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

In the Matter of	)	
	)	
Fostering Innovation and Investment	)	GN Docket No. 09-157
In the Wireless Communications Market	)	
	)	
A National Broadband Plan for our Future	)	GN Docket No. 09-51

COMMENTS OF SIRIUS XM RADIO INC.

In this inquiry, the Commission seeks to better understand the factors encouraging innovation and investment in the wireless market and identify concrete steps it can take to support and encourage further innovation and investment in this area.[1] Sirius XM Radio Inc. ("Sirius XM") is pleased to offer these brief comments for the Commission's consideration in this important proceeding.

Sirius XM offers a unique and valuable perspective on the issues of wireless innovation and investment. Since the mid-1990s, Sirius XM and its subsidiaries have spent billions to create an entirely new consumer-oriented satellite and wireless communications service from the ground-up that currently serves more than 18 million consumers. Few other entities can legitimately claim to have comparable expertise in conceiving, designing, building, and operating an innovative communications network of this scope over the past decade. Sirius XM understands the impact of regulation on investment decisions and how spectrum management influences network investments and the services new licensees provide to consumers.

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[1] *Fostering Innovation and Investment in the Wireless Communications Market*, Notice of Inquiry, FCC 09-66 (2009) ("NOI").

I. AUTHORIZING NEW BROADBAND OPERATIONS REQUIRES CONSIDERING NEEDS OF THE ENTIRE BROADBAND NETWORK WITHOUT HARMING SUBSCRIBERS TO EXISTING SERVICES.

Sirius XM appreciates the Commission's efforts to ensure the wireless industry is not impeded from innovating new services and devices to expand the reach and functionality of broadband service. Sirius XM concurs with the Commission's perception that innovation often results in new competitive service offerings, which is a fundamental goal of the Commission's efforts to promote the development of a national plan for the deployment of broadband services.[2] Since wireless technologies, including satellite-based services, offer the greatest opportunity for deploying new broadband networks, the Commission's current focus is largely on spectrum management policies that will create opportunities for such networks.[3]

The Commission must focus on developing a comprehensive plan for ensuring that the promises of wireless broadband can become reality as soon as possible. A comprehensive plan will ensure that no core components of a broadband system are overlooked that could impact service to the public. A functional broadband network is composed of numerous wireless components that are essential to its operations, each of which has its own spectrum needs, and the weakest of which will define the level of service available to the public. In any analysis of spectrum needed to promote state-of-the-art broadband service, the Commission, therefore, needs to focus on the end-to-end needs of a broadband network and not a limited subset of those needs.

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2 *A National Broadband Plan for Our Future*, Notice of Inquiry, GN Docket No. 09-51, FCC 09-31 (2009).

3 NOI at 20.

Sirius XM expects that the Commission will receive comments in this proceeding urging it to modify the technical restrictions currently restricting mobile use of the WCS spectrum immediately adjacent to Sirius XM's operations to permit the use of two-way mobile broadband services in the WCS band. The existing technical restrictions on WCS mobile devices, which have been in place since 1997 and were adopted to protect satellite radio subscribers, do not necessarily conflict with a policy goal of promoting innovative broadband services. Without modifications to the WCS rules, the entire 30 MHz of WCS spectrum is well suited for use by many essential elements of a broadband wireless system, without threatening to harm satellite radio service.

For example, the WCS frequencies could be used for fixed broadband services as at least one existing licensee is currently doing.[4] In addition, the band could be used for point-to-point and point-to-multipoint backhaul services, which the Commission's broadband workshops have identified as a serious need.[5] Moreover, the band could be used for downstream broadband base station transmissions with the return path communications from mobile devices transmitted in other nearby frequency bands, such as in the Broadband Radio Service at 2500 MHz. Each of these applications and uses is consistent with the original WCS allocation and existing service rules, each serves an

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[4] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services,* Twelfth Report, 23 FCC Rcd 2241 ¶ 26 (2008) (noting that AT&T is using its WCS spectrum to provide service in eight U.S. markets).

[5] *See, e.g., National Broadband Plan Workshop Wireless Broadband Deployment – General,* Transcript at 30, ("It used to be that the radio was the bottleneck in the networks. Now, with fast radio technology we're seeing that the back haul is becoming the bottleneck.") *available at* http://www.broadband.gov/docs/ws_03_deploy_wireless_transcript.doc.

essential function in the nation's broadband system, and none would threaten satellite radio reception by 18 million subscribers.

Other pending proceedings have documented the history of the WCS spectrum, its under-utilization by speculators, and current WCS licensees' efforts to modify their service rules to allow uses that would be incompatible with Sirius XM's use of adjacent satellite spectrum. The Commission should resolve the WCS and satellite radio compatibility issues on the record developed in those proceedings and not as part of any other proceeding looking toward furthering the availability of broadband services. The parties have filed reams of technical data supporting their positions in Docket 07-293 and recently conducted demonstrations and field tests in Ashburn, Virginia, in the presence of FCC engineers and staff, to show the real-world effect of WCS interference to satellite radio reception. It is this data and technical analysis -- as well as a full consideration of the spectrum environment in which satellite radio and WCS must co-exist -- that should drive the outcome of the pending proceedings.[6]

Sirius XM supports the Commission's goals of encouraging wireless innovation and investment. To the extent that wireless spectrum needs include use of the WCS bands for broadband purposes, the Commission should focus on the numerous ways in which that band can be productively used to promote the development of broadband

[6] The proceeding primarily addressing this issue is WT Docket No. 07-293, which proposes modifying WCS rules, although that proceeding has been linked to IB Docket No. 95-91, the docket looking toward authorizing satellite radio's use of complementary terrestrial repeaters. The Commission's failure to adopt repeater rules for over a decade, forcing Sirius XM to rely instead on a cumbersome STA process, provides strong support for the NOI's recognition that "Commission policies and processes can also hinder the progress of innovation and investment." NOI at ¶ 5.

service, rather than the narrow proposal advanced by WCS licensees that would threaten satellite radio service to 18 million customers.

II. STABLE REGULATORY ENVIRONMENTS ARE NEEDED TO PROMOTE INVESTMENTS IN INNOVATIVE TECHNOLOGIES.

As observed above, few companies can claim to have the expertise of Sirius XM in conceiving of and creating an entirely new communications service and investing billions of dollars over the last decade to develop the nationwide communications network and infrastructure needed to provide that service. Based on this expertise, Sirius XM is well situated to respond to the Commission's request for comment on how to balance the interference protection rights of incumbents against the opportunities for access to spectrum and how interference protection considerations affect innovation.[7] In an inquiry focused on finding spectrum opportunities to support new advanced services, the obvious mistake would be to focus on only one-half of this issue, *i.e.,* the perspective of the new entrant and the services it promises to provide. How the Commission decides to protect incumbents and the services they are currently providing may ultimately have more of an impact on future investments in innovation.

Businesses need to understand the rules of the road before investing in new services and products. While service flexibility is a desirable and necessary component of effective regulation, operators and licensees need stability and a full understanding of the neighboring spectrum environment before they will invest the significant sums needed to develop concepts into innovative spectrum uses.

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[7] NOI at ¶ 34.

For many wireless-based services, the technical standards used to define co-channel and adjacent band operations are critical considerations before they invest in infrastructure and product development. Operators will not develop innovative technologies if they are not confident that they will accrue benefits from the investments to their network. This is often referred to as the "tragedy of the commons" and has been cited by the Commission many times over the years to explain the rational behavior of operators on shared frequencies for limiting their investments in equipment upgrades.[8] And while it is appropriate for the Commission to continually evaluate the necessity of its rules and modifications to those rules, abrupt changes in regulatory policy that affect service quality will chill future investments in all services.

Satellite operations may have the greatest need for predictability and regulatory stability, given the significant up-front investment, and extremely long lead-times required for satellite deployment, and the operational challenges of delivering a usable signal from thousands of miles in space. For these reasons, satellite services undergo extensive regional and global allocation and coordination processes long before construction and service can be commenced. Satellite operators need to know how the spectrum is used in adjacent bands and adjacent countries years before they commit to spending the billions of dollars necessary to design and launch satellites. To illustrate, international efforts to allocate spectrum near 2.3 GHz for satellite digital audio radio

[8] *Modeling the Efficiency of Spectrum Designated to Licensed Service and Unlicensed Operations*, OPP Working Paper No. 42 (Feb. 2008), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-280522A1.pdf (last visited Sept. 30, 2009).

services began in the 1980s.[9] The Commission finalized the domestic allocation for satellite digital audio radio in 1995, in accordance with the final acts of WARC-92.[10] Sirius XM began the international coordination process for domestic use of frequencies in the 2.3 GHz band that same year – six years before they began providing service to the public.

The WCS service was created after satellite radio service was added to the U.S. Table of Allocations and, in so doing, the Commission expressly recognized the technical challenges of allowing mobile terrestrial transmissions in a band adjacent to satellite operations. The Commission, therefore, imposed stringent operating requirements on WCS mobile service to protect satellite radio receivers from harmful interference.[11]

Based on these protections, Sirius XM designed and implemented a multi-billion dollar network that revolutionized radio. Many of the design parameters of the original network architecture were driven by the protection Sirius XM reasonably expected to receive from adjacent services and, more specifically, the statement made by the FCC that mobile WCS services would not be feasible.[12] As but one example, the level of protection helped determine Sirius and XM's internal satellite band plans that placed the

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9 *An Inquiry Relating to Preparation for the International Telecommunication Union World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum*, Gen. Docket No. 89-554, 4 FCC Rcd 8546, at ¶ 1.

10 *See Amendment of the Commission's Rules with Regard to the Establishment and Regulation of New Digital Audio Radio Services, Report and Order*, 10 FCC Rcd 2310 (1995).

11 In order to "protect prospective [satellite radio] licensees from interference from WCS operations," the Commission adopted a very restrictive out-of-band emissions limitation on WCS providers that rendered "mobile operation in the WCS spectrum technologically infeasible." *Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service*, Memorandum Opinion and Order, 12 FCC Rcd 3977, 3978 (¶ 3) (1997).

12 *Id.*

terrestrial frequencies furthest from the WCS band and determined the minimum signal levels that would be needed from the satellite based transmitters.

Modifying these protections by allowing adjacent band WCS licensees to deploy wide-area mobile systems would undermine many of the innovations advanced by Sirius XM. For example, with new levels of interfering signals, the unique orbits of non-geostationary Sirius satellites may provide insufficient signal strength on the ground to remain viable. Without thoroughly and fairly evaluating the technical impact of FCC decisions on all spectrum users, those decisions could cause harm to system designs that cost billions of dollars to implement.[13]

The Commission must understand that future licensees of innovative services will be unwilling to take the risk of investing to develop new services without the assurance that their system designs will allow them to offer interference-free service to their customers in the future. This need for regulatory certainty leading to a predictable interference environment is especially relevant for satellite based services which have far less flexibility to modify network performance and must look toward a long-term return of investment from deployed satellites in order to be profitable.

The need for certainty is even more relevant for a company like Sirius XM, which focuses on serving customers whose radios are built-in to their automobiles. Unlike typical wireless handset customers who upgrade or replace subscriber equipment at every

[13] For this reason, the Commission should reject the concept of using alternative dispute resolution or other mediation techniques to settle interference disputes that arise during the rulemaking process where, as here, one service is serving subscribers and the other is only proposed. *See* NOI at ¶ 35. Where the risk of making a wrong decision could be disastrous to an operating company, the Commission should itself make the hard choices as to the interference a new service may cause to an incumbent, giving significant weight to the value of an ongoing business and the damage that a new entry's interference would create to paying subscribers' ability to receive an ongoing service.

two-year contract renewal, radios pre-installed in automobiles will be used for many years with no opportunity to improve reception through technological advances that might potentially be available to resolve interference issues. With limited ability to modify satellite transmissions once satellites are launched and with limited ability to modify satellite radio receivers once they are pre-installed in cars, Sirius XM and its 18 million customers would be devastated by FCC rule changes relaxing technical restrictions on adjacent band operations. Accordingly, modifying rules in ways that will increase the likelihood of interference to adjacent bands undermines the Commission's goals of promoting innovation and investment in wireless services.

III. CONCLUSION.

Sirius XM appreciates and strongly supports the Commission's overarching goals of fostering greater broadband access to all Americans. In so doing, however, the Commission must consider the end-to-end needs of broadband networks and must be careful not to adopt policies that, by injecting uncertainty into the regulatory equation, discourage spectrum users from investing in innovative technologies.

Respectfully Submitted,

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September 30, 2009