Before the
Federal Communications Commission
Washington DC 20554

In the Matter of	)	
	)	
Fixed Wireless Communications Coalition,	)	No. _____
Petition to Amend Part 101 of the	)	
Commission's Rules to Authorize 60 and	)	
80 MHz Channels in Certain Bands	)	
for Broadband Communications	)	

Petition for Rulemaking

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Petition for Rulemaking

Pursuant to Section 1.401 of the Commission's Rules, the Fixed Wireless Communications Coalition files this request to amend the rules as described below.[1]

The Commission's National Broadband Plan predicts steep growth in demand for mobile broadband capacity. Data points include a 268% compound annual growth rate in AT&T mobile data traffic (driven in part by the iPhone),[2] and a projected 44-fold increase in North American wireless network traffic between 2009 and 2014.[3]

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[1] 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] *Connecting America: The National Broadband Plan* at 76 (released March 16, 2010).

[3] *Id*.

These increases in mobile broadband use will inevitably raise demand for point-to-point microwave backhaul.[4] A shortage of backhaul capacity can inhibit speed at the handset, even if adequate last-mile spectrum is available.[5]

The National Broadband Plan discusses regulatory changes needed to improve flexibility and cost-effectiveness in deploying wireless backhaul.[6] But an important element is missing. The ongoing shift in end-user activity from voice and low-speed data (such as text and email) to high-speed data (such as video and web browsing) will add to the loads on individual backhaul links.

The Commission's Rules limit link capacity by capping channel bandwidth. The workhorse bands for long backhaul links, the Lower 6 GHz band (5925-6425 MHz) and the 11 GHz band (10.7-11.7 GHz), have maximum authorized bandwidths of 30 and 40 MHz, respectively.[7] Operators are required to carry at least 89.4 megabits/second (30 MHz channels at 11 GHz) or 134.1 Mb/s (30 MHz channels at 6 GHz and 40 MHz channels at 11 GHz).[8] Most operators do better, typically around 155 Mb/s at 6 GHz. But there is a practical maximum on a single polarization of about 180-200 Mb/s. That is generally adequate for voice and low-speed data services. The strong growth in mobile broadband, however, will soon push backhaul

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4 *Id*. at 77.

5 *Id*. at 78.

6 These include greater spatial reuse of microwave frequencies, modification of minimum throughput rules, easing restrictions on antenna size, and use of higher frequencies. *Id*. at 93-94. The FWCC has expressed its views on each of these proposals in other proceedings.

7 47 C.F.R. §§ 101.147(i), (o).

8 47 C.F.R. § 101.141(a)(3) (table).

requirements beyond those numbers, toward 360 Mb/s per channel. Achieving that capacity under the present rules would entail running separate signals on separate 30 or 40 MHz channels. That requires complex electronics to coordinate the transmissions, with the additional disadvantage of intermodulation products due to multiple RF signals sharing the same antenna. These show up as unwanted emissions in other channels.

To help meet emerging broadband backhaul needs, we ask the Commission to amend the rules to allow an operator to combine adjacent 30 and 40 MHz channels and treat them as a single 60 or 80 MHz channel, respectively. This simplifies the electronics, lowers costs, improves reliability, and eliminates intermodulation issues. We are not aware of any negative effects on any spectrum user.

Combining channels also puts into productive use the frequency space near the adjacent channel edges, where signal must otherwise be attenuated.

The following rule changes will implement the request:

> **Section 101.109(c)**: Change the table entry for 5,925 to 6,425 MHz to read "60 MHz." Retain the footnote. Change the table entry for 10,700 to 11,700 MHz to read "80 MHz." Retain the footnote.
>
> **Section 101.141(a)(3)**: Add lines to the bottom of the table as follows:

Nominal channel bandwidth (MHz)	Minimum payload capacity (Mbits/s)	Minimum traffic loading payload (as percent of payload capacity)	Typical utilization
60.0 (11 GHz)	178.8	50	N/A
60.0 (6 GHz)	268.2	50	N/A
80.0	268.2	50	N/A

> **Section 101.147(i)** (preamble): Change "30 MHz authorized bandwidth" to read: "60 MHz authorized bandwidth."

Section 101.147(i)(8): Below the table, insert: "Adjacent pairs of channels above can be combined to form 60 MHz channels, with occupied bandwidth centered in the 60 MHz channel."

Section 101.147(o) (preamble): Change "40 MHz authorized bandwidth" to read: "60 MHz authorized bandwidth."

Section 101.147(o)(6): Below the table, insert: "Adjacent pairs of channels above can be combined to form 60 MHz channels, with occupied bandwidth centered in the 60 MHz channel."

Section 101.147(o)(7): Below the table, insert: "Adjacent pairs of channels above can be combined to form 80 MHz channels, with occupied bandwidth centered in the 80 MHz channel."

As an alternative to the table inserts above, the Commission could provide an express list of authorized 60 and 80 MHz channels in Section 101.147, as it does for other bandwidths. The FWCC prefers the above formulation, however, because it allows for greater flexibility. Section 101.147 does not list overlapping channels having the same bandwidth. A 10 MHz channel (for example) at one location cannot ordinarily be offset by 5 MHz somewhere else. The above proposal, in contrast, would permit combining not only channels 1 and 2, 3 and 4, etc., but also 2 and 3, 4 and 5, etc. Particularly in heavily populated areas, where adjacent 30 and 40 MHz channels may sometimes be difficult to coordinate, the formulation here will give coordinators more options to work with.

CONCLUSION

Permitting Fixed Service operators to combine adjacent 30 and 40 MHz channels in the Lower 6 and 11 GHz bands will promote high-capacity backhaul in support of mobile broadband services, with no downside to any spectrum user.

Respectfully submitted,

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