Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Reallocation of the 216-220 MHz,	)	ET Docket No. 00-221
1390-1395 MHz, 1427-1429 MHz,	)	RM-9267
1429-1432 MHz, 1432-1435 MHz,	)	RM-9692
1670-1675 MHz, and 2385-2390 MHz	)	RM-9797
Government Transfer Bands	)	RM-9854

To: Chief, Wireless Telecommunications Bureau

Comments on
of Warren C. Havens on the
Notice of Proposed Rule Making

Warren C. Havens hereby submits comments on this Notice of Proposed Rule Making (the "NPRM"). I currently hold AMTS authorizations (in the 216-220 MHz range) to serve five inland navigable waterways and have pending applications to provide AMTS services to numerous other waterways. I also hold licenses in the 220-222 MHz service (and several other radio services not relevant to this NPRM), and have a majority interest (on a fully diluted basis) in Net Radio Communications which holds 220-222 MHz licenses ("220 MHz"). I am transferring these licenses to a company I will operate to provide varieties of commercial service and through which I will participate in future FCC spectrum auctions such as those involving the above-referenced bands.

Summary

Today, Information Technology is leading the world economy and wireless is a leading component in IT, often projected to soon have more traffic than wired networks. [1] Change is occurring rapidly and in wireless, and a new technology good enough for any nationwide deployment involves billions of dollars in development and construction and years of work.

For this, there must first exist the underlying spectrum available of sufficient quantity and nature, along with suitable regulatory framework. "Advanced Technology 220 MHz" ("AT 220 MHz") as outlined below would contribute to this.

Also, public-resource-licensed commercial business (including FCC wireless licensees) should be held to higher "corporate citizen" standards than other private enterprise. In this regard, I propose below a "Nationwide Environmental Wireless Service" as a component of AT 220 MHz.

Finally, spectrum reallocation should be combined with FCC (and other Federal) support for US advanced wireless technology, "4G technology." One way to achieve this is noted below: support of the DARPA 4G initiative now underway.

[1] Even is close to correct, there will be a need for many times the spectrum that exists in total that is usable for wide-area systems (several GHz down to 100 Mhz or thereabouts). The need for more spectrum for more and more advanced wireless is a major concern these days from commercial wireless operators and vendors, the FCC, Congress, the Executive Branch, and the Military (which wants to keep what it has in the face of demands to release spectrum to the burgeoning commercial wireless industry).

216-225 MHz:
Proposed "Advanced Technology 220 MHz Service"
("AT 220 MHz")

220 MHz, IVDS, and AMTS are lightly used and have been form their long histories. There is insufficient spectrum in each to support viable technology, operations, and services in the face of the increasingly successful major commercial wireless bands and the technologies made for them. Also, Amateurs lightly use 222-225 MHz bands and have sufficient other spectrum to use.

216-225 MHz should be allocated for operations under one set of rules for an advanced technology service in this range (herein, "AT 220 MHz").

The proposed auctions in AMTS and IVDS should be postponed pending an appropriate rulemaking in AT 220 MHz which would conclude in an auction of spectrum in this 216-225 MHz range.

Under AT220 MHz rules, I propose, incumbent (pre- AT 220 MHz- auction) Licensees in these bands could elect to operate under the AT 220 MHz rules until a certain date, after which they would be required to conform.

Technology that should be considered for the unpaired block of spectrum proposed for AT 220 MHz would include: SDMA+TDD (such as from Arraycom as noted in the NPRM); IP packet data technology (IP packet data air interface and IP core network also) combining voice and data; and other advanced techniques. (See also below under the DARPA 4G comments.)

National Environmental Wireless Service ("NEWS"). One use of AT 220 MHz should be for nationwide intensive wireless environmental (including wildlife) monitoring. This frequency range is very suitable for the wide-area "macrocell" coverage needed and coverage of rural and wilderness areas with rugged terrain. *There is no more important US resource than our environment. It is in a besieged state and need monitoring if it is to be "protecte*d." *Nationwide advanced wireless monitoring is needed for this.* It is a travesty for both public and private sectors to continue to overspend our environmental resources and drag our feet in even knowing the real effects.

The government, private, and non-profit sectors should cooperate in a NEWS to collect real-time and near real-time data on all ecosystems, and component localities, and provide the data in raw form and in various formats to research and "watchdog" entities and the general public at a NEWS website.[2]

Spectrum is the same whether in the largest markets or most remote wilderness: any spectrum allocation will never be close to used up in more remote areas if it is mostly used up in the urban areas. NEWS would put some of this excess capacity to use. AT 220 MHz licensees could elect to participate in NEWS and be "paid" via special tax breaks. If they do not so elect and participate, then they would loose certain amount of spectrum outside the more densely populated areas, and such spectrum would then be available to other entities to provide NEWS in the subject areas.

[2] The website could be one of the most interesting and most visited: NEWS could include tens of thousands of remote sensors, some with visuals, and the data would be displayed in numerous formats, including interactive programs showing past, present, and projected states of ecosystems down to very localized environments of national, state, and regional parks, tourist areas, and cities and towns.

NEWS technology would be essentially the same as in commercial AT 220 MHz, with remote radios adapted as needed for NEWS applications and environments. NEWS could be added to a core commercial AT 220 MHz network for modest incremental cost (a small fraction of any stand-alone NEWS service). However, AT 220 MHz licensees would be given tax breaks for fair value of contributing a percentage of their commercial network capital and operating costs used to support NEWS: the tax savings could exceed such incremental cost and thereby be clear incentive. In addition, for corporate good-will as sponsors, and tax deductions, wireless equipment and service vendors would contribute products and services for NEWS. Such private entities would plan and develop news along with governmental entities involved with environmental protection and management of public lands.

In addition, the NEWS spectrum component of AT 220 MHz's 216-225 MHz should be available for dual-mode terrestrial wireless (mobile and fixed) and satellite, the latter so that a satellite service (government and/or private) could be teamed up with terrestrial coverage to fully cover the US.

Also, it could be investigated as to whether Canada and Mexico could coordinate with the US to develop the same NEWS service.)

NEWS could also serve to monitor conditions along the US highway systems. This information would be fed to public highway agencies, transit authorities, Telematics service providers and users, news services, and the general public (for navigation purposes, traveler advisories, etc.). In this regard, it could be coordinated with the two current Transportation Infrastructure Radio Services (LMS and 5.9 GHz).

Two-way paging. Contrary to Regionet (as cited in the NPRM), I do not believe the 200 MHz range is very suitable for two-way paging. A higher frequency is more suitable, such as the 900 MHz N-PCS used for Reflex. I was advised this by Motorola's Reflex division engineers as well as consultant engineers. The propagation characteristics of 200 MHz would be largely wasted if used in small two-way pagers, and building penetration (essential for pagers) at this frequency is not as good as at higher frequencies.

In addition, two-way paging is moving quickly from short pages to two-way Internet with far more speed and capabilities. E.g., leading two-way paging companies such as Arch are in need of more spectrum to move from two-way paging (Reflex) to wireless Internet.

A small 200-MHz range two-way paging service will fail for lack of spectrum, capacity, market share, vendor support, economies of scale, etc. (E.g., unless a vendor is convinced of an initial market for a new pager in the hundreds of thousands with substantial further growth the device will not be cost effective and the vendor will not commit to the product.) Rather, 216-225 MHz should be consolidated in a service as outlined herein as AT 220 MHz.

US Spectrum Reallocation and Advanced Wireless Technology

Basic national infrastructure in today's highly technological civilization needs to be developed by the government along with the private sector. For example, the Internet and the US highway system could hardly have been established by private sector by itself. In wireless, the US is behind Western Europe, Japan, and other nations in wireless due in part to too much reliance on the "market" and too little active cooperation between public and private sectors involving longer-term planning.

Reallocation of Federal spectrum to the private sector should be coordinated with strong Federal support of US "4G" technology to better use such spectrum (and already allocated spectrum). There are orders of magnitude improvements possible via such technologies. In addition, the US economy will be stimulated via the wireless technology of US-owned and US-based companies achieving parity or superiority to the wireless technologies of companies of other nations, since companies with superior technology sell and license it worldwide.

DARPA 4G Wireless Project. In this regard, the US Defense Advanced Research Projects Agency (DARPA) Advanced Technology Office is currently planning a multi-year project to coordinate and facilitate such US 4G, with participation from private-sector entities (my company plans to participate) both for military needs and for use in the private and non-military public sectors.

Such 4G will likely include new techniques of noise suppression and interference excision, TDD-based dynamically allocated asymmetrical bandwidth on demand, "smart"

antenna systems, and other means to greatly increase not only spectrum efficiency and efficacy within a band, but also sharing of a band by several radio services, especially if such services design and coordinate their respective technologies and networks for this purpose. These 4G technologies could be used in the above proposed AT 220 MHz service involving the 216-225 MHz band, as well as in the other reallocation bands that are subject of the NPRM.

Respectfully submitted,

Warren C. Havens

2509 Stuart Street
Berkeley, CA 94705