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March 2, 2007

VIA ECFS

Marlene H. Dortch, Esq.
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554

Re: M2Z Networks, Inc.
WT Docket No. 07-16: Application for License and Authority to Provide National Broadband Radio Service in the 2155-2175 MHz Band;
WT Docket No. 07-30: Petition for Forbearance Under 47 U.S.C. § 160(c)

Dear Ms. Dortch:

Attached on behalf of M2Z Networks, Inc. ("M2Z") is a receipt-stamped copy of M2Z's September 1, 2006 amendment to its pending application. Although the amendment was filed several months ago and is available for review in the FCC's Public Reference Room, it has not yet been added to the electronic docket in either of the above-referenced proceedings. M2Z is filing the amendment electronically for the convenience of interested parties, and in the interest of ensuring a complete record.

If you have any questions concerning this matter, please do not hesitate to contact the undersigned.

Sincerely,

/s/

Erin L. Dozier, Esq.

Enc.

PLEASE STAMP AND RETURN

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September 6, 2006

RECV'D & INSPECTED
SEP 06 2006
FCC-GBG MAILROOM

VIA HAND DELIVERY

Federal Communications Commission
1270 Fairfield Road
Gettysburg, PA 17325-7245

Re: M2Z Networks, Inc.
FCC Registration No. 0014964985
Application for License and Authority to Provide National Broadband Radio Service in the 2155-2175 MHz Band
Amendment to Pending Application

Dear Sir or Madam:

On September 1, 2006, M2Z Networks, Inc. ("M2Z"), by its attorneys and pursuant to Section 1.927 of the Commission's rules, filed a minor amendment to the above-referenced pending application (the "Application") with the Office of the Secretary, FCC, in Washington, D.C. The Application, which originally was filed on May 5, 2006, has not yet been placed on public notice and to date no file number has been assigned to it. Pursuant to Section 1.913(d)(4) of the Commission's rules, an original and four copies of the amendment using FCC Form 601 are transmitted herewith.

There have been no changes to the technical data or other information provided in the schedules to the Application, so these schedules are not attached to the FCC Form 601. Only a narrative segment of the Application has been changed, and the new narrative is attached to the enclosed FCC Form 601. The purpose of the change to the narrative portion of the Application is to incorporate by reference a Petition for Forbearance (the "Petition") filed by M2Z under separate cover on September 1, 2006.[1] The Commission's consideration of the issues raised in M2Z's Application is inextricably tied to its review of the issues raised in the Petition, and vice versa. Consequently, new footnote 1 has been added to the narrative segment of M2Z's pending Application referencing such Petition. New footnote 1 to the narrative segment of the Application reads in full:

> "On September 1, 2006, M2Z filed under separate cover a Petition for Forbearance (the 'Petition') pursuant to 47 U.S.C. § 160(c) concerning the

[1] *See* Application of M2Z Networks, Inc. for License and Authority to Provide a National Broadband Radio Service in the 2155-2175 MHz Band (filed May 5, 2006) ("*Application*"). Although M2Z's application was filed four months ago, it has not yet been placed on public notice and to date no file number has been assigned to it.

application of Sections 1.945(b) and (c) of the Commission's rules, and other statutory and regulatory provisions, to this Application. The issues raised in the Petition are germane to the Commission's review of M2Z's Application. Accordingly, the Petition hereby is incorporated by reference into this Application."

As set forth in its Application, M2Z has requested a waiver of the Commission's electronic filing requirements for wireless service applications. For the same reasons explained in the Application, this amendment also has been filed on paper. To the extent necessary, M2Z reiterates its request for waiver of the Commission's electronic filing requirements as they apply to this amendment.

As this filing is a minor amendment to a pending application in the wireless services, no filing fee is required.

Please direct any questions concerning this matter to the undersigned.

Sincerely,

W. Kenneth Ferree, Esq.

Enclosure (M2Z Application as amended)

cc: (all w/o enclosure)
Ms. Marlene Dortch
Ms. Catherine Seidel
Mr. Joel Taubenblatt

FCC 601
Main Form

FCC Application for Wireless Telecommunications Bureau Radio Service Authorization

Approved by OMB
3060 - 0798
See instructions for public burden estimate

1) Radio Service Code: **BR**	1a) Existing Radio Service Code:

General Information

2) (Select only one) (**AM**)

NE - New | **RO** - Renewal Only | **AU** - Administrative Update | **NT** - Required Notifications
MD - Modification | **RM** - Renewal/Modification | **WD** - Withdrawal of Application | **EX** - Requests for Extension of Time
AM - Amendment | **CA** - Cancellation of License | **DU** - Duplicate License | **RL** – Registered Location/Link

3a) If this application is for a Developmental License, Demonstration License, or a Special Temporary Authorization (STA), enter the code and attach the required exhibit as described in the instructions. Otherwise enter 'N' (Not Applicable).	(**N**)D M S N/A
3b) If this application is for Special Temporary Authority due to an emergency situation, enter 'Y'; otherwise enter 'N'. Refer to Rule 1.915 for an explanation of situations considered to be an emergency.	( )Yes No
4) If this application is for an Amendment or Withdrawal, enter the file number of the pending application currently on file with the FCC.	File Number **Not yet assigned by FCC**
5) If this application is for a Modification, Renewal Only, Renewal/Modification, Cancellation of License, Duplicate License, or Administrative Update, enter the call sign of the existing FCC license. If this is a request for Registered Location/Link, enter the FCC call sign assigned to the geographic license.	Call Sign
6) If this application is for a New, Amendment, Renewal Only, or Renewal/Modification, enter the requested authorization expiration date (this item is optional).	MM / DD
7) Is this application "major" as defined in §1.929 of the Commission's Rules when read in conjunction with the applicable radio service rules found in Parts 22 and 90 of the Commission's Rules? (NOTE: This question only applies to certain site-specific applications. See the instructions for applicability and full text of §1.929).	( )Yes No
8) Are attachments (other than associated schedules) being filed with this application?	(**Y**)Yes No

Fees, Waivers, and Exemptions

9) Is the Applicant exempt from FCC application fees?	(**N**)Yes No
10) Is the Applicant exempt from FCC regulatory fees?	(**N**)Yes No
11a) Does this application include a request for a Waiver of the Commission's Rule(s)? If 'Yes', attach an exhibit providing rule number(s) and explaining circumstances.	(**Y**)Yes No
11b) If 11a is 'Y', enter the number of rule sections involved.	Number of Rule Section(s): **At least 1**
12) Are the frequencies or parameters requested in this filing covered by grandfathered privileges, previously approved by waiver, or functionally integrated with an existing station?	(**N**)Yes No

Applicant Information

13) FCC Registration Number (FRN):
0014964985

14) Applicant/Licensee Legal Entity Type: (Select One)
( ) Individual ( )Unincorporated Association ( )Trust ( )Government Entity (X)Corporation ( )Limited Liability Company

( ) General Partnership ( ) Limited Partnership ( ) Limited Liability Partnership ( ) Consortium

( ) Other: _____

15) If the Licensee name is being updated, is the update a result from the sale (or transfer of control) of the license(s) to another party and for which proper Commission approval has not been received or proper notification not provided? ( )Yes No

16) First Name (if individual):	MI:	Last Name:	Suffix:

17) Legal Entity Name (if other than individual):
M2Z Networks, Inc.

18) Attention To:
Uzoma Onyeije

19) P.O. Box:	And/Or	20) Street Address:
		2000 North 14th Street, Suite 600

21) City:	22) State:	23) Zip Code:
Arlington	VA	22201

24) Telephone Number:	25) FAX:
(703) 894-9500	

26) E-Mail Address:
uonyeije@m2znetworks.com

27) **Demographics (Optional)**:

Race:	Ethnicity:	Gender:
( )American Indian or Alaska Native	( )Hispanic or Latino	( )Male
( )Asian	( )Not Hispanic or Latino	( )Female
( )Black or African-American		
( )Native Hawaiian or Other Pacific Islander		
( )White		

Real Party in Interest

28) Name of Real Party in Interest of Applicant (If different from Applicant):	29) FCC Registration Number (FRN) of Real Party in Interest:

Contact Information (If different from the Applicant)
(____) Check here if same as Applicant.

30) First Name:	MI:	Last Name:	Suffix:
Kenneth		Ferree	

31) Company Name:
Sheppard Mullin Richter & Hampton LLP

32) Attention To:

33) P.O. Box:	And /Or	34) Street Address:
		1300 I Street, N.W., 11th Floor East

35) City:	36) State:	37) Zip Code:
Washington	DC	20005

38) Telephone Number:	39) FAX:
(202) 218-0000	

40) E-Mail Address:
kferree@sheppardmullin.com

Regulatory Status

41) This filing is for authorization to provide or use the following type(s) of radio service offering (enter all that apply):

(C)Common Carrier (N)Non-Common Carrier (P)Private, internal communications ( )Broadcast Services ( )Band Manager

Type of Radio Service

42) This filing is for authorization to provide the following type(s) of radio service (choose all that apply):

(F)Fixed (M)Mobile ( )Radiolocation ( )Satellite (sound) ( )Broadcast Services

43) Does the Applicant propose to provide service interconnected to the public telephone network? (Y)Yes No

Alien Ownership Questions (If any answer is 'Y', provide an attachment explaining the circumstances)

44) Is the Applicant a foreign government or the representative of any foreign government? (N)Yes No

45) Is the Applicant an alien or the representative of an alien? (N)Yes No

46) Is the Applicant a corporation organized under the laws of any foreign government? (N)Yes No

47) Is the Applicant a corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country? (N)Yes No

48a) Is the Applicant directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof, or by any corporation organized under the laws of a foreign country? (N)Yes No

48b) If the answer to 48a is 'Y', has the Applicant received a ruling(s) under Section 310(b)(4) of the Communications Act with respect to the same radio service(s) and geographic coverage area(s) involved in this filing? ( )Yes No

If the answer to 48b is 'Y', attach an exhibit that identifies the citation(s) of the applicable declaratory ruling(s) by DA/FCC number of the FCC Record citation, if available, release date, and any other identifying information

If the answer to 48b is 'N', attach to this filing a date-stamped copy of a request for a foreign ownership ruling pursuant to Section 310(b) (4) of the Communications Act.

Basic Qualification Questions

49) Has the Applicant or any party to this application had any FCC station authorization, license or construction permit revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? (N)Yes No

50) Has the Applicant or any party to this application, or any party directly or indirectly controlling the Applicant, ever been convicted of a felony by any state or federal court? (N)Yes No

51) Has any court finally adjudged the Applicant or any party directly or indirectly controlling the Applicant guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement, or any other means or unfair methods of competition? (N)Yes No

If the answer to any of 49-51 is 'Y', attach an exhibit explaining the circumstances.

Aeronautical Advisory Station (Unicom) Certification

52) ( ) I certify that the station will be located on property of the airport to be served, and, in cases where the airport does not have a control tower, RCO, or FAA flight service station, that I have notified the owner of the airport and all aviation service organizations located at the airport within ten days prior to application.

Broadband Radio Service and Educational Broadband Service Cable Cross-Ownership

53a) Will the requested facilities be used to provide multichannel video programming service? (N)Yes No

53b) If the answer to question 53a is 'Y', does Applicant operate, control or have an attributable interest (as defined in Section 27.1202 of the Commission's Rules) in a cable television system whose franchise area is located within the geographic service area of the requested facilities? ( )Yes No

Note: If the answer to question 53b is 'Y', attach an exhibit explaining how the Applicant complies with Section 27.1202 of the Commission's Rules or justifying a waiver of that rule. If a waiver of the Commission Rule(s) is being requested, Item 11a must be answered 'Y'.

Broadband Radio Service and Educational Broadband Service (Part 27)

54) (For EBS only) Does the Applicant comply with the programming requirements contained in Section 27.1203 of the Commission's Rules? ( )Yes No

Note: If the answer to item 54 is 'N', attach an exhibit explaining how the Applicant complies with Section 27.1203 of the Commission's Rules or justifying a waiver of that rule. If a waiver of the Commission Rule(s) is being requested, Item 11a must be answered 'Y'.

55) (For BRS and EBS) Does the Applicant comply with Sections 27.50, 27.55, and 27.1221 of the Commission's Rules? (Y)Yes No

Note: If the answer to item 55 is 'N', attach an exhibit justifying a waiver of that rule(s). If a waiver of the Commission Rule(s) is being requested, Item 11a must be answered 'Y'.

General Certification Statements

1)	The Applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application.
2)	The Applicant certifies that grant of this application would not cause the Applicant to be in violation of any pertinent cross-ownership or attribution rules.* *If the Applicant has sought a waiver of any such rule in connection with this application, it may make this certification subject to the outcome of the waiver request.
3)	The Applicant certifies that all statements made in this application and in the exhibits, attachments, or documents incorporated by reference are material, are part of this application, and are true, complete, correct, and made in good faith.
4)	The Applicant certifies that neither the Applicant nor any other party to the application is subject to a denial of Federal benefits pursuant to §5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862, because of a conviction for possession or distribution of a controlled substance. This certification does not apply to applications filed in services exempted under §1.2002(c) of the rules, 47 CFR § 1.2002(c). See §1.2002(b) of the rules, 47 CFR § 1.2002(b), for the definition of "party to the application" as used in this certification.
5)	The Applicant certifies that it either (1) has current required ownership data on file with the Commission, (2) is filing updated ownership data simultaneously with this application, or (3) is not required to file ownership data under the Commission's Rules.
6)	The Applicant certifies that the facilities, operations, and transmitters for which this authorization is hereby requested are either: (1) categorically excluded from routine environmental evaluation for RF exposure as set forth in 47 C.F.R. 1.1307(b); or, (2) have been found not to cause human exposure to levels of radiofrequency radiation in excess of the limits specified in 47 C.F.R. 1.1310 and 2.1093; or, (3) are the subject of one or more Environmental Assessments filed with the Commission.
7)	The Applicant certifies that it has reviewed the appropriate Commission Rules defining eligibility to hold the requested license(s), and is eligible to hold the requested license(s).
8)	The Applicant certifies that it is not in default on any payment for Commission licenses and that it is not delinquent on any non-tax debt owed to any federal agency.

Signature

56) Typed or Printed Name of Party Authorized to Sign

First Name:	MI:	Last Name:	Suffix:
John		Muleta	

57) Title: CEO

Signature: John B Muleta

58) Date: September 1, 2006

FAILURE TO SIGN THIS APPLICATION MAY RESULT IN DISMISSAL OF THE APPLICATION AND FORFEITURE OF ANY FEES PAID.

Upon grant of this license application, the Licensee may be subject to certain construction or coverage requirements. Failure to meet the construction or coverage requirements will result in termination of the license. Consult appropriate FCC regulations to determine the construction or coverage requirements that apply to the type of license requested in this application.

WILLFUL FALSE STATEMENTS MADE ON THIS FORM OR ANY ATTACHMENTS ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. Code, Title 18, §1001) AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. Code, Title 47, §312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, §503).

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

In re:	)	
	)	
M2Z NETWORKS, INC.	)	File No.
	)	
Application for License and Authority to	)	
Provide National Broadband Radio Service	)	
in the 2155-2175 MHz Band	)	
	)	

APPLICATION FOR LICENSE AND AUTHORITY TO PROVIDE NATIONAL BROADBAND RADIO SERVICE IN THE 2155-2175 MHZ BAND

Milo Medin
Chairman
M2Z Networks, Inc.
2800 Sand Hill Road
Suite 150
Menlo Park, CA 94025

Uzoma C. Onyeije
Vice President Regulatory Affairs
M2Z Networks, Inc.
2000 North 14th Street
Suite 600
Arlington, VA 22201
(703) 894-9500

Amended on September 1, 2006

APPLICATION FOR LICENSE AND AUTHORITY
TO PROVIDE NATIONAL BROADBAND RADIO SERVICE

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

In re:	)	
	)	
M2Z NETWORKS, INC.	)	File No.
	)	
Application for License and Authority to	)	
Provide National Broadband Radio Service	)	
in the 2155-2175 MHz Band	)	
	)	

APPLICATION FOR LICENSE AND AUTHORITY
TO PROVIDE NATIONAL BROADBAND RADIO SERVICE
IN THE 2155-2175 MHZ BAND

M2Z Networks, Inc. ("M2Z") hereby submits its license application to construct and operate a nationwide broadband wireless network in the 2155-2175 MHz spectrum band (the "Application").[1] Expedited acceptance and grant of the Application will enable M2Z to rapidly make available *free*,[2] high speed broadband access to nearly every consumer, business and non-profit and public safety entity in the United States without relying on the Universal Service Fund or other taxpayer dollars.

Grant of this Application would promote broadband deployment; yield near ubiquitous broadband access within 10 years of license grant and commencement of operations; and serve the public interest, convenience and necessity. M2Z is technically, financially and otherwise qualified to operate under the proposed license and meets the requirements of Section 1.945(b) of the Commission's rules.[3] M2Z operations in the 2155-2175 MHz spectrum band under the conditions proposed herein would fully protect, and would not cause harmful interference to, any other licensees. Moreover, M2Z will accept and be bound for its 15-year license term by specific operational commitments as well as concrete public

[1] *See* 47 C.F.R. § 2.106. On September 1, 2006, M2Z filed under separate cover a Petition for Forbearance (the 'Petition') pursuant to 47 U.S.C. § 160(c) concerning the application of Sections 1.945(b) and (c) of the Commission's rules, and other statutory and regulatory provisions, to this Application. The issues raised in the Petition are germane to the Commission's review of M2Z's Application. Accordingly, the Petition hereby is incorporated by reference into this Application.
[2] As explained herein, M2Z's basic broadband service, its National Broadband Radio Service (or "NBRS"), will be free of all recurring charges, just as over-the-air TV is today. Using a business model similar to over-the-air broadcasting, NBRS will be advertiser-supported. The consumer will only have to purchase a relatively low cost receiver.
[3] *See* 47 C.F.R. § 1.945(b).

interest and annual spectrum fee obligations as specified herein. Due to these unique and groundbreaking commitments, M2Z's Application should be accepted for filing immediately, and should be granted after consideration of comments. The Commission has ample legal authority to favorably and immediately grant the Application and need not conduct a rulemaking or adopt band-specific licensing processes that would only prolong consumers' wait for wireless broadband service that is virtually ubiquitous.

As explained in detail below, M2Z will transform the broadband marketplace by creating a nationwide, free broadband alternative for most Americans within an exceptionally short time frame. M2Z, therefore, requests that the Commission act expeditiously on the instant Application so that current and would-be consumers of broadband services can benefit from the increased availability and competition that M2Z's service will bring to the broadband marketplace.

I. EXECUTIVE SUMMARY AND INTRODUCTION

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, Nation-wide and world-wide wire and radio communication service with adequate facilities at reasonable charges . . . ."[4] In addition, Section 706 of the Telecommunications Act of 1996 provides that the "Commission . . . shall encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans . . . ."[5] Historically, the United States has been the global beacon for affordable, universally available modern communications. Now is the time to ensure that this legacy lives on in the "broadband era."

In the early days of radio and television, the Commission ably met the mandate for universal access in the broadcast arena. It granted pioneering broadcasters spectrum so that Americans of all income levels were immediately able to gain access to free over-the-air news, entertainment, public service and emergency alert content.

Similarly, M2Z proposes to make a family-friendly and free nationwide broadband service (384 kbps downlink/128 kbps uplink) available to consumers and public safety entities. Like viewers of free

[4] 47 U.S.C. § 151.
[5] *See* 47 U.S.C. § 157 nt, Pub. L. No. 104-104, § 706(a), 110 Stat. 153 (1996).

over-the-air television, consumers of M2Z's National Broadband Radio Service (or "NBRS") will not incur monthly fees. In order to take advantage of seamlessly connected, 24/7 portable broadband service, all a consumer needs to do is purchase a relatively inexpensive M2Z-certified reception device available from various established competitive vendors.[6] M2Z's ultimate goal, through its own service, is to drive development of the broadband marketplace so that access is affordable and future penetration levels are near-ubiquitous throughout the country. Consumers additionally will benefit from the competitive spur that M2Z will provide to other broadband services providers, leading to increased innovation and competitive pricing.

Universal access to broadband for consumers and a nationwide interoperable public safety data broadband network are national priorities. Congress, the Administration and the Commission continuously grapple with ways of achieving these laudable goals without imposing additional burdens on the taxpayers. M2Z's unique NBRS proposal achieves these priorities by using private capital to build and operate a truly affordable broadband network for both consumers and public safety. M2Z's proposal to provide free broadband access to consumers and public safety entities could result in enormous economic benefits. On behalf of M2Z, Drs. Rosston and Wallsten reviewed studies quantifying the economic benefits expected to result from universal broadband service, such as the service proposed by M2Z.[7] The consensus of these studies is that universal broadband service could yield economic benefits of several hundred billion dollars.[8] Further, according to Drs. Rosston and Wallsten, M2Z's proposal could save at least $8.4 billion and up to $20.5 billion because it will obviate the expansion of the Universal Service Fund ("USF" or "Fund") and will thereby constrain the growth of USF.[9] Additionally,

[6] We anticipate that the equipment, even initially, will cost less than $250.00, and that the cost will decline with increasing consumer adoption and manufacturing scale.
[7] Drs. Rosston and Wallsten are distinguished telecommunications economists submitting a joint statement on behalf of M2Z. *See* Appendix 5, The Benefits of Broadband Competition, at 7-10, attached hereto.
[8] *See id*.
[9] *See id*. at 23.

both state and federal agencies could rely on M2Z's nationwide interoperable secondary data network to save billions of dollars and still meet the needs of first responders.[10]

This Application is premised on enforceable conditions that will govern the operation of M2Z's network. Recognizing that the airwaves are a valuable national resource, M2Z pledges to operate its network in the public interest, with specific, enforceable public interest obligations. Notably, M2Z is committed to: (1) provide nationwide broadband service with no recurring costs to all users that purchase and register an M2Z certified device; [11] (2) construct its network so that at least 95% of the U.S. population – in urban centers and rural communities across America – can avail themselves of the service within 10 years of license grant and commencement of operations; (3) block access to indecent content for all free access service users; (4) provide public safety officials with access to an interoperable secondary data network, with appropriate consultation with such officials as to their needs; and (5) submit a voluntary payment to the U.S. Treasury of 5% of gross revenues generated from the subscription services that it will offer in addition to the free National Broadband Radio Service.

Moreover, the Commission's grant of 20 MHz of underutilized spectrum to M2Z will advance the public interest in a number of additional ways:

- M2Z's facilities-based network will provide an additional broadband competitor spurring innovation and price competition for the benefit of American consumers.
- The Nation's school children - in both rural and urban communities across America — will have free access to 384 kbps of wireless broadband that will automatically filter out pornography and other indecent content without the need for special end-user software.

---

[10] *Cf.* Federal Communications Commission, Report to Congress on the Study to Assess Short-Term and Long-Term Needs for Allocations of Additional Portions of the Electromagnetic Spectrum for Federal, State and Local Emergency Response Providers (rel. Dec. 19, 2005) ¶ 25 ("*Report to Congress*"), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-262865A1.pdf.

[11] Under M2Z's plan, between 119 and 128 million citizens of the United States who currently have no broadband or utilize dial-up Internet access will have free, full-time broadband service six times faster than today's dial-up Internet access, thereby accelerating the United States reemergence as the global leader in broadband technology. These population estimates were derived from figures in a study by the Pew Internet & American Life Project and a Nielsen/NetRatings press release. *See* Appendix 5 at 10. *See also* Susannah Fox, "Digital Divisions" at 1 (October 5, 2005), available at http://www.pewinternet.org/pdfs/PIP_Digital_Divisions_Oct_5_2005.pdf. *See* Nielsen/NetRatings, Inc., "Two Out of Every Five Americans Have Broadband Access at Home, According to Nielsen/NetRatings" (September 28, 2005), available at http://www.nielsen-netratings.com/pr/pr_050928.pdf.

- M2Z's build-out will not rely upon the Universal Service Fund but will be designed to provide near-universal service. The estimated savings to the U.S. government from M2Z's voluntary build-out of an affordable, universal broadband network could range from $8.4 to $20.5 billion over 25 years.

- Given the expedited deployment schedule of M2Z's broadband service, national economic growth will be stimulated as broadband competition increases productivity to the tune of billions of dollars.

- Finally, M2Z will provide all these benefits to the public while avoiding harmful interference to the operations of other licensees.

The M2Z proposal is substantial, it is in the public interest, and the company is prepared to execute it promptly upon the grant of this Application. M2Z has the technical, financial, and legal 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, including Section 309(j)(6)(E),[12] M2Z commits to explicit conditions that will mandate an aggressive, perhaps unprecedented, build-out requiring 33% national coverage within 3 years of license grant and commencement of operations, 66% after 5 years, and coverage of 95% of the population in 10 years. If M2Z's build-out falters, there will be no spectrum warehousing and no wrangling over spectrum rights; the Commission can simply make a finding that the M2Z license has been terminated for failure to meet the conditions placed on the license.

As outlined in this Application, the Commission has both the statutory authority and the unrivaled opportunity to make affordable broadband access a reality for all Americans. And it can do so by allowing the private sector to fully fund universally available broadband access without drawing from the existing USF or imposing new taxes to pay for a new interoperable public safety secondary data network. The only federal action required is for the Commission to grant M2Z – under the explicit authority provided to it by Congress – 20 MHz of largely fallow, unpaired and unassigned spectrum.[13] Indeed,

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[12] *See* 47.U.S.C. § 309(j)(6)(E).

[13] "In 2004 Shared Spectrum conducted an analysis which determined that the 2155-2175 MHz band was not used within the Arlington Virginia area." *See* Comments by Shared Spectrum Company, ET Docket 04-186, Appendix A - http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6516213428. Additional measurements at various locations are available at http://www.sharedspectrum.com/?section=nsf_measurements. These measurements, too, indicate that the level of spectrum usage in the 2155-2175 MHz band is very low.

M2Z seeks immediate action as this Application presents compelling public interest benefits that warrant the assignment of a license without the inevitable delay of an auction or rulemaking.

II. DESCRIPTION OF THE APPLICANT

A. About M2Z Networks

M2Z is a Silicon Valley company founded in 2005 by Milo Medin and John Muleta, both U.S. citizens.[14] Milo Medin, a co-founder of the company and Chairman of the company's Board of Directors,[15] serves as M2Z's Chief Technology Officer and is the visionary behind M2Z's offer to transform America into a broadband nation. Medin is a technology pioneer who began his career as an engineer at NASA Ames Research Center in California. He left his distinguished government career to become the founder of @Home Networks in 1995. @Home revolutionized broadband access in the U.S. by working with several cable carriers to create a technology standard for using cable infrastructure for broadband access. @Home started as a venture-backed company in 1995 and by 2001 had over 4 million homes as customers to its broadband access service.

John Muleta, the company's co-founder, is a member of the Board of Directors and also serves as CEO of M2Z. Muleta was most recently partner and co-Chair of the Communications Practice at Venable LLP. Muleta was previously head of the Commission's Wireless Telecommunications Bureau and responsible for implementing the Commission's policies regarding consumer wireless services and public safety radio networks. Between 1994 and 1998, Muleta worked at the Commission in the Common Carrier Bureau in several capacities including Deputy Chief of the Bureau and Chief of the Bureau's Enforcement Division. Muleta also has a distinguished private sector record as an entrepreneur, most prominently serving as a senior officer of PSINet, Inc., a leading commercial Internet Services Provider. Muleta headed PSINet's infrastructure provisioning organization that operated in 28 countries.

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[14] M2Z certifies that it does not have either foreign control or foreign ownership above the benchmarks of 47 U.S.C. § 310(b). In fact, M2Z currently has no foreign ownership.

[15] The M2Z Board of Directors comprises five members, all of whom are U.S. citizens: Milo Medin, John Muleta, John Doerr, Bruce Sachs, and Geoff Yang.

Muleta also served as President of PSINet's India, Middle East and Africa unit and as the President of PSINet Ventures, the company's $100 million corporate venture unit.

M2Z's financial backers are Kleiner Perkins Caufield & Byers, Charles River Ventures, and Redpoint Ventures. These three venture capital firms have played seminal roles in the transformation of the American economy and are determined to bring the ingenuity of the American entrepreneur to solve the vexing problems facing the American communications industry: universal access to broadband and increasing competition in the broadband market.

Kleiner Perkins Caulfield & Byers was formed in 1972 and is one of Silicon Valley's best-known venture capital firms with over $2 billion under management. The firm has unparalleled success as a venture capital firm, having backed some of the most revolutionary high tech companies in U.S. history. It has been an early investor in more than 300 information technology and biotech firms, including @Home, Amazon.com, America Online, Brio Technology, Compaq, Electronic Arts, Flextronics, Genentech, Google, Hybritech, Intuit, Lotus Development, LSI Logic, Macromedia, Netscape, Quantum, Segway, Sun Microsystems, Tandem. John Doerr, a managing partner of the firm, is a founding board member of M2Z.

Founded in 1970, Charles River Ventures ("CRV") is one of the oldest and most successful early-stage venture capital firms with approximately $1.8 billion under management. CRV is dedicated to helping exceptional entrepreneurs turn their ideas into the next category leaders in the data communications and software and services sectors. Over the past ten years, CRV funds have been ranked among the industry's top performers with early stage investments in leading companies in these sectors such as Cascade, Chipcom, CIENA, iBasis, Sonus Networks, SpeechWorks International, Flarion and Vignette. CRV has offices in Boston, MA and Menlo Park, CA. Bruce Sachs, the managing partner of the firm, is a founding board member of M2Z.

Redpoint Ventures was founded in 1999 by top partners from Brentwood Venture Capital and Institutional Venture Partners ("Redpoint"), two leading venture firms in Silicon Valley. Redpoint has over $1.7 billion under management. Since its inception, Redpoint has demonstrated a deep knowledge

and insight into the emerging convergence of media and broadband networks, having successfully invested in companies such as Excite, Ask Jeeves, TiVo, Netflix, WebTV, MySpace.com, Juniper Networks, Foundry Networks, MMC Networks, and Bay Networks. Geoff Yang, one of the managing partners of Redpoint Ventures, is a founding member of the M2Z Board.

As the preceding information and that set forth in Appendix 1 makes clear, M2Z is legally, technically and financially qualified to be licensed for the requested spectrum, and to effectuate this proposal. The founders and their financial backers clearly bring a wealth of practical, real world experience to the enterprise. More importantly, the company has been aligned with sufficient capital to ensure, upon licensing on the terms proposed in the Application, that M2Z can begin constructing and operating its broadband network. To this end, M2Z certifies, as a condition of its eligibility for the requested spectrum, that it currently has reasonable assurances from various committed sources that it will be able to obtain in excess of $400 million to help construct and operate its network.[16]

B. The M2Z Mission

> The Commission is "making sure we have the regulatory environment in place that provides for the opportunities for the private sector to go out and invest in the next generation of networks." Kevin J. Martin, Chairman, Federal Communications Commission[17]

The mission of M2Z is simple — to make affordable broadband available throughout the United States of America. While M2Z is a for-profit entity, one of its core principles is that it can thrive financially while significantly advancing the public interest. The proposal before the Commission is the perfect marriage of commercial passions and public commitment. M2Z believes that its proposal will benefit the economy and the productivity of our nation. In a phrase, the goal of M2Z is to get everyone connected and connected on broadband.

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[16] M2Z's proposal is well funded through both venture funding and funds generated through M2Z's strategic business partnerships. Many of our partnership relationships are confidential, and the indiscriminate release of sensitive information concerning them would be inconsistent with M2Z's contractual obligations. Nevertheless, to the extent the Commission would like to review additional financial information about M2Z or any of its partners, M2Z will provide such additional information, upon request, under a cover of confidentiality.

[17] *See* Drew Clark, "FCC Chief Discusses Priorities, Recent Broadcast Indecency Fines," National Journal's Technology Daily, Mar. 17, 2006, available at http://www.njtelecomupdate.com/lenya/telco/live/tb-TDUW1142887347767.html.

M2Z believes that its mission complements the broadband vision of the Commission. The Commission's strategic goal on broadband is that "[a]ll Americans should have *affordable* access to robust and reliable broadband products and services."[18] This goal enjoys unanimous support by the Chairman and the Commissioners. To this end, Chairman Martin has identified spurring rapid broadband deployment throughout the nation as his "highest priority."[19] Commissioner Tate has joined the Chairman in emphasizing the importance of facilitating broadband deployment.[20] Similarly, Commissioner Copps has indicated that "[b]roadband is the education and information and commerce and jobs of the future, and our challenge is to make sure that everyone has access to it."[21] Commissioner Adelstein, for his part, has said that "the public interest means securing access to communications for everyone, including those the market may leave behind."[22] These statements confirm that the Commission is committed to regulatory policies that promote more inclusive and far reaching broadband deployments for the benefit of the American public.

The Commission is not alone in its efforts to encourage the rapid deployment of broadband and other advanced services throughout the United States. The White House and the U.S. Congress both view broadband access as essential to maintaining the United States' global competitiveness. In early 2004, the President called for universal broadband availability by 2007 as a way to boost the economic competitiveness of the United States,[23] and has recently sought more options to make broadband available

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[18] *See* http://www.fcc.gov/broadband (emphasis added).

[19] *See* Kevin J. Martin, "United States of Broadband," *Wall Street Journal* (July 7, 2005), reprinted at http://www.freepress.net/news/print.php?id=9013.

[20] "Promoting broadband deployment is one of the highest priorities of the FCC." Joint Statement of Chairman Kevin J. Martin and Commissioner Deborah Taylor Tate, *Petition of the Verizon Telephone Companies for Forbearance under 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Their Broadband Services*, WC Docket No. 04-440, at 1 (Mar. 20, 2006).

[21] Remarks of Commissioner Michael J. Copps, OECD Conference on the Future Digital Economy, Rome, Italy January 30, 2006, at 3, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-263717A1.doc.

[22] Remarks of Commissioner Jonathan S. Adelstein, "Accessing the Public Interest: Keeping America Well-Connected," 21st Annual Institute on Telecommunications Policy & Regulation, Washington, DC, December 4, 2003, at 1, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-241881A1.doc.

[23] *See* "A New Generation of American Innovation," April 2004, available at http://www.whitehouse.gov/infocus/technology/economic_policy200404/chap4.html. The President's report noted efforts by the Department of Commerce to develop technical specifications to enable the widespread deployment of new technologies like broadband over power lines. Moreover, the Executive Branch has also undertaken other efforts to spur more efficient construction of broadband facilities. For example, the Bush Administration created the Federal Rights-of-

"over the air, as opposed to cable."[24] Congress also has significant interest in broadband deployment, with more than a dozen bills from the 109th Congress aimed at bringing broadband to rural areas, spurring facilities investment, or shoring up public safety systems.[25]

Recently, the Commission released its broadband development report, which showed positive trends for broadband deployment in the United States.[26] Despite these advances, Chairman Martin has noted that "[t]here is still more [the Commission] can do to encourage competition and speed broadband deployment."[27] In 2005, the Organization for Economic Cooperation and Development found that the United States had slipped two slots to 12th since 2003 in terms of the percentage of people using broadband Internet access.[28] Similarly, the International Telecommunication Union placed the United States at 16th in the world in broadband penetration per capita, a fall from 13th place in 2004.[29]

Way Working Group to identify and recommend changes in federal policies, regulations, and practices that would improve the process of granting rights-of-way for broadband communications networks across federal lands. *See* Federal Rights-of-Way Working Group, "Improving Rights-of-Way Management Across Federal Lands: A Roadmap for Greater Broadband Deployment" (April 2004), available at http://www.ntia.doc.gov/reports/fedrow/FROWReport_4-23-2004.htm.

[24] *See* "Remarks on the National Economy, and a Question and Answer Session in Sterling, Virginia," *Public Papers of the President*, Jan. 19, 2006. available at http://www.presidency.ucsb.edu/ws/index.php?pid=65155&st=&st1=.

[25] *See*, *e.g.*, H.R.5085 (the House version of the "American Broadband for Communities Act," introduced April 4, 2006); S.2357 (the "Right TRACK Act," requiring, *inter alia*, establishment of a national broadband policy, introduced March 2, 2006); S.2332 (the Senate version of the "American Broadband for Communities Act," introduced February 17, 2006); S.2256 (the "Internet and Universal Service Act of 2006," introduced February 8, 2006); H.R.4626 (the "Re-Channelization of Public Safety Spectrum Act," proposing to require an FCC rulemaking to re-channelize the 700 MHz public safety spectrum to accommodate commercial broadband technologies, introduced December 17, 2005); S.1583 (the "Universal Service for the 21st Century Act," introduced July 29, 2005); S.1504 (the "Broadband Investment and Consumer Choice Act," introduced July 27, 2005); S.1294 (the "Community Broadband Act of 2005," introduced June 23, 2005); S.1147 (proposing amendments to the Internal Revenue Code to allow deduction of certain broadband expenses, introduced May 26, 2005); H.R.1479 (the "Rural Access to Broadband Service Act," introduced April 5, 2005, similar to S.497); S.497 (the "Broadband Rural Revitalization Act of 2005," introduced March 2, 2005, similar to H.R.1479); H.R.146 (proposing to amend the Public Works and Economic Development Act of 1965 to provide for grants to advance high-speed telecommunications in areas with under 1 million in population, introduced January 4, 2005); H.R.144 (the "Rural America Digital Accessibility Act," introduced January 4, 2005).

[26] This report is available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-264744A1.pdf.

[27] *See* Kevin J. Martin, "Why Every American Should Have Broadband Access," Financial Times, Apr. 2, 2006, available at http://news.ft.com/cms/s/837637ee-c269-11da-ac03-0000779e2340,_i_rssPage=6e6e833c-cbff-11d7-81c6-0820abe49a01.html.

[28] *Compare OECD Broadband Statistics*, June 2005, available at http://www.oecd.org/document/16/0,2340,en_2649_201185_35526608_1_1_1_1,00.html ("*OECD Report*") *and*, *ICCP Broadband Update*, October 2003, at 5, available at http://www.oecd.org/dataoecd/18/9/18464850.pdf.

[29] *See* ICT Statistics, "Economics by Broadband Penetration, 2004," available at http://www.itu.int/ITU-D/ict/statistics/at_glance/top20_broad_2004.html ("ITU Statistics").

With the Commission's national licensing of the requested spectrum, M2Z will reverse this trend by providing widespread wireless broadband access throughout America funded solely through private capital.

III. THE M2Z REQUEST FOR A LICENSE TO PROVIDE A FAMILY-FRIENDLY FREE, NATIONWIDE WIRELESS BROADBAND SERVICE

A. Application

M2Z proposes to provide high-speed broadband Internet access throughout the United States, at virtually no cost to consumers, and with no outlay to M2Z from the U.S. Treasury or from the nation's USF. M2Z's service is designed to provide portable last mile broadband IP access to homes and offices, and can deliver a total of 512 kbps of asymmetric (384 kbps downstream; 128 kbps upstream) wireless IP data to an affordable device with no recurring monthly service charges to the end user.

In order to make this service possible, M2Z requests an exclusive, nationwide authorization to operate in 20 MHz of spectrum in the 2155-2175 MHz band, with a 15-year license term. A 20 MHz minimum spectrum allocation will guarantee the planned data rates, and ensure that the system has sufficient bandwidth to protect adjacent licensees as well as the current incumbents (until they vacate the spectrum as required by previous Commission Orders).[30] Conversely, based on existing technology, an obligation to share the spectrum (by frequency, geographical division or in any other way) would prevent M2Z from fulfilling its business plan. M2Z further requests that the service proposed in this Application be governed by the conditions outlined herein and in Appendix 2.[31] Finally, M2Z seeks waiver of strict

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[30] *See Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands*, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd. 14165, ¶¶ 37-38 (2004) ("*BRS R&O*") (ordering the relocation of users from the 2150-2156 MHz and 2156-2160 MHz bands to 2496-2502 MHz and 2618-2624 MHz respectively); *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*, Eighth Report and Order, Fifth Notice of Proposed Rulemaking and Order, 20 FCC Rcd. 15866, ¶ 6 (2005) ("*AWS 8th R&O*") (ordering the relocation of users of the Fixed and Mobile Service allocations in the 2155-2160 MHz band and designating the 2155-2175 MHz band for AWS use). *See also 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*, ET Docket No. 00-258, Ninth Report and Order, FCC 06-45 (rel. Apr. 21, 2006) ("*AWS 9th R&O*") (establishing procedures for relocation of incumbent users).

[31] Appendix 2, Proffered Conditions of Grant of M2Z's License, attached hereto.

application of Section 1.913 of its rules and other rules as necessary to accept this application, as discussed herein.

B. Voluntary Public Interest Commitments and Other Obligations Under the License

In exchange for the spectrum requested in this Application under the conditions outlined herein, M2Z pledges to utilize the spectrum subject to tangible and groundbreaking public interest commitments. As explained in greater detail in section IV.A. and Appendix 2, M2Z will commit to a series of explicit, enforceable public interest obligations that will govern its conduct under the requested license. M2Z will also be bound by certain operational obligations discussed in section III.C and Appendix 2. These unique commitments include the following:

- M2Z will commit to making available a robust level of broadband service, with engineered asymmetric rates designed to provide at least 384 kbps down and 128 kbps up, *free* of airtime or service charges, throughout the United States (the "National Broadband Radio Service" or "NBRS"). In order to avail themselves of the NBRS, consumers need only purchase a low cost M2Z reception device, and register their device, for free, with M2Z.

- M2Z will commence service within 24 months of grant of Commission authorization, and will comply with deployment benchmarks that require it to construct sufficient base stations to cover: (a) 33% of the U.S. population by the *third anniversary of commencement of operations;* (b) 66% of the U.S. population by the *fifth anniversary of commencement of operations;* and (c) 95% of the U.S. population by the *tenth anniversary of commencement of operations.*

- The National Broadband Radio Service will include a compulsory setting that will utilize state of the art network filtering technology to take every reasonable and available step to block access to sites purveying pornographic, obscene or indecent material.

- As part of its deployment, M2Z pledges that it will serve any federal, state, or municipal public safety organization willing to utilize NBRS, without limit to the number of devices on the network. The service will commence as soon as the company constructs its network and makes service generally available in the public safety agencies' service area.

- M2Z will also offer faster data rates, access to additional content and/or special service offerings on a subscription basis (referred to cumulatively as "Premium Service"). M2Z will, as a condition of its license, voluntarily pay to the U.S. Treasury a "usage" fee in an amount equal to five percent (5%) of the gross revenues derived from the Premium Service.[32]

[32] Premium Service customers will be able to specify that they wish their service to be equipped with filtering to block indecent material. *See* Appendix 3, M2Z's Commitment to Protect Minors from Indecent Material, at ¶ 6, attached hereto.

- M2Z will ensure that its network operates in such a manner that permits all then existing Commission licensees to enjoy an operating environment free of all harmful interference.

- M2Z will strictly comply with the Commission's relocation policies for Fixed Microwave Service and Broadband Radio Service operations currently within the 2155-2175 MHz band.

C. Spectrally-Efficient Advanced Technology

M2Z's planned network will make use of technology advances in spectrum access, including spatial reuse and dynamic bandwidth allocation, to provide connectivity in an extremely efficient manner. The M2Z Network will benefit from three cutting edge technologies. The combination of time division duplex ("TDD"), advanced antenna system ("AAS") technology, and Orthogonal Frequency Division Multiple Access ("OFDMA") waveforms will provide spectrum efficiencies and network capacity to ensure that M2Z can provide high quality wireless broadband service to fixed and nomadic points of presence while fulfilling the conditions of its license.

1. Time Division Multiplexing Technology

In unpaired spectrum such as the 2155-2175 MHz band, two-way communication is made possible using TDD technology. TDD is a transmission protocol that uses a single block of spectrum for both sending and receiving information. For TDD operations to work efficiently and to enable services requiring a high level of quality of service ("QoS"), all base stations and end-user equipment must be coordinated and synchronized to a common time base (*e.g.*, GPS) so that transmission and reception can take place according to a fixed duty cycle –*e.g.*, three time slots for downlink operations and one for uplink operations. TDD operation exploits time synchronicity in order to forego the need for paired spectrum and thus enables more intensive and efficient use of spectrum.[33]

Traditionally, the use of TDD technology in the United States has been hampered by the limited available spectrum and technology to mitigate the interference concerns of incumbent wireless operators

[33] In contrast, frequency division duplex ("FDD"), which is the prevalent mode of operation used by Commercial Mobile Radio Service carriers in the United States, requires symmetric operations, dedicating fixed amounts of spectrum to send as well as receive. Due to the naturally asymmetric nature of the Internet, there is considerably more data sent from base stations than from user terminals. As a result, the uplink spectrum allocated for FDD operates inefficiently when compared to TDD operations.

using frequency paired spectrum ("FDD") technology.[34] However, recent technological developments such as adaptive antenna systems and OFDMA as well as the widespread adoption of the Internet Protocol ("IP") have combined to make TDD operations viable marketplace options, as demonstrated by the findings of the ITU and other governmental and standards bodies.[35] Along this vein, the Commission recently called for the additional allocation of spectrum to TDD uses as a means of spurring technical innovation.[36] M2Z's technology, its operational plans to provide a nationwide interoperable broadband data network, and its proposed conditions for use of the 2155-2175 MHz band, fulfill the Commission's specified desire to promote the rapid deployment of affordable broadband data using TDD spectrum.

2. Advanced Antenna Technology

M2Z is also basing its operations on the AAS standard for beam forming to create a high capacity broadband network. The AAS technology that M2Z plans to use dynamically manages the network's capabilities for range extension, interference avoidance, interference suppression, and throughput. This is accomplished by extensively using the diversity within the antenna subsystem to focus emitted energy on the specific user while "defocusing" energy on non-active users. This technology provides for a high degree of spatial reuse which, when combined with appropriately selected waveforms, creates significant increases in spectral efficiency and link budget. While this technology is advanced, it is at the same time neither untested nor unfamiliar to industry experts. This technology is based on optional modes that are compatible with the 802.16e standard, often referred to as Wi-Max.

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[34] *See, e.g.*, Comments of AT&T Wireless Services Inc., *filed in* WT Docket No. 02-353 at 8 (filed February 7, 2003); Comments of Verizon Wireless, *filed in* WT Docket No 02-353 at 5 (filed February 7, 2003); Reply to Joint Opposition of Wireless Communication Association International, *filed in* ET Docket 00-258 at 3 (filed May 29, 2003).

[35] *See* Mitigating Techniques To Address Coexistence between IMT-2000 Time, Division Duplex and Frequency Division Duplex Radio Interference Technologies within Frequency Range 2500-2690 MHz Operating in Adjacent Bands and in the Same Geographical Area, Rep. ITU-R M.2045 (2004) (identifying numerous techniques that reduce interference between TDD and FDD technologies).

[36] *See Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, Report and Order, 18 FCC Rcd. 25162, ¶ 46 (2003) ("*AWS 1st Order*").

3. OFDMA Technology

OFDMA technology provides the capacity to dynamically select both the amount of frequency and the length of time that a particular user will have access to the spectrum. M2Z plans to operate in the 2155-2175 MHz band, and may employ different sub-banding schemes that are specific to a site depending on extraneous factors, including user density and interference coordination with adjacent and co-channel users (prior to the relocation of certain incumbents as described herein). OFDMA is used to further sub-channelize the spectrum, with each user assigned a particular sub-channel as well as length of transmission. This assignment process is continuously updated to optimize the performance and utilization of the spectrum. This dynamic allocation of bandwidth results in significant increases in spectral efficiency because each user is only accessing the amount of spectrum he or she needs at a particular time. In addition, different sub-channels can be combined from various carriers. Thus, with advanced signal processing technology, each subscriber can be treated separately, independent of location, distance from base station, interference environment and power requirements.

D. Operations in the 2155-2175 MHz Band on a National and Exclusive Basis

1. The 2155-2175 MHz Band Offers Both Technical and Spectrum Coordination Benefits

The 2155-2175 MHz band is the ideal location for M2Z's offering. As noted above, M2Z will utilize state of the art TDD, smart antenna, and OFDMA technology. As explained below, the unpaired spectrum at 2155-2175 MHz is ideal for deployment of broadband wireless service using these technologies. First, the characteristics of the band and the requirements of the technologies to be used are highly correlated and represent a strong match. In particular, the band is unpaired and TDD is designed to operate in an unpaired environment.

Second, the band is ripe for the introduction of new services. Notably, all of the current incumbent licensees of the 2155-2175 MHz band have been assigned to different bands by the

Commission and will be vacating their current locations.[37] Moreover, although the 2155-2175 MHz band has been found by the Commission to be appropriate for AWS, no channelization plan, or licensing or service rules, have yet been adopted for it.[38] Taking these characteristics together, this band is essentially an unpaired, undefined, and uncluttered block of spectrum in need of a long-term useful occupant.

Thus, the Commission has the occasion to promote efficient and dynamic use of the spectrum. It is also an opportunity for the Commission to follow through on its pledge to "make every effort to provide spectrum opportunities for TDD systems in future allocation and spectrum proceedings, such as in the *AWS Allocation* proceeding."[39] The 2155-2175 MHz band provides the Commission with the spectrum opportunities for TDD deployment that other proceedings have not. Because the spectrum is unpaired and has no long term plan for use, it will likely remain underused or fallow for many years due to the limited number of carriers with the capability of operating in unpaired spectrum. M2Z is therefore ideally positioned to use the spectrum at 2155-2175 MHz to create a nationwide broadband network, including a data-oriented network that is available to public safety users, without significant interference and interoperability obstacles.

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[37] In adopting a revised band plan for the Broadband Radio Service ("BRS," formerly known as the Multichannel Multipoint Distribution Service) the Commission decided to relocate Channel 1, currently at 2150-2156 MHz, and Channel 2/2A, currently at 2156-2160 or 2162 MHz, depending on the market, to 2496-2502 MHz and 2618-2624 MHz, respectively. *See BRS R&O* at ¶ 37. *See also AWS 8th R&O* at ¶ 6. The Commission established relocation procedures for both BRS operators and Fixed Microwave Service ("FS") operators in its Ninth Report and Order. *See AWS 9th R&O, supra* Note 30.

[38] *See AWS 8th R&O* at ¶ 9 (designating 2155-2175 MHz for Advanced Wireless Services, or "AWS"). We note that the proposed network is fully consistent with the AWS designation. "Advanced Wireless Services is the collective term we use for new and innovative fixed and mobile terrestrial wireless applications using bandwidth that is sufficient for the provision of a variety of applications, including those using voice and data (such as internet browsing, message services, and full-motion video) content. Although AWS is commonly associated with so-called third generation (3G) applications and has been predicted to build on the success of such current-generation commercial wireless services as cellular and Broadband PCS, *the services ultimately provided by AWS licensees are only limited by the fixed and mobile designation of the spectrum we allocate for AWS* and the service rules we ultimately adopt for the bands." *AWS 8th R&O* n.1 (emphasis added).

[39] *See AWS 1st Order* at ¶ 46 (2003).

2. A National and Exclusive License is Critical to M2Z's Proposal

TDD is a complex and sophisticated technology. Unlike operations in paired spectrum, spectrally efficient TDD operations require that all base stations and end-user equipment be coordinated and synchronized to a common time base (*e.g.*, GPS) and transmit and receive operations take place according to a fixed duty cycle. In order for TDD to function properly and perform the advanced functions necessary to coordinate all of its hardware, it cannot operate in conjunction with technologies for delivering AWS that are incapable of performing such detailed coordination. In light of the Commission's recognition of the value and efficiencies of TDD and M2Z's compelling use of the spectrum, it is important that M2Z be permitted to operate in an environment that is hospitable to its technology and with minimum coordination issues and costs. Thus, an exclusive license ensures that M2Z will be able to deliver high quality, non-degraded services to the public, and is an essential component of M2Z's business plan and its ability to offer the commitments described in this Application.[40]

In addition to exclusivity, M2Z seeks a nationwide license. M2Z's goal is not to provide a niche service or to provide service limited only to the most populated portions of the country. Rather, it is to achieve something truly revolutionary in the broadband space – provide free high speed connections to 95% of U.S. consumers without any recurring fees. This is a grand undertaking. And, by its very terms, nationwide coverage cannot be achieved through the establishment of a regional service area. Moreover, in order to make the cost of the equipment required for its free service even more affordable, M2Z requires sufficient scale in addressable market size in order to drive down the cost of the end-user equipment by presenting manufacturers the opportunity to produce and sell significant volumes of equipment. Moreover, a nationwide license will allow M2Z to spread the costs of its operations across

[40] M2Z notes that the gratis provision of its NBRS service makes the service equivalent to the second type of "private commons" arrangement allowed in the Commission's *Secondary Markets Order*. Under that type of arrangement, the licensee "would not charge an ongoing access fee or otherwise have any direct relationship with the users." *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, ¶ 96 (2004). Facilitating this private commons arrangement is one more reason justifying the exclusive license requested by M2Z.

both urban and rural markets as well as high and low income areas, thereby creating an opportunity for it to profitably serve these different markets as well.[41]

Assigning a nationwide license is well within the Commission's authority. In enacting the Communications Act's auction provision, Congress made clear that the provision cannot be construed to prohibit the Commission from issuing "nationwide, regional, or local licenses or permits."[42] Indeed, grant of a nationwide license is also consistent with Commission precedent.[43]

Establishing a nationwide license also avoids unnecessary technical complexities for M2Z and adjacent licensees.[44] Having a single licensee for this unpaired spectrum obviates concerns related to harmful interference between co-channel systems operating in adjacent regions. In addition to requiring another layer of complex detail to the Commission's rules, co-channel interference protection criteria impose an avoidable cost on licensees by making them expend resources to constantly coordinate with

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[41] *See, e.g., 2000 Biennial Regulatory Review: Spectrum Aggregation Limits for Commercial Mobile Radio Services***,** Report and Order, 16 FCC Rcd. 22668, ¶ 38 (2001) ("The Commission has concluded previously that mobile telephony service providers with nationwide service areas can achieve certain economies of scale and increased efficiencies compared to operators with smaller service areas."). *See also AWS 1st Order* at ¶ 31 ("geographic area licensing permits economies of scale because it allows licensees to coordinate usage across an entire geographic area to maximize the use of spectrum [and] . . . reduces regulatory burdens and transaction costs because licensees . . . can aggregate their service territories without incurring the administrative costs and delays . . . [which] is especially advantageous where spectrum is likely to be used for services that require ubiquity and mobility over wide areas"); *Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service ("WCS")*, Report and Order, 12 FCC Rcd. 10785, ¶ 33 (1997) (recognizing the importance of economies of scale for equipment development and pointing to the establishment of licenses with large geographic areas and spectrum blocks, along with rules to encourage aggregating licenses, as steps to assist licensees in achieving such economies); Paul Dykewicz, "National Video Franchising Could Cut Health-care Costs, Economist Says," Broadband Daily, Apr. 5, 2006, available at http://www.broadbandadvisoryservices.com/showSingleDoc.asp?iName= broadbandDailyIndex&docid=200633565381&section=1 (regarding testimony of Brookings Institute economist, noting that prices for services and equipment for broadband will decrease as deployment increases and referencing the personal computer market as an example of how economies of scale reduce consumer prices).

[42] 47 U.S.C. §309(j)(6)(F).

[43] *See, e.g., Improving Public Safety Communications in the 800 MHz Band*, Report and Order, 19 FCC Rcd. 14969, ¶ 12 (2004) ("*800 MHz Re-banding Order*"); *Wireless Operations in the 3650-3700 MHz Band*, Report and Order, 20 FCC Rcd. 6502, ¶ 1 (2005); *Amendments to Parts 1, 2, 27 and 90 of the Commission's Rules to License Services in the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz***,** *1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands*, Report and Order, 17 FCC Rcd. 9980, ¶ 3 (2002); *Announcing the High Bidders in the Auction of Ten Nationwide Narrowband PCS Licenses*, Public Notice, 1994 FCC LEXIS 3799 (1994).

[44] *See Auction of Advanced Wireless Services Licenses Scheduled for June 29, 2006*, Public Notice, FCC 06-47 (rel. Apr. 12, 2006) ("*1710-1755 and 2110-2155 MHz Auction Public Notice*") (auctioning 2110-2155 MHz immediately below spectrum M2Z proposes to use for its service). The spectrum immediately above the spectrum M2Z proposes to utilize (2175-2180 MHz) has been allocated for AWS use. *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*, Sixth Report and Order, Third Memorandum Order and Opinion, and Fifth Memorandum Order and Opinion, 19 FCC Rcd. 20720, ¶ 1 (2004) ("*AWS 6th R&O*").

each other. The M2Z proposal for a nationwide exclusive license, therefore, permits the Commission to move forward without adopting co-channel interference protection criteria and increases the speed and flexibility with which Advanced Wireless Services can be deployed in this spectrum.

E. No Harmful Interference to Other Licensees

An important reason for M2Z's selection of the 2155-2175 MHz band is the fact that there is a limited universe of incumbent licensees in the band, all of which have been reassigned to other bands and ordered by the Commission to relocate as soon as practicable.[45]

Currently, there are two types of services operating in the 2155-2175 MHz band – Broadband Radio Service ("BRS") and Fixed Microwave Service ("FS"). BRS operations currently exist in the 2150-2160/62 MHz band and FS operations currently exist in the 2110-2150 MHz and 2160-2200 MHz bands. Due to their current locations, some BRS and FS operations may potentially be subject to either co-channel interference or out-of-band interference. Services in the bands adjacent to M2Z's proposed location include future AWS operations in the 2110-2155 MHz band and the 2175-2180 MHz band.[46] Because these services may potentially be subject to out-of-band interference from M2Z and vice versa, M2Z's proposal includes several means for avoiding harmful interference to licenses transitioning out and adjacent to the 2155-2175 MHz band.

While M2Z is committed to comply with the AWS relocation rules that were recently released by the Commission,[47] it is also committed to protect market incumbents until such transitions are complete. M2Z will also work cooperatively with the Commission and new entrants to protect parties that may in the future enter bands adjacent to the 2155-2175 MHz band including future licensees of the F Block in the 2140-2155 MHz band from harmful interference, and of course also to ensure the integrity of its own ubiquitous service from the operation of these other licensees.

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[45] *See BRS R&O* at ¶¶ 37-38 (ordering the relocation of users from the 2150-2156 MHz and 2156-2160 MHz bands to 2496-2502 MHz and 2618-2624 MHz respectively); *AWS 8th R&O* at ¶ 6 (ordering the relocation of users of the Fixed and Mobile Service allocations in the 2155-2160 MHz band and designating the 2155-2175 MHz band for AWS use).
[46] *See 1710-1755 and 2110-2155 MHz Auction Public Notice* and *AWS 6th R&O* at ¶ 1.
[47] *See generally AWS 9th R&O*.

M2Z recognizes the potential for harmful interference issues associated with integrating a new service within existing and migrating services. The theoretical potential for harmful interference will never become a reality, however. M2Z will avoid harmful interference and will comply with all applicable emission requirements to that end. M2Z will achieve this with proactive system configuration and design using emerging technologies, as described in more detail below. In addition, M2Z will work with the Commission and adjacent licensees to address interference issues that were not anticipated and to ensure that both M2Z and the adjacent licensees do not suffer harmful interference.

1. Co-Channel Harmful Interference

Co-channel harmful interference may occur when the M2Z network transmitters emit their primary signals within the band of the non-M2Z service. This may occur during the transition of the BRS Channels 1, 2a, and 2 and the FS systems that are currently operating in the 2155-2175 MHz band. These systems operate in fixed frequency bands and at fixed geographic locations. M2Z will address the potential co-channel interference through judicious selection of spectral subbands of operation and AAS technology. This will provide the same level of protection afforded by the current BRS/EBS emission rules of the 43 + 10 log 10(P) out-of-band emission ("OOBE") standard.[48] Therefore, BRS/FS incumbents will be protected from harmful interference by M2Z's adherence to that standard, as a condition of its license, until these operations are relocated in accordance with the applicable Commission rules.[49]

2. Out-of-Band Emissions

Out-of-band harmful interference is caused when M2Z network transmitters emit signals outside their licensed band. Future AWS operations in the 2110-2155 MHz band and the 2175-2180 MHz band[50] pose the highest potential for out-of-band harmful interference. The proximity of AWS operations will not present a unique or otherwise difficult challenge. The use of cutting edge technology will ensure that

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[48] *See AWS 1st Order* at ¶ 92.
[49] *See AWS 9th R&O* at ¶¶ 10-54 (BRS relocation rules) and ¶¶ 55-63 (FS relocation rules).
[50] *See generally*, *1710-1755 and 2110-2155 MHz Auction Public Notice* (announcing auction of 2110-2155 MHz spectrum for AWS) and *AWS 6th R&O* at ¶ 1 (allocating 2175-2180 MHz band for AWS).

M2Z is a good neighbor. M2Z will employ a multiplicity of methods to address any potential out-of-band harmful interference, including filtering, OFDMA and AAS. The Commission has already approved the operation of TDD and FDD in close spectral proximity when it rewrote the rules for BRS/EBS operation in the 2495-2690 MHz band.[51] M2Z will meet or exceed the OOBE standard of $43 + 10 \log_{10}(P)$ for the fixed digital stations[52] required by BRS/EBS.

F. Affordable Customer Premises Equipment

M2Z does not plan nor does it intend to be in the business of selling customer premises equipment ("CPE") necessary to connect to its network. Instead, M2Z's limited, albeit critical, role will be to confirm that such devices are certified to properly operate on its network and meet the operational requirements of its license. M2Z plans to work with a wide number of technology partners including chip makers, modem and radio manufacturers and personal computer manufacturers to develop a set of affordable end-user devices in large volumes. M2Z plans call for three separate device "form factors":

- A residential gateway: this form factor is a desktop model (the size of wireless routers currently available in the marketplace) that will have a wide area fixed wireless radio combined with a Wi-Fi radio for local area connectivity. The Wi-Fi radio will use standard 802.11 based technology for maximum interoperability with current and future Wi-Fi technology.[53] This will allow native interoperability with the wide variety of devices that have inexpensive Wi-Fi technology incorporated.

- A portable gateway: M2Z considers this form factor an interim element designed to work with laptops and other portable devices and will have the form factor of a PCMCIA or PCI Express card. We believe that this form factor will eventually be replaced through integrated modules as described below (according to one estimate, nearly 90% of all new laptops are now shipped with built-in support for Wi-Fi networks).[54]

- A built-in model: this device will be designed to be incorporated into laptop personal computers and other communications devices by the manufacturers in a manner similar to the current generation of laptops that incorporate Wi-Fi radios and the associated antennas into the laptop case. Newer models currently include built-in radios and antennas for EV-DO and

[51] *BRS R&O* at ¶¶ 131-134.
[52] *See* 47 C.F.R. § 27.53(l)(2).
[53] *See Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, Notice of Proposed Rulemaking, 19 FCC Rcd. 10018 (2004) (proposes to allow unlicensed devices in unused broadcast television spectrum). The device will also be able to operate in the 4.9 GHz band.
[54] *See* Ed Sutherland, "Will Mobile Broadband Kill WiFi?" Information Week (December 20, 2005), available at http://www.informationweek.com/story/showArticle.jhtml?articleID=175007157.

GPRS/UMTS networks. Similarly, M2Z expects to work with its technology partners to include its Wide Area Radios as an integrated part of the offering.

M2Z will work with its technology providers and its business partners to make its receiver units available for the public through normal distribution channels such as electronic retailers and local service partners. M2Z believes that the initial range of prices for its standalone "gateway" device will be under $250 in the initial years and will rapidly decline with greater consumer adoption and the resulting scale economies provided by the opportunity to serve national markets.

IV. THE M2Z PROPOSAL WILL YIELD CONCRETE PUBLIC INTEREST BENEFITS AND TRANSFORM THE COMMUNICATIONS MARKETPLACE

M2Z's broadband service has unique public interest characteristics – free nationwide service, filtering of obscene and indecent material, unprecedented construction benchmarks to ensure rapid deployment of a nationwide network, the commitment to build an interoperable and affordable broadband network for public safety agencies and first responders, and a voluntary 5% revenue-based spectrum usage fee payable annually to the U.S. Treasury. In addition to these specific public interest benefits, the proposed M2Z broadband network will promote competition, accelerate broadband deployment in low income, rural and high cost areas with zero reliance on USF support, and help ensure a seamless, interoperable broadband network for public safety agencies. The Commission's grant of M2Z's Application pursuant to Part 1.945 of its Rules would therefore be in the public interest.[55]

A. The M2Z Proposal Contemplates Specific and Enforceable Public Interest Obligations

In exchange for the spectrum requested in this Application and under the conditions outlined herein, M2Z pledges to utilize the spectrum subject to specific and enforceable public interest commitments that will govern its conduct under the requested license.

Provision of Free and Broadband Data Services. First and foremost, M2Z will ensure a robust level of broadband service is provisioned, with asymmetric engineered data rates of at least 384 kbps down and 128 kbps up, free of airtime or service charges, to all U.S. residents. By contrast, dial-up

[55] *See* 47 C.F.R. §1.945(b).

Internet access, which according to recent reports currently serves at least 54 million Americans, is generally available up to only 56 kbps.[56] Thus, M2Z's National Broadband Radio Service will have data rates at least six times faster than a dial-up service.[57] In fact, M2Z's National Broadband Radio Service will provide connectivity that amply meets the Commission's definition of high speed broadband.[58]

Specific Construction Benchmarks. Under the conditions of its proposed license, M2Z would be required to commence service within 24 months of a grant of Commission authorization, and comply with strict construction compliance benchmarks, rather than the more lenient "substantial service" standard applicable to other wireless carriers. M2Z will be required to construct sufficient base stations to cover 33% of the population within three years of license grant and commencement of operations, 66% of the population within five years, and 95% within ten years.[59] The 95% benchmark represents the minimum construction obligation that M2Z must meet as a condition of its license.[60] This kind of rapid build-out

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[56] *See* Appendix 5, *supra* note 7, at 7-10.

[57] Our estimate of a connection speed that is six times faster is conservative. Because all 56K modems are asymmetric protocols, some bandwidth is permanently reserved for uploads. In addition, throughput is dependent on line conditions. The fastest connection possible on a 56K modem is 53 kbps, but many consumers experience rates as low as 33 kbps. *See* Indiana University, Knowledge Base, at http://kb.iu.edu/data/agmb.html ("The theoretical maximum of a 56K modem is actually 53 Kbps."). *See also* Argon Technologies, Frequently Asked Questions, at http://www.argontech.net/faq.php ("56K modems also require a clean, straight through telephone connection to the telephone company's central office switching center. Phone company line amplifiers that boost a telephone signal over a long distance, PBX switchboard systems, and other phone equipment alter the phone signal and force 56K modems to fall back to speeds of 33.6 Kbps and lower. So no 56K modem ever connects at 56K. Most 56K modem users seem to connect at speeds of 28-33 Kbps.").

[58] The Commission uses the terms "high speed" and "broadband" to refer to services that provide transmission rates more than 200 kbps in at least one direction. *See Local Telephone Competition and Broadband Reporting*, Report and Order, 19 FCC Rcd. 22340, at ¶ 3 n.7 (2004).

[59] Without limiting the generality of the coverage benchmarks proposed in this application, M2Z plans to deploy its network in unserved and underserved areas throughout the United States, including rural and insular areas and federally recognized tribal lands that are unserved by any telecommunications carrier or that have a telephone penetration rate of 70% or less. *Cf.* 47 C.F.R. § 1.2110(f)(3). Because M2Z is proposing that the requested spectrum be assigned without auction, the tribal land bidding credit provided for in Section 1.2110(f)(3) would of course be inapplicable; nonetheless, M2Z submits that tribal lands are among the areas that could benefit greatly from the National Broadband Radio Service that M2Z proposes. The limitation of coverage to 95% of the population is based upon the company's estimates of where backhaul infrastructure may not be available to interconnect with optical network facilities and therefore the rest of the Internet.

[60] We note that, as a general matter, a licensee governed by Part 27 of the Commission's Rules must demonstrate that it provides "service which is sound, favorable and substantially above a level of mediocre service which just might minimally warrant renewal" as both a build-out requirement and to receive a dispositive "renewal expectancy" in the event that a competing application is filed against its renewal application. *See* 47 C.F.R. §§ 27.14 (a)-(b). M2Z believes that "hard" population coverage benchmarks are much more aggressive than the substantial service test. Nevertheless, M2Z leaves it to the Commission's discretion whether the substantial service standard should apply to it.

and service deployment serves consumers and obviates any concerns about potential spectrum warehousing.

Mandatory Filtering of Indecent and Obscene Material. M2Z commits to mandatory filtering of indecent and obscene material for the National Broadband Radio Service. This will be accomplished through a compulsory setting on the service that will utilize state of the art filters, taking every reasonable and available step to block access to sites purveying pornographic, obscene or indecent material. Like the free service itself, M2Z's content filtering will be "always on." Moreover, National Broadband Radio Service customers will be unable to alter the filters as they constitute an essential element of that service. To accomplish these critical filtering functions, M2Z plans to route National Broadband Radio Service traffic through a set of servers that can examine the traffic flows for improper activity and restrict access as required. Thus, the nation's children — and their parents — will have free access to broadband that is not only very affordable but also family-friendly and free from pornographic and other indecent material. Adults who wish to access otherwise lawful material that is restricted by M2Z's National Broadband Radio Service may do so by enrolling in one of M2Z's Premium Service offerings. Adult consumers providing M2Z with appropriate proof that they are of the age of majority, for example through the use of a credit card, can subscribe to a premium product.[61] A more detailed explanation of the filtering mechanism to be employed by the company is provided in Appendix 3.

Commitment to Public Safety and Interoperability. The United States does not have an interoperable public safety network capable of providing broadband services to first responders.[62] Various public safety organizations have estimated that the costs of building out such a nationwide, interoperable network could be as much as $18 billion.[63] The network proposed by M2Z can serve as a

[61] *Cf.* 47 C.F.R. § 64.201(a)(2).
[62] *Cf.* National Task Force on Interoperability, "Why Can't We Talk? Working Together to Bridge the Communications Gap to Save Lives: A Guide for Public Officials" at 5, 15 (February 2003), available at http://www.safecomprogram.gov/NR/rdonlyres/322B4367-265C-45FB-8EEA-BD0FEBDA95A8/0/Why_cant_we_talk_NTFI_Guide.pdf. ("*Interoperability Guide*").
[63] *See Report to Congress* at ¶ 25.

secondary interoperable broadband data network for public safety.[64] As part of its deployment, M2Z pledges that it will serve any federal, state, or municipal public safety organization willing to utilize NBRS, without limit to the number of devices on the network. The service will commence as soon as the company constructs its network and makes service generally available in the public safety agencies' service area.

As part of its public interest obligations and as more fully described in Appendix 4, M2Z proposes to provide each registered public safety user (*e.g.*, a police car equipped with a laptop) the ability to access service (384 kbps downstream; 128 kbps upstream) without a fee, at only the cost of the gateway device.[65] The single nationwide network proposed by M2Z guarantees interoperability across the United States. M2Z's network will also provide greater capacity and higher speeds than the systems that most public safety organizations are likely to be able to afford to construct themselves, and no recurring federal, state or local government expenditures will be required to make M2Z's state-of-the-art system available to every law enforcement agency, fire department, and ambulance service in the United States.[66]

Moreover, public safety entities that are interested in additional features can obtain them by subscribing to service through M2Z's strategic partner, PacketHop, Inc.[67] PacketHop's technology will enable users, among other things, to obtain real-time multicast video, to perform resource tracking functions, and use multimedia instant messaging. Further, PacketHop will provide autonomous mesh networking that will extend the reach, utility and functions of the gateway device and will allow communication between devices even if network infrastructure is unavailable or compromised. The features and benefits of the PacketHop technology are explained more fully in Appendix 4.

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[64] *See Report to Congress* at ¶ 45. Although not appropriate for all public safety needs, commercial technology can provide a viable solution for interoperability.
[65] *See* Appendix 4, M2Z's Proposal to Serve Public Safety Entities, attached hereto.
[66] M2Z's commitment extends to all public safety entities that would be eligible under 47 C.F.R. §§ 90.1203, 90.523.
[67] *See* www.packethop.com. On April 22, 2006 PacketHop's technology was demonstrated at the largest U.S. public safety and homeland security field exercise held at Long Beach, California. *See* PacketHop Press Release, "PacketHop Deploys World's-First Mobile Mesh Broadband 4.9 GHz Product for Public Safety," Apr. 24, 2006, available at http://www.packethop.com/news_events/press_releases/2006/042406.php.

The Commission has already noted that commercial networks may provide a viable solution for public safety users who require both interoperable and affordable services.[68] M2Z is committed to work with public safety officials to help make reliable and affordable interoperable services a reality.[69] The nation's public safety community – federal, state and municipal entities – will have free access to a fully interoperable nationwide broadband network which can be integrated to provide a scaleable, low cost, and highly efficient network for public safety and homeland security purposes.

Five Percent Revenue-Based Spectrum Usage Fee Payable to the U.S. Treasury. M2Z will also offer faster data rates, access to additional content and/or special service offerings on a subscription basis ("Premium Service"), and is voluntarily committing to pay to the U.S. Treasury in the form of a "usage" fee in an amount equal to five percent (5%) of the gross revenues derived from the Premium Service.[70] Consistent with Section 309(j), this usage fee will ensure "recovery for the public of a portion of the value of the public spectrum resource" and will avoid any unjust enrichment for M2Z.[71]

B. The M2Z Proposal Will Promote Greater Broadband Penetration and Economic Growth

Grant of M2Z's Application will help ensure substantially greater broadband penetration in the United States. Currently, there are as many as 128 million citizens of the United States who have no broadband or utilize dial-up Internet access.[72] With the introduction of M2Z's service, these individuals will have access to always-on broadband service six times faster than today's dial-up Internet access. Thus, M2Z will increase both the reach and the availability of high-speed services. M2Z's ability to

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[68] *See Report to Congress* at ¶¶ 45-47.

[69] To the extent safety officials require uninterrupted service, M2Z will work with them toward this end. To the extent the Commission believes it is necessary, M2Z will seek modification of its license after grant in order to make any changes necessary consistent with our discussions with the public safety community.

[70] Because M2Z is proposing a digital service with a business plan similar to the broadcast model, it submits that its position is analogous to digital television broadcasters, who are required to pay such a fee on their ancillary services pursuant to Section 336 of the Act. *See* 47 U.S.C. § 336(e). *See also Fees for Ancillary or Supplementary Use of Digital Television Spectrum Pursuant to Section 336(e)(1) of the Telecommunications Act of 1996*, Report and Order, 14 FCC Rcd. 3259 (1998) ("*Digital Broadcast Fee Order*"). M2Z will pay a fee on the revenues derived from its Premium Service equivalent to what the Commission has established for the "ancillary or supplemental" subscription services of digital broadcasters pursuant to Section 336. *See Digital Broadcast Fee Order* at ¶ 20.

[71] *See* 47 U.S.C. §309(j)(3)(C).

[72] *See supra* note 11.

break down the current economic barrier associated with broadband will provide tangible benefits for consumers who will be able finally to obtain an uninterrupted high speed connection.

The increase in new broadband subscribers will likely benefit all subscribers, whether new or existing. As explained in the attached economic study of Drs. Rosston and Wallsten (Appendix 5), increased broadband penetration will benefit U.S. consumers in three ways. First, by expanding the availability of broadband, M2Z's proposal will allow more consumers to receive the benefit of broadband service.[73] Second, the price of existing broadband services should decline because of the availability of M2Z's service. This would benefit customers of existing broadband services to benefit from the availability of M2Z's service, even if they do not utilize M2Z's network.

Finally, increased broadband penetration should increase the value of high speed services to all consumers through direct and indirect network effects.[74] Direct network effects occur when a subscriber benefits from direct interaction with another subscriber and is directly made better off by having more subscribers with whom to interact.[75] Indirect network effects arise from the provision of additional goods and services, such as software, that become more prevalent as producers respond to the size of the network.[76] Therefore, increasing the number of subscribers through lower prices and increased availability of broadband service can lead to more investment in broadband applications because there is a larger base of customers for the application developers to target. More widespread and compelling broadband applications, in turn, will attract more subscribers to broadband. Thus the self-reinforcing network effects lead to increased economic benefits.[77]

As a result, increasing the number of broadband subscribers could generate tremendous economic benefits. Drs. Rosston and Wallsten reviewed studies quantifying the economic benefits expected to result from universal broadband service, such as the service proposed by M2Z.[78] The consensus of these

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[73] *See* Appendix 5 at 5.
[74] *See id*. at 6.
[75] *See id*.
[76] *See id*.
[77] As explained in Appendix 5, direct and indirect network effects can have a major impact on the U.S. economy.
[78] *See* Appendix 5 at 10-11.

studies is that universal broadband service could yield economic benefits of several hundred billion dollars.[79] Another way of looking at the potential benefit from increased broadband penetration is its effect on productivity growth. It has been estimated that investments in information technology and high-speed telecom infrastructure "may be responsible for nearly one full percentage point of the annual increase in U.S. productivity since 1995 [through 2004]."[80] By any measure, the potential economic benefits from increased broadband penetration facilitated by M2Z's proposal are very large.

C. The M2Z Proposal Will Promote Increased Competition

M2Z has outlined its numerous commitments herein. But it is additionally valuable to the public interest that M2Z will be a new entrant in the nascent broadband market and therefore will provide much needed competition to spur additional investment and innovation to this sector of the industry that is growing too slowly for the U.S. to keep up with its peers in the world economy.[81] M2Z's entry supports the Commission's goal of ensuring that a vibrant and competitive broadband industry serves to provide consumers with the most affordable access to these services. Moreover, M2Z's entry is consistent with the notion that intermodal forms of competition create substantial facilities-based competition.

As competition flourishes, traditional carriers will be forced to respond in ways that will enhance the broadband market. For example, M2Z's data rates and filtered content may result in incumbents finding ways to present more innovative offerings to their customers. These events will all accrue to the benefit of the public. Similarly, M2Z will place real pricing pressure on current broadband providers. Indeed, lower prices from increased competition will make broadband affordable to more people while allowing existing subscribers to pay less than they do now. Reduced prices for existing subscribers do not immediately yield net economic benefits, as those subscribers already benefit from broadband

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[79] *See id.* at 7-10.
[80] *See id*. at 3, *citing to* Thomas Hazlett et al., "Sending the Right Signals: Promoting Competition through Telecommunications Reform," Analysis Group: Washington, DC (2004).
[81] Currently, approximately 93.5% of broadband lines are either cable modem or asymmetric DSL. *See High Speed Services for Internet Access Report: Status as of June 2005* at 2 (released April 2006), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-264744A1.pdf.

services.[82] Lower prices do, however, increase consumer surplus by transferring additional benefits from producers to consumers. Reduced prices that encourage additional households and individuals to subscribe yield both increased consumer welfare and net economic benefits.

Granting M2Z's Application will help the Commission successfully reach the goal of encouraging multiple broadband platforms,[83] will spur innovation, and will result in generally lower broadband prices and/or higher speeds. This is a regulatory triple crown. Best yet, these benefits may be especially pronounced in rural areas and for other under-served populations.

D. The M2Z Proposal Will Enhance Universal Service

Universal service is one of the largest programs overseen by the Commission and state regulatory commissions. Combined, the four universal service programs under the Commission's purview[84] spent approximately $6.6 billion in 2005 and these expenditures are expected to increase over time.[85] Should broadband access eventually fall under the rubric of universal service, such expenditures may become even more daunting in scale and scope.[86] Expansion of the universal service definition to include broadband services is not mere speculation. Rather, it may be viewed as a natural outgrowth of the Telecommunications Act of 1996, which acknowledges that universal service is an evolving concept – meaning that the definition may be extended to support additional services.[87] It is also organically related to the advanced services mandate found in Section 706 of the 1996 Act.[88] In fact, recent bills introduced in Congress would expand universal service specifically for the deployment of broadband services, with

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[82] Economists often refer to net economic benefits as "total surplus."
[83] "If we are successful in our efforts, consumers will have the opportunity to choose the technologies and services that best meet their individual needs. One thing is clear—when consumers have more options through competition, they reap the benefits—better services, greater innovation and lower prices." Remarks of Commissioner Michael J. Copps, *supra* note 21, at 2.
[84] The four programs are high cost, low income, schools and libraries, and rural health care. These programs are discussed in detail in Appendix 5.
[85] *See* Appendix 5 at 14.
[86] *See* Appendix 5 at 16-17.
[87] Section 254(c)(1) of the Communications Act of 1934, 47 U.S.C §254(c)(1), sets forth the conditions under which the Joint Board should recommend to the Commission changes in the definition of "universal service."
[88] *See* 47 U.S.C. § 157 nt, Pub. L. No. 104-104, § 706(a), 110 Stat. 153 (1996).

the expansion estimates in the range of several hundred million dollars annually.[89] The possible broadening of the definition of universal service to include broadband would come with the unavoidable necessity of higher universal service payments from all consumers to cover the new class of services.[90]

M2Z's application and the free services it plans to provide will allow the realization of universal service goals for broadband without necessitating the growth of the universal service funding requirements, and thereby reduce the growing burden on the American consumer. The expert economists that have reviewed M2Z's proposal estimate that M2Z's network could result in $8.4-$20.5 billion in savings to American consumers over a 25 year period.[91] M2Z's private sector-financed proposal provides the Commission with an immediate means for expanding universal access policies to advanced networks, without imposing new costs on the federal government or consumers.

M2Z does not express a judgment as to what policies the Commission, or Congress, should ultimately adopt with respect to the USF. M2Z is offering to build a nationwide broadband network through private financing while at the same time helping to resolve one of the most complex undertakings in telecommunications, which is to make access both more widely available and affordable.[92] While the debate over whether and how the USF may be adapted to broadband services continues,[93] M2Z urges the

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[89] The Boucher-Terry "Universal Service Reform Act of 2006," for example, includes broadband service in its definition of universal service. *See* Section 4(c), available at http://www.house.gov/boucher/docs/USF%20Bill.PDF. *See also* Universal Service for the 21st Century Act, S.1583, § 5 (2006) (adding broadband account to USF), available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:s1583is.txt.pdf.

[90] *See* Appendix 5 at 16-17.

[91] *See* Appendix 5 at 23.

[92] *See* Television Bureau of Advertising, "TV Basics: Television Households," available at http://www.tvb.org/rcentral/mediatrendstrack/tvbasics/02_TVHouseholds.asp (citing Nielsen Media Research). Commission estimates of telephone penetration in the U.S. are consistently in the range of 94%. *See* Industry Analysis and Technology Division, Wireline Competition Bureau, *Telephone Subscribership in the United States*, Table 1 (rel. Nov. 2005), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-262084A1.pdf. One of M2Z's goals is to rival broadcast television's penetration rate. However, due to the need to rely on interconnection with, and transport over, the PSTN, M2Z is constrained to build out its network only to points reached by the PSTN.

[93] *See*, *e.g.*, S.1583 (the "Universal Service for the 21st Century Act," introduced in the Senate on July 29, 2005, would revise the current USF mechanism, *inter alia*, to support broadband deployment in unserved areas and expand the USF contribution base); S.284 (introduced by Senator Gordon Smith from Oregon on February 3, 2005 to change the distribution mechanism; introductory remarks to this bill note that the high cost program provides no support to 40 states and propose to create a new mechanism that would target the high cost fund at smaller geographic areas); *Comprehensive Review of Universal Service Fund Management, Administration and Oversight*, Notice of Proposed Rulemaking and Further Notice of Proposed Rulemaking, 20 FCC Rcd. 113084 (rel. June 14,

Commission to grant its Application so it may pursue a parallel commercial approach to bring about affordable and universally available broadband service throughout the country.

E. M2Z Will Not Be Unjustly Enriched

The Commission has a statutory mandate that it recover "*for the public* . . . a portion of the value of the public spectrum resource . . . ."[94] That is exactly what M2Z's proposal is designed to do. First, M2Z proposes to build a national network and provide *free* national broadband service in exchange for the right to use the 2155-2175 MHz spectrum.[95] By providing free access to the spectrum, M2Z will ensure that the American public maintains unfettered access to the 2155-2175 MHz band. The value of free access to the public is substantial. Conservatively, assuming that M2Z would be able to sell its basic broadband service at twelve dollars a month to one million subscribers, the public would receive $144 million worth of service annually for free from M2Z in exchange for M2Z's use of the 2155-2175 MHz spectrum.[96] In essence, consumers will directly recover the value of the spectrum because they will be allowed on the M2Z information highway without having to pay a toll.

In addition to the value that consumers will directly receive from M2Z's provision of free broadband service, consumers will also indirectly benefit from M2Z's pledge to make payments to the U.S. Treasury. As a fundamental condition for grant of its license, M2Z is volunteering to pay the U.S. Treasury a "usage" fee of five percent (5%) on the subscription services that it will offer. The Commission has recognized in other contexts that such usage fees can serve to compensate the public for

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2005) (broadly seeking comment on the manner in which the USF is currently administered and proposals to increase efficiency and reduce errors and fraud); *Federal State Joint Board on Universal Service*, Report and Order and Second Further Notice of Proposed Rulemaking, 17 FCC Rcd. 24952 (2002) (proposing changes to the contribution method, including a proposal for a per-line or per-telephone number charge).

[94] *See* 47 U.S.C. §309(j)(3)(c) (emphasis added).

[95] The Commission has in the past looked at the value of services and assets that a potential spectrum user would contribute in order to ensure that the spectrum user would not receive a windfall from receiving its spectrum outside of an auction. In the 800 MHz re-banding proceeding, the Commission determined that it would credit Nextel with the value of the 800 MHz spectrum it was contributing, the costs Nextel incurred to reconfigure the 800 MHz band, and the costs Nextel incurred to clear the 1.9 GHz band at the end of the transition. These contributions by Nextel will be weighed against the estimated value of the 1.9 GHz it received. *See 800 MHz Re-banding Order* at ¶ 212.

[96] One million subscribers a month would represent only a very small portion of the estimated 119 to 128 million Americans who either have no Internet access or only have dial-up Internet access. Further, the price of twelve dollars a month is also a conservative estimate falling between the price for dial-up access and lower speed DSL offerings.

use of valuable spectrum and prevent unjust enrichment by licensees.[97] As M2Z's business grows, the "spectrum use" fee could also generate a sizeable contribution to the U.S. Treasury.[98]

Beyond these direct contributions that M2Z would make for a license to use the 2155-2175 MHz spectrum, M2Z's proposal would also generate substantial indirect contributions to the public for the use of the spectrum. As discussed above, by establishing a privately financed national wireless broadband network, M2Z's proposal is likely to generate $8.4-$20.5 billion in universal service funding savings to American consumers over a 25 year period.[99] In the aggregate, the savings that M2Z will pass on to the federal government can be expected to be far greater than the proceeds that could be realized from auctioning the 2155-2175 MHz spectrum.[100] In short, M2Z's proposal will handsomely compensate the public for licensing the 2155-2175 MHz spectrum to it, and M2Z will not be unjustly enriched by the grant of a license outside of the auction process.

F. The Commission Will Have Ample Jurisdiction To Enforce M2Z's Commitments

There is no risk that the commitments made by M2Z will prove illusory. M2Z will be subject to the Commission's jurisdiction and enforcement authority in two respects. First, M2Z will be subject to the enforcement provisions of Section 332, which apply to commercial mobile services.[101] Second, by

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[97] *See Digital Broadcast Fee Order* at ¶ 20 (1998) ("We will set the fee for feeable ancillary or supplementary services provided on the DTV bitstream at five percent of gross revenues received from these services. We believe that a fee of five percent of gross revenues fulfills our statutory obligations to impose a fee which recovers for the public some portion of the value of the spectrum, prevents the unjust enrichment of broadcasters providing feeable ancillary or supplementary services, and approximates, to the extent possible, the revenues that would have been received had the spectrum on which these services are provided been licensed through an auction. We also believe that a five percent fee will not dissuade broadcasters from using their DTV capacity to provide new and innovative services that can greatly benefit consumers.").

[98] With some important exceptions, spectrum auctions are generally considered the most efficient mechanism for assigning spectrum, and some also consider the monies they generate to the Treasury as a way of recognizing the value of the spectrum to the public. However, it is not clear that spectrum auctions provide the public a true picture of the value of the resource. For example, the PCS auctions have yielded nearly $17 billion to the Treasury since 1993 while the cellular industry has grown to become a $100 billion industry in that time frame. Assuming a 5% spectrum fee to the current level of the industry's revenues, the net present value of this fee would yield $58-87 billion to the Treasury (assuming 3% and 7% discount rates per OMB guidelines). This return pales in comparison to the $17 billion raised through the auction program.

[99] *See* Appendix 5 at 23. These benefits are inextricably linked to M2Z's commitment to forego universal service support.

[100] *See* Appendix 5 at 24.

[101] *See* 47 U.S.C. § 332(c). M2Z expects that it would be regulated as a CMRS provider, *see* Appendix 2 at Condition 10(f), and therefore will be subject to CALEA, E911, and relevant reporting requirements to the extent

incorporating M2Z's commitments into the license, the Commission will have independent authority to enforce compliance. In the event of M2Z's failure to comply with any of the explicit voluntary conditions, the Commission will have the discretion to find that the license has been rendered null and void of its own terms, without the need to conduct a revocation hearing.[102]

This authority gives the Commission ample tools to enforce M2Z's commitment to provide a valuable service to the public under aggressive build-out schedules that will require service to 33% of the population within just three years after license grant and commencement of operations. It can equally enforce M2Z's commitment to construct a system engineered to provide data rates of 384 kbps download and 128 kbps upload speeds, or the other public interest conditions in the license. These are not hortatory promises; they are obligations with regulatory teeth.

M2Z is confident that it will be able to deliver broadband service consistent with its build-out requirements and voluntary conditions of operation. In granting the application, the Commission will have facilitated the development of a new broadband service offering much more quickly than possible under any other path for proceeding in the 2155-2175 MHz band. If, however, M2Z fails to deliver on the conditions of its license, the Commission has ample enforcement authority to take the appropriate actions, including seeking to cancel M2Z's license and put the spectrum to another use.

Attached as Appendix 2, M2Z is submitting proposed conditions under which it must operate in order to maintain its license. These conditions cover the legal, public interest, and technical parameters that will govern M2Z's service. Each of these provisions may be enforced by the Commission if such a necessity arises. These commitments include:

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these provisions are applicable to CMRS and M2Z's proposed service. In addition, M2Z anticipates that its Premium Services (for which there will be a consumer charge) would be subject to universal service contributions to the extent specified by the Commission in appropriate rulemaking proceedings, and subject to the demands of competitive parity with the high speed access offerings of telephone companies and cable operators. M2Z will work with the Commission to ensure that its service meets the relevant requirements for CMRS providers.

[102] *See, e.g., ICO Global Comm'n (Holdings) LTD v. FCC*, 428 F.3d 264, 270 (D.C. Cir. 2005) (holding that Commission was not required to hold a hearing when a satellite station license was revoked for failing to meet a milestone – a condition of the license) and *In the Matter of Glendale Electronics, Inc., Regarding the License of SMR Station WNGQ365, Santiago Peak And Mount Lukens, California*, Memorandum Opinion and Order, 19 FCC Rcd. 2540, ¶10 (2004) ("a license that cancels for failure to satisfy a license condition is not revoked and does not trigger a hearing requirement"), *second petition for reconsideration denied in Order on Reconsideration*, 20 FCC Rcd. 4238 (2005).

- Construction of a system engineered to maintain broadband service at 384 kbps down and 128 kbps and provision of such service, *free* of airtime or service charges.

- Commencement of service within 24 months of a grant of Commission authorization.

- Compliance with deployment benchmarks that require M2Z to construct sufficient base stations to cover: (a) 33% of the U.S. population *by the third anniversary of commencement of operations;* (b) 66% of the U.S. population by the *fifth anniversary of commencement of operations;* and (c) 95% of the U.S. population by the *tenth anniversary of commencement of operations.*

- Filtering the NBRS in a manner that takes every reasonable and available step to block access to sites purveying pornographic, obscene or indecent material.

- Deployment of additional network facilities to serve any federal, state, or municipal public safety organization willing to utilize NBRS, without limit to the number of devices on the network.[103]

- Payment to the U.S. Treasury of a "usage" fee equal to five percent (5%) of the gross revenues derived from M2Z's Premium Service.

- Avoidance of all harmful interference to any and all Commission licensees.

- Compliance with the Commission's relocation rules for entities currently operating in the 2155-2175 MHz band.

V. THE COMMISSION HAS AMPLE LEGAL AUTHORITY TO GRANT THIS APPLICATION AND LICENSE M2Z UNDER SECTION 1.945 OF THE COMMISSION'S RULES

The Commission's grant of M2Z's Application for a nationwide, exclusive license for the provision of free high-speed broadband service is well within the scope of the Commission's plenary and specific statutory authority, consistent with the Commission's public interest mandate, left intact by the savings clause of 47 U.S.C. §309(j)(6)(E), and consistent with the Commission's actions in the recent *800 MHz Re-banding* and *Ancillary Terrestrial Component* proceedings.

Under 47 U.S.C. §309(j)(6)(E), the auction provision should not "be construed to relieve the Commission of the obligation in the public interest to continue to use . . . threshold qualifications, service regulations, and other means in order to avoid mutual exclusivity in application and licensing

[103] The service will commence as soon as the company constructs its network and makes service generally available in the public safety agencies' service area.

proceedings."[104] This is precisely a case where the public interest requires the Commission to consider alternatives to auctions for assigning spectrum licenses.

In exchange for the grant of an exclusive, nationwide license, M2Z is proposing to commit to a number of important and enforceable public interest obligations, including nationwide broadband deployment, subject to specific, periodic benchmarks; the provision of a basic level of free broadband service to all citizens; filtering to prevent the exposure of children to indecent materials; features for interoperability among and access of citizens to public safety organizations; and the voluntary contribution of a "usage fee" to the U.S. Treasury in order to compensate the government (and by extension, the public) for the use of the spectrum resource requested herein.[105] Given its compelling proposal to dramatically alter the broadband future of the country, M2Z believes that the Commission should find the immediate grant of its license without conducting an auction to be in the public interest.

Moreover, no new service and licensing rules are required, as a legal or practical matter. A protracted rulemaking would only compound the multi-year delay in putting the spectrum to productive use. Importantly, a protracted rulemaking would erect unnecessary procedural hurdles that would rob 128 million U.S. consumers of quick access to the free uninterrupted broadband service that M2Z will provide.

A. The Commission's Plenary Authority

The broad goals of the Communications Act of 1934, as amended (the "Act") are stated as the obligation "to make available, so far as possible, to all the people of the United States . . . a rapid, efficient, Nation-wide and worldwide wire and radio communication service with adequate facilities at reasonable charges. . . ."[106] To achieve these ends, the Act grants the Commission exclusive and expansive authority to regulate communications by radio as the public interest, convenience and necessity

[104] 47 U.S.C. §309(j)(6)(E).
[105] The public will also receive value in the form of the estimated $260 million of savings that might otherwise be required from the USF to support infrastructure equivalent to that proposed by M2Z by the end of its ten year build-out period. *See* Appendix 5 at 21-22.
[106] *See* 47 U.S.C. § 151.

require. Among the specific grants of authority under the Act, the Commission is charged with "generally encourag[ing] the larger and more efficient use of radio in the public interest."[107] The Commission is also authorized "to allocate electromagnetic spectrum so as to provide flexibility of use" provided that, *inter alia*, such allocation would not deter investment or technological development in communications.[108]

The Courts have long noted the broad scope of the Commission's powers under the Act. "Congress' clear intent . . . was to confer upon the Commission sweeping authority to regulate in 'a field of enterprise the dominant character of which was the rapid pace of its unfolding.'"[109] The "public interest" standard, which governs all Commission action, is "a supple instrument for the exercise of discretion by the expert body which Congress has charged to carry out its legislative policy."[110] M2Z contends that these broad standards give the Commission sufficient authority to act favorably in this Application. [111]

Importantly, Congress' grant to the Commission of competitive bidding authority under Section 309(j) of the Act did not disturb the long-standing Commission authority to use different licensing schemes and threshold qualifications to *avoid* mutual exclusivity.[112] Section 309(j)(6)(E) explicitly states that the grant of competitive bidding authority does not "relieve the Commission of the obligation in the public interest to continue to use engineering solutions, negotiation, *threshold qualifications, service regulations, and other means* in order to avoid mutual exclusivity in application and licensing

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[107] *See* 47 U.S.C. § 303(g). The Commission is also charged with classifying stations and prescribing the services to be provided by each class, and by individual stations. *See* 47 U.S.C. §§ 303(a)-(c).
[108] *See* 47 U.S.C. § 303(y).
[109] *See Office of Communication of the United Church of Christ v. FCC*, 707 F.2d 1413, 1423 (D.C. Cir. 1983), quoting *National Broadcasting Co. v. U.S.*, 319 U.S. 190, 219 (1943).
[110] *See FCC v. Pottsville Broadcasting Co.*, 309 U.S. 134, 138 (1940).
[111] "Where do we go from here? The FCC Auctions and the Future of Radio Spectrum Management.", Chapter 4, Congressional Budget Office, April 1997, available at http://cbo.gov/showdoc.cfm?index=9&sequence=5. Following the 1993 spectrum auction amendments to the Communications Act of 1934, Congress found that "the use of auctions to assign specific licenses does not exhaust the possibilities of market-based mechanisms for managing the spectrum." *Id.*
[112] *See* 47 U.S.C. §309(j)(6)(A)-(B).

proceedings."[113] The courts have also interpreted the Act to provide the Commission great latitude in using different licensing schemes to avoid mutual exclusivity.[114]

Even though some have called for spectrum auctions as a way of supplementing the Federal Treasury, using a different licensing approach to avoid mutual exclusivity is consistent with the plain reading of the Act. In fact, the Act specifically prohibits the Commission from making license assignment decisions based on the expectation of Federal revenues from auctions.[115] Rather, the Commission is tasked to safeguard the public interest and seek to promote various socioeconomic objectives, including the "development and rapid deployment of new technologies, products and services for the benefit of the public" and the promotion of "economic opportunity and competition" in general, and specifically for small businesses, residents of rural areas, and minority and female-owned businesses.[116] So long as the public interest warrants, the Commission can impose licensing rules that avoid mutual exclusivity without conducting an auction, with the balance hanging on "[the] effectiveness of licensing mechanisms that avoid mutual exclusivity [and] the potential costs of any such change against the potential benefits."[117] Based on the numerous public interest benefits that will result from M2Z's proposal, it is clear that such a balancing act unequivocally tips the scales in favor of granting this Application.

Thus, the Commission may significantly advance the public interest by granting M2Z's Application pursuant to Section 1.945 of the Commission's Rules, without opening the spectrum to competing applications and competitive bidding. The Commission's flexibility to award spectrum

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[113] *See* 47 U.S.C. §309(j)(6)(E) (emphasis added).

[114] *See, e.g.*, *Rainbow Broadcasting Company v. FCC*, 949 F.2d 405 (D.C. Cir. 1991) ("*Rainbow Broadcasting Company*") (upholding Commission policy allowing commercial and non-commercial licensees to swap frequencies by seeking amendment to the table of allotments); *Hispanic Information & Telecommunications Network, Inc. v. FCC*, 865 F.2d 1289, 1294 (D.C. Cir. 1989) (upholding an absolute licensing preference for local applicants, noting that Section 309(e) "does not preclude the Commission from establishing threshold standards to identify qualified applicants and excluding those applicants who plainly fail to meet the standards"). *See also Amendment of the Commission's Space Station Licensing Rules and Policies*, Notice of Proposed Rulemaking and First Report and Order, 17 FCC Rcd. 3847, ¶ 63 (2002) (noting permissibility of "first come, first served" licensing schemes under *Ashbacker*).

[115] 47 U.S.C. § 309(j)(7)(A).

[116] 47 U.S.C. §§ 309(j)(3)(A)-(B).

[117] *See Implementation of Section 309(j) and 337 of the Communications Act*, Memorandum Opinion & Order, 17 FCC Rcd. 7553, ¶ 14 (2002) ("*Auctions MO&O*").

licenses by means other than auction when in the public interest, left intact by Section 309(j), is also embodied in the Commission's rules – "[a]n application will be entitled to comparative consideration with one or more conflicting applications *only* if the Commission determines that such comparative consideration will serve the public interest."[118]

B. Prior Commission Action Supports the Grant of a License Without Holding an Auction

The grant of the requested license is also consistent with recent actions by the Commission, similarly dictated by the public interest. In its Order to restructure the 800 MHz band in order to improve public safety operations, the Commission permitted Nextel to relocate to the 1.9 GHz band without being subject to competing applications that would require an auction. In making its decision, the Commission first and foremost determined that the public interest necessitated the restructuring of the 800 MHz band. It also made the determination that the grant of an exclusive nationwide 10 MHz license to Nextel was a critical element in facilitating the restructuring of the 800 MHz band and the public safety operations therein. In making its decision to avoid mutually exclusive applications, the Commission explained that nothing in Section 309(j) required it to accept mutually exclusive applications that would trigger an auction in the first instance.[119] Although the *800 MHz Re-banding Order* relied, in part, on the Commission's authority to modify licenses under Section 316 of the Act, it further stated: "[w]e also note that, as an alternative licensing approach toward the same end, we could have exercised our authority to grant rights to the ten megahertz of spectrum to Nextel as an initial license, without subjecting the spectrum to competitive bidding measures."[120] The Commission found that eligibility for such an initial license would have been limited to Nextel, in order to address the "public interest imperatives" in resolving interference to public safety communications.[121] The *800 MHz Re-banding Order*, therefore, stands for nothing less than the fact that the Commission has the authority to independently determine

[118] *See* 47 C.F.R. § 27.321 (emphasis added).
[119] *See 800 MHz Re-banding Order* at ¶ 69. The Commission also noted that it had never proposed opening the spectrum in question (1910-1915 and 1995-2000 MHz) to competing applications. *See id*. at ¶ 71.
[120] *Id.* at ¶ 74.
[121] *Id.*

that public interest demands support the grant of a spectrum license without accepting mutually exclusive applications.

Where, as here, the proposed service will both address critical public safety concerns and also bring about an abundance of other benefits, the Commission has broad authority to make similar licensing decisions in its discretion.[122] For example, in another recent proceeding, the Commission allowed Mobile Satellite Service ("MSS") licensees to obtain licenses to provide Ancillary Terrestrial Component ("ATC") services without an initial licensing auction procedure, finding that "it would be technically less efficient" to allow new entrants for ATC services and that "there are spectrum efficiency benefits to dynamic allocation [that] can only be realized by" limiting ATC authorizations to the existing MSS licensees.[123] The Commission found the fact "that MSS operations have the potential ability to bring new technologies and services to consumers in rural areas" compelling enough to justify its decision not to accept terrestrial applications from other parties.[124]

M2Z submits that licensing the 2155-2175 MHz band without auction is justified because by doing so the Commission will rapidly move the broadband market toward the goal of achieving universally available broadband in the United States. Moreover, just as in the *800 MHz Re-banding Order*, M2Z can meet a critical public need by burdening itself with obligations that will further the Commission's goals.[125] Additionally, as in the *MSS/ATC Order*, the proposal before the Commission provides technologically efficient means of addressing the lack of ubiquitous, affordable broadband that

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[122] *See, e.g.*, *id*. at ¶¶ 73-74.

[123] *See Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band*, Report and Order and Notice of Proposed Rulemaking, 18 FCC Rcd. 1962, ¶ 228 (2003) ("*MSS/ATC Order*").

[124] *See MSS/ATC Order* at ¶ 228. In an earlier proceeding, the Commission had granted waivers to Air-Ground Radiotelephone Service licensees to obtain then-unassigned control channels, to be used as additional communications channels, simply noting that the requested waivers would allow for more efficient use of the spectrum. *Claircom Licensee Corporation and GTE Airfone Incorporated Requests For Waivers of Air-Ground Radiotelephone Service Rules*, Order, 16 FCC Rcd. 17959, ¶ 4 (Wir. Tel. Bur. 2001). Indeed, the first commercial Air-Ground system was operated for nearly a decade under experimental authorization, without competition, before receiving regular authorization. *GTE Airfone Incorporated*, Memorandum Opinion and Order, 6 FCC Rcd. 4435, ¶ 2 (Mob. Ser. Div. 1991) (granting a regular Air-Ground license, noting that Airfone had been granted an experimental license in 1981 and commenced operations in 1983).

[125] *Cf. 800 MHz Re-banding Order* at ¶ 68.

"can only be realized by" M2Z.[126] M2Z has proposed the imposition of specific, substantial public interest commitments as conditions for the proposed broadband service, and is financially able to deploy a nationwide broadband network without subscriber revenue. These circumstances support M2Z's eligibility to receive an exclusive, nationwide 20 MHz block of spectrum.

C. The Commission May Grant M2Z Its License Without the Delay Associated with a Rulemaking

M2Z requests that the Commission accept the application for filing, consider public comments on the application, and grant M2Z the requested conditional license as expeditiously as possible, without conducting, or awaiting the conclusion of, a rulemaking to establish service and licensing rules for the 2155-2175 MHz band. M2Z submits that there is no legal or practical need for such a proceeding, and that the delays inevitably associated with a rulemaking would siphon off a portion of the benefits promised by M2Z's plan.

As the Commission is well aware, absent M2Z's proposal, there would be significant work still left to be done for this band. Indeed, the Commission has been working on revamping its usage of the 2155-2175 MHz spectrum band to provide AWS for approximately five years.[127] While the Commission has reallocated this spectrum to provide AWS[128] and established rules to clear incumbent operators,[129] no service rules or channelization plans have been proposed for the band.

In light of the lack of movement in this band, the Commission recently alluded to a tentative plan to conduct a rulemaking in this band.[130] Given the short time it would take under the M2Z proposal to provide free wireless broadband service to the public, the delay associated with a rulemaking is wholly unnecessary. This Application presents the Commission with an opportunity to quickly make a decision

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[126] *Cf. MSS/ATC Order* at ¶228.
[127] *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*, Notice of Proposed Rule Making and Order, 16 FCC Rcd. 596, ¶ 1 (2001) and *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*, Memorandum Opinion and Further Notice of Proposed Rule Making, 16 FCC Rcd. 16043, ¶ 2 (2001).
[128] *See AWS 8th R&O* at ¶ 9.
[129] *See AWS 9th R&O* at ¶ 1.
[130] *See* AWS 9th R&O at ¶ 63.

that will result in the 2155-2175 MHz band being rapidly transformed into a thoroughly useful and productive band. Thus, the Commission need not go through the additional steps of proposing rules, seeking comment and replies, evaluating the record, and producing an order (or perhaps a series of orders) to conclude its rulemaking functions for the 2155-2175 MHz band. These actions take valuable time which, in the end, could compound the delay for service in this band.

Unfortunately, such delays are not unprecedented. For the 1710-1755 MHz and 2110-2155 MHz AWS spectrum band ("*AWS I*"), for example, the time between issuing a notice of proposed rulemaking to establish rules for the band and the auction for the band was over three years.[131] If the 2155-2175 MHz spectrum was to follow a similar trajectory, widespread use of the spectrum to provide advanced wireless services would be still years away.[132] A separate proceeding will not provide any more detail or comment than that which the Commission will obtain through public comment on this Application. Indeed, conducting a rulemaking here would result in a serious disconnect between the pace of Commission actions and the urgency of the broadband penetration problem.

Time is of the essence. Taking action now that permits this spectrum to be commercially deployed is critical to expand broadband availability, provide relief to universal service funding mechanisms and exponentially increase U.S. productivity. The United States does not have the luxury of time in which to eliminate the persistent lag separating it from the "broadband pioneer" countries. The band has remained underused for years, and the Commission has in hand a proposal for jump-starting its use in the public interest. Importantly, the conduct of a rulemaking would delay beginning of M2Z's proposed build-out. The benefits from broadband expansion estimated by Drs. Rosston and Wallsten are

[131] The NPRM was issued in November 2002. *See Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, Notice of Proposed Rulemaking, 17 FCC Rcd. 24135 (2002). The auction is scheduled for June 29, 2006. *See 1710-1755 and 2110-2155 MHz Auction Public Notice.*

[132] While M2Z acknowledges that special circumstances surrounding government relocation may have resulted in a longer time period for the *AWS I* rulemaking, here there is no need for any delay.

heavily dependent on the swift timing of the expansion, and many of them may evaporate if licensing is delayed.[133]

Moreover, a rulemaking is not legally necessary, and the commitments undertaken by M2Z obviate the policy goals that would be served by opening such a proceeding. Under Title III of The Communications Act, the Commission must place applications on public notice and may not grant them "earlier than 30 days" from the issuance of that notice.[134] If the Commission finds that grant of the application serves the public interest, convenience and necessity, it must grant the application.[135] As 47 U.S.C. § 309(j)(6)(E) makes clear, the Commission must also avoid mutual exclusivity by means of threshold qualifications and other means when doing so is in the public interest. Notably, the issuance of "service regulations" is identified as only one of multiple means for avoiding mutual exclusivity, showing that service rules are not a required path for the Commission. In short, there is no statutory bar to granting the application without conducting a rulemaking, and the statute also makes clear that "service regulations" are only one of many methods for avoiding mutual exclusivity when in the public interest.

In addition to the lack of a legal bar to moving forward quickly, there is no practical need to consider and adopt service rules in this instance as the commitments undertaken by M2Z obviate the policy needs that would be served by opening such a proceeding. The conditions that M2Z is proposing be imposed on its license include the mandate that it operate in a manner that avoids harmful interference to all other Commission licensees and strictly follow the Commission's recently adopted relocation rules for current operations in the 2155-2175 MHz band. In addition, M2Z has already voluntarily committed to enforceable conditions to its license that impose public interest obligations far greater than would

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[133] This is not an academic fear. Protracted rulemakings prior to licensing have in the past meant that a new technology is not given a timely and full opportunity to deliver its benefits to the consumers. The Mobile Satellite Service rulemaking of the 1990s is one case in point. *See, e.g., In re Application of Motorola Satellite Communications, Inc. for Authority to Construct, Launch, and Operate a Low Earth Orbit Satellite System in the 1616-1626.5 MHz Band*, Order and Authorization, 10 FCC Rcd. 2268, ¶ 1 (Intern. Bur. 1995) and *In re application of Mobile Communications Holdings, Inc.; For Authority To Construct, Launch, and Operate an Elliptical Low Earth Orbit Mobile Satellite System*, 12 FCC Rcd. 9663, ¶¶ 1, 5 (Intern. Bur. 1997) (both applicants applied in late 1990 to operate a low earth orbit satellite system and were finally granted authority in January 1995 and June 1997, respectively, after a rulemaking on low earth orbit satellites).

[134] 47 U.S.C. §309(b). *See also* 47 C.F.R. §1.945.

[135] *See* 47 U.S.C. § 309(a).

ordinarily be applied to comparable wireless service providers. Under these circumstances, the public interest would not be served by conducting a rulemaking, as M2Z has already dealt with the Commission's key policy concerns through its Application.

Thus, if the Commission determines that the public interest benefits from the proposed service justify avoiding mutual exclusivity, the Commission should not conduct a rulemaking.[136] Instead, it should examine the thorough record that will no doubt be compiled in response to M2Z's Application.

VI. THE COMMISSION SHOULD GRANT CERTAIN OTHER PROCEDURAL RELIEF NECESSARY FOR THE EXPEDITIOUS GRANT OF THIS APPLICATION

M2Z seeks a waiver of the electronic filing rules and the requirement of filing certain schedules to Form 601. M2Z also requests waiver of any other Commission rules to the extent necessary to allow processing and grant of this novel application. The enormous public interest benefits to flow from the grant of the Application constitute ample cause for such a waiver.

M2Z requests that the Commission waive Section 1.913(b) of its rules, which requires license applications to be filed electronically, the requirement of completing certain schedules to Form 601, and any other rules necessary to allow the Commission to process this application. Pursuant to Section 1.925(b)(3) of the Commission's Rules, the Commission may grant a request for waiver if it is shown that: (i) the underlying purpose of a rule would not be served by its application in a particular case; or (ii) in view of the unique or unusual factual circumstances of a given case, application of a rule would be inequitable, unduly burdensome, or contrary to the public interest, or the applicant has no reasonable alternative.[137] Due to the distinctiveness of the Application, Rule 1.913(b) must be waived in order for the Commission to properly entertain M2Z's proposal. As explained below, M2Z submits that the circumstances of its Application are sufficiently unique to warrant waiver of Section 1.913(b) of the

[136] If, however, the Commission were to decide to conduct a rulemaking for the band, M2Z believes that only a very limited set of new rules would be warranted. In that event, the Commission should simply include the 2155-2175 MHz band in 47 C.F.R. § 27.5, set forth the requested license term for the band at 47 C.F.R. § 27.13, and create a new Subpart incorporating the public interest obligations set forth in this application.
[137] *See* 47 C.F.R. § 1.925(b)(3)(i)(ii).

Commission's Rules and any other rules necessary to permit the Commission to process this Application.[138]

Because M2Z is filing an initial licensing application to provide wireless service, it is required to file an FCC Form 601 with its Application.[139] Section 1.913(b) of the Commission's Rules, however, requires electronic filing of all applications using FCC Form 601 and associated schedules.[140] A prerequisite for filing FCC Form 601 electronically is that an applicant must enter the appropriate Radio Service Code.[141] Notably, the Commission's instructions for filing FCC Form 601 provides applicants with an exclusive list of Radio Service Codes that must be entered into Box 1 of the Form. Failure to include a Radio Service Code will result in dismissal of an application as the Radio Service Code is a mandatory field.[142] Each Radio Service Code in turn is associated with a particular schedule that must be submitted with the FCC Form 601.[143]

M2Z seeks waiver of Section 1.913(b) because it is unable to comply with the letter of the rule. Currently, there are no service rules for the 2155-2175 MHz band, and thus there are no Radio Service Codes associated with operations in the 2155-2175 MHz band. Electronic filing remains infeasible even though M2Z has chosen the "BR" code for BRS service to facilitate processing of the Application.[144] Moreover, while M2Z has made an effort to complete Schedule B to the Form, which is required of BRS applicants, many of the requests set forth in that Schedule are simply inapplicable here. M2Z's inability to properly complete an electronic FCC Form 601 or to identify with certainty and complete the relevant schedule is the basis for this requested waiver of Section 1.913(b) of the Commission's Rules. Instead of

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[138] *See* 47 C.F.R. §§ 1.913(b).
[139] *See Biennial Regulatory Review Amendment of Parts 0, 1, 13, 22, 24, 26, 27, 80, 87, 90, 95, 97 and 101 of the Commission's Rules to Facilitate the Development and Use of the Universal Licensing System in the Wireless Telecommunications Services; Amendment of the Amateur Service Rules to Authorize Visiting Foreign Amateur Operators to Operate Stations in the United States*, Report and Order, 13 FCC Rcd. 21027, ¶ 10 (1998) ("*ULS Order*").
[140] *See* 47 C.F.R. § 1.913(b).
[141] *See* FCC Form 601 Instructions at 7.
[142] *See ULS Order* at ¶¶ 90-91.
[143] *See* FCC Form 601 Instructions at 7.
[144] We note, however, that M2Z's choice of the BR code was done for the sole purpose of facilitating the process by which this Application will be incorporated into the Commission's Universal Licensing Service. M2Z does not seek treatment as a BRS provider. Rather, the Application outlines specific conditions that will govern the operation of M2Z's proposed service.

an electronic filing, M2Z seeks to file FCC Form 601 manually and to attach a narrative describing the technical characteristics of the service in lieu of a schedule, together with a Schedule B that is complete to the extent possible.

Such a waiver is not without precedent. The Commission has granted waivers of Section 1.913(b) when a wireless applicant cannot file an application electronically due to its inability, through no fault of its own, to complete all the fields in a Commission form.[145] In the *Calcutt Order*, for example, the Commission stated that an applicant's inability to obtain a ULS password, which prevented it from filing its application electronically, constituted "unique and unusual circumstances" warranting a waiver of the Commission's electronic filing rule. The Commission reasoned that the applicant had no reasonable alternative but to file his application manually.[146]

The *Calcutt* facts are relevant here. Just as in *Calcutt*, M2Z lacks information necessary to make its ULS filing (in this case it is the lack of a Radio Service Code). The case for waiver here, however, is even more compelling than in *Calcutt*. In *Calcutt*, the ULS password necessary to make the filing was not readily available because it was being withheld from the applicant. Having no other alternatives, *Calcutt* filed an application manually one day before its deadline. The circumstances underlying M2Z's Application go well beyond whether the required information is *readily* available; rather, a Radio Service Codes does not exist. Here, no passage of time will change the fact that M2Z cannot properly complete an electronic FCC Form 601 or identify the relevant schedule.[147]

Consequently, M2Z has no reasonable alternative but to manually file the relevant form, substitute a narrative description for a technical schedule, and file a Schedule B that is complete to the extent possible. The unique and unusual circumstances surrounding this case warrant waiver of Section 1.913(b) of the Commission's Rules and associated schedule filing requirement.[148]

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[145] *See Applications to Transfer Control of Licenses from Robert F. Broz to William B. Calcutt*, Order, 20 FCC Rcd. 8848, ¶ 25 (2005) ("*Calcutt Order*").
[146] *Id.*
[147] *See* FCC Form 601, Main Form at 1
[148] *See Calcutt* at ¶ 25.

Indeed, the underlying purpose of Section 1.913(b) of the Commission's Rules would not be served by its strict application in this instance. The main purpose of the Commission's mandatory electronic filing requirement is to streamline wireless services applications in order to expedite new wireless services to the public.[149] An exacting application of Section 1.913(b) would effectively prohibit M2Z's filing and would present a barrier to the introduction of new services to the public. As such, application of Section 1.913(b) would frustrate, rather than promote, the purpose of the rule.

Waiver of these requirements also will serve the public interest by expediting M2Z's service to the public. Universal broadband access is a national priority because such services have proven to be a critical conduit for, *inter alia*, productivity, job growth, education, and health care services all over the world. Free access to M2Z's network will make broadband Internet access ubiquitously available in the United States in all areas including less wealthy and rural areas.

Moreover, M2Z's proposal goes beyond simply providing broadband access. It provides tangible, meaningful public interest benefits to all Americans. This Application also represents a partial solution to the vexing problem facing first responders throughout the nation – the unavailability of a nationwide interoperable broadband network. In addition, M2Z's Application to provide family-friendly and free broadband service for nearly all Americans will promote the public interest in a number of ways, including promoting the widespread availability of indecency filters, spurring competition in the provision of broadband, keeping the universal service mechanism strong by avoiding any government subsidies, and contributing regular voluntary payments to the U.S. Treasury.

For all the foregoing reasons, M2Z respectfully requests waiver of Sections 1.913(b) of the Commission's Rules, associated electronic filing and schedule filing requirements, and any other Commission Rules that would prevent the processing of this Application.[150] The unusual circumstances surrounding M2Z's proposed network require waiver of the subject rules. The requested waiver will also serve the public interest by providing near-ubiquitous broadband access within the U.S. and supplying

[149] *See ULS Order* at ¶ 20.
[150] 47 C.F.R. §1.913(b).

first responders with access to a fully interoperable and reliable data network. Consistent with Commission precedent, this waiver should be granted for the purpose of allowing the Commission to evaluate the merits of M2Z's Application.

VII. CONCLUSION

M2Z is ready to move forward immediately toward its goal of commencing fee and family-friendly National Broadband Radio Service within 24 months of the grant of this Application. The citizens of the United States are ready for the competitive alternative provided by M2Z. For all the foregoing reasons, M2Z respectfully submits that its Application serves the public interest, convenience and necessity. M2Z, therefore, asks the Commission to move quickly on this Application. In particular, M2Z requests that the Commission immediately accept its Application for filing under Section 1.945,[151] place it on Public Notice, and expeditiously release an order granting the action requested herein.

[151] *See* 47 C.F.R. § 1.945.

Respectfully submitted,

M2Z NETWORKS, INC.

By: _____

Milo Medin
Chairman
M2Z Networks, Inc.
2800 Sand Hill Road
Suite 150
Menlo Park, CA 94025

Uzoma C. Onyeije
Vice President for Regulatory Affairs
M2Z Networks, Inc.
2000 North 14th Street
Suite 600
Arlington, VA 22201
(703) 894-9500

September 1, 2006

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

In re:	)	
	)	
M2Z NETWORKS, INC.	)	File No.
	)	
Application for License and Authority to	)	
Provide National Broadband Radio Service	)	
in the 2155-2175 MHz Band	)	

APPENDIX 1

FCC FORMS 601 AND 602

FCC 601
Main Form

FCC Application for Wireless Telecommunications Bureau Radio Service Authorization

Approved by OMB
3060 - 0798
See instructions for public burden estimate

1) Radio Service Code:	1a) Existing Radio Service Code:
BR	

General Information

2) (Select only one) (NE)

NE - New **RO** - Renewal Only **AU** - Administrative Update **NT** - Required Notifications
MD - Modification **RM** - Renewal/Modification **WD** - Withdrawal of Application **EX** - Requests for Extension of Time
AM - Amendment **CA** - Cancellation of License **DU** - Duplicate License **RL** – Registered Location/Link

3a) If this application is for a Developmental License, Demonstration License, or a Special Temporary Authorization (STA), enter the code and attach the required exhibit as described in the instructions. Otherwise enter 'N' (Not Applicable).	(N)D M S N/A
3b) If this application is for Special Temporary Authority due to an emergency situation, enter 'Y'; otherwise enter 'N'. Refer to Rule 1.915 for an explanation of situations considered to be an emergency.	( )Yes No
4) If this application is for an Amendment or Withdrawal, enter the file number of the pending application currently on file with the FCC.	File Number
5) If this application is for a Modification, Renewal Only, Renewal/Modification, Cancellation of License, Duplicate License, or Administrative Update, enter the call sign of the existing FCC license. If this is a request for Registered Location/Link, enter the FCC call sign assigned to the geographic license.	Call Sign
6) If this application is for a New, Amendment, Renewal Only, or Renewal/Modification, enter the requested authorization expiration date (this item is optional).	MM / DD
7) Is this application "major" as defined in §1.929 of the Commission's Rules when read in conjunction with the applicable radio service rules found in Parts 22 and 90 of the Commission's Rules? (NOTE: This question only applies to certain site-specific applications. See the instructions for applicability and full text of §1.929).	( )Yes No
8) Are attachments (other than associated schedules) being filed with this application?	(Y)Yes No

Fees, Waivers, and Exemptions

9) Is the Applicant exempt from FCC application fees?	(N)Yes No
10) Is the Applicant exempt from FCC regulatory fees?	(N)Yes No
11a) Does this application include a request for a Waiver of the Commission's Rule(s)? If 'Yes', attach an exhibit providing rule number(s) and explaining circumstances.	(Y)Yes No
11b) If 11a is 'Y', enter the number of rule sections involved.	Number of Rule Section(s): at least 1
12) Are the frequencies or parameters requested in this filing covered by grandfathered privileges, previously approved by waiver, or functionally integrated with an existing station?	(N)Yes No

Applicant Information

13) FCC Registration Number (FRN):
0014964985

14) Applicant/Licensee Legal Entity Type: (Select One)
( ) Individual ( )Unincorporated Association ( )Trust ( )Government Entity (X)Corporation ( )Limited Liability Company
( ) General Partnership ( ) Limited Partnership ( ) Limited Liability Partnership ( ) Consortium
( ) Other:

15) If the Licensee name is being updated, is the update a result from the sale (or transfer of control) of the license(s) to another party and for which proper Commission approval has not been received or proper notification not provided? ( )Yes No

16) First Name (if individual):	MI:	Last Name:	Suffix:

17) Legal Entity Name (if other than individual):
M2Z Networks, Inc.

18) Attention To:
Uzoma Onyeije

19) P.O. Box:	And/Or	20) Street Address:
		2000 North 14th Street, Suite 600

21) City:	22) State:	23) Zip Code:
Arlington	VA	22201

24) Telephone Number:	25) FAX:
(703) 894-9500	

26) E-Mail Address:
uonyeije@m2znetworks.com

27) **Demographics (Optional):**

Race:	Ethnicity:	Gender:
( )American Indian or Alaska Native	( )Hispanic or Latino	( )Male
( )Asian	( )Not Hispanic or Latino	( )Female
( )Black or African-American		
( )Native Hawaiian or Other Pacific Islander		
( )White		

Real Party in Interest

28) Name of Real Party in Interest of Applicant (If different from Applicant):	29) FCC Registration Number (FRN) of Real Party in Interest:

Contact Information (If different from the Applicant)
( ) Check here if same as Applicant.

30) First Name:	MI:	Last Name:	Suffix:
Pantelis		Michalopoulos	

31) Company Name:

32) Attention To:

33) P.O. Box:	And /Or	34) Street Address:
		1330 Connecticut Avenue, NW

35) City:	36) State:	37) Zip Code:
Washington	DC	20036

38) Telephone Number:	39) FAX:
(202) 429-6494	

40) E-Mail Address:
pmichalo@steptoe.com

Regulatory Status

41) This filing is for authorization to provide or use the following type(s) of radio service offering (enter all that apply):

(X)Common Carrier (X)Non-Common Carrier (X)Private, internal communications ( )Broadcast Services ( )Band Manager

Type of Radio Service

42) This filing is for authorization to provide the following type(s) of radio service (choose all that apply):

(X)Fixed (X)Mobile ( )Radiolocation ( )Satellite (sound) ( )Broadcast Services

43) Does the Applicant propose to provide service interconnected to the public telephone network? (Y)Yes No

Alien Ownership Questions (If any answer is 'Y', provide an attachment explaining the circumstances)

44) Is the Applicant a foreign government or the representative of any foreign government? (N)Yes No

45) Is the Applicant an alien or the representative of an alien? (N)Yes No

46) Is the Applicant a corporation organized under the laws of any foreign government? (N)Yes No

47) Is the Applicant a corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country? (N)Yes No

48a) Is the Applicant directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof, or by any corporation organized under the laws of a foreign country? (N)Yes No

48b) If the answer to 48a is 'Y', has the Applicant received a ruling(s) under Section 310(b)(4) of the Communications Act with respect to the same radio service(s) and geographic coverage area(s) involved in this filing? ( )Yes No

If the answer to 48b is 'Y', attach an exhibit that identifies the citation(s) of the applicable declaratory ruling(s) by DA/FCC number of the FCC Record citation, if available, release date, and any other identifying information

If the answer to 48b is 'N', attach to this filing a date-stamped copy of a request for a foreign ownership ruling pursuant to Section 310(b) (4) of the Communications Act.

Basic Qualification Questions

49) Has the Applicant or any party to this application had any FCC station authorization, license or construction permit revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? (N)Yes No

50) Has the Applicant or any party to this application, or any party directly or indirectly controlling the Applicant, ever been convicted of a felony by any state or federal court? (N)Yes No

51) Has any court finally adjudged the Applicant or any party directly or indirectly controlling the Applicant guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement, or any other means or unfair methods of competition? (N)Yes No

If the answer to any of 49-51 is 'Y', attach an exhibit explaining the circumstances.

Aeronautical Advisory Station (Unicom) Certification

52) ( ) I certify that the station will be located on property of the airport to be served, and, in cases where the airport does not have a control tower, RCO, or FAA flight service station, that I have notified the owner of the airport and all aviation service organizations located at the airport within ten days prior to application.

Broadband Radio Service and Educational Broadband Service Cable Cross-Ownership

53a) Will the requested facilities be used to provide multichannel video programming service? (N)Yes No

53b) If the answer to question 53a is 'Y', does Applicant operate, control or have an attributable interest (as defined in Section 27.1202 of the Commission's Rules) in a cable television system whose franchise area is located within the geographic service area of the requested facilities? ( )Yes No

Note: If the answer to question 53b is 'Y', attach an exhibit explaining how the Applicant complies with Section 27.1202 of the Commission's Rules or justifying a waiver of that rule. If a waiver of the Commission Rule(s) is being requested, Item 11a must be answered 'Y'.

Broadband Radio Service and Educational Broadband Service (Part 27)

54) (For EBS only) Does the Applicant comply with the programming requirements contained in Section 27.1203 of the Commission's Rules? ( )Yes No

Note: If the answer to item 54 is 'N', attach an exhibit explaining how the Applicant complies with Section 27.1203 of the Commission's Rules or justifying a waiver of that rule. If a waiver of the Commission Rule(s) is being requested, Item 11a must be answered 'Y'.

55) (For BRS and EBS) Does the Applicant comply with Sections 27.50, 27.55, and 27.1221 of the Commission's Rules? (Y)Yes No

Note: If the answer to item 55 is 'N', attach an exhibit justifying a waiver of that rule(s). If a waiver of the Commission Rule(s) is being requested, Item 11a must be answered 'Y'.

General Certification Statements

1)	The Applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application.
2)	The Applicant certifies that grant of this application would not cause the Applicant to be in violation of any pertinent cross-ownership or attribution rules.* *If the Applicant has sought a waiver of any such rule in connection with this application, it may make this certification subject to the outcome of the waiver request.
3)	The Applicant certifies that all statements made in this application and in the exhibits, attachments, or documents incorporated by reference are material, are part of this application, and are true, complete, correct, and made in good faith.
4)	The Applicant certifies that neither the Applicant nor any other party to the application is subject to a denial of Federal benefits pursuant to §5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. § 862, because of a conviction for possession or distribution of a controlled substance. This certification does not apply to applications filed in services exempted under §1.2002(c) of the rules, 47 CFR § 1.2002(c). See §1.2002(b) of the rules, 47 CFR § 1.2002(b), for the definition of "party to the application" as used in this certification.
5)	The Applicant certifies that it either (1) has current required ownership data on file with the Commission, (2) is filing updated ownership data simultaneously with this application, or (3) is not required to file ownership data under the Commission's Rules.
6)	The Applicant certifies that the facilities, operations, and transmitters for which this authorization is hereby requested are either: (1) categorically excluded from routine environmental evaluation for RF exposure as set forth in 47 C.F.R. 1.1307(b); or, (2) have been found not to cause human exposure to levels of radiofrequency radiation in excess of the limits specified in 47 C.F.R. 1.1310 and 2.1093; or, (3) are the subject of one or more Environmental Assessments filed with the Commission.
7)	The Applicant certifies that it has reviewed the appropriate Commission Rules defining eligibility to hold the requested license(s), and is eligible to hold the requested license(s).
8)	The Applicant certifies that it is not in default on any payment for Commission licenses and that it is not delinquent on any non-tax debt owed to any federal agency.

Signature

56) Typed or Printed Name of Party Authorized to Sign

First Name: John	MI:	Last Name: Muleta	Suffix:
57) Ti tle: CEO			
Signature: John B Muleta			58) Date: May 4, 2006

FAILURE TO SIGN THIS APPLICATION MAY RESULT IN DISMISSAL OF THE APPLICATION AND FORFEITURE OF ANY FEES PAID.

Upon grant of this license application, the Licensee may be subject to certain construction or coverage requirements. Failure to meet the construction or coverage requirements will result in termination of the license. Consult appropriate FCC regulations to determine the construction or coverage requirements that apply to the type of license requested in this application.

WILLFUL FALSE STATEMENTS MADE ON THIS FORM OR ANY ATTACHMENTS ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. Code, Title 18, §1001) AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. Code, Title 47, §312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, §503).

Schedule for Geographically Licensed Services

FCC 601
Schedule B

Approved by OMB
3060 – 0798
See 601 Main Form Instructions
for public burden estimate

MARKET/CHANNEL BLOCK INFORMATION

1) Market Designator	2) Market Name	3) Channel Block	4) Sub-Market Designator	5) Percentage of Bidding Credit	6) Open/Closed Bidding	7) I Am Seeking A Tribal Lands Bidding Credit In This Market
BTA-1-493	United States	2155-2175 MHz	NA	NA	NA	( ) Yes (N) No
						( ) Yes ( ) No
						( ) Yes ( ) No

TRIBAL LANDS INFORMATION - Complete only when attaching the required certification(s) from the tribal government(s)

8) Market Designator	9) Channel Block	10) Name of Tribal Lands	11) Area, in square kms, of tribal lands contained within designated market	12) Indicate with an "x" those tribal lands where Applicant has secured the required certification(s) from the tribal governments [attach certification(s)]	13) The amount of bidding credit as defined by FCC Rules (by Market)	14) Additional amount of bidding credit requested (attach justification)

15) Agreement Identifier: Action Requested: ☐ Add ☐ Delete
Type of Agreement: ☐ Collusion-Based ☐ Designated Entity ☐ Other (Description of Type of Agreement) _____

Agreement Name:
NA

Party(ies) to Agreement(s)

Action Requested: ☐ Add ☐ Delete

☐ Entity Name:	Legal Entity Name			FCC Registration Number (FRN):
☐ Individual Name:	First	MI	Last	Suffix
FCC Registration Number (FRN):				

Action Requested: ☐ Add ☐ Delete

☐ Entity Name:	Legal Entity Name			FCC Registration Number (FRN):
☐ Individual Name:	First	MI	Last	Suffix
FCC Registration Number (FRN):				

Action Requested: ☐ Add ☐ Delete

☐ Entity Name:	Legal Entity Name			FCC Registration Number (FRN):
☐ Individual Name:	First	MI	Last	Suffix
FCC Registration Number (FRN):				

Designated Entity/Closed Bidding Agreement Info

16) Have you entered into any agreements which would impact your Designated Entity or closed bidding status? If 'Y', attach an exhibit.	(NA) Yes No

17) Additional Demographic Information (Not Required)

Applicant Status:

☐ Minority Owned Business ☐ Rural Telephone Company ☐ Woman Owned Business

Revenue and Asset Information

18) Has any Revenue and Asset information changed for the Applicant, the Disclosable Interest Holder, or the Affiliate? If 'Y', explain why in an exhibit.	(NA) Yes No

19) Revenue and Asset Information for the Applicant
Purpose (Check Modify and complete all changes different from previously filed FCC Form 175)

☐ Modify

Gross Revenue Disclosure Most Recent Reportable Year

20a) Were the Applicant and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

20b) Gross Revenues $_____ (Format: 99,999.99)

20c) Year End Date: _____ (Date Format: MM/DD/YYYY)

One Year Prior to Most Recent Reportable Year

21a) Were the Applicant and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

21b) Gross Revenues $_____ (Format: 99,999.99)

21c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Two Years Prior to Most Recent Reportable Year

22a) Were the Applicant and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

22b) Gross Revenues $_____ (Format: 99,999.99)

22c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Average Gross Revenue

23) Average Gross Revenue of Reported Years: $ NA (Format: 99,999.99)

Asset Disclosure

24) Total Assets as of Application Filing Deadline: $ NA (Format: 99,999.99)

Financial Statements

25) Audited or Unaudited (Check One) NA

☐ The Applicant used audited financial statements.

☐ The Applicant used unaudited financial statements prepared in accordance with Generally Accepted Accounting Principles (GAAP) and certified by the Applicant's chief financial officer or the equivalent.

FCC 601
Schedule B

26) Revenue and Asset Information for the Disclosable Interest Holder (DIH)
Purpose (Select One) NA

☐ Add	☐ Modify	☐ Delete

27) Disclosable Interest Holder

☐ Entity Name:					FCC Registration Number (FRN):
☒ Individual Name: First John	MI	Last Muleta		Suffix	FCC Registration Number (FRN): 0014999726

Gross Revenue Disclosure Most Recent Reportable Year

28a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

28b) Gross Revenues $_____ (Format: 99,999.99)

28c) Year End Date: _____ (Date Format: MM/DD/YYYY)

One Year Prior to Most Recent Reportable Year

29a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

29b) Gross Revenues $_____ (Format: 99,999.99)

29c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Two Years Prior to Most Recent Reportable Year

30a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

30b) Gross Revenues $_____ (Format: 99,999.99)

30c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Average Gross Revenue

31) Average Gross Revenue of Reported Years: $ NA (Format: 99,999.99)

Asset Disclosure

32) Total Assets as of Application Filing Deadline: $ NA (Format: 99,999.99)

Financial Statements

33) Audited or Unaudited (Check One) NA

☐ The Disclosable Interest Holder used audited financial statements.

☐ The Disclosable Interest Holder used unaudited financial statements prepared in accordance with Generally Accepted Accounting Principles (GAAP) and certified by the Applicant's chief financial officer or the equivalent.

FCC 601
Schedule B

26) Revenue and Asset Information for the Disclosable Interest Holder (DIH)
Purpose (Select One) NA

☐ Add	☐ Modify	☐ Delete

27) Disclosable Interest Holder

☐ Entity Name:				FCC Registration Number (FRN):
☒ Individual Name: First Milo	MI	Last Medin	Suffix	FCC Registration Number (FRN): 0014999759

Gross Revenue Disclosure Most Recent Reportable Year

28a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No
If 'Y', provide the following information.	
28b) Gross Revenues $_____ (Format: 99,999.99)	
28c) Year End Date: _____ (Date Format: MM/DD/YYYY)	

One Year Prior to Most Recent Reportable Year

29a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No
If 'Y', provide the following information.	
29b) Gross Revenues $_____ (Format: 99,999.99)	
29c) Year End Date: _____ (Date Format: MM/DD/YYYY)	

Two Years Prior to Most Recent Reportable Year

30a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No
If 'Y', provide the following information.	
30b) Gross Revenues $_____ (Format: 99,999.99)	
30c) Year End Date: _____ (Date Format: MM/DD/YYYY)	

Average Gross Revenue

31) Average Gross Revenue of Reported Years: $ NA (Format: 99,999.99)

Asset Disclosure

32) Total Assets as of Application Filing Deadline: $ NA (Format: 99,999.99)

Financial Statements

33) Audited or Unaudited (Check One) NA

☐ The Disclosable Interest Holder used audited financial statements.

☐ The Disclosable Interest Holder used unaudited financial statements prepared in accordance with Generally Accepted Accounting Principles (GAAP) and certified by the Applicant's chief financial officer or the equivalent.

FCC 601
Schedule B

26) Revenue and Asset Information for the Disclosable Interest Holder (DIH)
Purpose (Select One) NA

☐ Add	☐ Modify	☐ Delete

27) Disclosable Interest Holder

☒ Entity Name: KPCB Holdings, Inc.				FCC Registration Number (FRN): 0015005630
☐ Individual Name: First	MI	Last	Suffix	FCC Registration Number (FRN):

Gross Revenue Disclosure Most Recent Reportable Year

28a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

28b) Gross Revenues $_____ (Format: 99,999.99)

28c) Year End Date: _____ (Date Format: MM/DD/YYYY)

One Year Prior to Most Recent Reportable Year

29a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

29b) Gross Revenues $_____ (Format: 99,999.99)

29c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Two Years Prior to Most Recent Reportable Year

30a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

30b) Gross Revenues $_____ (Format: 99,999.99)

30c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Average Gross Revenue

31) Average Gross Revenue of Reported Years: $ NA (Format: 99,999.99)

Asset Disclosure

32) Total Assets as of Application Filing Deadline: $ NA (Format: 99,999.99)

Financial Statements

33) Audited or Unaudited (Check One) NA

☐ The Disclosable Interest Holder used audited financial statements.

☐ The Disclosable Interest Holder used unaudited financial statements prepared in accordance with Generally Accepted Accounting Principles (GAAP) and certified by the Applicant's chief financial officer or the equivalent.

FCC 601
Schedule B

26) Revenue and Asset Information for the Disclosable Interest Holder (DIH)
Purpose (Select One) NA

☐ Add	☐ Modify	☐ Delete

27) Disclosable Interest Holder

☒ Entity Name: Charles River Partnership XII, LP				FCC Registration Number (FRN): 0015003833
☐ Individual Name: First	MI	Last	Suffix	FCC Registration Number (FRN):

Gross Revenue Disclosure Most Recent Reportable Year

28a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

28b) Gross Revenues $_____ (Format: 99,999.99)

28c) Year End Date: _____ (Date Format: MM/DD/YYYY)

One Year Prior to Most Recent Reportable Year

29a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

29b) Gross Revenues $_____ (Format: 99,999.99)

29c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Two Years Prior to Most Recent Reportable Year

30a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

30b) Gross Revenues $_____ (Format: 99,999.99)

30c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Average Gross Revenue

31) Average Gross Revenue of Reported Years: $ NA (Format: 99,999.99)

Asset Disclosure

32) Total Assets as of Application Filing Deadline: $ NA (Format: 99,999.99)

Financial Statements

33) Audited or Unaudited (Check One) NA

☐ The Disclosable Interest Holder used audited financial statements.

☐ The Disclosable Interest Holder used unaudited financial statements prepared in accordance with Generally Accepted Accounting Principles (GAAP) and certified by the Applicant's chief financial officer or the equivalent.

FCC 601
Schedule B

26) Revenue and Asset Information for the Disclosable Interest Holder (DIH)
Purpose (Select One) NA

☐ Add	☐ Modify	☐ Delete

27) Disclosable Interest Holder

☒ Entity Name: Redpoint Ventures II, LP				FCC Registration Number (FRN): 0015003940
☐ Individual Name: First	MI	Last	Suffix	FCC Registration Number (FRN):

Gross Revenue Disclosure Most Recent Reportable Year

28a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

28b) Gross Revenues $_____ (Format: 99,999.99)

28c) Year End Date: _____ (Date Format: MM/DD/YYYY)

One Year Prior to Most Recent Reportable Year

29a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

29b) Gross Revenues $_____ (Format: 99,999.99)

29c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Two Years Prior to Most Recent Reportable Year

30a) Were the DIH and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	(NA) Yes No

If 'Y', provide the following information.

30b) Gross Revenues $_____ (Format: 99,999.99)

30c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Average Gross Revenue

31) Average Gross Revenue of Reported Years: $ NA (Format: 99,999.99)

Asset Disclosure

32) Total Assets as of Application Filing Deadline: $ NA (Format: 99,999.99)

Financial Statements

33) Audited or Unaudited (Check One) NA

☐ The Disclosable Interest Holder used audited financial statements.

☐ The Disclosable Interest Holder used unaudited financial statements prepared in accordance with Generally Accepted Accounting Principles (GAAP) and certified by the Applicant's chief financial officer or the equivalent.

FCC 601
Schedule B

34) Revenue and Asset Information for the Affiliate
Purpose (Select One) NA

☐ Add	☐ Modify	☐ Delete

35) Affiliate

☐ Entity Name: NA				FCC Registration Number (FRN):
☐ Individual Name: First	MI	Last	Suffix	FCC Registration Number (FRN):

Gross Revenue Disclosure Most Recent Reportable Year

36a) Were the Affiliate and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	( ) Yes No

If 'Y', provide the following information.

36b) Gross Revenues $_____ (Format: 99,999.99)

36c) Year End Date: _____ (Date Format: MM/DD/YYYY)

One Year Prior to Most Recent Reportable Year

37a) Were the Affiliate and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	( ) Yes No

If 'Y', provide the following information.

37b) Gross Revenues $_____ (Format: 99,999.99)

37c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Two Years Prior to Most Recent Reportable Year

38a) Were the Affiliate and any predecessors-in-interest in existence for a full year of the relevant period? If 'N', explain why in an attachment.	( ) Yes No

If 'Y', provide the following information.

38b) Gross Revenues $_____ (Format: 99,999.99)

38c) Year End Date: _____ (Date Format: MM/DD/YYYY)

Average Gross Revenue

39) Average Gross Revenue of Reported Years: $_____ (Format: 99,999.99)

Asset Disclosure

40) Total Assets as of Application Filing Deadline: $_____ (Format: 99,999.99)

Financial Statements

41) Audited or Unaudited (Check One)

☐ The Affiliate used audited financial statements.

☐ The Affiliate used unaudited financial statements prepared in accordance with Generally Accepted Accounting Principles (GAAP) and certified by the Applicant's chief financial officer or the equivalent.

FCC 601
Schedule B

Closed Bidding/Designated Entity Eligibility

Total Gross Revenues for Most Recent Reportable Year

42a) Gross Revenues	$ NA	(Format: 99,999.99)
42b) Year End Date:	_____	(Date Format: MM/DD/YYYY)

Total Gross Revenues for One Year Prior to Most Recent Reportable Year

43a) Gross Revenues:	$ NA	(Format: 99,999.99)
43b) Year End Date:	_____	(Date Format: MM/DD/YYYY)

Total Gross Revenues for Two Years Prior to Most Recent Reportable Year

44a) Gross Revenues:	$ NA	(Format: 99,999.99)
44b) Year End Date:	_____	(Date Format: MM/DD/YYYY)

Total Aggregate Average Gross Revenues for Designated Entity

45) Aggregate Average Gross Revenue: $ NA (Format: 99,999.99)

Total Aggregate Average Gross Revenues for Closed Bidding

46) Aggregate Average Gross Revenue: $ NA (Format: 99,999.99)

Total Assets Disclosure for Closed Bidding

47) Total Assets: $ NA (Format: 99,999.99)

Certifications (By signing the Main Form, the Applicant certifies that the statements listed are true, complete, correct and made in good faith)

For Applicants Claiming Eligibility as an Entrepreneur Under the General Rule

Applicant certifies that they are eligible to obtain the licenses for which they apply.

For Applicants Claiming Eligibility as a Publicly Traded Corporation

Applicant certifies that they are eligible to obtain the licenses for which they apply and that they comply with the definition of a Publicly Traded Corporation, as set out in the applicable FCC rules.

For Applicants Claiming Eligibility using a Control Group Structure

Applicant certifies that they are eligible to obtain the licenses for which they apply.
Applicant certifies that the Applicant's sole control group member is a pre-existing entity, if applicable.

For Applicants Claiming Eligibility as a Very Small Business, Very Small Business Consortium, Small Business, or as a Small Business Consortium

Applicant certifies that they are eligible to obtain the licenses for which they apply.
Applicant certifies that the Applicant's sole control group member is a pre-existing entity, if applicable.

For Applicants Claiming Eligibility as a Rural Telephone Company

Applicant certifies that they meet the definition of a Rural Telephone Company as set out in the applicable FCC rules, and must disclose all parties to agreement(s) to partition licenses won in this auction. See applicable FCC rules.

For Applicants Claiming Tribal Lands Bidding Credit

Applicant certifies that it will comply with the bidding credit buildout requirements and consult with the tribal government(s) regarding the siting of facilities and deployment of service on the tribal land(s) as set out in the applicable FCC rules.

For Auction Applicants

Applicant provided separate gross revenue information for itself, for each of Applicant's officers and directors; for each of Applicant's other controlling interests; for each of Applicant's affiliates; and for each affiliate of each of Applicant's officers, directors, and other controlling interests.
Applicant provided separate gross revenue and total asset information for itself, for each of Applicant's officers and directors; for each of Applicant's other controlling interest; for each of Applicant's affiliates; and for each affiliate of each Applicant's officers, directors, and other controlling interests.

FCC 602
Main Form

FCC Ownership Disclosure Information for the Wireless Telecommunications Services

Approved by OMB
3060 – 0799
See instructions for
Public burden estimate
Submitted
05/04/2006 at 4:20 PM
File Number:
0002594910

Filing Type

1a) X Current Filing ___Proposed Filing

1b) Is the purpose of this filing to report cellular cross-ownership holdings required pursuant to section 1.919 of the Commission's Rules? ___Yes _X_No

If 'Yes', provide an exhibit with this filing that identifies the Rural Service Area market(s) involved, as well as the cellular licensee of which the filer has acquired direct or indirect ownership interest of 10% or greater.

Filer Information

2) First Name (if individual):	MI:	Last Name:	Suffix:

3) Filer Name (if entity):	4) FCC Registration Number (FRN):
M2Z Networks, Inc.	14964985

5) Contact Information

Name and Address:	Telephone Number:
Uzoma C Onyeije M2Z Networks, Inc. 2000 North 14th Street, Suite 600 Arlington, VA 22201	703-894-9090
	Fax Number:
	E-mail Address: uonyeije@m2znetworks.com

Related FCC Regulated Businesses of Filer

6a) Name of all FCC-Regulated Businesses owned by Filer (use additional sheets, if necessary):	6b) Principal Business:	6c) FCC Registration Number (FRN):	6d) Percent of Interest Held:

Signature
7) Typed or Printed Name of Party Authorized to Sign

First Name:	MI:	Last Name:	Suffix:
Uzoma	C	Onyeije	

Title: Vice President Regulatory Affairs

Signature:	Date:
Uzoma C Onyeije	5/04/2006

WILLFUL FALSE STATEMENTS MADE ON THIS FORM OR ANY ATTACHMENTS ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. Code, Title 18, Section 1001) AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. Code, Title 47, Section 312(a)(1) AND/ OR FORFEITURE (U.S. Code, Title 47, Section 503).

FCC 602
Schedule A

FCC Ownership Disclosure Information for the Wireless Telecommunications Services

Schedule for Disclosable Interest Holders

Approved by OMB
3060 – 0799
See instructions for
Public burden estimate

Disclosable Interest Holder Information (complete as many as required to describe all disclosable interest holders)

1) Disclosable Interest Holder's First Name (if individual):	MI:	Last Name:	Suffix:

2) Disclosable Interest Holder's Name (if entity):	3) FCC Registration Number(FRN):
Charles River Partnership XII, LP	0015003833

4) Disclosable Interest Holder's Address:
2800 Sand Hill Road Suite 150
Menlo Park, CA 94025

5) Type of Interest in Filer ( ) (refer to Instructions for a list of codes):	6) Disclosable Interest Holder is a (n): ( ) (refer to instructions for list of codes):	7) Percent of Interest Held in Filer:
Direct Ownership Interest in Filer	Limited Partnership	16.10

8) Disclosable Interest Holder's Type of Ownership ( ) (refer to instructions for a list of codes):	9) Disclosable Interest Holder's Country of Citizenship or Jurisdiction of Formation:
Preferred Stock: Voting,Convertible	United States, Delaware

Related FCC Regulated Businesses of Disclosable Interest Holders (repeat for each interest holder identified)

10a) Name and address of all FCC-Regulated Businesses owned by the Disclosable Interest Holder listed in Item 1 or 2 (use additional sheets, if neccessary)	10b) Principle Business	10c) FCC Registration Number (FRN)	10d) Percent of Interest Held

10a) Name and address of all FCC-Regulated Businesses owned by the Disclosable Interest Holder listed in Item 1 or 2 (use additional sheets, if neccessary)	10b) Principle Business	10c) FCC Registration Number (FRN)	10d) Percent of Interest Held

FCC 602
Schedule A

FCC Ownership Disclosure Information for the Wireless Telecommunications Services

Schedule for Disclosable Interest Holders

Approved by OMB
3060 – 0799
See instructions for
Public burden estimate

Disclosable Interest Holder Information (complete as many as required to describe all disclosable interest holders)

1) Disclosable Interest Holder's First Name (if individual):	MI:	Last Name:	Suffix:
John		Muleta	

2) Disclosable Interest Holder's Name (if entity):	3) FCC Registration Number(FRN):
	0014999726

4) Disclosable Interest Holder's Address:
2800 Sand Hill Road Suite 150
Menlo Park, CA 94025

5) Type of Interest in Filer ( ) (refer to Instructions for a list of codes):	6) Disclosable Interest Holder is a (n): ( ) (refer to instructions for list of codes):	7) Percent of Interest Held in Filer:
Direct Ownership Interest in Filer Officer Director	Individual	25.10

8) Disclosable Interest Holder's Type of Ownership ( ) (refer to instructions for a list of codes):	9) Disclosable Interest Holder's Country of Citizenship or Jurisdiction of Formation:
Common Stock: Voting	United States

Related FCC Regulated Businesses of Disclosable Interest Holders (repeat for each interest holder identified)

10a) Name and address of all FCC-Regulated Businesses owned by the Disclosable Interest Holder listed in Item 1 or 2 (use additional sheets, if neccessary)	10b) Principle Business	10c) FCC Registration Number (FRN)	10d) Percent of Interest Held

10a) Name and address of all FCC-Regulated Businesses owned by the Disclosable Interest Holder listed in Item 1 or 2 (use additional sheets, if neccessary)	10b) Principle Business	10c) FCC Registration Number (FRN)	10d) Percent of Interest Held

FCC 602
Schedule A

FCC Ownership Disclosure Information for the Wireless Telecommunications Services

Schedule for Disclosable Interest Holders

Approved by OMB
3060 – 0799
See instructions for
Public burden estimate

Disclosable Interest Holder Information (complete as many as required to describe all disclosable interest holders)

1) Disclosable Interest Holder's First Name (if individual):	MI:	Last Name:	Suffix:

2) Disclosable Interest Holder's Name (if entity):	3) FCC Registration Number(FRN):
KPCB Holdings, Inc.	0015005630

4) Disclosable Interest Holder's Address:
2750 Sand Hill Road
Menlo Park, CA 94025

5) Type of Interest in Filer ( ) (refer to Instructions for a list of codes):	6) Disclosable Interest Holder is a (n): ( ) (refer to instructions for list of codes):	7) Percent of Interest Held in Filer:
Direct Ownership Interest in Filer	Corporation	16.32

8) Disclosable Interest Holder's Type of Ownership ( ) (refer to instructions for a list of codes):	9) Disclosable Interest Holder's Country of Citizenship or Jurisdiction of Formation:
Preferred Stock: Voting,Convertible	United States, Delaware

Related FCC Regulated Businesses of Disclosable Interest Holders (repeat for each interest holder identified)

10a) Name and address of all FCC-Regulated Businesses owned by the Disclosable Interest Holder listed in Item 1 or 2 (use additional sheets, if neccessary)	10b) Principle Business	10c) FCC Registration Number (FRN)	10d) Percent of Interest Held

10a) Name and address of all FCC-Regulated Businesses owned by the Disclosable Interest Holder listed in Item 1 or 2 (use additional sheets, if neccessary)	10b) Principle Business	10c) FCC Registration Number (FRN)	10d) Percent of Interest Held

FCC 602
Schedule A

FCC Ownership Disclosure Information for the Wireless Telecommunications Services

Schedule for Disclosable Interest Holders

Approved by OMB
3060 – 0799
See instructions for
Public burden estimate

Disclosable Interest Holder Information (complete as many as required to describe all disclosable interest holders)

1) Disclosable Interest Holder's First Name (if individual):	MI:	Last Name:	Suffix:
Milo		Medin	

2) Disclosable Interest Holder's Name (if entity):	3) FCC Registration Number(FRN):
	0014999759

4) Disclosable Interest Holder's Address:
2800 Sand Hill Road Suite 150
Menlo Park, CA 94025

5) Type of Interest in Filer ( ) (refer to Instructions for a list of codes):	6) Disclosable Interest Holder is a (n): ( ) (refer to instructions for list of codes):	7) Percent of Interest Held in Filer:
Direct Ownership Interest in Filer Officer Director	Individual	25.10

8) Disclosable Interest Holder's Type of Ownership ( ) (refer to instructions for a list of codes):	9) Disclosable Interest Holder's Country of Citizenship or Jurisdiction of Formation:
Common Stock: Voting	United States

Related FCC Regulated Businesses of Disclosable Interest Holders (repeat for each interest holder identified)

10a) Name and address of all FCC-Regulated Businesses owned by the Disclosable Interest Holder listed in Item 1 or 2 (use additional sheets, if neccessary)	10b) Principle Business	10c) FCC Registration Number (FRN)	10d) Percent of Interest Held

10a) Name and address of all FCC-Regulated Businesses owned by the Disclosable Interest Holder listed in Item 1 or 2 (use additional sheets, if neccessary)	10b) Principle Business	10c) FCC Registration Number (FRN)	10d) Percent of Interest Held

FCC 602
Schedule A

FCC Ownership Disclosure Information for the Wireless Telecommunications Services

Schedule for Disclosable Interest Holders

Approved by OMB
3060 – 0799
See instructions for
Public burden estimate

Disclosable Interest Holder Information (complete as many as required to describe all disclosable interest holders)

1) Disclosable Interest Holder's First Name (if individual):	MI:	Last Name:	Suffix:

2) Disclosable Interest Holder's Name (if entity):	3) FCC Registration Number(FRN):
Redpoint Ventures II, LP	0015003940

4) Disclosable Interest Holder's Address:
3000 Sand Hill Road Building 2, Suite 290
Menlo Park, CA 94025

5) Type of Interest in Filer ( ) (refer to Instructions for a list of codes):	6) Disclosable Interest Holder is a (n): ( ) (refer to instructions for list of codes):	7) Percent of Interest Held in Filer:
Direct Ownership Interest in Filer	Limited Partnership	15.95

8) Disclosable Interest Holder's Type of Ownership ( ) (refer to instructions for a list of codes):	9) Disclosable Interest Holder's Country of Citizenship or Jurisdiction of Formation:
Preferred Stock: Voting,Convertible	United States, Delaware

Related FCC Regulated Businesses of Disclosable Interest Holders (repeat for each interest holder identified)

10a) Name and address of all FCC-Regulated Businesses owned by the Disclosable Interest Holder listed in Item 1 or 2 (use additional sheets, if neccessary)	10b) Principle Business	10c) FCC Registration Number (FRN)	10d) Percent of Interest Held

10a) Name and address of all FCC-Regulated Businesses owned by the Disclosable Interest Holder listed in Item 1 or 2 (use additional sheets, if neccessary)	10b) Principle Business	10c) FCC Registration Number (FRN)	10d) Percent of Interest Held

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

In re:	)	
	)	
M2Z NETWORKS, INC.	)	File No.
	)	
Application for License and Authority to	)	
Provide National Broadband Radio Service	)	
in the 2155-2175 MHz Band	)	
	)	

APPENDIX 2

CONDITIONS FOR GRANT OF M2Z'S LICENSE
AND OPERATION OF ITS NETWORK

CONDITIONS FOR GRANT OF M2Z'S LICENSE
AND OPERATION OF ITS NETWORK

M2Z Network, Inc.'s license and its operations on 2155-2175 MHz band shall be conditioned on the following requirements:

1. **Service Name and Definition**

M2Z (hereinafter "NBRS Licensee" or "M2Z") shall provide National Broadband Radio Service. National Broadband Radio Service is a radio service provided under a single nationwide license on 20 MHz of spectrum in the 2155-2175 MHz band for the provision of fixed and portable broadband data services, without charge to end-users, on a network engineered to provide data rates of 384 kbps downstream and 128 kbps upstream.

2. **Frequencies**

M2Z shall provide the National Broadband Radio Service in the 2155-2175 MHz band on a primary basis.

3. **Service Areas**

The Service Area for National Broadband Radio Service in the 2155-2175 MHz band shall be nationwide. The nationwide service area consists of the fifty states, the District of Columbia, American Samoa, Guam, Northern Mariana Islands, Puerto Rico and the United States Virgin Islands.

4. **License Period**

Initial authorizations and renewal terms for the National Broadband Radio Service shall be fifteen (15) years from the date of initial issuance or renewal.

5. **Construction requirements; Criteria for comparative renewal proceedings.**

M2Z shall commence the National Broadband Radio Service by placing a base station in operation in at least one Standard Metropolitan Statistical Area within 24 months of the Commission's grant of license authorization, and will comply with the following construction compliance benchmarks:

(a) *Third anniversary of license grant and commencement of operations:* will have constructed sufficient base stations to provide service to thirty-three percent (33%) of the U.S. population measured by counties.

(b) *Fifth anniversary of license grant and commencement of operations:* will have constructed sufficient base stations to provide service to sixty-six percent (66%) of the U.S. population measured by counties.

(c) *Tenth anniversary of license grant and commencement of operations:* will have constructed sufficient base stations to provide service to ninety-five percent (95%) of the U.S. population measured by counties.

(d) *At the filing of the renewal application*: will have constructed sufficient base stations to provide service to ninety-five percent (95%) of the U.S. population measured by counties.

6. Power limits

The following power limits shall apply to the 2155-2175 MHz bands:

(a) *Main, booster and base stations.*

(i) The maximum EIRP of a main, booster or base station shall not exceed 33 dBW + 10log(X/Y) dBW, where X is the actual channel width in MHz and Y is 6 MHz.

(ii) If a main or booster station sectorizes or otherwise uses one or more transmitting antennas with a non-omnidirectional horizontal plane radiation pattern, the maximum EIRP in dBW in a given direction shall be determined by the following formula: EIRP = 33 dBW + 10 log(X/Y) dBW + 10 log(360/beamwidth) dBW, where X is the actual channel width in MHz, Y is 6 MHz, and beamwidth is the total horizontal plane beamwidth of the individual transmitting antenna for the station or any sector measured at the half-power points.

(b) *User stations.* All user stations are limited to 2.0 watts transmitter output power.

7. Emission limits

For operations in the 2155–2175 MHz band, the power of any emissions outside the NBRS Licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts.

(a) *For fixed and temporary fixed digital stations.* The attenuation for fixed and temporary fixed digital stations shall be not less than 43 + 10 log (P) dB, unless a documented harmful interference complaint is received from an adjacent channel licensee. Provided that the complaint cannot be mutually resolved between the parties, both licensees of existing and new systems shall reduce their out-of-band emissions by at least 67 + 10 log (P) dB measured at 3 MHz from their channel's edges.

(b*) For user stations.* The attenuation factor for user stations shall be not less than 43 + 10 log (P) dB at the channel edge and 55 + 10 log (P) dB at 3 MHz from the channel edges.

8. Relocation of Incumbents

(a) *Relocation of fixed microwave service licensees.* Incumbent fixed microwave service licensees in the 2160-2175 MHz band shall be relocated pursuant to the procedures established by the Commission in the Ninth Report and Order on Advanced Wireless Services. *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, FCC 06-45, ¶¶ 55-63 (Rel. Apr. 21, 2006) ("*AWS 9th R&O*").

(b) *Relocation of fixed BRS licensees.* Incumbent BRS licensees in the 2150-2162 MHz band shall be relocated pursuant to the procedures established by the Commission in the Ninth Report and Order on Advanced Wireless Services. *See AWS 9th R&O* at ¶¶ 11-63.

9. Protection of Incumbents

(a) *Protection of Part 101 operations*. Prior to initiating operations from any base or fixed station, the NBRS Licensee must coordinate its frequency usage with co-channel and adjacent channel incumbent Part 101 fixed-point-to-point microwave licensees operating in the 2110-2155 MHz band. Coordination shall be conducted in accordance with the provisions of Section 24.237 of this chapter.

(b) *Protection of Part 21 operations.* Prior to initiating operations from any base or fixed station, the NBRS Licensee must coordinate its frequency usage with co-channel and adjacent channel incumbent Part 21 BRS licensees operating in the 2150-2162 MHz band. In the event that the NBRS Licensee and BRS licensees cannot reach agreement in coordinating their facilities, either licensee may seek the assistance of the Commission, and the Commission may then, at its discretion, impose requirements on either or both parties.

10. Public Interest and Other Obligations of M2Z

(a) *Basic service.* The NBRS Licensee shall make available National Broadband Radio Service at engineered data rates of 384 kbps download and 128 kbps upload speeds free of airtime or service charges. The NBRS Licensee may condition service provision on the use of customer premises equipment that is certified by the NBRS Licensee to operate in the band according to its specifications and other relevant Commission regulations.

(b) *Service to Public Safety Entities*. The NBRS Licensee shall serve any public safety organization in the U.S. willing to utilize NBRS , without limit to the number of devices, and without airtime or service charges, provided that the NBRS Licensee has constructed its network and makes service generally available in the public safety agencies' service area. The NBRS Licensee shall provide any public safety entity that registers with service of up to 384 kbps download and 128 kbps upload speeds. Such service may be conditioned on the use of a gateway device certified by the NBRS Licensee to operate in the band according to its specifications and other relevant Commission regulations.

(c) *Fees on Premium Services*. The NBRS Licensee may make available "Premium Services" on a subscription basis, in which event it shall pay to the U.S. Treasury, on an annual basis, a voluntary usage fee of 5% of the gross revenues derived from such Premium Service.

(d) *Interference Protection*. The NBRS Licensee shall protect incumbent licensees from harmful interference from its operations until the incumbents' operations are relocated in accordance with applicable Commission rules.

(e) *Limiting Indecent Content*. The NBRS Licensee shall include, with its National Broadband Radio Service, automatic, default blocking of access to pornographic, obscene, and/or indecent material. Such default blocking shall be based on technology and processes readily available in the marketplace. The NBRS Licensee may disable this blocking capability for National Broadband Radio Service or "Premium Service" customers who provide M2Z with

appropriate proof that they are of the age of majority. *See, e.g.,* 47 C.F.R. § 64.201. The NBRS Licensee shall be permitted to disconnect any end user from its service for any violation of its service agreement, this condition or the Commission's regulations.

(f) *Commercial Mobile Radio Service.* M2Z is subject to regulation as Commercial Mobile Service under Section 332 of the Communications Act of 1934, 47 U.S.C. § 332, and as a Commercial Mobile Radio Service as defined in Section 20.9 of the Commission's rules. *See* 47 C.F.R. § 20.9.

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APPENDIX 3

M2Z'S COMMITMENT TO PROTECT MINORS FROM INDECENT

MATERIAL ON M2Z'S NETWORK

M2Z's Commitment to Protect Minors From Indecent Material on M2Z's Network

1. Modeling its proposal for protecting minors from pornography on the free over-the-air broadcast model successfully established by the Commission six decades ago, M2Z recognizes the legitimate expectations of the Commission and Congress for the responsible and efficient use of licensed spectrum. Accordingly, M2Z is committed to developing reliable means to prevent unfettered access to pornography and other indecent material when M2Z provides free, nationwide, interoperable broadband access to all Americans, including school children. To this end, M2Z will actively take steps to prevent access to indecent material by young people.[1]

2. Providing broadband Internet access without a subscription charge presents certain unique challenges that must be addressed responsibly by the operator. Where a billing relationship exists, there is great certainty about the identity of the subscriber and therefore action can be taken against the user when Internet standards of proper conduct are violated. Conversely, when there is no regular monthly charge for access, there is no billing information available about the subscriber. Therefore the operator cannot verify with high integrity the subscriber's age, name, address, or other contact information. In a system providing free broadband access, therefore, the network must actively intervene to prevent improper behavior.

3. While there are several approaches that could address these problems, M2Z's current approach is to route free-user traffic through a set of proxy servers, which can examine the traffic flows for improper activity and restrict access as required. This approach will also reduce the need for a large quantity of IPV4 addresses to launch service, because non-global routing address space can be used to communicate with subscriber computers. This technical approach is similar to firewalls used by large scale enterprises, as well as by many schools and libraries to restrict user access to indecent material. This proposed proxy server model will have to be deployed on a

[1] M2Z also will endeavor to reduce the ability of users to distribute spam from its network; however, M2Z will not have the means to completely eliminate spam.

much larger scale to meet M2Z's requirements, but M2Z believes it can effectively do this within the cost constraints imposed by the free access business model.

4. In the proxy server approach, web and other traffic from a user is directed through various network elements to a set of regional servers, which then process the requests. These servers can examine the URL (the web address of a specific piece of content), and compare it with a list of sites that contain pornography or other forms of indecent content. If the requested site is not in the list of problematic sites, then the server requests the data from the remote web server (using the proxy server's own IP address), and then delivers the data back to the user. If the URL is on a list of prohibited sites, then the user is provided with a message that indicates that the URL cannot be accessed.[2]

5. It is important to point out that, while these measures can be very effective, it is unlikely they will be 100% effective. Some indecent materials may be accessed from time to time, and M2Z will work with the appropriate authorities to take remedial action as needed. The capabilities of content filters change over time and the sites serving up indecent material also change, requiring constant updates of the list. Several companies are in the business of providing such services, and M2Z will strive to use the most effective filters that provide the smallest number of false positives (blocking access to sites that do not contain indecent material). The proposed .xxx domain will also help with this process if it is adopted, by encouraging purveyors of indecent materials to move to a clearly identifiable "zone" that makes it easy for servers to identify such traffic and block it as required.

6. While M2Z's filtering proposal is primarily designed for its National Broadband Radio Service, the company, nevertheless, recognizes that consumers that upgrade to the Premium

[2] Likewise, when a user sends out email, the outbound SMTP request is redirected by the network to a set of servers. If the user is attempting to send large volumes of email and the traffic matches a profile of spam, the server can reject the email or slow down the rate it can be sent to the rest of the Internet, thereby lowering the desirability of M2Z's network to so called spam merchants.

Services may also be interested in obtaining filtering capabilities. For that reason, all consumers purchasing a Premium Service will have the option of employing content filtering.

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APPENDIX 4

M2Z'S PROPOSAL
TO SERVE PUBLIC SAFETY ENTITIES

M2Z'S PROPOSAL
TO SERVE PUBLIC SAFETY ENTITIES

1. Our nation has become increasingly aware of the importance of public safety entities. These agencies include the nation's first responders in times of crisis (such as firefighters, police officers, and ambulance services). The communications needs of such entities are considerable. With lives in the balance, public safety entities require first class, secure, uninterrupted and interoperable communications to maintain safety for their members and the public they serve. Unfortunately, the United States does not have an interoperable[1] public safety network capable of serving the critical data needs of first responders. In the light of the constant risk of either man-made or natural disasters, this deficiency has been a key concern for policy makers.

2. Congress expressed its concern in Section 7502 of the Intelligence Reform Act, which directs that the Commission "shall, in consultation with the Secretary of Homeland Security and the National Telecommunications and Information Administration, conduct a study to assess short-term and long-term needs for allocations of additional portions of the electromagnetic spectrum for Federal, State, and local emergency response providers . . . ."[2] In making the Congressional assessment, the Commission was directed to: (1) seek input from Federal, State, local, and regional emergency response providers regarding the operation and administration of a potential nationwide interoperable broadband mobile communications network; and (2) consider the use of commercial wireless technologies to the greatest extent practicable.[3]

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[1] Interoperability is defined by the Commission as a communications link within public safety and public wireless systems that permits units from different entities to interact with each other and exchange information. *See* Federal Communications Commission, *Report to Congress on the Study to Assess Short-Term and Long-Term Needs or Allocations of Additional Portions of the Electromagnetic Spectrum for Federal, State and Local Emergency Response Providers, Appendix B* at 1 (rel. Dec. 19, 2005) ("*Report to Congress*").
[2] *Intelligence Reform and Terrorism Prevention Act of 2004*, PL 108-458, § 7502(a) (Dec. 17, 2004).
[3] *Id*. at § 7502(c)(1)-(2), Study Requirements.

3. The Commission responded to the Congressional mandate when it issued its Report to Congress in December 2005.[4] After seeking comment from all interested parties, most notably, public safety entities, the Commission acknowledged that there is a place for dual use commercial networks that can both enable commercial communications and help serve the needs of the public safety community.[5] Working with commercial entities is particularly worthy because such networks will likely help ameliorate the key challenges facing public safety—the need for interoperability and affordability.[6]

4. Critically, the use of commercial networks will help create an affordable public safety solution. Various public safety organizations have estimated that the costs of building out a nationwide, interoperable network could be as much as $18 billion.[7] The Department of Homeland Security ("DHS") and Public Safety organizations have estimated that the cost of replacing the existing public safety land mobile radio systems to achieve interoperability could reach $40 billion.[8]

5. This level of funding simply does not exist. In fact, public safety agencies around the country have identified lack of funding as a primary obstacle to interoperability.[9] Similarly, the Department of Homeland Security stated that public safety agencies have been plagued by "inadequate and unreliable wireless communications"[10] for decades, and that they are often "unable to share vital voice or data information with other jurisdictions" in response to incidents that jeopardize the public safety.[11] DHS further concluded that interoperability, which is

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[4] *See Report to Congress*.
[5] *See id*. at ¶¶ 45-49. *See also* Appendix B to *Report to Congress* at 1-2 ("Public safety entities may also benefit from partnering with commercial wireless providers to leverage technological advances and enter into mutually beneficial network agreements, especially with respect to non-mission critical duties.").
[6] *See id*. at ¶¶ 45-46. *See also* Appendix B to *Report to Congress* at 2-3.
[7] *See Report to Congress* at ¶ 25.
[8] *See The State of Public Safety Communications*, International Symposium on Advanced Radio Technologies, SAFECOM (March 2, 2004) at 9, available at www.safecomprogram.com.
[9] *Id*.
[10] *See Statement of Requirements of Public Safety Wireless Communications and Interoperability*, The SAFECOM Program, Department of Homeland Security, January 26, 2006 at 1 ("*Statement of Requirements*").
[11] *Id*.

currently lacking in public safety entities' communications systems, is a vital element in securing the safety of U.S. citizens.[12]

6. No doubt, the creation of a nationwide interoperable broadband communications network is a tall order. The good news is that M2Z will enable first responders to have seamless nationwide data communications that can supplement their existing systems with no recurring costs to the first responders or federal and state governments.

I. M2Z's Network Will Help Solve the Interoperability Problem and Provide Significant Benefits to First Responders

7. As explained elsewhere in this Application, M2Z proposes to provide the first free nationwide broadband wireless network in the United States.[13] While consumers will be able to enjoy the vast benefits of this network, M2Z's deployment will provide numerous public safety benefits to first responders. M2Z plans to deploy an IP-based fixed wireless network that will support fixed and mobile devices and provide full interoperability to public safety agencies. M2Z's network will have significant scale and reach. Indeed, by the terms of the conditions under which M2Z must operate, at least 95% of the U.S. population will have access to its network within the next decade.[14] This will enable the rapid implementation of broadband wireless infrastructure for public safety interoperability over virtually the entire country. Moreover, as explained below, M2Z has entered into a strategic relationship with PacketHop to deliver additional security-oriented applications to public safety entities.

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[12] *Id*.
[13] *See* Application at 2-3.
[14] The 5% of the U.S. population that may not have guaranteed coverage is due to the lack of backhaul from other networks and other provisioning issues beyond M2Z's control. Nonetheless, M2Z will make all reasonable efforts to provide 100% coverage as it builds out its network.

A. M2Z's Network Will Provide Free Interoperable and Secure Broadband Connections to the Public Safety Community

8. M2Z's network will provide free 512 kbps (384 Kbps download and 128 Kbps upload) service to every registered public safety user who purchases M2Z certified customer premise equipment ("CPE"), which will be available through various retailers and local Internet service providers ("ISPs"). M2Z's certified CPE will seamlessly operate on both wide area networks ("WANs") and local area networks ("LANs"). The CPE has the operational capacity to accomplish this because it will include dual radios: one radio operating in the WAN mode using M2Z's multi-users advanced antenna system ("AAS") orthogonal frequency division multiple access ("OFDMA") technology; and another radio operating using WiFi radios operating on various unlicensed bands, including 2.4 GHz and 5.47-5.85 GHz bands in the LAN mode.[15]

9. Getting M2Z's CPE in the hands of a significant number of public safety entities is feasible. SAFECOM has estimated that the number of firefighters in the U.S. is approximately 960,000; the number of law enforcement officials totals roughly 710,000; and EMS personnel number about 830,000, for a total of approximately 2,500,000 public safety officials. Assuming an initial cost of $250 for each piece of CPE, every public safety official in the country could utilize this service for an estimated $625,000,000. That is a minuscule figure compared to the $40 billion estimated by DHS to achieve public safety interoperability.

B. M2Z's Partnership with PacketHop Will Provide Additional Valuable Subscription-Based Applications to First Responders

10. While M2Z's Basic Service will provide a robust base level of secondary data connectivity to public safety officials, M2Z recognizes that there are a number of additional features, above and beyond raw data connectivity, that would provide additional tools to public safety. For that reason, M2Z has partnered with PacketHop (www.packethop.com) to make each

[15] The radios will also be capable of functioning on 4.9 GHz.

M2Z First Responder modem embedded with the ability to activate PacketHop's First Responder optimized software applications.[16]

11. PacketHop's technology allows wireless devices to communicate directly with each other on a peer-to-peer basis. It does so by forming an instant short-range mobile mesh network. By loading cutting edge software onto standard IP radio-equipped (e.g., 802.11) such as the M2Z CPE device, the mobile mesh networking creates a self-organizing wireless communications network in which every mobile device becomes a network router. Such a network promotes instant connectivity with other devices in the mesh network. In such an environment, wireless communications are not dependent on the distance to the nearest access point or base station. Rather, the only key distance is the amount of terrain separating each wireless device.

12. PacketHop's technology is well suited for responding to an emergency. In the event that network infrastructure is unavailable or compromised, fixed network infrastructures such as base stations or access points are not required in order to provide communications between devices. Moreover, unlike other mesh systems, PacketHop's solution does not require special infrastructure or access points. Thus, where infrastructure exists, PacketHop's technology permits communication outside the network and thus acts as an extension to existing networks. Indeed, PacketHop's applications meet the DHS requirements for secure interoperable data communications systems for public safety networks.[17] This additional level of connectivity can be accessed by first responder organizations as a subscription service by working directly with PacketHop and its activation partners.

13. The PacketHop software, which is well tested and is currently deployed today, will allow public safety officials to perform a variety of multimedia applications that are especially important for multi-jurisdictional first responders. Some PacketHop benefits are detailed below.

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[16] PacketHop's software enables autonomous mesh networks and server-less broadband applications running on open standard networks (802.11). *See* http://www.packethop.com/company/.
[17] *See Statement of Requirements* at 22.

- **Real-time Multicast Video Application:** Live video can be invaluable for assessing a situation and responding with maximum effectiveness. Multiple high-quality video feeds can be selectively multicast and viewed individually or concurrently; new video feeds can be quickly provisioned at any time.
- **Resource Tracking Application:** High-resolution maps with real-time resource location tracking show who is at a scene and where they are at any time, using the Global Positioning System ("GPS") receiver in their device.
- **Multimedia Instant Messaging Application:** In addition to text-based instant messages, users can share files in a variety of formats - including documents, spreadsheets, diagrams, still digital photographs and selected video frames.
- **Whiteboarding Application:** Two or more users can share tactical information graphically (e.g. annotate a map, video frame, or other image) and collaborate on a course of action. This virtual whiteboard is especially powerful in situations where it is impossible or impractical to meet in person.
- **Security Policy Management Application:** Public safety entities will enjoy the authentication and authorization of users, equipping them with the credentials needed to participate in the PacketHop-enabled autonomous mobile mesh network.
- **IT Management and Administration:** The PacketHop system enables secure account management, provisioning, logging, configuration setting, maintenance and other IT management tasks.

C. M2Z is Committed to Work with DHS and Public Safety Entities to Optimize its Network for Public Safety Applications

14. As part of its network deployment, M2Z pledges to build such additional network facilities as necessary to serve public safety entities that plan to use the National Broadband Radio Service when it becomes available in their area. Further, to the extent public safety entities require uninterrupted service, M2Z will work with them to achieve that goal. If the Commission believes that it is necessary, M2Z will seek modification of its license after grant in order to make any necessary changes to implement our discussions with the public safety community. In addition, for the provision of enhanced services to public safety entities beyond the National Broadband Radio Service, M2Z is working with PacketHop, a company experienced in serving the needs of first responders to bring the benefit of applications optimized for their needs.[18]

II. Conclusion

15. M2Z's network will provide an invaluable enhancement to public safety entities' communications systems. Because M2Z will provide its National Broadband Radio Service for free (with low one-time CPE costs), even small public safety agencies with limited IT/telecom budgets will now be able to obtain high-speed and reliable broadband data services to supplement their existing systems. Moreover, through M2Z's partnership with PacketHop, first responders will have a suite of useful applications available at any incident site.

[18] Information on PacketHop's Public Safety and Government services is available at http://www.packethop.com/markets/public_safety.php. In addition, on April 22, 2006, PacketHop demonstrated its technology at the large U.S. public safety and homeland security field exercise held at Long Beach, California. See press release available at http://www.packethop.com/news_events/press_releases/2006/042406.php.

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APPENDIX 5

THE BENEFITS OF BROADBAND COMPETITION

GREGORY L. ROSSTON

AND

SCOTT WALLSTEN

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I. M2Z's proposal: Universal broadband service achieved through investment of private capital

We have been asked by M2Z Networks to evaluate the economic impact of additional and universal broadband service. The existing literature suggests that ubiquitous broadband service could create large benefits for American consumers and large cost savings for American firms as well. In addition, economic studies show that universal broadband could also provide substantial benefits to rural areas, the disabled and the elderly. We have also examined how M2Z's proposed free service could alleviate some of the financial pressures on the universal service fund and ensure high-speed access to a large part of the country.

M2Z seeks to establish a unique service that would generate significant public interest benefits. M2Z proposes to bring high-speed wireless access to 95 percent of the U.S. population. If it obtains the necessary spectrum license, M2Z will deploy advanced wireless technology across the United States using 20 MHz of unpaired spectrum in the 2100 MHz band. A key component of M2Z's service model is to provide nearly ubiquitous broadband access for free.[1] Users will be able to connect to the free system by acquiring the necessary radio equipment, which M2Z notes will be supplied competitively by a range of independent vendors. Users will also be able to upgrade to faster service (greater bandwidth) on the M2Z system for a monthly fee.[2]

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[1] The free service will have default filters to prevent minors from being able to access pornography. The upgraded service will require proof of age as part of the subscription process so that it will not have default content filters, but in that service as well, consumers could opt for filtering.

[2] This type of business model has been used in several popular Internet applications. Yahoo!, for example, offers free email and other services if the user agrees to certain restrictions, such as less storage space and advertisements at the bottom of outgoing emails. Subscribers can upgrade to advertising-free service for a fee.

Putting this unpaired spectrum to use for the provision of ubiquitous broadband services would provide substantial benefits to the American public by creating additional access, increased competition, and new service opportunities. It could also restrain increased spending on federal and state universal service programs, which might otherwise be increased in an attempt to promote broadband access.

As with free over-the-air television service, paid advertisements will support the free high-speed service. In 1998, pursuant to statutory instruction, the FCC ruled that television broadcasters must pay a fee of five percent of "gross revenues received from ancillary or supplementary uses of the digital television (DTV) spectrum for which they charge subscription fees or other specified compensation."[3] Similarly, M2Z proposes to pay a spectrum use fee to the government equal to five percent of its subscription service revenues.

M2Z's innovative plan has several additional benefits for the public – most of them coming from more ubiquitous, cheaper and competitive broadband service, and from relieving pressure on the growing universal service fund. In particular, M2Z will:

- Increase competition for broadband services in all of its coverage area.
- Make free broadband service available in areas that are expensive to serve and to customers who are economically disadvantaged. M2Z's service will allow users to layer competing VOIP services on top of the broadband service they get from M2Z, guaranteeing customers choice for voice service. New broadband entry, especially in rural and poor urban areas, will enhance consumer welfare.

[3] http://www.fcc.gov/Bureaus/Mass_Media/News_Releases/1998/nrmm8037.html

- Provide portable broadband service for all of its subscribers. A customer who has an M2Z account (free or paid) will be able to use the service anywhere in M2Z's service territory, whether at home or on the road.
- Use private investment to provide broadband service without using any funds from the Universal Service Fund, even in high-cost areas. This operation will help meet broadband universal service goals and stabilize the size of the fund.

In the remainder of this report, we discuss the benefits of more widespread adoption of broadband, the important role of competition in achieving universal coverage, and how M2Z's proposal will help achieve universal coverage with the infusion of private capital without burdening the Universal Service Fund.

II. Benefits of broadband

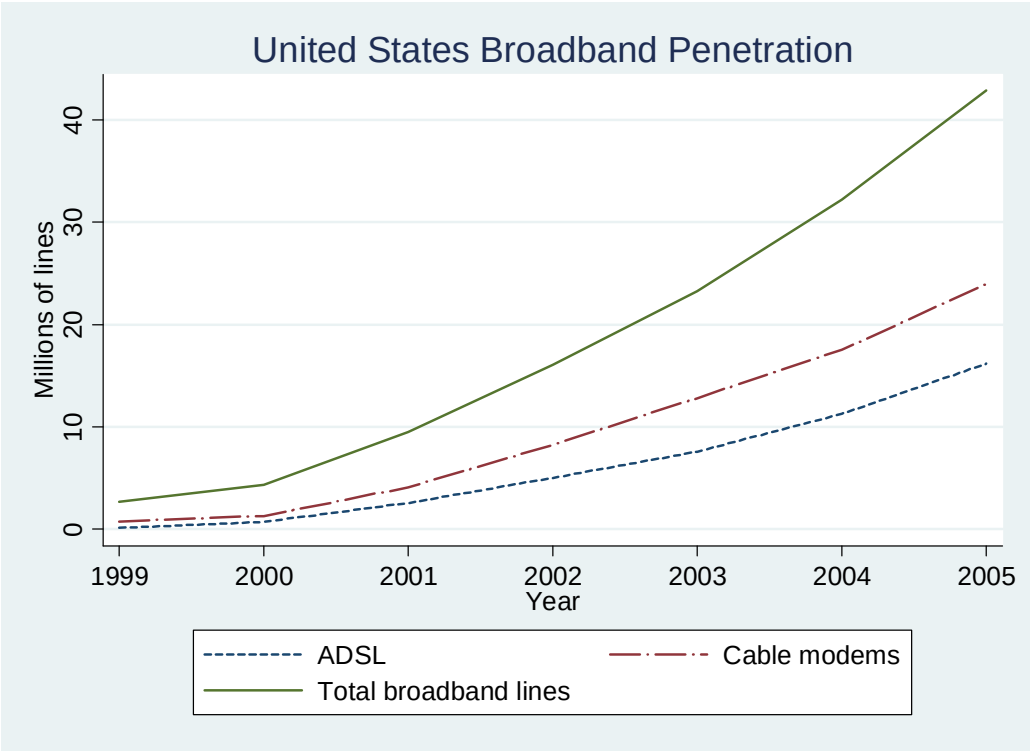
We begin by examining the benefits a broadband entrant could bring to American end users.

A. Broadband background

Broadband, or high-speed access to the Internet, has generated significant economic benefits for those who have access and the ability to pay for it. It has revolutionized the way people communicate with each other and obtain information, increasing productivity and reducing transaction costs for firms, and reducing search costs for consumers. By one estimate, investments in information technology and high-speed telecom infrastructure "may be responsible for nearly one full percentage point of the annual increase in U.S. productivity since 1995 [through 2004]" (Hazlett, *et al.* 2004). These authors note that labor productivity grew at around three percent during this period, so the increase attributable to information technology and high-speed telecom infrastructure is substantial.

Yet, broadband penetration in U.S. is limited and lags behind that of many other nations. By the middle of 2005, the U.S. had nearly 43 million broadband lines, meaning that the majority of American households do not subscribe to broadband services at home.[4] Figure 1 shows that this number has grown quickly over the past few years, but some analysts think the growth rate may be poised to slow.[5]

Figure 1



Source: FCC "High-Speed Services for Internet Access" Reports, 1999-2006, available at http://www.fcc.gov/wcb/iatd/comp.html

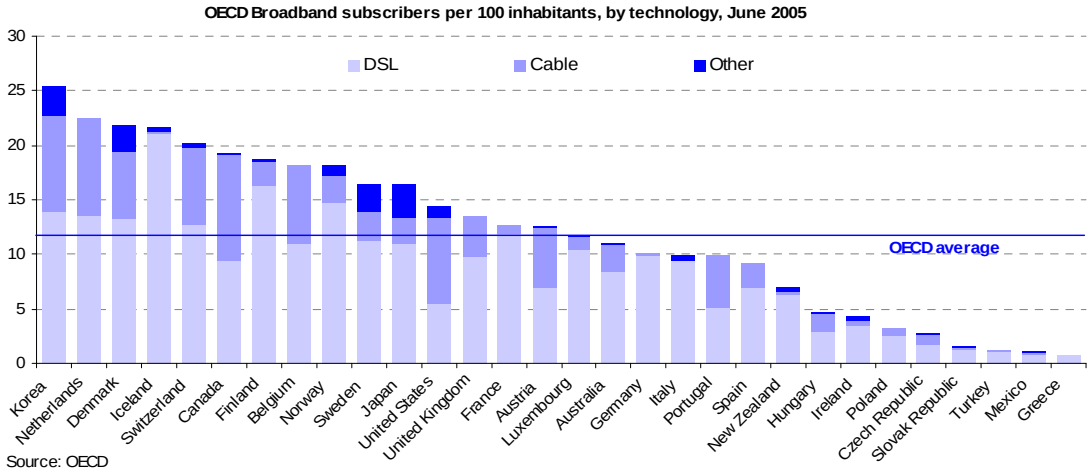
Figure 2 shows recent OECD data on the number of broadband subscribers per 100 inhabitants. As of June 2005, the U.S. had fewer broadband subscribers per 100 inhabitants than 11 other OECD countries. Bleha (2005) notes that Japan has much faster

[4] FCC (2006).

[5] *See*, for example, Horrigan (2005).

broadband at much cheaper rates and that Korea has the world's highest percentage of individuals who use broadband. A number of reasons help explain the relatively poor position of the U.S. on this measure. Different demographics, population density, and regulatory policies have all likely contributed to these differences. Whatever the source of the U.S. lag, the President and other policy makers have concluded that it is a problem that should be addressed.[6]

Figure 2



Because penetration is limited, the U.S. does not enjoy broadband's full potential. Specifically, broadband could be even more valuable in at least three ways. First, increasing the reach and availability of high-speed services would allow more people to benefit from high-speed services. Second, lower prices from increased competition would make broadband affordable to more people while allowing existing subscribers to

[6] In the words of the President: "[W]e rank 10th amongst the industrialized world in broadband technology and its availability. That's not good enough for America. Tenth is 10 spots too low as far as I'm concerned." President Unveils Tech Initiatives for Energy, Health Care, Internet, April 26, 2004.

pay less than they do now. Reduced prices for existing subscribers do not immediately yield net economic benefits as those subscribers already benefit from broadband services.[7] Lower prices do, however, increase consumer surplus by transferring additional benefits from producers to consumers. Reduced prices that encourage additional households to subscribe yield both increased consumer welfare and net economic benefits. These benefits may be especially pronounced in rural areas and for other under-served populations.

Third, the direct and indirect network effects inherent in broadband-related industries mean that the increase in new broadband subscribers can increase the value of high-speed services to the benefit of all subscribers, new and existing.[8] In particular, broadband-related industries may face a "chicken-and-egg" problem—subscribers increase their demand for broadband connections when more broadband applications are available, but investment in broadband applications only increases with more potential users (broadband subscribers). Thus, increasing the number of subscribers through lower prices and endowing additional households with the ability to access broadband helps to solve the chicken-and-egg problem, leading to even more investment in broadband applications and increased economic benefits. Increased deployment in rural areas, for example, may make it financially viable to launch remote home health services that rely on broadband connections.

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[7] Economists often refer to net economic benefits as "total surplus."

[8] Direct network effects occur when a subscriber benefits from direct interaction with another subscriber and is directly made better off by having more subscribers with whom to interact. Indirect network effects arise from the provision of additional goods and services, such as software, that become more prevalent as producers respond to the size of the network.

Direct network effects also increase the value of broadband services. For example, eBay's value to its users was lower in 1996 when there were fewer Internet users (virtually all using narrowband connections) than it is today to those same users who benefit from a vastly larger number of potential buyers and sellers. Increasing the number of broadband users can have similar effects—some potential innovations may not be profitable without near ubiquity of broadband availability, and many existing services cannot convey nearly the same benefits without the network effects.

B. Magnitude of broadband benefits

Achieving universal broadband coverage (and adoption) could yield significant economic and social benefits. Using several different methodologies, a variety of different researchers have concluded that increased broadband adoption could generate tens and even hundreds of billions of dollars in benefits.

Crandall and Jackson (2001) estimated that universal broadband adoption could yield annual gross consumer benefits of around $300 billion. They use two methods to estimate the benefits, both of which require numerous assumptions. First, they estimate a demand curve for broadband services at $40 per month and assume that increased deployment of broadband services shifts the curve out so more customers demand broadband at any given price because of the increased availability. Based on the new area under this demand curve, they estimate that universal deployment of broadband could result in annual benefits of $300 billion to $450 billion. With 110 million households in the country, this is an annual benefit of about $3,000 to $4,000 per household.

The second approach examines benefits consumers would realize in specific sectors, primarily entertainment, shopping, telephone, commuting, and telemedicine. This approach yields a wider range of benefits ($272 billion to $520 billion). They use these estimates to determine the benefits from more rapid adoption of broadband than "business as usual" and determine that accelerated adoption of universal broadband could lead to total benefits of about $500 billion.

Litan and Rivlin (2001) explore the issue differently – instead of directly estimating consumer benefits, they examine how the Internet could help businesses run more efficiently. They estimate that universal access to the Internet could reduce business costs by $125 billion to $250 billion annually by reducing transactions costs, facilitating communications both within firms and with customers, and increasing competition by making it easier to compare prices and services.

Both 2001 estimates use the principles discussed above – that increased access makes the adoption of new technologies and services more profitable and that network effects increase the benefits to consumers. These estimates, however, were derived several years ago, when many broadband applications, such as Internet telephony, online gaming, and streaming music and videos, had not achieved mass consumer appeal. Some of the uses that have become popular in the last five years could not have been foreseen when that research was being done, and there will assuredly be new uses in the future that we cannot predict now.

The larger number of possible uses of a broadband connection increases its value to consumers. Thus, while the number of possible additional consumers is smaller now

than in 2001, the welfare gains from each new subscriber may be greater than they were at the time.

New estimates suggest even larger gains from accelerating universal broadband penetration. Litan (2005) looks at one specific application of broadband technology – improving the lives of the elderly and disabled. He examines how broadband technologies could reduce health care costs by enabling remote monitoring of health conditions, leading to fewer office visits and reduced need for assisted living facilities. He also explores how broadband could increase productivity by enabling the elderly and disabled to remain in the workforce through telecommuting. He estimates that accelerating broadband access to the elderly and disabled could yield more than a half trillion dollars in benefits over the next 25 years.

Goolsbee and Klenow (2006) take a different approach to estimating the value of Internet services. Rather than calculating consumer surplus based on expenditures only, they account explicitly for time spent by consumers using the Internet. For high wage workers, the cost to using the Internet may be substantially higher than for lower wage workers because of the cost of time involved. Using this and the difference in time spent on the Internet allows them to determine the elasticity of demand for Internet services and consequently to estimate the consumer surplus from Internet usage. Thus, although consumers spend only about 0.2 percent of their income on Internet access, they spend about 10 percent of their leisure time online, suggesting that "consumer surplus from the Internet may be around 2 percent of full-income or several thousand dollars per user." While the methodology differs from the other studies, the magnitude of the benefits is similar.

With several assumptions, we can use the Goolsbee-Klenow approach to estimate the consumer value of connecting the remaining population to the Internet. Fox (2005) reports that according to a survey conducted by the Pew Internet and American Life Project, 22 percent of the American adult population has no Internet access, and 40 percent has only limited access (e.g., narrowband, dial-up users). The Goolsbee-Klenow method suggests that the net present value of improving Internet access for this large group of people could range up to a trillion dollars over the next 25 years.[9] The Crandall-Jackson estimates could also be updated, which would require some additional assumptions, but with only a third of the country on broadband, their methodology would also likely lead to a conclusion that connecting the rest of the country would engender large economic benefits.

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[9] This estimate is highly sensitive to assumptions. The U.S. Census reports an adult population of about 213 million in 2004. We calculate a low and a high estimate. Consistent with research demonstrating a strong correlation between income and broadband connectivity (Flamm 2005), we assume that adults without access have lower-than-average incomes. For the "low" estimate, we assume that the 22 percent with no access have wages only in the 10th percentile of all wage-earners and that the 40 percent with limited access have wages in the 25th percentile of all wage earners. We then assume that those with no access would spend time equal to two percent of their annual wages online (the lower of the Goolsbee-Klenow 2-3 percent estimate). Those who currently have limited access could increase their time spent online by an amount equal to one percent of their wages, since they already spend some time online. Wage data come from the U.S. Bureau of Labor Statistics (http://www.bls.gov/oes/current/oes_00Al.htm). For the "high" estimate, we assume that the average wages of both groups is equal to the 25th percentile of all wage earners, that those with no access currently would spend time equal to three percent of their wages while those with limited access would spend time equal to 2.5 percent of their wages online. Using a discount rate of five percent and assuming that all those people were connected immediately yields a net present value ranging from about a half trillion to one trillion dollars.

Several caveats must accompany these estimates. First, some people currently not connected may simply have little interest in connecting. They would therefore receive few benefits from broadband since they place a low value on it. Second, we assume all potential users would sign up for service immediately; that clearly would not happen. Third, we assume that people who currently have "limited access" would slightly increase the amount of time they spend online. It is possible that people who currently have narrowband connections would actually spend *less* time online if they chose to continue using only those services they currently use.

III. Benefits of competition from M2Z

Policy analysts disagree over why the U.S. lags other countries and whether its position reflects an underlying problem. Reasons why U.S. broadband penetration is lower than in some other countries—and possibly lower than the optimal level—include the possibility that prices are too high, connection speeds too low, and access too limited. Whether broadband penetration is growing quickly enough or not, economists agree that removing artificial and uneconomic barriers to entry is the best way to encourage investment and improve service.[10] Competition is likely to reduce prices, increase quality and increase overall access.

Today, economists almost universally accept that competition in all manner of telecommunications services benefits consumers and economic efficiency. Policies that promote private investment and the resulting competition are likely to be the best approach for improving service, encouraging investment, and reducing prices. Evidence from around the world supports this notion that competition leads to benefits in all of these dimensions. The benefits of competition are readily seen in other telecommunications markets.

Even a century ago—a time when people argued that there were larger economies of scale and density in telecommunications than believed to be the case today—competition among telephone providers brought more investment, lower prices, and better services both in the United States and Europe (e.g., Gabel 1994; Gabel 1969; Wallsten 2005). The same result is true in developing countries today: competition—primarily from privately-owned wireless carriers—has dramatically improved

[10] See, for example, the 2006 statement on broadband policy signed by 25 economists (Bailey, *et al*. 2006).

telecommunications services in those countries (e.g., Li and Xu 2001; Noll and Wallsten 2005; Wallsten 2001).

The same holds true for U.S. wireless service. The FCC initially allocated spectrum licenses to two cellular carriers in each market. While early cellular growth was stronger than expected, service prices remained relatively high until 1994. At that time, the FCC increased substantially the amount of spectrum in the marketplace and allowed multiple additional competitors in most areas. Not surprisingly, prices began to drop. According to survey data from the CTIA – The Wireless Association (CTIA), from December 1994 to December 2004 wireless subscriptions increased by 725 percent (20 million to 167 million) while average revenue per minute declined by 82 percent (from $0.53 per minute to $0.09 per minute).[11] The FCC recently concluded that "competitive pressure continues to compel carriers to introduce innovative pricing plans and service offerings, and to match the pricing and service innovations introduced by rival carriers."[12]

Additional competition has been shown to yield benefits in other telecommunications services, as well. Research by the Government Accountability Office suggests that telecommunications service prices were 15-41 percent lower in cities with the new entrants than in cities without (GAO 2004), and that cable prices were about 15 percent lower in cities with wireline video competition (GAO 2005). Wallsten (2005) shows that regulations that effectively block competitive entry keep the number of Internet users artificially low in developing countries, perpetuating the digital divide.

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[11] The figures from the CTIA surveys should not be considered definitive. CTIA's semi-annual surveys are voluntary, meaning the companies that respond to particular questions may differ from year to year. CTIA reports the raw results from the survey and does not attempt to adjust the figures for the non-respondents or to make the results exactly comparable year-to-year. As a result, the survey data indicate trends, but cannot be presumed to show precise levels.

[12] Federal Communications Commission (2005, para 3).

These different arenas all have a common theme – competition leads to lower prices and higher penetration. This in turn leads to greater benefits for those already on the network as both direct and indirect network effects take hold with greater penetration. However, without competition, the large potential benefits outlined in the section above are unlikely to be realized fully.

Robust competition among existing broadband providers and easy entry by other firms wishing to compete is the best way to increase investment in broadband and achieve the benefits discussed above (e.g., Aron and Burnstein 2003). While most competition in broadband has to date come from cable and DSL, policymakers should recognize that other platforms may become strong competitors if their entry is not arbitrarily blocked (Faulhaber 2002; Weiser 2005).

M2Z is poised to provide new broadband competition for 95 percent of the U.S. population. Adding M2Z to the competitive mix of broadband providers can provide additional benefits because of the scope of its proposed service. Incumbent cable and telephone networks will face additional facilities-based competition throughout the vast majority of their territories. As a result, consumers stand to gain enormous benefits. Even consumers who choose not to use M2Z and continue to subscribe to cable and DSL will benefit as their providers will likely be forced to compete by upgrading service and reducing prices.

IV. M2Z will enhance universal service

M2Z can improve universal service in two ways. First, it will further the objectives of universal service by bringing broadband service to high-cost areas, low-income consumers, rural health care providers, and schools and libraries without

increasing the financial burden on existing universal service programs. Second, in addition to demonstrating that some areas currently thought to be uneconomic to serve may, in fact, be attractive to private investors, M2Z's free service will provide a mechanism that might help control increases in current universal service program expenditures. These effects could reduce future expenditures on universal service and, more importantly, improve the efficiency of communications delivery and increase overall consumer welfare.

A. The current universal service system.

Universal service is one of the largest programs the FCC and state regulatory commissions oversee. The Federal universal service program, which will spend about $6.6 billion in 2006, has four components: high-cost, low-income, schools and libraries, and rural health care.[13] The high-cost program is expected to spend about $4.2 billion in 2006. Federal universal service expenditures for low-income consumers are expected to be around $800 million in 2006, schools and libraries $2.3 billion, and rural health care around $45 million.[14] Many states also have universal service programs, adding to the total cost of universal service.

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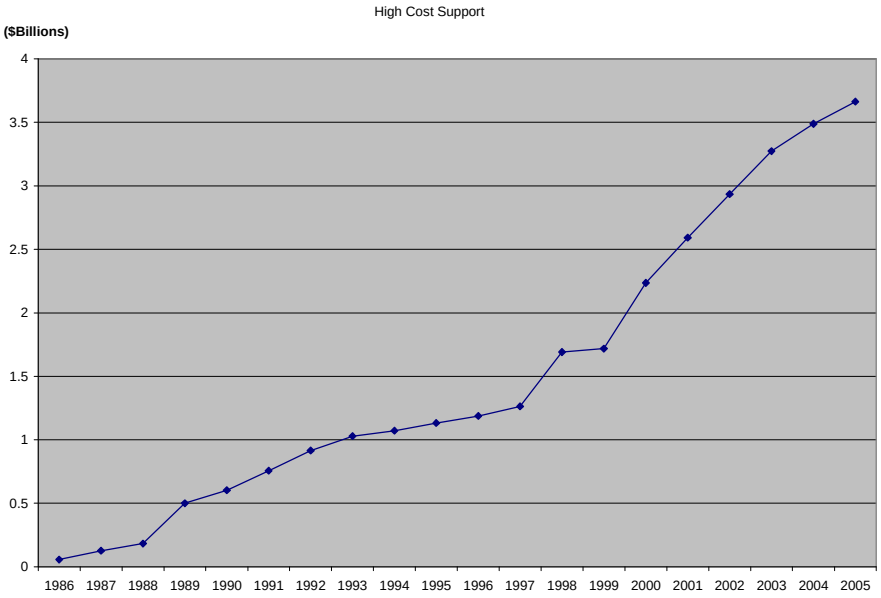
[13] The Universal Service Administrative Company spent about $85 million in administrative costs in 2005 or 1.29 percent of its disbursements (Universal Service Administrative Company, 2005 Annual Report, p. 14).

[14] The low-income program is intended to help poor consumers access affordable telecommunications services. In conjunction with the Telecommunications Act of 1996, the FCC expanded the Federal program for low-income support. This program is divided into two parts – Lifeline and LinkUp. The Lifeline program started in 1985 and was expanded in 1996. It provides a minimum of a $5.25 subsidy per line, plus a Federal match for state funds to further reduce the monthly charge, up to a total of $7.00 per month in total federal subsidy. The LinkUp program reduces the charge to connect a new telephone line by 50 percent or $30, whichever is less. The Federal portion of low income Lifeline and LinkUp programs is about $800 million per year. "Universal Service Fund Facts" available at http://www.universalservice.org/about/universal-service/fund-facts.aspx.

The current universal service system has grown rapidly since the implementation of the Telecom Act of 1996. Figure 3 shows the growth of the high-cost fund for rural carriers over the past 20 years.[15] The overall program for these areas has grown by a factor of three in less than ten years and about ten percent per year for the past five years. These costs have increased while nearly all other telecommunications prices have dropped markedly. A variety of factors explain this increase, primarily changing access charges and reimbursements for eligible telecommunications providers. These increases have put tremendous pressures on traditional support mechanisms, and these pressures will only increase if the program expands to provide broadband services without a major reshaping.

Figure 3



Source: USAC filings.

[15] Note that the data is only for "rural" carriers. The total high-cost fund was $4.2 billion in 2005, of which $3.8 billion went to rural carriers.

The Telecommunications Act of 1996 states that universal service is an evolving concept, meaning that the FCC can extend universal service to support additional services.[16] Recent bills introduced in Congress would expand universal service specifically to include broadband services. The Boucher-Terry "Universal Service Reform Act of 2006" for example, includes broadband service in its definition of universal service.[17] As discussed above, the widespread availability and adoption of broadband is likely to yield great benefits. However, expanding the definition of universal service comes with certain costs – higher universal service payments to cover the new services unless some existing subsidies are cut, and potential market distortions created by the new subsidies.

It is currently unclear how a broadband universal service fund or program would work. It might be layered on top of the existing narrowband universal service fund or may operate completely separately. The design and implementation of any new broadband subsidy, however, should consider carefully the implications of new and quickly changing technologies.

In any event, if the FCC adds broadband to the list of supported services, the Commission would likely strive for a system that ensures service to the customers it wants served, promotes efficiency in service provision, and provides incentives to keep the cost of the system as low as possible.

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[16] Section 254(c)(1) of the Telecommunications Act describes universal service as an "evolving level of telecommunications services," and sets forth the factors to be considered by the Joint Board and the FCC in defining the services that are supported.

[17] See Section 4(c) available at http://www.house.gov/boucher/docs/USF%20Bill.PDF.

M2Z's proposal and system demonstrate that costs of providing new broadband services need not necessarily be higher than the current costs of providing narrowband services. While changing from narrowband to broadband may increase costs above today's narrowband costs in some cases, in other cases advances in technology and spectrum availability may even make it less costly to provide new broadband service with wireless technology than it is now to provide narrowband service with wireline technologies.

B. M2Z can help relieve pressure on the Universal Service Fund

A key question for universal service is how to guarantee service while also controlling costs. M2Z's proposal offers a way of meeting these objectives. M2Z will improve service for a significant number of consumers without increasing outlays from the universal service fund or necessitating increases in contributions to the fund.[18] M2Z's service will be available to "universal service customers" (rural, low-income, rural health care providers and schools and libraries) on the same terms and conditions that it provides service to all other customers, without receiving any money from state or federal universal service funds.

M2Z would not receive any money from the Universal Service Fund and would provide coverage in areas that would likely be eligible for broadband universal service support should such a program be established. Instead, M2Z would commit to providing broadband access at a zero price to all customers including a large number of customers who would otherwise not have access or may not subscribe because of price.

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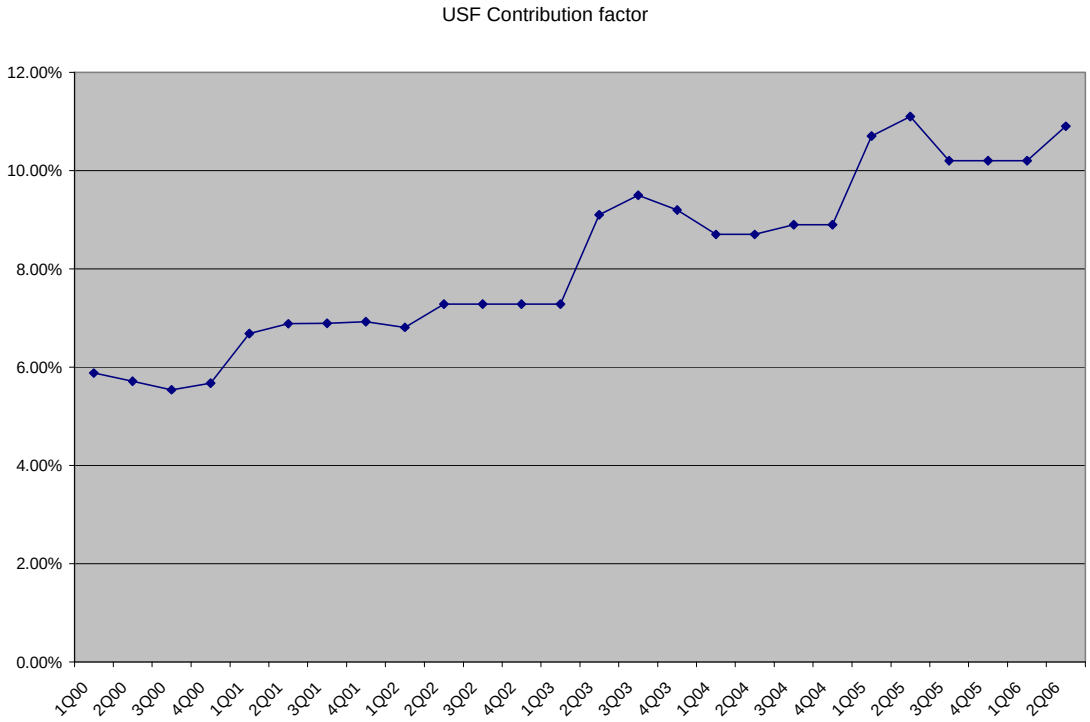
[18] In addition, M2Z's proposal would not add to the USAC administrative burden in collecting and disseminating universal service funds.

The current debate about broadband is part of a larger debate about how to fund universal service. As Figure 5 shows, the contribution factor for interstate services has been growing for the past six years. Part of this is due to the increasing size of the USF and part due to the declining base of interstate revenues.

Figure 5



Source: FCC releases, http://www.fcc.gov/wcb/universal_service/quarter.html.

Many people think that the current universal service funding mechanism is unsustainable because new services like Skype and others promise to reduce the interstate revenue base. As a result, the system may ultimately be forced to use a connection charge, a number fee or some hybrid rather than the current set of charges. Any proposal is likely to face opposition. Changes to the program, however, will be easier to make the lower any new charges are and the better future growth is expected to be controlled.

Ensuring that the universal service charges are lower than they otherwise would be would reduce deadweight loss and thereby improve consumer welfare in a number of ways.[19] Some economists have argued that the current universal service support system causes inefficient market distortions.[20] By distorting consumer behavior, universal service charges create economic losses beyond the amount of money the charges raise. In an economic sense, the universal service charges and payments themselves are simply transfers from one party to another and are not, therefore, economic costs. The effort of raising the funds, however, is costly to the economy. Most of this cost is a result of consumers changing their behavior in response to the charges. Any taxation is costly for this reason. Ballard, *et al*. (1985) estimated that the cost of raising one dollar for the general treasury costs the economy an additional 37 cents. But that amount is small compared to the cost of the current system of raising funds for universal service. Hausman (1998) estimates the cost of universal service charges to be an additional $1.25 per dollar raised, more than three times as large as the general taxation costs calculated in Ballard's work. These costs come from the distortions caused by the existence of the surcharge. By providing a service that does not require such funds, the M2Z service could yield substantial improvements in overall welfare by ultimately allowing universal service charges and their accompanying distortions to be reduced.

With several simplifying assumptions we can calculate a range of savings to the universal service system from M2Z's proposal. First, M2Z could mitigate the pressure

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[19] Deadweight loss in this case refers to the lost surplus from artificially high prices that cause a lower quantity to be sold. In this case, universal service surcharges increase the prices for services that support universal service and consequently reduce the demand for these services, resulting in deadweight loss.

[20] See, for example, Hausman (1998).

for a new broadband universal service fund or an increase in the existing program to include broadband. By its very existence it could demonstrate that such a fund is unnecessary to bring broadband to high-cost and low-income areas. If we assume that the new universal service funds would be $500 million[21] per year without any changes, eliminating 80% of this would save $400 million per year or a net present value of $5 to $7 billion over 25 years.

Additional savings will result because M2Z can be expected to restrain the growth of current USF funding. Specifically, we assume that in the absence of a mechanism to restrain the growth of high cost funding, traditional high cost funding would grow from its current $4.2 billion at 4 percent per year (compared to the current 10 percent annual growth rate). With M2Z, one might assume that the fund would continue to grow, but at a slightly lower rate because M2Z will be competing for high cost customers, but not receiving any money from the high cost fund.

M2Z plans to build its system to offer service to one-third of the population within three years of licensing, two-thirds within five years, and 95 percent within ten years. Assuming this buildout schedule, we estimate a range of potential savings to the USF. For both our "high" and "low" savings estimates, we assume that the universal service fund continues to grow, but at slower rates as M2Z builds out its infrastructure.

For our "high" savings calculation we assume that the high-cost fund growth slows to two percent per year by the time M2Z reaches its target of 95 percent coverage instead of four percent without M2Z. Because in the first year following licensing just

[21] See, for example, "Senate Bill Expands USF Subsidy To 'Broadband'," TelecomWeb Newsbreak, August 2, 2005, citing the $500 million per year in S.1583, "Universal Service for the 21st Century Act."

over ten percent of the population could be expected to have coverage, the savings would amount to only around $9 million. The annual savings in year five, however, will have grown to $110 million, and by full buildout at year ten the annual savings would be more than $500 million, all in nominal dollars and compared to an assumed alternative growth rate of four percent without M2Z. For our "low" savings scenario, we assume that with M2Z the fund's growth would slow to three percent per year as M2Z reaches full buildout. In this case, the universal service fund would save about $5 million in the first year, and the savings would grow in nominal terms to $55 million in year five and more than $260 million in year ten.

Consistent with general OMB guidelines for cost-benefit analyses,[22] we estimate the net present value of the savings using two discount rates: three percent (for the "high" savings estimate) and seven percent (for the "low" savings estimate) and look at the difference over 25 years. These calculations suggest that the net present value of savings just in terms of a slower rate of increase in the high cost fund could range from around $4 billion to $13 billion over 25 years.

In addition to these savings, there also may be substantial savings and service improvements for low-income consumers, schools and libraries, and rural healthcare providers.[23] However, this report does not quantify those savings. Over the next 25 years, the government could save a substantial amount of money from reduced increases

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[22] *See*, for example, Hahn (2005).

[23] The schools and libraries program is intended to provide telecommunications services and connect schools and libraries to the Internet. Schools and libraries may also be able to use M2Z's system for high-speed Internet access. While the rural health care expenditures are a relatively small part of the universal service system, M2Z may provide some additional benefits here, as well, especially with the ability to provide wireless connections and portable high speed access for rural health care workers. For all of these Universal Service programs, the M2Z system may provide a mechanism to reduce future cost increases.

in the Universal Service Fund. On top of the direct savings, the economic benefits derived from reducing artificial distortions could be very large.

Table 1
Possible USF Savings over 25 years (Net Present Value)

Program	($billions) LOW 3% growth in USF, 7% discount rate	HIGH 2% growth in USF, 3% discount rate
Reduction in USF growth	$3.7	$13.5
Reduction in broadband USF payments	$4.7	$7.0
Total Savings	$8.4	$20.5

There are costs to achieving these reductions in universal service expenditures. The largest is the opportunity cost of the spectrum – it might be used for other purposes that would create higher value to consumers. We have long advocated strongly for auctions and spectrum flexibility and continue to believe that to be the best policy for spectrum use.[24]

C. The goal is maximizing the public interest

The FCC is charged with at least three public interest considerations: promoting the rapid deployment of communication services for the benefit of the public; making communication services affordable and widely available through universal service

[24] Auctions and a reliance on flexibly defined and freely tradable licenses are generally the best way to allocate spectrum. However, under certain circumstances, auctions and flexible use can result in a divergence between private and social value when firms make entry decisions. *See* Hundt and Rosston (1995) "Spectrum Flexibility will Promote Competition and the Public Interest," *IEEE Communications Magazine*, December, 1995 pp 2-5.

programs; and assigning the spectrum resource in as efficient a manner as possible. Occasionally, these policy considerations converge, but in some cases, they do not and the Commission has to choose among the competing considerations. As we discuss below, achieving the best policy outcome requires the FCC to weigh the cost and benefits of its actions with respect to potentially conflicting policy goals.

For example, the current system for universal service is expensive and costly and may become substantially more costly if Congress uses the universal service system to support broadband services. The government has several options to achieve its universal service goals. For example, it can continue to pay for universal services in the traditional way by directly subsidizing companies and consumers; it can attempt to revamp the system in some way to reduce the increase in costs, possibly by restricting the ability of some firms to get support, to limit the number of supported lines, or by some other mechanism; or it might use the spectrum resource to achieve its universal service objective.[25]

M2Z's proposal, the high and increasing costs in the current universal service system, and the limited prospects for large scale reform suggest that the FCC may wish to weigh the tradeoff of spectrum for universal service savings. As discussed above, the FCC would have to weigh the costs and benefits of this proposal. The benefits include quickly moving spectrum into the market, providing additional broadband competition for 95 percent of the population, and potentially reducing the growth in universal service spending as well as demonstrating the lack of need for a new broadband universal service

[25] Another possible way to achieve some of the same benefits would be to auction the spectrum with a series of mandates and commitments including that the licensee provide a high-speed free service to 95% of the population without getting any universal service funding.

program. The primary cost includes the opportunity cost of the spectrum not being used for some other purpose—the cost of not auctioning it. One part of the necessary calculation would be to estimate the likely net proceeds from an auction of 20 MHz of unpaired spectrum.[26] Auction 58 raised about $2 billion in revenue or slightly under $1 per MHz-pop for paired spectrum in the PCS band where technology was already available.[27] Ignoring the potential discounts for unpaired spectrum and a new spectrum band with limited operational and manufacturing scale and any potential premium for a nationwide license, simply applying this gross value to 20 MHz of unpaired spectrum would yield about $5 billion in revenue before the tax deduction offset.[28]

Comparing the gross benefit of revenues from a spectrum auction to the universal service cost savings provides a way to evaluate the tradeoff from awarding the spectrum for M2Z service. With the assumptions made in this paper, the $8.4-$20 billion savings in universal service expenditures would outweigh the $5 billion (less taxes) in auction revenues.

There may be other ways to curtail universal service spending, as well. Chairman Martin recently discussed the option of "universal service auctions" as a means to restrain spending for universal service.[29] Such auctions are one of the many innovative ways to solve the problem of providing universal service efficiently, in addition to using the

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[26] For any auction, the net proceeds to the government are substantially less than the face value of the net bid since companies can be expected to deduct the license costs from their taxable income.

[27] http://wireless.fcc.gov/auctions/default.htm?job=auction_summary&id=58

[28] In the FCC's auction for the 1670-1675 MHz band, a nationwide unpaired 5 MHz block of spectrum sold for $12.6 million in 2003 (http://wireless.fcc.gov/auctions/default.htm?job=auction_factsheet&id=46). Based on that price for spectrum, a 20 MHz unpaired block would sell for about $50 million.

[29] *See* "Martin Likes 'Reverse Auction' Idea for Universal Service" Communications Daily, March 30, 2006.

spectrum resource to that end. For example, instead of completely relying on positive bids for spectrum, the universal service auction principle could be applied and have carriers bid low prices to provide service to customers possibly along with a bid for the spectrum.[30] Such an approach has been used elsewhere, but with mixed results. Chile and Peru were among the first countries to implement such an auction, giving licenses to telecom operators that agreed to serve areas for the smallest subsidy.[31] In Chile, the average winning subsidy from 1995 to 1999 was about half the maximum subsidy the government was prepared to give, while in Peru the subsidy was only about one-quarter as high as expected.[32] India has had somewhat less success with such universal service auctions, with most of the subsidies going to the incumbent for the maximum amount the government was prepared to pay.[33]

The FCC potentially has different options on how to ensure and pay for universal service and how to assign spectrum efficiently into the marketplace. The current method for funding universal service is extremely costly to the economy, as is the delay in getting spectrum into the market.[34] Ultimately, we believe that the Commission should determine which of the available options in front of it best serves "the public interest, necessity and convenience."

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[30] Demsetz (1968) and Williamson (1976) discuss the idea of bidding for a franchise. There are many theoretical ways of designing auctions to generate particular outcomes. They include the concept of reverse universal service subsidy auctions (discussed above), and the concept of auctions limited to those entities that can meet certain threshold qualifications and/or make certain public interest commitments.

[31] Cannock (2001).

[32] Intven (2000).

[33] Noll and Wallsten (2006). In addition, an incumbent service provider may bid for spectrum to prevent competitors from using it.

[34] Hausman (1997), Jackson *et al* (1991) and Rosston (2003) discuss the large losses from the delay in getting spectrum into the marketplace.

V. Conclusion

M2Z proposes an ambitious plan to provide free broadband services. Estimates of the total incremental benefits of more ubiquitous broadband could be quite large – on the order of hundreds of billions of dollars. The M2Z proposal provides a way to accelerate those benefits and lead to their widespread realization.

Should the government accept M2Z's proposal, it would be using spectrum as a way to secure important productivity benefits for the American economy while also saving consumers money. The government can achieve these goals by aligning the nation's spectrum resources with private sector entrepreneurial capital to provide universal broadband service and potentially eliminating the need for additional assessments and subsidies.

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DECLARATION

I, Gregory L. Rosston, declare under penalty of perjury that to the best of my knowledge the foregoing is true and correct.

Executed on: 4/28/06

Gregory L. Rosston

DECLARATION

I, Scott Wallsten, declare under penalty of perjury that to the best of my knowledge the foregoing is true and correct.

Executed on: May 1, 2006

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