provided the EIRP does not exceed 14 dBm per 24 megahertz. Private operational fixed point-to-point microwave stations authorized after September 9, 1983, are licensed on a non-harmful interference basis to DBS and are required to make any and all adjustments necessary to prevent harmful interference to operating domestic DBS receivers. Incumbent public safety licensees shall be afforded protection from MVDDS and NGSO FSS licensees, however all other private operational fixed licensees shall be secondary to DBS, MVDDS and NGSO FSS licensees. As of May 23, 2002, the Commission no longer accepts applications for new licenses for point-to-point private operational fixed stations in this band, however, incumbent licensees and previously filed applicants may file applications for minor modifications and amendments (as defined in § 1.929 of this chapter) thereto, renewals, transfer of control, or assignment of license. Notwithstanding any other provisions, no private operational fixed point-to-point microwave stations are permitted to cause harmful interference to broadcasting-satellite stations of other countries operating in accordance with the Region 2 plan for the Broadcasting-Satellite Service established at the 1983 WARC.

(2) *Special provisions for incumbent low power, limited coverage systems in the band segments 12.2-12.7 GHz.*

(i) As of May 23, 2002, the Commission no longer accepts applications for new stations in this service and incumbent stations may remain in service provided they do not cause harmful interference to any other primary services licensed in this band as described in paragraph (p) of this section. However, incumbent licensees and previously filed applicants may file applications for minor modifications and amendments (as defined in § 1.929 of this chapter) thereto, renewals, transfer of control, or assignment of license.

(ii) Prior to December 8, 2000, notwithstanding any contrary provisions in this part, the frequency pairs 12.220/12.460 GHz, 12.260/12.500 GHz, 12.300/12.540 GHz and 12.340/12.580 GHz, were authorized for low power, limited coverage systems subject to the following provisions:

(A) Maximum equivalent isotropically radiated power (EIRP) shall be 55 dBm;

(B) The rated transmitter output power shall not exceed 0.5 watts;

(C) Frequency tolerance shall be maintained to within 0.01 percent of the assigned frequency;

(D) Maximum beamwidth shall not exceed 4°. However, the sidelobe suppression criteria contained in § 101.115 shall not apply, except that a minimum front-to-back ratio of 38 dB shall apply;

(E) Upon showing of need, a maximum bandwidth of 12 MHz may be authorized per frequency assigned;

(F) Radio systems authorized under the provisions of this section shall have no more than three hops in tandem, except upon showing of need, but in any event the maximum tandem length shall not exceed 40 km (25 miles);

(G) Interfering signals at the receiver antenna terminals of stations authorized under this section shall not exceed -90 dBm and -70 dBm respectively, for co-channel and adjacent channel interfering signals, and

(H) Stations authorized under the provisions of this section shall provide the protection from interference specified in § 101.105 to stations operating in accordance with the provisions of this part.

(q) *12700 to 13200 MHz.* 30 MHz maximum authorized bandwidth.

(1) 1.25 MHz Bandwidth Channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
12700.625	12950.625
12701.875	12951.875
12703.125	12953.125
12704.375	12954.375
12705.625	12955.625
12706.875	12956.875
12708.125	12958.125
12709.375	12959.375
12710.625	12960.625
12711.875	12961.875
12713.125	12963.125
12714.375	12964.375
12715.625	12965.625
12716.875	12966.875
12718.125	12968.125
12719.375	12969.375
12720.625	12970.625
12721.875	12971.875
12723.125	12973.125
12724.375	12974.375
12725.625	12975.625
12726.875	12976.875
12728.125	12978.125
12729.375	12979.375
12730.625	12980.625
12731.875	12981.875
12733.125	12983.125
12734.375	12984.375
12735.625	12985.625
12736.875	12986.875
12738.125	12988.125
12739.375	12989.375
12740.625	12990.625
12741.875	12991.875
12743.125	12993.125
12744.375	12994.375
12745.625	12995.625

12746.875	12996.875
12748.125	12998.125
12749.375	12999.375
12750.625	13000.625
12751.875	13001.875
12753.125	13003.125
12754.375	13004.375
12755.625	13005.625
12756.875	13006.875
12758.125	13008.125
12759.375	13009.375
12760.625	13010.625
12761.875	13011.875
12763.125	13013.125
12764.375	13014.375
12765.625	13015.625
12766.875	13016.875
12768.125	13018.125
12769.375	13019.375
12770.625	13020.625
12771.875	13021.875
12773.125	13023.125
12774.375	13024.375
12775.625	13025.625
12776.875	13026.875
12778.125	13028.125
12779.375	13029.375
12780.625	13030.625
12781.875	13031.875
12783.125	13033.125
12784.375	13034.375
12785.625	13035.625
12786.875	13036.875
12788.125	13038.125
12789.375	13039.375
12790.625	13040.625
12791.875	13041.875
12793.125	13043.125
12794.375	13044.375
12795.625	13045.625
12796.875	13046.875
12798.125	13048.125
12799.375	13049.375
12800.625	13050.625
12801.875	13051.875
12803.125	13053.125
12804.375	13054.375
12805.625	13055.625
12806.875	13056.875
12808.125	13058.125

12809.375	13059.375
12810.625	13060.625
12811.875	13061.875
12813.125	13063.125
12814.375	13064.375
12815.625	13065.625
12816.875	13066.875
12818.125	13068.125
12819.375	13069.375
12820.625	13070.625
12821.875	13071.875
12823.125	13073.125
12824.375	13074.375
12825.625	13075.625
12826.875	13076.875
12828.125	13078.125
12829.375	13079.375
12830.625	13080.625
12831.875	13081.875
12833.125	13083.125
12834.375	13084.375
12835.625	13085.625
12836.875	13086.875
12838.125	13088.125
12839.375	13089.375
12840.625	13090.625
12841.875	13091.875
12843.125	13093.125
12844.375	13094.375
12845.625	13095.625
12846.875	13096.875
12848.125	13098.125
12849.375	13099.375
12850.625	13100.625
12851.875	13101.875
12853.125	13103.125
12854.375	13104.375
12855.625	13105.625
12856.875	13106.875
12858.125	13108.125
12859.375	13109.375
12860.625	13110.625
12861.875	13111.875
12863.125	13113.125
12864.375	13114.375
12865.625	13115.625
12866.875	13116.875
12868.125	13118.125
12869.375	13119.375
12870.625	13120.625

12871.875	13121.875
12873.125	13123.125
12874.375	13124.375
12875.625	13125.625
12876.875	13126.875
12878.125	13128.125
12879.375	13129.375
12880.625	13130.625
12881.875	13131.875
12883.125	13133.125
12884.375	13134.375
12885.625	13135.625
12886.875	13136.875
12888.125	13138.125
12889.375	13139.375
12890.625	13140.625
12891.875	13141.875
12893.125	13143.125
12894.375	13144.375
12895.625	13145.625
12896.875	13146.875
12898.125	13148.125
12899.375	13149.375
12900.625	13150.625
12901.875	13151.875
12903.125	13153.125
12904.375	13154.375
12905.625	13155.625
12906.875	13156.875
12908.125	13158.125
12909.375	13159.375
12910.625	13160.625
12911.875	13161.875
12913.125	13163.125
12914.375	13164.375
12915.625	13165.625
12916.875	13166.875
12918.125	13168.125
12919.375	13169.375
12920.625	13170.625
12921.875	13171.875
12923.125	13173.125
12924.375	13174.375
12925.625	13175.625
12926.875	13176.875
12928.125	13178.125
12929.375	13179.375
12930.625	13180.625
12931.875	13181.875
12933.125	13183.125

12934.375	13184.375
12935.625	13185.625
12936.875	13186.875
12938.125	13188.125
12939.375	13189.375
12940.625	13190.625
12941.875	13191.875
12943.125	13193.125
12944.375	13194.375
12945.625	13195.625
12946.875	13196.875
12948.125	13198.125
12949.375	13199.375

(2) 2.5 MHz Bandwidth Channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
12701.25	12951.25
12703.75	12953.75
12706.25	12956.25
12708.75	12958.75
12711.25	12961.25
12713.75	12963.75
12716.25	12966.25
12718.75	12968.75
12721.25	12971.25
12723.75	12973.75
12726.25	12976.25
12728.75	12978.75
12731.25	12981.25
12733.75	12983.75
12736.25	12986.25
12738.75	12988.75
12741.25	12991.25
12743.75	12993.75
12746.25	12996.25
12748.75	12998.75
12751.25	13001.25
12753.75	13003.75
12756.25	13006.25
12758.75	13008.75
12761.25	13011.25
12763.75	13013.75
12766.25	13016.25
12768.75	13018.75
12771.25	13021.25

12773.75	13023.75
12776.25	13026.25
12778.75	13028.75
12781.25	13031.25
12783.75	13033.75
12786.25	13036.25
12788.75	13038.75
12791.25	13041.25
12793.75	13043.75
12796.25	13046.25
12798.75	13048.75
12801.25	13051.25
12803.75	13053.75
12806.25	13056.25
12808.75	13058.75
12811.25	13061.25
12813.75	13063.75
12816.25	13066.25
12818.75	13068.75
12821.25	13071.25
12823.75	13073.75
12826.25	13076.25
12828.75	13078.75
12831.25	13081.25
12833.75	13083.75
12836.25	13086.25
12838.75	13088.75
12841.25	13091.25
12843.75	13093.75
12846.25	13096.25
12848.75	13098.75
12851.25	13101.25
12853.75	13103.75
12856.25	13106.25
12858.75	13108.75
12861.25	13111.25
12863.75	13113.75
12866.25	13116.25
12868.75	13118.75
12871.25	13121.25
12873.75	13123.75
12876.25	13126.25
12878.75	13128.75
12881.25	13131.25
12883.75	13133.75
12886.25	13136.25
12888.75	13138.75
12891.25	13141.25
12893.75	13143.75
12896.25	13146.25

12898.75	13148.75
12901.25	13151.25
12903.75	13153.75
12906.25	13156.25
12908.75	13158.75
12911.25	13161.25
12913.75	13163.75
12916.25	13166.25
12918.75	13168.75
12921.25	13171.25
12923.75	13173.75
12926.25	13176.25
12928.75	13178.75
12931.25	13181.25
12933.75	13183.75
12936.25	13186.25
12938.75	13188.75
12941.25	13191.25
12943.75	13193.75
12946.25	13196.25
12948.75	13198.75

(3) 3.75 MHz Bandwidth Channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
12701.875	12951.875
12705.625	12955.625
12709.375	12959.375
12713.125	12963.125
12716.875	12966.875
12720.625	12970.625
12724.375	12974.375
12728.125	12978.125
12731.875	12981.875
12735.625	12985.625
12739.375	12989.375
12743.125	12993.125
12746.875	12996.875
12750.625	13000.625
12754.375	13004.375
12758.125	13008.125
12761.875	13011.875
12765.625	13015.625
12769.375	13019.375
12773.125	13023.125
12776.875	13026.875

12780.625	13030.625
12784.375	13034.375
12788.125	13038.125
12791.875	13041.875
12795.625	13045.625
12799.375	13049.375
12803.125	13053.125
12806.875	13056.875
12810.625	13060.625
12814.375	13064.375
12818.125	13068.125
12821.875	13071.875
12825.625	13075.625
12829.375	13079.375
12833.125	13083.125
12836.875	13086.875
12840.625	13090.625
12844.375	13094.375
12848.125	13098.125
12851.875	13101.875
12855.625	13105.625
12859.375	13109.375
12863.125	13113.125
12866.875	13116.875
12870.625	13120.625
12874.375	13124.375
12878.125	13128.125
12881.875	13131.875
12885.625	13135.625
12889.375	13139.375
12893.125	13143.125
12896.875	13146.875
12900.625	13150.625
12904.375	13154.375
12908.125	13158.125
12911.875	13161.875
12915.625	13165.625
12919.375	13169.375
12923.125	13173.125
12926.875	13176.875
12930.625	13180.625
12934.375	13184.375
12938.125	13188.125
12941.875	13191.875
12945.625	13195.625

(4) 5 MHz Bandwidth Channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
12702.5	12952.5
12707.5	12957.5
12712.5	12962.5
12717.5	12967.5
12722.5	12972.5
12727.5	12977.5
12732.5	12982.5
12737.5	12987.5
12742.5	12992.5
12747.5	12997.5
12752.5	13002.5
12757.5	13007.5
12762.5	13012.5
12767.5	13017.5
12772.5	13022.5
12777.5	13027.5
12782.5	13032.5
12787.5	13037.5
12792.5	13042.5
12797.5	13047.5
12802.5	13052.5
12807.5	13057.5
12812.5	13062.5
12817.5	13067.5
12822.5	13072.5
12827.5	13077.5
12832.5	13082.5
12837.5	13087.5
12842.5	13092.5
12847.5	13097.5
12852.5	13102.5
12857.5	13107.5
12862.5	13112.5
12867.5	13117.5
12872.5	13122.5
12877.5	13127.5
12882.5	13132.5
12887.5	13137.5
12892.5	13142.5
12897.5	13147.5
12902.5	13152.5
12907.5	13157.5
12912.5	13162.5
12917.5	13167.5
12922.5	13172.5
12927.5	13177.5

12932.5	13182.5
12937.5	13187.5
12942.5	13192.5
12947.5	13197.5

(5) 10 MHz Bandwidth Channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
12705	12955
12715	12965
12725	12975
12735	12985
12745	12995
12755	13005
12765	13015
12775	13025
12785	13035
12795	13045
12805	13055
12815	13065
12825	13075
12835	13085
12845	13095
12855	13105
12865	13115
12875	13125
12885	13135
12895	13145
12905	13155
12915	13165
12925	13175
12935	13185
12945	13195

(6) 30 MHz Bandwidth Channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
12715	12965
12745	12995
12775	13025
12805	13055
12835	13085
12865	13115

12895	13145
12925	13175

* * * * *

APPENDIX B

Initial Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Commission has prepared this present Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in this *Notice of Proposed Rulemaking (NPRM)*. Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines specified in the *NPRM* for comments. The Commission will send a copy of this *NPRM*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[2] In addition, the *NPRM* and IRFA (or summaries thereof) will be published in the Federal Register.[3]

A. Need for, and Objectives of, the Proposed Rules

In this *NPRM*, we propose four changes to our rules involving microwave stations. First, we propose allowing fixed service stations to operate in the 6875-7125 MHz and 12700-13200 MHz bands. Second, we propose to eliminate the prohibition on broadcasters using Part 101 stations as the final radiofrequency (RF) link in the chain of distribution of the program material to broadcast stations. Third, we propose to amend our minimum payload capacity rule to facilitate the use of adaptive modulation to allow licensees to maintain communications by briefly reducing the rate at which they send data. Fourth, we propose to allow Part 101 licensees to add auxiliary stations in order to allow substantially greater reuse of microwave spectrum and substantially reduce the cost of using FS spectrum for backhaul and other important purposes.

With respect to the first proposal, we anticipate that demand for fixed service spectrum will increase substantially as it is increasingly used for wireless backhaul and other important purposes. The 6875-7125 MHz and 12700-13200 MHz bands are currently assigned to television pickup, television studio-transmitter links, television relay stations, television translator relay stations, and mobile only CARS. Based upon our experience in other bands, we believe assigning this band to the fixed service would be compatible with these other services using the frequency coordination procedures in Section 101.103 of the Commission's Rules. Assigning this spectrum to the fixed service would help provide additional spectrum that could be used for wireless backhaul and other critical applications.

Second, Section 101.603(a)(7) of the Commission's Rules, commonly known as the "final link" rule, prohibits broadcasters from using Part 101 stations as the final radiofrequency (RF) link in the chain of distribution of the program material to broadcast stations. The rules ensures that private operational fixed stations are used for private, internal purposes and prevents broadcasters from causing congestion when Part 74 Broadcast Auxiliary Service (BAS) frequencies are available. In light of recent technological and regulatory developments, we believe the "final link" rule may no longer serve its intended purpose and may in fact inhibit the full use of Part 101 spectrum. As broadcasters and other microwave users move to digital-based systems, we question whether it makes sense to maintain regulatory restrictions based on the type of content that the digital data represents. Based on the record developed in waiver requests granted by the Wireless Telecommunications Bureau, it appears that there

[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996, (SBREFA) Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *See* 5 U.S.C. § 603(a).

[3] *See* 5 U.S.C. § 603(a).

are an increasing number of markets where Broadcast Auxiliary Service (BAS) spectrum is scarce. Furthermore, the rule may impose additional costs by requiring broadcasters to build two different systems: one system to carry program material to the transmitter site, and a separate system to handle other data. In light of the extensive sharing between BAS and FS of the same bands, we believe it is appropriate to provide broadcasters with additional flexibility to use the FS bands. We therefore propose to eliminate this rule.

Our third proposal is to amend out Part 101 technical rules to facilitate the use of adaptive modulation. Section 101.141(a)(3) of the Commission's Rules establishes minimum payload capacities (in terms of megabits per second) for various channel sizes in certain Part 101 bands. The underlying purpose of the rule is to promote efficient frequency use. Although the Commission has never quantified the time period over which licensees must comply with those standards, the industry has generally construed the payload requirements as applying whenever the link is in service. Fixed service links, especially long links, are subject to atmospheric fading: a temporary drop in received power caused by changes in propagation conditions. Fading leads to an increase in bit errors, and sometimes to a complete loss of communications. One way to combat fading is by briefly reducing the data rate, which requires a temporary change in the type of modulation, a process called "adaptive modulation." The use of adaptive modulation may reduce the minimum payload capacity below the value specified in the rule for a short time, although this still represents an increase over the otherwise zero level during the fade. Adaptive modulation has public interest benefits of allowing communications to be maintained during adverse propagation conditions. Given the critical backhaul and public safety applications of fixed service stations, we find this benefit to be significant. By allowing this level of flexibility in our efficiency standards we hope to provide carriers with a way to lower their costs yet still use the spectrum efficiently. We therefore propose to amend our rules to state that the minimum payload capacity requirements must be complied with at all times, except during anomalous propagation conditions, when lower capacities may be utilized in order to maintain communications. That approach would allow licensees to take advantage of the benefits of adaptive modulation while ensuring efficient use of the spectrum.

Finally, we seek comment on allowing substantially greater reuse of microwave spectrum and substantially reduce the cost of using fixed spectrum for backhaul and other important purposes by allowing licensees to place auxiliary antennas that the licensee of each primary FS link be allowed to deploy as many auxiliary stations as it wishes under the following conditions:

- Each auxiliary station must operate on the same frequencies as the main licensed link.
- Auxiliary stations must not cause any incremental interference to other primary links, i.e., they must not cause any more interference to them than the main link would cause. This result can, possibly, be achieved by alternating transmissions between the primary station and the auxiliary stations on a time-division multiplexed basis or by any other method that achieves the required result.
- Auxiliary stations will be secondary in status and have no right to claim protection from interference from any primary stations, including stations in other services, such as BAS, CARS, and satellite stations, other than interference that violates the protection rights of the main link. Otherwise, auxiliary stations will have a right to claim protection only from later-deployed auxiliary stations.
- Auxiliary stations would have to be coordinated in advance with other licensees and applicants pursuant to the frequency coordination process specified in Section 101.103 of the Commission's Rules.

- After coordination, the licensee of the main link would file applications to make major modifications to the main link license to add auxiliary stations. In those bands where conditional authority is available, applicants could operate their auxiliary stations as soon as they complete the frequency coordination process and file their application with the Commission, subject to the usual conditions and exceptions to conditional authority.[4] Alternatively, we seek comment on whether, consistent with the procedures set out in Section 101.31 of our Rules for temporary fixed links, we could allow main link licensees to file blanket applications to operate temporary auxiliary stations at multiple locations within specified geographic areas surrounding the associated main links.

- Until we gain further experience with system operation under these new rules, we further propose to require that auxiliary stations be restricted from communicating directly with each other, i.e., that they be allowed to communicate directly only with the primary link's transmitter or receiver. We propose this restriction because it would reduce the chance of interference.

- Auxiliary stations would not be subject to the antenna standards or minimum path length requirements that apply to main links.[5] Eliminating the beamwidth requirement will enable licensees to use smaller, less expensive antennas that put less of a load on support structures and thereby reduce the cost of those structures. The main link, however, would still have to comply with those requirements.

- Main links would remain subject to existing loading and path length requirements, but auxiliary stations would be exempt from the loading and path length requirements.[6] Alternatively, in determining compliance with the loading requirements, licensees would be allowed to aggregate loading on the main link and auxiliary stations. We seek comment on both alternatives. Parties supporting the second alternative should explain how to avoid double counting traffic between a main link and an auxiliary link that also traverses the main link.

- Like primary stations, auxiliary stations would be required to obtain the necessary approvals for FAA tower clearance and to comply with environmental requirements covering non-ionizing radiation hazards, zoning, the National Environmental Act of 1969 and the National Historical Act of 1966, as applicable.[7]

B. Legal Basis

The proposed action is authorized pursuant to sections 1, 2, 4(i), 7, 10, 201, 214, 301, 302, 303, 307, 308, 309, 310, 319, 324, 332 and 333 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 157, 160, 201, 214, 301, 302, 303, 307, 308, 309, 310, 319, 324, 332, and 333.

[4] *See* 47 C.F.R. § 101.31(b).

[5] *See* 47 C.F.R. §§ 101.115, 101.143.

[6] *See* 47 C.F.R. §§ 101.141(a)(3), 101.143.

[7] *See* 47 C.F.R. Part 1, Subpart I, and Part 17.

C. Description and Estimate of the Number of Small Entities To Which the Proposed Rules Will Apply

The RFA directs agencies to provide a description of, and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules and policies, if adopted.[8] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[9] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[10] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[11]

Our proposed action, if implemented, may, over time, affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three comprehensive, statutory small entity size standards.[12] First, nationwide, there are a total of approximately 27.2 million small businesses, according to the SBA.[13] In addition, a "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[14] Nationwide, as of 2002, there were approximately 1.6 million small organizations.[15] Finally, the term "small governmental jurisdiction" is defined generally as "governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[16] Census Bureau data for 2002 indicate that there were 87,525 local governmental jurisdictions in the United States.[17] We estimate that, of this total, 84,377 entities were "small governmental jurisdictions."[18] Thus, we estimate that most governmental jurisdictions are small.

Wireless Telecommunications Carriers (except satellite). Microwave services include common carrier,[19] private-operational fixed,[20] and broadcast auxiliary radio services.[21] At present, there are

[8] 5 U.S.C. § 603(b)(3).

[9] 5 U.S.C. § 601(6).

[10] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[11] 15 U.S.C. § 632.

[12] *See* 5 U.S.C. §§ 601(3)–(6).

[13] *See* SBA, Office of Advocacy, "Frequently Asked Questions," http://web.sba.gov/faqs (last visited Oct. 21, 2009).

[14] 5 U.S.C. § 601(4).

[15] INDEPENDENT SECTOR, THE NEW NONPROFIT ALMANAC & DESK REFERENCE (2002).

[16] 5 U.S.C. § 601(5).

[17] U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2006, Section 8, page 272, tbl. 415.

[18] We assume that the villages, school districts, and special districts are small, and total 48,558. *See* U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2006, section 8, page 273, tbl. 417. For 2002, Census Bureau data indicate that the total number of county, municipal, and township governments nationwide was 38,967, of which 35,819 were small. *Id.*

[19] 47 C.F.R. Part 101 *et seq.* (formerly, part 21 of the Commission's Rules) for common carrier fixed microwave services (except MDS).

approximately 31,428 common carrier fixed licensees and 79,732 private and public safety operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services. The Commission has not yet defined a small business with respect to microwave services. For purposes of the IRFA, we will use the SBA definition that applies to Wireless Telecommunications Carriers (except satellite) – *i.e.*, an entity with no more than 1,500 persons.[22] Since 2007, the Census Bureau has placed wireless firms within this new, broad, economic census category.[23] Prior to that time, such firms were within the now-superseded categories of "Paging" and "Cellular and Other Wireless Telecommunications."[24] Under the present and prior category definitions, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.[25] For the category of Wireless Telecommunications Carriers (except Satellite), preliminary data for 2007, *i.e.*, data based on the superseded SBA classification, show that there were 11,927 firms operating that year.[26] While the Census Bureau has not released data on such establishments broken down by number of employees, we note that the Census Bureau lists total employment for all firms in that sector at 281,262.[27] Since all firms with fewer than 1,500 employees are considered small, given the total employment in the sector, we estimate that the vast majority of wireless firms are small. We estimate that virtually all of the Fixed Microwave licensees (excluding broadcast auxiliary licensees) would qualify as small entities under the SBA definition.

Radio Broadcasting. A radio broadcasting station is an establishment primarily engaged in broadcasting aural programs by radio to the public.[28] Included in this industry are commercial, religious, educational, and other radio stations.[29] Radio broadcasting stations which primarily are engaged in radio

(...continued from previous page)

[20] Persons eligible under Parts 80 and 90 of the Commission's rules can use Private-Operational Fixed Microwave services. *See* 47 C.F.R. Parts 80 and 90. Stations in this service are called operational-fixed to distinguish them from common carrier and public fixed stations. Only the licensee may use the operational-fixed station, and only for communications related to the licensee's commercial, industrial, or safety operations.

[21] Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission's Rules. *See* 47 C.F.R. Part 74 *et seq.* Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

[22] 13 C.F.R. § 121.201, NAICS code 517210.

[23] U.S. Census Bureau, 2007 NAICS Definitions, "517210 Wireless Telecommunications Categories (Except Satellite)"; http://www.census.gov/naics/2007/def/ND517210.HTM#N517210.

[24] U.S. Census Bureau, 2002 NAICS Definitions, "517211 Paging"; http://www.census.gov/epcd/naics02/def/NDEF517.HTM.; U.S. Census Bureau, 2002 NAICS Definitions, "517212 Cellular and Other Wireless Telecommunications"; http://www.census.gov/epcd/naics02/def/NDEF517.HTM.

[25] 13 C.F.R. § 121.201, NAICS code 517210 (2007 NAICS). The now-superseded, pre-2007 C.F.R. citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

[26] U.S. Census Bureau, 2007 Economic Census, Sector 51, EC0751I1 Information: Industry Series: Preliminary Summary Statistics for the United States: 2007, NAICS code 517210 (issued Oct. 20, 2009); http://factfinder.census.gov/servlet/IBQTable?-fds_name=EC0700A1&-_clearIBQ=Y&-ds_name=EC0751I1&-NAICS2007=51721.

[27] *Id.*

[28] U.S. Census Bureau, 2007 NAICS Definitions, "515112 Radio Stations"; http://www.census.gov/naics/2007/def/ND515112.HTM#N515112.

[29] *Id.*

broadcasting and which produce radio program materials are similarly included.[30] However, radio stations that are separate establishments and are primarily engaged in producing radio program material are classified under another NAICS number.[31] The SBA has established a small business size standard for this category, which is: firms having $7 million or less in annual receipts.[32] According to BIA Advisory Services, L.L.C., MEDIA Access Pro Database on March 17, 2009, 10,884 (95%) of 11,404 commercial radio stations have revenue of $6 million or less. Therefore, the majority of such entities are small entities. We note, however, that many radio stations are affiliated with much larger corporations having much higher revenue. Our estimate, therefore, likely overstates the number of small entities that might be affected by any ultimate changes to the rules and forms.

Television Broadcasting. The SBA defines a television broadcasting station as a small business if such station has no more than $14.0 million in annual receipts.[33] Business concerns included in this industry are those "primarily engaged in broadcasting images together with sound."[34] The Commission has estimated the number of licensed commercial television stations to be 1,392.[35] According to Commission staff review of the BIA/Kelsey, MAPro Television Database ("BIA") as of April 7, 2010, about 1,015 of an estimated 1,380 commercial television stations[36] (or about 74 percent) have revenues of $14 million or less and, thus, qualify as small entities under the SBA definition. The Commission has estimated the number of licensed noncommercial educational (NCE) television stations to be 390.[37] We note, however, that, in assessing whether a business concern qualifies as small under the above definition, business (control) affiliations[38] must be included. Our estimate, therefore, likely overstates the number of small entities that might be affected by our action, because the revenue figure on which it is based does not include or aggregate revenues from affiliated companies. The Commission does not compile and otherwise does not have access to information on the revenue of NCE stations that would permit it to determine how many such stations would qualify as small entities.

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[30] *Id.*

[31] U.S. Census Bureau, 2007 NAICS Definitions, "515111 Radio Networks"; http://www.census.gov/naics/2007/def/ND515111.HTM#N515111.

[32] 13 C.F.R. § 121.201, NAICS code 515112.

[33] *See* 13 C.F.R. § 121.201, NAICS Code 515120 (2007).

[34] *Id.* This category description continues, "These establishments operate television broadcasting studios and facilities for the programming and transmission of programs to the public. These establishments also produce or transmit visual programming to affiliated broadcast television stations, which in turn broadcast the programs to the public on a predetermined schedule. Programming may originate in their own studios, from an affiliated network, or from external sources." Separate census categories pertain to businesses primarily engaged in producing programming. *See* Motion Picture and Video Production, NAICS code 512110; Motion Picture and Video Distribution, NAICS Code 512120; Teleproduction and Other Post-Production Services, NAICS Code 512191; and Other Motion Picture and Video Industries, NAICS Code 512199.

[35] *See* News Release, "Broadcast Station Totals as of December 31, 2009," 2010 WL 676084 (F.C.C.) (dated Feb. 26, 2010) ("*Broadcast Station Totals*"); also available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296538A1.pdf.

[36] We recognize that this total differs slightly from that contained in *Broadcast Station Totals*, *supra*, note 33; however, we are using BIA's estimate for purposes of this revenue comparison.

[37] *See Broadcast Station Totals*, *supra*, note 33.

[38] "[Business concerns] are affiliates of each other when one concern controls or has the power to control the other or a third party or parties controls or has to power to control both." 13 C.F.R. § 121.103(a)(1).

In addition, an element of the definition of "small business" is that the entity not be dominant in its field of operation. We are unable at this time to define or quantify the criteria that would establish whether a specific television station is dominant in its field of operation. Accordingly, the estimate of small businesses to which rules may apply do not exclude any television station from the definition of a small business on this basis and are therefore over-inclusive to that extent. Also, as noted, an additional element of the definition of "small business" is that the entity must be independently owned and operated. We note that it is difficult at times to assess these criteria in the context of media entities and our estimates of small businesses to which they apply may be over-inclusive to this extent.

D. Description of Projected Reporting, Recordkeeping, and other Compliance Requirements

This *Notice of Proposed Rulemaking* imposes no new reporting or recordkeeping requirements.

E. Steps taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

As noted above, this *NPRM* proposes rules to (1) allow fixed service stations to operate in the 6875-7125 MHz band, (2) eliminate the prohibition on broadcasters using Part 101 stations as the final radiofrequency (RF) link in the chain of distribution of the program material to broadcast stations, (3) amend our minimum payload capacity rule to facilitate the use of adaptive modulation to allow licensees to maintain communications by briefly reducing the rate at which they send data, and (4) allow Part 101 licensees to add auxiliary stations. These actions would provide additional options to all licensees, including small entity licensees. Such action will serve the public interest by making additional spectrum available for fixed service users, providing additional flexibility for broadcasters to use microwave spectrum, allowing communications to be maintained during adverse propagation conditions, facilitating the efficient use of the 6 GHz and 23 GHz bands. The rules could therefore open up economic opportunities to a variety of spectrum users, including small businesses.

Generally, the alternative approach would be to maintain the existing rules. If the rules were not changed, the 6875-7125 MHz and 12700-13200 MHz bands would remain unavailable for fixed service use. Given the increasing demand for Part 101 spectrum for backhaul and other uses, not making that spectrum available may make it increasingly difficult to meet demand for microwave facilities. If the prohibition on broadcasters using Part 101 stations as the final radiofrequency (RF) link in the chain of distribution of the program material to broadcast stations is not eliminated, broadcasters will be limited to using Broadcast Auxiliary Service spectrum for that purpose, and may have to build two separate microwave systems using different frequencies, such an alternative would be inadequate to meet the demands of licensees and therefore less than ideal. If no BAS spectrum is available, broadcasters will have to pay to prepare a request for waiver to access Part 101 spectrum and await action on that waiver request before they can begin operation. Such expense and delay may be particularly harmful to small businesses.

With respect to our proposal to amend our minimum capacity payload rule to facilitate adaptive modulation, if our rules are not amended to facilitate the use of adaptive modulation, licensees will be unable to fully use technology to maintain critical communications during signal fades. Under the proposal made in the *NPRM*, the minimum payload capacity requirements must be met at all times, except during anomalous propagation conditions, when lower capacities may be utilized in order to maintain communications.

An alternative to the adaptive modulation proposal made in the *NPRM* would be to allow compliance with the efficiency standards "on average" and "during normal operation." We believe that

standard would give licensees too much latitude to deploy inefficient systems that would be inconsistent with good engineering practices.

Finally, while herein we propose to authorize the use of auxiliary stations, we are open to alternatives such as authorizing auxiliary stations in a more limited fashion or not at all, however, if we do not authorize auxiliary stations in some fashion, we may prevent licensees from fully utilizing their spectrum for backhaul and other purposes.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

None.

APPENDIX C

List of Commenters on Fixed Wireless Communications Coalition, *et al.* Request For Declaratory Ruling (WT Docket No. 09-106)

Comments
AT&T Inc.
Clearwire Corporation
DragonWave, Inc.
Fixed Wireless Communications Coalition
Harris Stratex Networks, Inc.
United States Cellular Corporation
Verizon and Verizon Wireless

Reply Comments
Fixed Wireless Communications Coalition
Harris Stratex Networks, Inc.
Motorola, Inc.
X-Dot, Inc.

Ex Parte Filings
Fixed Wireless Communications Coalition

APPENDIX D

List of Commenters on Wireless Strategies, Inc. Petition for Declaratory Ruling (WT Docket No. 07-121)

Comments
AirTegrity Wireless, Inc.
Alcatel-Lucent
Bridgeway Systems, Inc.
Comsearch
Ferris, Baker Watts, Inc.
Fixed Wireless Communications Coalition
Harris Stratex Networks, Inc.
Mobile Satellite Ventures Subsidiary LLC and TerreStar Networks, Inc.
National Spectrum Managers Association
David B. Popkin
Proximetry, Inc.
Society of Broadcast Engineers, Inc.
Summit Tower, LLC
TerreStar Networks, Inc. and Mobile Satellite Ventures Subsidiary LLC
Verizon

Reply Comments
AirTegrity Wireless, Inc.
American Petroleum Institute
Bridgeway Systems, Inc.
Fixed Wireless Communications Coalition
National Cable & Telecommunications Association
San Diego Gas & Electric Company and Southern California Gas Company
Satellite Industry Association and Global VSAT Forum
Sprint Nextel Corporation
United States Cellular Company
Verizon
Wireless Strategies, Inc.

Ex Parte Filings
Doctors Telehealth Networks, Inc.
Engineers for the Integrity of Broadcast Auxiliary Services Spectrum
Exalt Communications Inc.
FiberTower Corporation
Fixed Wireless Communications Coalition
Mt. Vernon.net, Inc.
National Spectrum Managers Association
San Diego Gas & Electric Company and Southern California Gas Company
Satellite Industry Association and Global VSAT Forum
Sprint Nextel Corporation
Wireless Strategies, Inc.

STATEMENT OF
CHAIRMAN JULIUS GENACHOWSKI

Re: *Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees; Request for Interpretation of Section 101.141(a)(3) of the Commission's Rules Filed by Alcatel-Lucent, Inc., et al.; Petition for Declaratory Ruling Filed by Wireless Strategies, Inc.; Request for Temporary Waiver of Section 101.141(a)(3) of the Commission's Rules Filed by Fixed Wireless Communications Coalition*; WT Docket Nos. 10-153; 09-106; 07-121

Today we implement another important recommendation of the National Broadband Plan. Some of the most important recommendations of the National Broadband Plan fall under the heading of spectrum. Unleashing spectrum for mobile broadband is critical for investment, innovation and U.S. global competitiveness. So I'm very pleased that the Plan's recommendations in this area have received broad support—including bipartisan legislation and the President's recent Executive Memorandum on Spectrum.

Today, we launch an effort to ensure that sufficient microwave spectrum is available to meet the current and future demands for wireless backhaul. This item brings together three key themes of the National Broadband Plan: unleashing spectrum; removing outdated regulatory barriers; and seizing the opportunities of broadband for rural America.

Microwave communications has become, in a growing number of situations, a viable option for backhaul of mobile broadband traffic. As broadband providers accelerate deployment of next-generation networks, they will require backhaul that can carry what will be an exponential growth in mobile data traffic. If that capacity is unduly restrained, it will hamper our ability to take full advantage of emerging communications technologies and undermine our ability to lead the world in mobile.

Today's item takes a fresh look at our rules governing the use of certain microwave bands. Specifically, we propose increasing the flexibility, capacity, and cost-effectiveness of prime microwave bands, while protecting incumbent licensees in these bands. The increased flexibility proposed in the item will also make more frequencies available for fixed broadcast studio links.

Flexible rules can greatly increase our efficient use of microwave spectrum. With spectrum sharing, we have the opportunity to make 750 MHz of microwave spectrum newly available for broadband backhaul or other advanced point-to-point uses. Removing outdated regulatory barriers to keep pace with the rapid changes in technology will help reduce some of the costs of 4G deployment and increase investment in new 4G services that enhance economic growth and U.S. competitiveness.

These changes in our microwave rules can have a particularly positive impact on rural America. Microwave backhaul may be the only practical solution available to reach 4G cell sites in very remote rural areas.

This item recommends concrete steps to facilitate deployment of mobile services on which all Americans – regardless of geography – increasingly depend to communicate for work, with family, and for personal safety.

Thank you to the staff for taking a close look at the ways in which we can increase spectrum flexibility and improve spectrum efficiency.

STATEMENT OF
COMMISSIONER MICHAEL J. COPPS

Re: *Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees; Request for Interpretation of Section 101.141(a)(3) of the Commission's Rules Filed by Alcatel-Lucent, Inc., et al.; Petition for Declaratory Ruling Filed by Wireless Strategies, Inc.; Request for Temporary Waiver of Section 101.141(a)(3) of the Commission's Rules Filed by Fixed Wireless Communications Coalition*; WT Docket Nos. 10-153; 09-106; 07-121

Today's action is yet another important step in implementing the National Broadband Plan. We are looking at ways to expand flexibility in spectrum use by removing barriers to the provision of wireless backhaul in certain bands. Backhaul is the life blood of a healthy and inventive wireless broadband market, providing the necessary bandwidth to get data between a cell tower and the network. As I noted in a statement at the Commission's last Open Meeting, spectrum is a finite resource. We can't make any more of it, so we need to find ways to optimize our supply by expanding flexibility of use for licensees and by improving efficiency through new and innovative technologies. With this Notice of Proposed Rulemaking and Notice of Inquiry, we take an encouraging step in that direction.

We have compiled and seriously considered a vast number of suggestions and proposals on wireless backhaul in crafting this item. I am hopeful that it will spark a robust dialogue on the best approaches to expand essential capacity and competitive choice in backhaul, which is currently a significant part of wireless networks' operating expense.

I am especially appreciative that this item gives particular focus to the economic and geographic impediments working to isolate large parts of *rural* America from the full potential of broadband. Many rural areas have few, if any, real options for fiber backhaul, and increasingly rely on wireless bankhaul to deliver the capacity needed for broadband. Admittedly, some of the difficulties facing these areas may be the result—at least in part—of out-dated regulatory policies that limit flexibility and competitive choice. But in calling for a national broadband strategy, Congress directed us to ensure that *every* American has access to broadband capability—no matter who they are, where they live, or the particular circumstances of their individual lives. Through responsible reform efforts and inventive solutions like those proposed in this item, we can overcome these obstacles and ensure the broadband rights of all Americans.

I would like to Ruth Milkman and her entire team who worked to bring us such a thorough item for consideration. I look forward to working expeditionsly with the Chairman and my colleagues as we continue working to maximize the public interest benefits of our precious spectrum resource.

STATEMENT OF
COMMISSIONER ROBERT M. McDOWELL

Re: *Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees; Request for Interpretation of Section 101.141(a)(3) of the Commission's Rules Filed by Alcatel-Lucent, Inc., et al.; Petition for Declaratory Ruling Filed by Wireless Strategies, Inc.; Request for Temporary Waiver of Section 101.141(a)(3) of the Commission's Rules Filed by Fixed Wireless Communications Coalition;* WT Docket Nos. 10-153; 09-106; 07-121

I am delighted to vote to approve today's notice of proposed rulemaking and notice of inquiry seeking guidance on removing regulatory barriers to the use of spectrum for backhaul and other point-to-point and point-to-multipoint communications. By enabling the development of more flexible and cost-effective microwave services, the Commission will be poised to assist with increasing deployment of fourth-generation (4G) mobile broadband networks.

Last month's report from the Pew Internet & American Life Project reveals that American consumers are taking advantage of a much wider range of mobile services – taking pictures, web browsing, and playing music, to name a few. Of course this is even before the launch of 4G technologies. As the use of mobile data increases, providers will need to increase their backhaul capacity, including microwave backhaul, to accommodate that traffic. Increasing the availability of, and lowering barriers to entry for, microwave will serve as an additional choice for backhaul services.

This is an issue that I've been speaking about for some time now, most notably in November 2008 as part of the Commission's work on the TV white spaces proceeding, particularly in rural areas. I will continue to stay engaged on this issue, and look forward to learning more. In the meantime, I hope my colleagues agree that moving forward expeditiously in this proceeding, as well as in the white spaces proceeding, would be a win-win.

STATEMENT OF COMMISSIONER MIGNON L. CLYBURN

Re: *Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees; Request for Interpretation of Section 101.141(a)(3) of the Commission's Rules Filed by Alcatel-Lucent, Inc., et al.; Petition for Declaratory Ruling Filed by Wireless Strategies, Inc.; Request for Temporary Waiver of Section 101.141(a)(3) of the Commission's Rules Filed by Fixed Wireless Communications Coalition*; WT Docket Nos. 10-153; 09-106; 07-121

I am pleased to support this item because the changes it proposes may reduce the costs that companies face to provide wireless services, including broadband, and could lead to more wireless opportunities for consumers, particularly rural consumers.

In May of this year, the Commission released its *Fourteenth Annual Report and Analysis* on the mobile wireless market. That report made three interrelated findings that, in my opinion, are important about the state of wireless services in rural areas. First, more than ten million people live in rural areas with two or fewer wireless service providers. Second, the need for backhaul transport imposes significant costs on wireless service providers. Third, rural service providers are increasing their use of microwave communications to reduce the costs of backhaul transport. Those findings suggest that we should look for ways to lower the costs of providing wireless services, including backhaul transport, in order to promote those services in rural areas.

One way to reduce the costs for backhaul transport for wireless providers is to create a regulatory environment that allows for more flexible use of microwave communications. Giving service providers more options on how they can use microwave communications, enhances their ability to find the most cost effective backhaul transport solutions for their respective business models. This item identifies a number of areas in which the Commission's rules could encourage more flexible use of microwave communications of up to 750 megahertz of spectrum, while proposing to protect incumbent operations, and increase the flexibility of operations.

I applaud Chairman Genachowski's leadership in setting ambitious goals in this proceeding, and I thank the Wireless Telecommunications Bureau staff for its efforts in crafting a Notice to elicit further information from the public, on how we should balance these important public interest benefits.