50) WAPs nationwide except as necessary to facilitate compliance with construction milestones that are conditions of the license.

<sup>11</sup> The license conditions are contained in Exhibit 2 hereto.

<sup>12</sup> See 47 C.F.R. §1.9001 *et seq.*

<sup>13</sup> A WAP consists of a medium-power transmitter having a range of approximately one mile. It allows for users of wireless devices, such as laptops, mobile phones and personal digital assistants to access the Internet from any location within the WAP footprint. NetfreeUS estimates that WPB would involve the deployment of more than one million WAPs nationwide.

- o Consistent with “private commons” principles in Section 1.9080, NetfreeUS and its spectrum lessees would make spectrum usage rights available on a “private commons” basis to facilitate peer-to-peer and device-to-device communications. These spectrum usage rights and the technical and operating terms and conditions of use would be defined consistent with the operating conditions of the NetfreeUS license. NetfreeUS or its spectrum lessees would retain *de facto* control over the spectrum by users within the private commons. Mesh networks would be encouraged in certain areas where backhaul facilities are limited, and non-proprietary mesh networks can be integrated into the WPB to encourage bandwidth-efficient communications.
- **Public *Safety*.** NetfreeUS will provide first responders with a special software override code that would clear traffic in times of emergencies. Similar to the Emergency Alert System, public safety officials will be able to effectively communicate with the public and with each other over the Internet before, during and after natural disasters and homeland security alerts.
- **Substantial *Service*.** A license condition would require the provision of substantial service to at least 50 percent of the nation’s **734** Cellular Market Areas (CMAs) within four years of initial license grant, to 75 percent of the nation’s **CMAs** within six years of license grant and 95 percent of the nations CMAs within 10 years of license grant. “Substantial service” could be demonstrated by these deadlines **through** certain safe harbors. NetfreeUS will commit to a license condition that would require NetfreeUS to maintain a database of WAPs to identify areas where service is available. The database would be uploaded on a weekly basis as new WAPs are deployed.
- **Interoperability and Spectrum *Efficiency*.** All WAPs would be required to provide interoperability to facilitate nationwide roaming, assist public safety and enhance competitiveness with other broadband networks. Through the “license-and-lease” process, NetfreeUS will help coordinate construction and operation of the various local networks. WAP would provide software to allow the deployment of sectorized and dynamic networks that would promote spectral efficiency through the use of cognitive radio technology.
- **Open *Networks*.** NetfreeUS and its spectrum lessees would **use** an open network architecture to facilitate maximum flexibility for uses by end **users**. NetfreeUS would not censor content transmitted over WPB networks but instead leave these matters to individual and parental discretion.
- ***Revenue* Contribution.** The WPB will be supported through advertising revenue. NetfreeUS will make an annual payment to the U.S. Treasury of five percent (**5%**) of its gross revenues.

NetfreeUS’s goal is to establish a free broadband marketplace with near-ubiquitous access throughout the country, with actual service to be provided by third parties through a secondary

market mechanism. Universal access to broadband for consumers and a nationwide interoperable public safety data broadband network are national priorities. NetfreeUS's unique WPB proposal achieves these priorities by allowing entrepreneurs and the public (even municipalities) to build and operate a truly affordable broadband network for both consumers and public safety, potentially resulting in enormous economic and public interest benefits.

Consumers also will benefit from the competition that NetfreeUS and other entrants will provide to other broadband services providers, leading to increased innovation and competitive pricing. Because WPB will be advertising-supported, the frequency-coordinated entrepreneurial entity network will spur innovation and price competition for the benefit of consumers.

Moreover, existing users of IEEE 802.11 wireless devices may convert to the NetfreeUS WPB network with only a software upgrade. NetfreeUS anticipates that consumers will download software to make existing equipment interoperable on the WPB network. The WAPs that will be operated by the independent lessees are anticipated to cost initially several hundred dollars and can be frequency-coordinated by NetfreeUS's Network Operations Center ("NOC") server. These WAPs can be simple reprogrammed Wi-Fi equipment with the remote-management feature found in ordinary off-the-shelf equipment for consumers today. This added benefit allows existing users of Wi-Fi and other technologies to easily access the new nationwide **network**, thereby facilitating interoperability and ubiquity. To help mitigate and avoid interference, NetfreeUS would maintain a database of technical data submitted by spectrum lessees with respect **to** their WAPs. This technical database would further promote spectrum accountability by allowing NetfreeUS to identify lessees that are causing harmful interference and coordinating with those lessees to implement interference reduction or elimination techniques.

NetfreeUS has the qualifications to provide a service that will transform the broadband marketplace — all to the benefit of consumers. In requesting prompt Commission action in accordance with Title III of the Communications Act of 1934, as amended (the “Act”), including Section 309(j)(6)(E), NetfreeUS submits that it is technically, financially and otherwise qualified to operate under the proposed license. Moreover, the Commission has the authority to grant the Application without conducting a rulemaking proceeding or adopting band-specific licensing processes that would only delay consumers’ access to wireless broadband service. Accordingly, NetfreeUS requests the Commission to act expeditiously on the Application.

### C. Description of NetfreeUS

NetfreeUS is a wholly-owned unit of Speedus, which is a publicly-traded company listed on the NASDAQ Capital Market (Symbol: SPDE). For more than 15 years, Speedus and its predecessors-in-interest have been innovators in providing new services, new spectrum allocations and new telecommunications technology. In January 1991, the Commission granted Hye Crest Management, Inc. (“Hye Crest”), a predecessor-in-interest to Speedus, the first LMDS license pursuant to a waiver of the Part 21 point-to-point rules to authorize point-to-multipoint cellular video operations.<sup>14</sup> These efforts ultimately led to establishment of the LMDS and the auction of nationwide spectrum.<sup>15</sup> Speedus has received design and engineering awards from Popular Science and Popular Mechanics magazines, and holds a total of **52** patents in **28** countries, many of them

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<sup>14</sup> See *Application of Hye Crest Management, Inc. for License Authorization in the Point-to-Point Microwave Service in the 27.5-29.5 GHz Band and Request for Waiver of the Rules*, Memorandum Opinion and Order, 6 FCC Rcd 332 (1991). Speedus now holds an LMDS license for eight counties in the metropolitan New York City area (Call Sign WLT379).

<sup>15</sup> See, e.g., *Rulemaking to Amend Parts 1, 2, 21 and 25 of the Commission’s Rules to Redesignate the 27.5 - 29.5 GHz Frequency Band, to Reallocate the 29.5 – 30.0 GHz Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for fixed Satellite Services*, Second Report and Order, Order on Reconsideration and Fifth Notice of Proposed Rulemaking. 12 FCC Rcd 12545 (1997). High bids in the LMDS auction (Auction 17) were \$578.663.029. See *Public Notice, LMDS Auction Closes*, DA 98-572 (rel. Mar. 26, 1998).

for wireless technology.<sup>16</sup> These patents include U.S. Patent No. 4,747,160 (“Low Power Multi-Function Cellular Television System,”) U.S. Patent 5,594,937 (“System for the Transmission and Reception of Directional Radio Signals Utilizing a Gigahertz Implosion Concept”), U.S. Patent 5,568,610 (“LMDS Transmitter Array With Polarization-Diversity Sub-Cells”), U.S. Patent 5,949,793 (“Transmission of Digital and Analog Signals in the Same Band”); U.S. Patent 5,893,078 (relating to radio signal distortion reduction) and U.S. Patent 6,438,359 (relating to redundant transmitter with backup switching). The NetfreeUS Application is the most recent example of this legacy of product and service development.

NetfreeUS’s leadership team consists of the following individuals:

- **Shant S. Hovnanian** is Chairman and Chief Executive Officer of Speedus, NetfreeUS’s managing member, positions he has held since 1991. Mr. Hovnanian has served as a U.S. State Department Delegate to the World Radio Conference of the International Telecommunications Union in Geneva, Switzerland. Mr. Hovnanian also founded FCC-licensed Ka-band satellite company, VisionStar, which is now controlled by EchoStar Communications.
- **William F. Leimkuhler** is a director of Speedus, a position he has held since September 2000. He is the General Counsel and Director of Business Development of Paice Corporation, a privately-held developer of advanced vehicle powertrains. From 1994 through 1999, he held various positions with Allen & Company, a New York investment banking firm, initially serving as the firm’s General Counsel. Prior to that, Mr. Leimkuhler was a corporate partner with the New York law firm of Werbel & Camelutti (now Heller Ehrman White & McAuliffe).
- **Christopher Vizas** is a director of Speedus, a position he has held since July 2001. Mr. Vizas is a principal in the strategic advisory firm of East Wind Partners. He serves as non-executive Chairman of the Board of i1, Inc., a privately-held Chinese software provider, as well as a member of the boards of a few other privately-held companies. Mr. Vizas’ positions during the 1990s included Chairman of eGlobe, Inc, CEO of Quo Vadis International, Managing Director of Kouri Capital Group and its Telecommunications & Technology affiliate, and founder and Vice Chairman of Orion Network Systems. Earlier in his career, he was a founder and part of the management in Trinity Cellular and Asia Pacific Space & Communications, Mr. Vizas served in the White House Office of Telecommunications Policy in the Ford Administration, as Special Counsel to the U.S. Privacy Commission, and on congressional staff.

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<sup>16</sup> Current documentation regarding Speedus patents appears at <http://www.speedus.com/patents/>.

These individuals, as well as all of officers and directors of Speedus, are United States citizens. Speedus certifies that it does not have either foreign control or foreign ownership above the benchmarks of 47 U.S.C. § 310(b).<sup>17</sup>

NetfreeUS is financially qualified to hold the requested license. As a wholly-owned unit of a publicly traded company, NetfreeUS can raise additional financing through the issuance by Speedus of new shares. Moreover, Speedus is experienced in raising capital to provide pioneering services – the issuance of the Hye Crest LMDS license in 1991 created sufficient value for the company to successfully launch an initial public offering. Speedus intends to bring this **same** track record of success to providing WPB service through NetfreeUS.

## **II. THE NETFREEUS REQUEST FOR A LICENSE TO PROVIDE WIRELESS PUBLIC BROADBAND.**

### **A. The Application**

By this Application, NetfreeUS seeks authority to construct and operate facilities to provide high-speed broadband access throughout the United States at no cost to consumers and with no governmental financial support. NetfreeUS proposes that it be assigned a nationwide license with the obligation to lease its spectrum to entrepreneurs, new entrants and other independent third-party entities to operate WAPs locally on a location-by-location basis for a nominal cost-covering registration fee. The lessees will, in **turn**, establish a “private commons” composed of a nationwide mesh of consumers. To make this service possible, NetfreeUS requests a 10-year renewable authorization to operate in 20 MHz of spectrum in the **2155-2175** MHz band on a nationwide basis. A 20 MHz spectrum allocation will ensure that the system has sufficient bandwidth to provide high-speed connections and protect from harmful interference nearby licensees as well as

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<sup>17</sup> See also Exhibit 1 hereto.

incumbents (until their facilities **are** relocated pursuant to Commission rules). **As** further discussed below, NetfreeUS seeks waiver of Section 1.913 and other rules as necessary for acceptance and grant of this Application.

Through the unique “license-and-lease” process, NetfreeUS will enable entrepreneurs and municipalities to quickly obtain access to licensed spectrum in given areas of the country to facilitate local operation, rapid build-out and competitive choice for consumers. To **ensure** that no large area is dominated by a single operator and to maintain the entrepreneurial nature of the WPB network, no entity (including NetfreeUS) would be permitted to operate more than fifty WAPs. This licensing process also facilitates interference protection and operational coordination. Grant of this proposal will allow private-sector funding of free public broadband access without drawing from any public funding programs.

The only federal action required is for the Commission to grant NetfreeUS – under the authority provided to it by Congress – **20** MHz of unassigned spectrum that would likely remain fallow for many years. By putting this spectrum to use now, the benefits of a nationwide free public broadband service can immediately be realized.

#### **B. Public Interest Commitments and Other Obligations**

To facilitate the public interest benefits of NetfreeUS’s Application, NetfreeUS accepts several significant conditions and obligations as an express part of its license:

- NetfreeUS will be licensed on a nationwide basis for a 10-year renewable term, with the obligation to lease spectrum, on a location-by-location basis, to entrepreneurs, new entrants, municipalities and other independent entities. NetfreeUS and any lessee will be limited initially to a maximum of fifty WAPs. Lessees need only pay a nominal fee to cover NetfreeUS’s transaction costs associated with the leasing arrangement. The lease process will be subject to the Commission’s existing secondary market rules, as set out in Section 1.9001 *et seq.*

- NetfreeUS and any lessee will be required to commence service within six months of grant of Commission authorization, and will comply with deployment benchmarks as follows: NetfreeUS and its lessees would be required to provide “substantial service”<sup>18</sup> to 50 percent of the nation’s 734 Cellular Market Areas (CMAs) within four **years** of initial license grant, to **75** percent of the nation’s CMAs within six years of license grant and 95 percent of the nation’s CMAs within 10 years of license grant. Service to a CMA would be deemed “substantial” if it falls within certain safe harbors modeled on other broadband services,” including:
  - Coverage to at least 30 percent (30%) of the population of the CMA; or
  - Coverage to “rural areas” (a county (or equivalent) with a population density of 100 persons per square mile or less, based upon the most recently available Census data) and areas with limited access to telecommunications services, where coverage is provided to at least 75% of the geographic area of at least 30% of the rural areas within its service area; or
  - Providing specialized or technologically sophisticated service that does not require a high level of coverage to benefit consumers; or
  - Providing service to niche markets or to areas outside the areas covered by other licenses.
- If any lessee fails to meet these requirements, NetfreeUS would have the right to terminate the lease and then would have six months following termination to meet the milestone. If NetfreeUS does meet the milestone requirement within that time period, the leased area would automatically revert to the Commission for re-allocation.
- NetfreeUS will maintain a database of WAPs. The database would be uploaded on a weekly basis as new WAPs are deployed. This database will be used to assist coordinate and network management and will help identify areas where “substantial service” is being provided.
- NetfreeUS will make WPB service available at minimum engineered data rates of 384 kbps downstream and 128 kbps upstream, free of airtime or service charges, throughout the United States. Data rates will be based on link budgets and would exceed these minima based on the number of WAP users.
- Consumers need only purchase a low-cost NetfreeUS reception device. Existing users of 802.11 devices would be able to migrate to the WPB by upgrading the software on their existing devices.
- NetfreeUS will serve any federal, state, or municipal public-safety organization willing to utilize WPB, with no limitation on the number of devices on the network other than

<sup>18</sup> For other wireless services, the **Commission** has defined “substantial service” as “service which is sound, favorable and substantially above a level *of* mediocre service which just might minimally warrant renewal.” *See, e.g.*, 47 C.F.R. §27.14(e).

<sup>19</sup> The Commission has adopted similar safe harbors for the Broadband Radio Service and Educational Broadband Service. *See* 47 C.F.R. §27.14(e)(1).

technical limits. The service will commence once the organization constructs its network and makes service generally available in the public safety agencies' service area.

- NetfreeUS will contribute to the U.S. Treasury a “usage” fee equal to five percent (5%) of the gross revenues. The usage fee is based on the digital broadcast television model, which provides that stations that provide “ancillary and supplementary” subscription services must annually remit to the Commission a fee of five percent (5%) of gross revenues from such services.<sup>20</sup>
- NetfreeUS will ensure that its network operates in such a manner that permits all then-existing Commission licensees to be free of harmful interference. NetfreeUS will strictly comply with the Commission’s relocation rules for Broadband Radio Service (“BRS”) and Fixed Microwave Service (“FS”) incumbents operating in the **2155-2175 MHz** band?

### C. Promoting Spectrum Access and Efficiency through “Private Commons” Operations and Advanced Technology

NetfreeUS proposes to apply the Commission’s “private commons” approach in WPB to promote efficient and intensive spectrum use at WAPs via mesh networks and open network architectures. The Commission first adopted the private commons approach in 2004 “[t]o facilitate the use of advanced technologies, and thus better promote access to and the efficient use of spectrum,” noting that:

[private commons] will allow licensees and spectrum lessees to make spectrum available to individual users or groups of users that do not fit squarely within the current options for spectrum leasing or within the traditional end-user arrangements associated with the licensee’s (or spectrum lessee’s) subscriber-based services and network infrastructures. New technologies enable users, through use of advanced devices, to engage in a wide range of communications that do not require use of a licensee’s (or lessee’s) network infrastructure. To facilitate the use of these technologies, we adopt the private commons option, which will permit, and be restricted to, peer-to-peer communications between devices in a non-hierarchical network arrangement that does not utilize the network infrastructure of the licensee (or spectrum lessee).

The private commons option provides a cooperative mechanism for licensees (or lessees) to make licensed spectrum available to users employing these advanced technologies in a manner similar to that by which unlicensed users gain access to spectrum to suit their particular needs, and to do so without the necessity of entering into individual spectrum

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<sup>20</sup> See 45 C.F.R. §73.624(g).

<sup>21</sup> See Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, Ninth Report and Order and Order. 21 FCC Rcd 4473 (2006) (“Ninth R&O”).

leasing arrangements under our existing rules. In the **2.4 GHz** and **5 GHz** bands, for instance, users gain access and use of the spectrum with specified types of low-power communications devices provided they comply with technical requirements established by the Commission and set forth in our Part 15 rules. In these bands, users then can create their own networks -- such as those that are *ad hoc* or “mesh” in nature -- using equipment that complies with Commission-established requirements. The private commons option provides a potentially complementary access model, in which licensees (or spectrum lessees) would determine to make access available to a similar class of users, and would do so under technical requirements for sharing use of the licensed band established and managed by the licensee (or lessee). The nature of these types of users’ access to spectrum under this private commons option thus differs qualitatively from the nature of access provided to spectrum lessees under the Commission’s spectrum leasing policies and procedures. In the private commons, the licensee (or lessee) authorizes users of devices operating at particular technical parameters specified by the licensee (or lessee) to operate on ~~the~~ licensed frequencies, consistent with the applicable technical requirements and use restrictions under the license authorization, using peer-to-peer (device-to-device) technologies. In spectrum leasing arrangements, individually negotiated spectrum access rights are provided to entities that traditionally obtained licenses and that would then provide traditional network-based services to end-users.”

These passages describe to a “T” the nationwide network NetfreeUS proposes. NetfreeUS intends to ensure that WPB lessees make their networks available to end users via the private commons approach. This approach will help ensure that WPB service fulfills its goal as a **free service** to end users with no charge for premium access or content

The “public commons” approach also would serve localism. Neither NetfreeUS nor its Lessees would have control over content and would have no power of censorship. WPB would facilitate local business development by allowing NetfreeUS and WPB to sell highly targeted advertising to promote local business. Service would be flexible and market-responsive, and targeted to the interests of the local community.

NetfreeUS’s WPB will employ cutting-edge technology advances to enable spectrum access. These technologies include frequency reuse and software upgrades *to* provide spectrally

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<sup>22</sup> See *Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, Second Report and Order. Order on Reconsideration and Second Further Notice of Proposed Rulemaking, 19 FCC Rcd 17503 (2004) at ¶¶91-92. See also 47 C.F.R. §1.9080.

efficient service. Existing wireless devices can be immediately added to the network with a simple software upgrade, allowing millions of users to obtain the benefits of nationwide roaming, wide-area coverage and portability within a larger area. With an exclusive license that, through a secondary market leasing process that enables a "private commons" of thousands to share in the network, NetfreeUS will serve as a system manager to coordinate build-out and mitigate the potential for interference among WAPs.

Empirical data from NetfreeUS affiliate Wibiki Labs taken from a random sampling of 15,858 Wi-Fi access points in the United States show that 2,269 access points are operating on Channel 1, 6,430 are operating on channel 6 and 4,693 are operating on channel 11, with the remaining 2,466 access points dispersed throughout the remaining eight channels. The results illustrate inefficient, uneven use of the unlicensed spectrum. By contrast, NetfreeUS's NOC server will promote spectral efficiency and coordination among the WAPs by providing for better channel dispersion, better coverage area and increased quality of service for WPB users.

#### **D. Benefits of the 2155-2175 MHz Band**

NetfreeUS agrees with M2Z that the 2155-2175 MHz spectrum is uniquely suited for a nationwide broadband service.<sup>23</sup> Based on its current projections, NetfreeUS believes that 20 MHz will be sufficient to deploy spectrally-efficient technology.

First, propagation in the 2155-2175 MHz band has been proven to be ideal for the provision of wide-area broadband service. At present, in a number of markets throughout the country,<sup>24</sup> BRS operators in the 2150-2156 and 2156-2160/62 MHz bands are providing upstream and downstream high-speed data services to subscribers using pre-WiMax equipment. Depending on topography,

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<sup>23</sup> See M2Z Application at 15-16.

<sup>24</sup> Based on data collected from BRS 1/2 licensees within the last 15 months, the Commission concluded that there were "active" BRS operations in 65 of the 176 U.S. Economic Areas. See *Ninth R&O* at 4480-4481

terrain obstructions and the type of technology deployed, high-speed data can be received and transmitted across a 35-mile radius from the transmit site. Based on this ongoing commercial and technological success, NetfreeUS firmly believes that the 2155-2175 MHz band is well-suited for the provision of nationwide broadband service.

Second, existing Commission rules guarantee interference-free operation to incumbents until they are relocated to “comparable facilities.”<sup>25</sup> These rules were adopted in contemplation of AWS, but they equally ensure that NetfreeUS’s WPB can operate consistent with the balance manifest in Commission rules between protection of incumbents and the introduction of new services. The 2155-2175 MHz band is thus ready-made for deployment of a nationwide broadband service.

#### **E. No Interference**

**As** discussed in the *Ninth R&O*, relatively few incumbent licensees will require relocation to other bands. However, until BRS and FS licensees operating in the 2150-2160/62 MHz band and 2160-2200MHz bands *are* relocated, the potential for interference from a nationwide licensee exists. To prevent any harmful interference to incumbent BRS and FS facilities, NetfreeUS agrees to the following:

- NetfreeUS will comply with all applicable co-channel and adjacent-channel interference standards, emission requirements and relocation rules set forth in **Parts 22, 27** and 101 of the Commission’s Rules. In particular, NetfreeUS will comply with *the* BRS/EBS emission rules of the  $43 + 10 \log_{10}(P)$  out-of-band emission **standard**.<sup>26</sup> Thus, BRS/FS incumbents will be protected from harmful interference by NetfreeUS’s compliance with this existing rule until operations are relocated.
- NetfreeUS will cooperate with the Commission and with incumbents to address unanticipated interference issues and to ensure that neither NetfreeUS nor nearby BRS and FS licensees suffer harmful interference.

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<sup>25</sup> See 47 C.F.R. §§27.1251-52, 1255 and §§101.73, 75, 79.

<sup>26</sup> See 47 C.F.R. §27.53(l).

- NetfreeUS will take appropriate measures to ensure that its lessees – the local operators – coordinate their respective facilities. All leases will permit NetfreeUS to immediately terminate service if a lessee violates Commission technical requirements and unlawful interference results.

#### F. Affordable Customer Premises Equipment

The open network architecture, free software and “private commons” approach proposed with WPB would speed broadband deployment by reducing costs of customer premises equipment. While new services predicated on proprietary equipment would involve higher retail costs for equipment, particularly during the early-adoption stage of the equipment’s product cycle, WPB would offer free software downloads to ensure interoperability using equipment that already exists in the marketplace. This makes WPB service more affordable and more available than broadband services based on closed-architecture technologies and new proprietary equipment that lacks backward compatibility.

#### G. NetfreeUS’s Proposal to Serve Public Safety Entities

In the aftermath of Hurricane Katrina, the instability of our nation’s public safety communications networks became apparent. Local networks developed in piecemeal fashion, with little attention paid to interoperability among local, state and federal jurisdictions. In a Notice of Proposed Rulemaking released in June 2006, the Commission summarized the communications crisis that resulted and exacerbated the disaster:

The destruction to communications companies’ facilities in the region, and therefore to the services upon which citizens rely, was extraordinary. Hurricane Katrina knocked out more than three million customer phone lines in Alabama, Louisiana, and Mississippi. The wireline telecommunications network sustained enormous damage – dozens of central offices and countless miles of outside plant were damaged or destroyed as a result of the hurricane or the subsequent flooding. Local wireless networks also sustained considerable damage – more than a thousand cell sites were knocked out of service by the hurricane. At the hurricane’s height, more than thirty-five Public Safety Answering Points (PSAPs) were out of service, and

some parishes in Louisiana remained without 911 or enhanced 911 (E911) service for weeks.<sup>27</sup>

More than two years later, an interoperable national public safety communications solution does not exist. In a Report to Congress, the Commission cited a number of comments demonstrating a need for a nationwide network capable of integrating the communications of federal, state and first responders.” Though the commenters differed on how to achieve the goal of improving interoperability, there can be no doubt that the need exists.

For its part, NetfreeUS will equip a special override software code to all first responders that would quickly and simply clear channel traffic in times of emergency. Such codes will provide all first responders additional communication tools when other systems become disabled from unforeseen disasters. Evidence shows that these types of “ad hoc mesh” solutions proved useful in the aftermath of the Hurricane Katrina disaster.<sup>29</sup> NetfreeUS will rely on the technical ability of mesh networking to turn most wireless devices into routers, thereby creating a network to aid first responders and others.

### **III. GRANT OF THIS APPLICATION WILL SERVE THE PUBLIC INTEREST**

This Application proposes unmatched public interest benefits. As discussed above, NetfreeUS will provide free, nationwide broadband service under a unique plan for nationwide secondary-market licensing that allows entrepreneurs, new entrants and municipalities to participate in providing services and enables service to be provided more quickly than other planned nationwide build-outs. NetfreeUS’s network will be fully interoperable, and will even

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<sup>27</sup> See *Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, 21 FCC Rcd 7320, Notice of Proposed Rulemaking (rel. June 19, 2006) at 1-2 (footnote omitted) (“*Katrina Panel NPRM*”).

<sup>28</sup> See “On the Study to Assess Short-Term and Long-Term Needs for the Allocation of Additional Portions of the Electromagnetic Spectrum for Federal, State and Local Emergency Response Providers.” Report to Congress (rel. Dec. 19, 2005) at 9-12.

<sup>29</sup> See *Katrina Panel NPRM* at Appendix B.

allow users of existing 802.11 devices to immediately migrate **to** the new network, which will offer high-speeds and public safety access. Moreover, NetfreeUS will contribute five percent (5%) of its gross revenues to the U.S. Treasury on an annual basis. NetfreeUS's WPB service will help bridge the digital divide that leaves many consumers in rural and isolated **areas** of the country without access to broadband services. The service also will advance competition and promote innovation.

**A. NetfreeUS's "Wireless Public Broadband" Service Will Promote Widespread Broadband Deployment.**

By granting NetfreeUS's Application, the Commission would take an enormous step in facilitating ubiquitous broadband availability and access across the country. In many parts of the country, particularly rural areas, consumers do not have access to broadband services, or have little or no choice in providers. In its most recent report on High-speed Services, the Commission concluded that high-speed lines increased by 26% during the first half of 2006 to 64.6 million total nationwide.<sup>30</sup> Cable Modem service represented 55.2% while 40.1% were asymmetric DSL (ADSL) connections and 18.4% used "other technologies."<sup>31</sup> This latest FCC **report** essentially confirms the cable/telco duopoly in estimating that DSL connections were available **to** 79% of households (to whom incumbent LECs provided service), while cable modem service was available to 93% of households (to whom cable companies provided **service**).<sup>32</sup> Although the Commission concluded that 99% of zip codes had at least one provider available, many rural areas lack competitive provision of broadband access service and the attendant benefits of lower prices and technological innovation. Although this represents an improvement over previous years' reports, it is clear that in many areas of the country, consumers are underserved and lack competitive choice.

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<sup>30</sup>See "High-Speed Services for Internet Access: Status as of June 30, 2006, Report of Industry Analysis and Technology Division, Wireline Competition Bureau;"(rel. Jan. 31, 2007) at 1.

<sup>31</sup> *Id.* at 3.

<sup>32</sup> *Id.*

Because of technological constraints and **high** costs of extending wired networks to sparsely-populated areas, in vast areas of the country only wireless and satellite technologies can be readily deployed. In being a private commons manager, NetfreeUS will enable a nationwide network of independent operators to quickly initiate service in those areas that are **most** in need of broadband services, with local customer service and support. This unique secondary market licensing process facilitates simultaneous build-out to a larger **part** of the country than a single-source solution.

Broadband access has been found to be **an** engine for economic growth, **as** information becomes more readily available to consumers, businesses and educational institutions. **For** example, a Final Report commissioned by the West Virginia Development **Office** concluded that the availability of broadband would have a significant economic benefit for workers in the service and financial sectors.<sup>33</sup> In the service sector, “broadband was observed. . . to be associated with a Service sector wage differential of roughly \$1,519 per worker. . . . The gains associated with extending broadband to all **zip** codes would account for a roughly \$32.6 million one time, non-transient increase in service sector earnings” – a 5.2% **increase**.<sup>34</sup> For the financial sector, the results were similar – “\$2,250 per worker or \$12.2 million in state-wide earnings . . . could be realized from an extension of broadband to areas not yet served” – an 11.2% wage **increase**.<sup>35</sup> Thus, not only is broadband unavailable in many areas, but its presence likely would significantly increase the income of workers. Applied nationwide, this economic impact cannot be overlooked in assessing the public interest benefits that would result from NetfreeUS’s operations.

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<sup>33</sup> See “The Residential and Commercial Benefits of Rural Broadband: Evidence from Central Appalachia,” Final Report, prepared by the Marshall University Center for Business and Economic Research on behalf of the West Virginia Development Office, Council for Community & Economic Development (July 2005) (“Final Report”).

<sup>34</sup> *Id.* at 28.

<sup>35</sup> *Id.* at 29.

## **B. NetfreeUS's "Wireless Public Broadband" Service Will Introduce Competition to Incumbent Broadband Service Providers.**

In areas where DSL and cable modem services are available, NetfreeUS will provide a competitive alternative. In addition to increasing consumer choice, the introduction of a third provider into the market can result in lower prices, especially where one of the providers is offering a free, advertiser-supported service.

Facilities-based competition is an important Congressional and Commission policy objective. As explained in the FCC's Strategic Plan, the U.S. seeks "[t]he establishment of policies that reward innovation and investment in facilities and infrastructure. ..."<sup>36</sup> NetfreeUS's service would fulfill this goal of facilities-based competition by deploying a new and innovative nationwide network of WAPs funded by the private sector for free use by the American public. No government funds would be expended to construct this new competitive network; on the contrary, the U.S. Treasury would benefit from annual payments of five percent of NetfreeUS's gross revenues.

## **C. WPB Service Will Enhance Interoperability, Particularly Among Private and Public Safety Interests**

As discussed above, our nation lacks a nationwide interoperable network for public safety use, compromising our ability to respond to natural disasters and homeland security threats. The analyses conducted in the wake of Hurricane Katrina, including the Commission's independent panel, confirm the need for such a network.<sup>37</sup> In addition, the Commission has noted the importance of having redundant networks so that if, for instance, one wireless network is

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<sup>36</sup> See FCC Strategic Plan (2006-2011) (Objective 4) at [www.fcc.gov/omd/strategicplan/](http://www.fcc.gov/omd/strategicplan/)

<sup>37</sup> See, e.g., *Katrina Panel NPRM* at Appendix B.

incapacitated, another would be available to coordinate **response**.<sup>38</sup> The Application helps address these concerns. By equipping a special overmode software code for all first responders, NetfreeUS proposes to enhance interoperability by providing tools for quick clearance of channel traffic during emergencies. This approach is similar to the Emergency Alert System, which requires broadcasters, DBS providers and others to maintain special equipment for transmission of priority messages in the event of national, state or local emergencies based on specified activation procedures.<sup>39</sup>

#### **D. NetfreeUS's WPB Encourages Local Participation by Entrepreneurs and Municipalities**

NetfreeUS proposes to limit itself to a maximum of **fifty** WAPs, and will enter into secondary market leases with entrepreneurs and municipalities around the country to expeditiously construct the nationwide network. In this manner, NetfreeUS will be fostering local ownership of the free public broadband network, creating economic opportunities at the local level. NetfreeUS would be permitted to lease spectrum to accountable local owners that would share deployment costs and would develop "private commons" spectrum access for users. Unless **required**,<sup>40</sup> local users would not be required to incur subscription fees for their broadband services, and users will have flexibility to engage in peer-to-peer communications. These opportunities would reduce financial constraints on local governments and start-up businesses alike.

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<sup>38</sup> *Id.* at §I(B) (describing "failure of redundant pathways for communications traffic" as a "main problem" causing communications network interruptions and hindering public-safety response to Hurricane Katrina).

<sup>39</sup> *See* 47 C.F.R. Part 11

<sup>40</sup> *See* Petition at n. 12.

#### **E. NetfreeUS Will Provide a Revenue Stream to the U.S. Government**

Section 309(j) (3)(c) of the Communications Act requires the Commission *to recover “for the public. . . a portion of the value of the public spectrum resource.”*<sup>41</sup> NetfreeUS’s proposal allows for this recovery in three distinct respects. First, by providing a free, nationwide broadband service, NetfreeUS will save consumers millions of dollars in access fees. Second, NetfreeUS will not profit from the leasing of its spectrum, but will require its local leasing partners to pay only a nominal fee to cover NetfreeUS’s transaction costs. The entry costs to local businesses will be de minimis, offering a significant advantage over prevailing broadband business models. Third, NetfreeUS will pay the U.S. Treasury a spectrum fee of five percent (**5%**) of the gross revenues it derives from the WPB. Because these payments will be made over the entire license term, and presumably will increase as subscriber counts and advertising revenues increase, the total economic benefit –including the amount consumers will save through a free service – may well exceed that which the Commission could expect in an auction. Given these benefits and license conditions, NetfreeUS will not receive a windfall in obtaining a nationwide license in the **2155-2175 MHz** band.

#### **IV. THE COMMISSION HAS AUTHORITY TO GRANT THIS APPLICATION AND LICENSE NETFREEUS UNDER SECTION 1.945 OF THE COMMISSION’S RULES**

Commission grant of the Application would fall within the Commission’s broad legal authority to issue licenses in the public interest. The Application may be granted without a hearing pursuant to Section **1.945** provided that, to the extent necessary, the Commission exercises its forbearance authority in a manner outlined in NetfreeUS’s concurrently filed Petition for Forbearance, to allow acceptance and processing of the Application.

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<sup>41</sup> See 47 U.S.C. §309(j)(3)(c) (emphasis added).