Before the
Federal Communications Commission
Washington DC 20554

In the Matter of	)	
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Amendment of Parts 2 and 101 of the	)	No. _____
Commission's Rules to Provide for Federal	)	
and Non-Federal Sharing in the 7125-8500	)	
MHz Band	)	

PETITION FOR RULEMAKING OF THE
FIXED WIRELESS COMMUNICATIONS COALITION

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PETITION FOR RULEMAKING OF THE
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The Fixed Wireless Communications Coalition ("FWCC") submits this Petition for Rulemaking pursuant to Section 1.401 of the Commission's Rules.[1]

A. BACKGROUND

The Commission has announced multiple efforts to find additional spectrum for mobile broadband services,[2] including those in the National Broadband Plan released today.[3]

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[1] 47 C.F.R. § 1.401. The FWCC is a coalition of companies, associations, and individuals interested in the fixed service – *i.e.*, in terrestrial fixed microwave communications. Our membership includes manufacturers of microwave equipment, licensees of terrestrial fixed microwave systems and their associations, and communications service providers and their associations. The membership also includes railroads, public utilities, petroleum and pipeline entities, public safety agencies, cable TV and private cable providers, backhaul providers, and/or their respective associations, communications carriers, and telecommunications attorneys and engineers. Our members build, install, and use both licensed and unlicensed point-to-point, point-to-multipoint, and other fixed wireless systems, in frequency bands from 900 MHz to 95 GHz. For more information, see www.fwcc.us.

[2] *E.g.*, Julius Genachowski, "Mobile Broadband: A 21st Century Plan for U.S. Competitiveness, Innovation and Job Creation," Prepared Remarks at The New America Foundation, Washington, D.C. (Feb. 24, 2010), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296490A1.pdf (announcing the Commission's intention to free up 500 MHz of spectrum over the next ten years for mobile broadband); *Data Sought on Uses of Spectrum*, GN Dockets 09-47, 09-51, 09-137, NBP Public Notice #26, DA 09-2518 (released Dec. 2, 2009), National Broadband Plan Task Force, *Broadband Gaps*, Presentation, slides 14, 16 (Nov. 18, 2009), *available at*

These measures, if successful, will add to past developments that contributed to the present explosion of broadband-enabled portable devices.[4]

The Commission recognizes that growth in mobile applications will inevitably add to the demand for "backhaul"[5] – the carriage of data between central network facilities and transmission towers. Every byte of data that goes over the air to a mobile user must first be transported from the network to the tower; likewise, every byte received from a user must be carried from the tower back to the network. Commercial networks and private and public safety networks will all see increasing demand for backhaul to accommodate the growing implementation of wireless broadband.

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http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-294708A1.pdf; *Comment Sought on Spectrum for Broadband*, GN Dockets 09-47, 09-51, 09-137, NBP Public Notice #6, DA 09-2100 (released Sept. 23, 2009); National Broadband Plan Task Force, *September Commission Meeting*, Presentation (Sept. 29, 2009), slides 61-74, *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-293742A1.pdf.

[3] *Connecting America: The National Broadband Plan* (not dated; released March 16, 2010).

[4] *E.g.*, *Unlicensed Operation in the TV Broadcast Bands*, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd 16807 (2008); *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, Report and Order and Further Notice of Proposed Rulemaking, 22 FCC Rcd 8064 (2007); *Wireless Operations in the 3650-3700 MHz Band*, Report and Order and Memorandum Opinion and Order, 20 FCC Rcd 6502 (2005); *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*, Third Report and Order, Third Notice of Proposed Rule Making and Second Memorandum Opinion and Order, 18 FCC Rcd 2223 (2003).

[5] "An increase in mobile broadband use raises demand for other wireless services, such as point-to-point microwave backhaul and unlicensed networks, to enhance the overall delivery of broadband." *National Broadband Plan*, note 4 above, at 77; *Comment Sought on Spectrum for Broadband*: GN Docket Nos. 09-47, 09-51, 09-137, NBP Public Notice # 6, 24 FCC Rcd 12032, 12038 (2009) ("Sufficient backhaul is a key element in the wireless broadband environment.")

Eighty to ninety percent of wireless cell sites are served by legacy copper T1 lines that will not support 4G data needs.[6] Fiber is a workable alternative in some urban and suburban locations, but backhaul to many sites, particularly in rural areas, must rely on microwave links.[7] AT&T, among others, wants the Commission to set aside additional point-to-point spectrum below 10 GHz so that backhaul does not become a limiting factor for mobile broadband.[8]

Frequencies below 10 GHz are preferable because they provide for long path lengths.[9] Rain attenuation affects propagation above about 10 GHz, and has a greater effect with increasing radio frequency.[10] "While there is ample spectrum for the time being in the bands 10 GHz and higher," says Comsearch, an organization expert in microwave spectrum, "links in these bands must be designed for shorter distances" because of rain fading.[11]

The only frequencies below 10 GHz actually available to non-Federal users, the Lower and Upper 6 GHz bands, are congested in many markets.[12] Comsearch notes – and the FWCC agrees – that the only opportunities for backhaul below 10 GHz lie in the band of Federal fixed spectrum between 7125 and 8500 MHz.[13]

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6 Comments of AT&T Inc. in GN Docket Nos. 09-47, 09-51, 09-137, NBP Public Notice #6 at 33 (filed Oct. 23, 2009) (listed in ECFS as "AT and T Inc.")

7 *Id*. at 34-39; Comments of Motorola, Inc. in GN Docket Nos. 09-47, 09-51, 09-137, NBP Public Notice #6 at 19 (filed Oct. 23, 2009).

8 Comments of AT&T Inc., note 6 above, at 32.

9 *Id*. at 39.

10 Reply Comments of Comsearch in GN Docket Nos. 09-47, 09-51, 09-137, NBP Public Notice #6 at 2 (file Nov. 13, 2009).

11 *Id*.

12 *Id*.

13 *Id*.

Non-Federal access to that spectrum is urgently needed, and will require amending the Table of Allocations, among other rules. Accordingly, the FWCC asks the Commission to cooperate with the National Telecommunications and Information Administration ("NTIA") in launching a rulemaking on non-Federal use of 7125-8500 MHz fixed spectrum.

B. NEED FOR RULEMAKING

It is beyond reasonable question that (1) the escalating growth in mobile broadband services will create a commensurate increase in demand for wireless backhaul, and (2) current allocations below 10 GHz cannot support that demand.

The only Fixed Service allocations below 10 GHz, and so not subject to rain fade, are the 2, 4, and 6 GHz bands. The Commission has reallocated the 2 GHz band to other uses. The Commission effectively eliminated new service in the 4 GHz band by granting interference protection to vast numbers of receive-only satellite dishes in the band.[14] The requirement to avoid harmful interference into those dishes makes it impossible to coordinate new links across much of the country. Similarly, the Lower 6 GHz band (5925-6425 MHz) is shared with fixed satellite earth station uplinks.[15] Because the Commission routinely licenses each such earth station for the entire frequency band and across the entire satellite arc, even if the earth station accesses far less satellite capacity,[16] the band is largely unavailable to the Fixed Service in and near major population centers, where the need for backhaul and other fixed service

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14 *See* 47 C.F.R. § 25.131(b).

15 47 C.F.R. § 25.202(a)(1).

16 *See Communications Satellite Corp.*, 8 F.C.C.2d 1001, 1003 (1967) (consistent practice in the United States to "coordinate[] the entire bands 5925-6425 MHz (transmit) and 3700-4200 MHz (receive) and all azimuths from 0º-360º and all elevation angles from 5º and above, in order to allow for flexibility of operation.") Although in 1967 this opinion found "little or no adverse affect upon terrestrial systems in the areas concerned," *id.*, that is no longer true today.

communications is greatest.[17] This leaves only the relatively small Upper 6 GHz band (6525-6875 MHz), which is inadequate by far to meet the expected need for broadband backhaul.[18]

A glance at the Table of Allocations confirms that the only feasible source of relief below 10 GHz lies in sharing with Federal users at 7125-8500 MHz.[19] The FWCC accordingly asks for the rule changes described below.

C. SPECIFICS OF REQUESTED RULE CHANGE

The FWCC petitions the Commission, in consultation with NTIA, to amend its rules as follows:

- ***Section 2.106 (Table of Allocations)***:

  For each sub-band in the range 7125-8500 MHz, insert "FIXED" in the column headed "Non-Federal Table."

  (Alternatively, as to any sub-band in which the Commission and NTIA determine that non-Federal use must be secondary to Federal use, to insert "Fixed" in that column.)

  Over the range 7125-8500 MHz, insert "Fixed Microwave (101)" in the column headed "FCC Rule Part(s)."

- ***Section 101.31(b)***: Insert 7125-8500 MHz as eligible for conditional authorization.[20]

- ***Section 101.101***: Insert a line in the table as follows:

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[17] In 2002, the Commission turned down a request from the FWCC to change the practice of routine full-band, full-arc licensing. *FWCC Request for Declaratory Ruling on Partial-Band Licensing of Earth Stations in the Fixed-Satellite Service*, 17 FCC Rcd 2002 (2002).

[18] The Commission is presently considering wider radio-frequency bandwidths in the Upper 6 GHz band than are presently allowed. *Thirty Megahertz Channels in the 6525-6875 MHz Band*, 24 FCC Rcd 9620, Notice of Proposed Rulemaking and Order (2009).

[19] *See* 47 C.F.R. § 2.106.

[20] Under conditional licensing, an applicant may begin operating a link as soon as the license application is filed, if the link has been frequency coordinated and certain other conditions are met. 47 C.F.R. § 101.31(b)(1). The applicant agrees to cease operation immediately if the application is dismissed or denied. 47 C.F.R.§§ 101.31(b)(2), (3).

Frequency band (MHz)	Radio service				
	Common carrier (Part 101)	Private radio (Part 101)	Broadcast auxiliary (Part 74)	Other (Parts 15, 21, 22, 24, 25, 74, 78 & 100)	Notes
7125-8500	CC	OFS	(blank)	(blank)	(blank)

- ***Section 101.147***: Insert pairings and channel assignments for bandwidths of 2.5 MHz, 5 MHz, 10 MHz, 20 MHz, and 30 MHz over the range 7125-8500 MHz.

The FWCC also asks the Commission and NTIA to explore the feasibility of automating frequency coordination between Federal and non-Federal uses. We are confident that Federal/ non-Federal sharing is feasible in the 7125-8500 MHz band because it has been a success in the 21.2-23.6 GHz ("23 GHz band") for many years. The only problem with the 23 GHz arrangement, from our standpoint, is the weeks-long delay in operation due to ineligibility for conditional licensing in much of the band.[21] If a database of Federal 7125-8500 MHz usage were available, non-Federal frequency coordinators could swiftly determine whether a given link could be accommodated.

Such a database would make it feasible for the Commission to provide conditional licensing in the 7125-8500 MHz band. Fixed service facilities, including backhaul, must often be installed on short notice to meet urgent needs. Conditional licensing allows providers to meet these needs with minimum delay. Because successful frequency coordination is a precondition, conditional licensing does not present any interference risk to other users of the band.

[21] Six channel pairs are pre-approved by NTIA for conditional licensing by non-Federal users. Four pairs are presently available, 47 C.F.R. § 101.31(b)(1)(vii), and the Commission is considering adding the other two to its rules. *Thirty Megahertz Channels in the 6525-6875 MHz Band*, note 18 above. The rest of the band requires frequency coordination through NTIA before operation can begin.

D. PUBLIC INTEREST

There are two components to the public interest in this request: the benefits to be obtained, and the absence of any concomitant harm.

The benefits are clear. Sharing of this spectrum with the private sector will provide needed backhaul capacity to facilitate deployment of mobile broadband services.

Frequency Band (MHz)	Services (Other Than Fixed)		Frequency Band (MHz)	Services (Other Than Fixed)
7145-7190	SPACE RESEARCH (deep space) (Earth-to-space)		7750-7850	METEOROLOGICAL-SATELLITE (space-to-Earth)
7190-7235	SPACE RESEARCH (Earth-to-space)		7900-8025	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space)
7250-7300	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)		8025-8175	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED SATELLITE (Earth-to-space) Mobile-satellite (Earth-to-space) (no airborne transmissions)
7300-7450	FIXED-SATELLITE (space-to-Earth) Mobile-satellite (space-to-Earth)		8175-8215	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Mobile-satellite (Earth-to-space) (no airborne transmissions)
7450-7550	FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) Mobile-satellite (space-to-Earth)		8215-8400	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space) Mobile-satellite (Earth-to-space) (no airborne transmissions)
7550-7750	FIXED-SATELLITE (space-to-Earth) Mobile-satellite (space-to-Earth)			

The absence of harm follows from the lack of any realistic threat of interference to incumbent Federal services. All of the 7125-8500 MHz band has a Federal fixed allocation, mostly on a primary or co-primary basis.[22] Frequency coordination with incumbent fixed links is

[22] The fixed allocation is secondary in the 7250-7300 and 7900-8025 MHz segments, and primary or co-primary elsewhere. 47 C.F.R. § 2.106.

a straightforward process.[23] The band is additionally shared with several Federal satellite services, both for uplinks and downlinks. Details are in the table above. The issues of frequency coordination between the Fixed Service and each of these services are well understood in the technical community, so that sharing can be accomplished without harmful interference.

CONCLUSION

The FWCC asks the Commission to launch a rulemaking, in collaboration with NTIA, on shared non-Federal fixed use in the 7125-8500 MHz band, particularly for wireless broadband backhaul.

Respectfully submitted,

/s/

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[23] The process as among non-Federal users is spelled out at 47 C.F.R. § 101.103(d). Similar procedures apply as between Federal and non-Federal users, except that the response described at 47 C.F.R. § 101.103(d)(2)(iv) from Federal users is abbreviated.

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