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Wireless Internet: Is the US Falling Behind? Recommendations for Action for Improvements to Wireless Internet Access

The Congress and the FCC could do a great service to the American people by changing the wireless spectrum allocation rules to encourage innovative unlicensed activities. The remarkable success of wireless local area networks using the 802.11b (WiFi) protocol shows the potential of an "open spectrum" model where spectrum is shared by many users instead of being allocated to the exclusive use of just a few. The tremendous economic success of unlicensed spectrum is one of the greatest success stories of the FCC since it introduced rules to create the service back in 1985. However, current spectrum allocation rules are acting to preclude further development of this opportunity.

At a press conference on October 23, FCC Chairman Michael Powell noted that, "Our nation's approach to spectrum allocation is seriously fractured." We strongly support this statement. By unleashing cooperative spread spectrum and ultra-wideband technologies, the FCC and Congress could help overcome the broadband bottleneck our nation faces today. Wireless Internet access could then become a viable access alternative complementing Internet services offered via wireline DSL and cable.

Our spectrum allocation policies still assume a technology framework rooted in the 1920s. Modern levels of computing power and available component technologies allow many users to cooperatively share spectrum in a more efficient manner than is currently the case. A "spectrum commons" would mitigate the massive infrastructure build-out costs that stand in the way of universal broadband connectivity. In particular, the rise of WiFi devices illustrates the level of innovation that can occur when a single entity does not control spectrum exclusively. At the same time, this approach would further the Commission's public interest goals as tasked to them by Congress in the Communications Act.

Professor Yochai Benkler of New York University Law School first described the 'spectrum commons' or 'open spectrum' model in detail in his 1998 article in the Harvard Journal of Law and Technology. It draws upon technical, legal, and operational activities by a number of experts including David Reed, Lawrence Lessig, Paul Baran, Dewayne Hendricks, David Hughes and Tim Shepard. The FCC's Technological Advisory Council is examining unlicensed technologies and how they could be further developed to provide more affordable and pervasive broadband access, but its work has not yet received sufficient attention from the Commission itself.

The Commission has shown its willingness to undertake new approaches to spectrum policy with its recent lifting of spectrum caps. However, greater flexibility for spectrum licensees is not an alternative to innovation in unlicensed technology. Current FCC rules discourage researchers from exploring the technical boundaries of unlicensed wireless communications, and discourage investors from funding companies that might bring new devices and services to market.

AN-MSI urges the Congress and the FCC to take the following steps as soon as appropriate:

- Designate significant additional spectrum blocks for unlicensed services use.
- Promulgate the development of a regulatory framework for a new class of wireless device, known in the industry as a 'cognitive radio' or 'smart radio', in order to define the privileges and responsibilities of smart devices communicating over the airwaves.
- Allow low-power ultra-wideband and spread spectrum services to "overlay" services on existing licensed bands.
- Create equipment-certification rules to ensure that transmitters and receivers in the new unlicensed bands cooperate intelligently for maximum efficiency.

Any of these changes if implemented alone would make many new services possible; all of them together would lay the groundwork for a new era of communications.

In his October 23 press conference, Chairman Powell pledged to "continue strong support for unlicensed bands where feasible." While this endorsement is welcome, it is not enough. The Commission and the Congress must actively reform its spectrum management and allocation policies to encourage rather than prevent innovation.