

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

In the Matter of

International Comparison and Consumer Survey  
Requirements in the Broadband Data Improvement Act

GN Docket No. 09-47

A National Broadband Plan for Our Future

GN Docket No. 09-51

Inquiry Concerning the Deployment of Advanced  
Telecommunications Capability to All Americans in a  
Reasonable and Timely Fashion, and Possible Steps to  
Accelerate Such Deployment Pursuant to Section 706 of the  
Telecommunications Act of 1996, as Amended by the  
Broadband Data Improvement Act

GN Docket No. 09-137

**COMMENTS OF DELL INC. AND MICROSOFT CORP. –  
NPB PUBLIC NOTICE # 26**

**I. INTRODUCTION.**

Access to spectrum is critical to advancing broadband connectivity throughout the Nation. As the supply of available spectrum decreases, especially below 1 GHz, the Commission must be creative in its efforts to meet growing needs. Both this public notice<sup>1</sup> and the FCC's five-year effort to make underutilized TV-band white spaces available for consumers<sup>2</sup> are the type of forward-looking efforts that the nation needs to ensure that wireless broadband networks and innovations continue to thrive.

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<sup>1</sup> *Data Sought on Uses of Spectrum, Public Notice #26*, GN Docket Nos. 09-47, 09-51, 09-137 (rel. Dec. 2, 2009) ("Public Notice") (citing the American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115).

<sup>2</sup> *See generally Unlicensed Operations in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd. 16807 (2008) ("*White Spaces Order*").

Dell and Microsoft therefore appreciate the opportunity to comment on the use of television broadcast spectrum for wireless broadband services. The FCC is on the precipice of delivering important new broadband connectivity to consumers through its efforts in the white spaces proceeding. Technology companies have made substantial investments in white spaces research and development.<sup>3</sup> Once the Commission completes the few regulatory matters that remain pending following the historic 2008 *White Spaces Order*, companies will be able to take the next steps and build a new generation of unlicensed wireless broadband devices. We therefore urge the Commission to ensure that its consideration of reallocating broadcast spectrum promotes rather than retards its parallel efforts to improve broadband availability by advancing consumer access to unlicensed broadband technologies below 1 GHz.

To achieve this balance, the National Broadband Plan should reflect two important policy determinations made in the *White Spaces Order*.<sup>4</sup> First, the Plan should recommend that FCC policy ensure consumers have access to both licensed and unlicensed spectrum below 1 GHz for broadband services. The FCC has determined, and Dell and Microsoft agree, that the combination of licensed and unlicensed services best meets the diverse needs of today's consumers.<sup>5</sup>

Second, the Commission should continue to move forward quickly to give consumers unlicensed access to underutilized television band spectrum. If the FCC delays the ongoing white spaces proceeding during the consideration of a reallocation

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<sup>3</sup> See Reply Comments of Microsoft Corp., GN Docket Nos. 09-51, 09-157, at 7-9 (filed Nov. 5, 2009) (“Microsoft Innovation Reply Comments”).

<sup>4</sup> See generally *id.*

<sup>5</sup> See generally *infra*, Section II.

plan it will deny consumers access to spectrum that is already available for wireless broadband. Importantly, giving consumers unlicensed access to white spaces spectrum in no way would interfere with a future decision to reshuffle the band. The Commission's current rules require that white spaces devices be uniquely flexible and spectrum agile. The result is that devices in the field will be able to use or avoid new spectrum bands if the Commission decides to shift current allocations – without any action on the part of the consumer. The presence of white spaces devices will therefore present no barrier to the FCC if it moves forward with TV-band reallocation.

**II. ANY BROADCAST SPECTRUM REALLOCATION SHOULD PROVIDE CONSUMERS WITH ACCESS BOTH TO LICENSED AND UNLICENSED BROADBAND.**

The Public Notice seeks comment on the factors the Commission should consider when assessing the benefits of spectrum used for wireless broadband, as well as the impact to the U.S. economy if insufficient wireless broadband spectrum is made available.<sup>6</sup> Numerous responses to the National Broadband Plan and Wireless Innovation *Notices of Inquiry* confirm that wireless technologies – both licensed and unlicensed – are a fundamental part of the way Americans use broadband. Simply put, demand for both licensed and unlicensed wireless services has skyrocketed, and will continue to increase rapidly.<sup>7</sup>

As Dell and Microsoft previously have explained, there are unique benefits to both licensed and unlicensed spectrum access models, and the nation's broadband policy should ensure that the public receives the best of both worlds.<sup>8</sup> The need for licensed

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<sup>6</sup> Public Notice at 1, ¶¶ A.1-2.

<sup>7</sup> *See, e.g.*, Comments of Dell Inc. at 6-9 (filed Dec. 4, 2009).

<sup>8</sup> *See, e.g., id.*; Microsoft Innovation Reply Comments.

carriers to have adequate access to spectrum has been well documented in this proceeding, and there is little dispute that licensed operators play a critical role in delivering wireless broadband services to consumers. However, as the Commission recently recognized, there has also been “explosive growth” in unlicensed broadband use.<sup>9</sup> This is fully consistent with the Commission’s decision in the white spaces proceeding, which reaffirmed the “need for additional spectrum for unlicensed broadband devices, particularly in the lower frequency bands.”<sup>10</sup> Accordingly, Dell and Microsoft fully support the National Broadband Plan task force’s recognition of the need to “[i]dentify new spectrum for licensed *and* unlicensed use” and “[p]reserv[e] spectrum for unlicensed devices” recently set forth in the final National Broadband Plan policy framework.<sup>11</sup>

As with spectrum policy more generally, any recommendation to reclaim broadcast spectrum for wireless broadband should reflect the unique benefits that unlicensed services provide.<sup>12</sup> Unlicensed bands have a proven track record of supporting innovation. Advances first developed in the unlicensed context—

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<sup>9</sup> *Fostering Innovation and Investment in the Wireless Communications Market, A National Broadband Plan for Our Future*, Notice of Inquiry, GN Docket No. 09-157, ¶ 23 (rel. Aug. 27, 2009) (“Innovation NOI”).

<sup>10</sup> *White Spaces Order* ¶ 45.

<sup>11</sup> See Broadband Presentation, National Broadband Plan Policy Framework, at 17-18 (Dec. 16, 2009), [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-295259A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-295259A1.pdf) (emphasis added).

<sup>12</sup> Indeed, even an analysis recently submitted by the Consumer Electronics Association illustrating the potential auction value of broadcast spectrum “does not take the position that all new reallocated spectrum should be assigned on a licensed basis.” Coleman Bazelon, *The Need for Additional Spectrum for Wireless Broadband: The Economic Benefits and Costs of Reallocations*, at 4 n.15, attached to Comments of the Consumer Electronics Association (filed Oct. 23, 2009).

such as orthogonal frequency division multiplexing (“OFDM”)—have translated to broad consumer benefits in both licensed and unlicensed bands.<sup>13</sup> Moreover, as the Commission recognizes, devices now routinely communicate using both licensed and unlicensed spectrum.<sup>14</sup> There are numerous handsets and laptops integrating both Wi-Fi and 3G network connectivity, including devices using Unlicensed Mobile Access (“UMA”) protocols to switch seamlessly between licensed and unlicensed networks.<sup>15</sup> Accordingly, it is critical that sufficient access to both unlicensed and licensed spectrum continue to be made available to support tomorrow’s technological breakthroughs, and to support devices and applications that will increasingly enable consumers to leverage the benefits of each spectrum access model.

A study by Richard Thanki previously submitted by Microsoft in this proceeding estimates that the annual consumer surplus generated by Wi-Fi in the United States in homes—which accounts for only about 15% of the total projected market for unlicensed chipsets—is between \$4.3 and \$12.6 billion.<sup>16</sup> This translates to a consumer surplus per U.S. household per month of between \$5.40 and \$15.70. However, Thanki concludes that the historical lack of unlicensed spectrum allocations below 1 GHz has retarded “the development of longer-range, more reliable and ultra low-power unlicensed applications”

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<sup>13</sup> See Microsoft Innovation Reply Comments at 2-4.

<sup>14</sup> Innovation NOI ¶ 51.

<sup>15</sup> See Comments of CTIA – The Wireless Association®, GN Docket Nos. 09-51, 09-157, at 23 (filed Sep. 30, 2009).

<sup>16</sup> See generally Richard Thanki, *The Economic Value Generated by Current and Future Allocations of Unlicensed Spectrum*, at 27 (Sept. 8, 2009), attached to Reply Comments of Microsoft Corporation, GN Docket Nos. 09-51, 09-157, (filed Nov. 5, 2009).

that could create far more value for the American public.<sup>17</sup> In other words, the value of existing unlicensed applications using Wi-Fi only hints at the incredible potential that could be derived from using spectrum, such as broadcast spectrum, with far better propagation characteristics. For example, an experimental white spaces network recently deployed by Dell, Microsoft, and Spectrum Bridge Corp. now enables wireless broadband access in several locations in the formerly unserved rural community of Claudville, VA.<sup>18</sup> Deploying this network would not have been feasible using existing unlicensed spectrum options at higher frequencies.

It is therefore critical that any recommendations to repurpose television broadcast spectrum for wireless broadband made by the Commission provide for a substantial amount of spectrum that can be accessed on an unlicensed basis.

**III. WHITE SPACE DEVICES WILL SOON DELIVER MORE BROADBAND ACCESS TO AMERICAN CONSUMERS AND WILL NOT INHIBIT ANY FUTURE FCC REALLOCATION DECISION.**

The Commission has reaffirmed in this proceeding that white space devices “hold promise for the introduction of new broadband services.”<sup>19</sup> This will be the case even if the Commission ultimately recommends that some or all broadcast television spectrum be repurposed for wireless broadband, because the FCC’s 2008 *White Spaces Order* requires that every white spaces device be spectrum agile and subject to a database through which the FCC can designate frequencies where devices may and may not operate.

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<sup>17</sup> *Id.* at 44.

<sup>18</sup> *See generally* Network World, Microsoft Subnet Blog, Microsoft, Dell, Spectrum Bridge Launch First Public White Spaces Network, (Oct. 21, 2009), at <http://www.networkworld.com/community/node/46577>.

<sup>19</sup> *A National Broadband Plan for Our Future*, Notice of Inquiry, GN Docket No. 09-51, ¶ 21 (rel. Apr. 8, 2009).

Nevertheless, CTIA has urged the Commission to move slowly when authorizing unlicensed white spaces access, starting at the “bottom end” of available white spaces spectrum.<sup>20</sup> This proposal is completely unnecessary and would undermine the Congressional and Commission goal of expanding consumer access to broadband services.

As the Commission has explained, the white spaces rules were created precisely to accommodate circumstances in which the “frequencies and amount of unused TV band spectrum will vary from location to location and could change over time.”<sup>21</sup> To achieve this goal, the FCC’s *White Spaces Order* requires that white space devices employ innovative geolocation technology and be subject to an independent, cloud-based database of frequencies that determines where each device may and may not operate at its particular location at a particular time.<sup>22</sup> From the beginning, the database will prohibit white spaces operation that could interfere with incumbent licensed users. The database will protect not only incumbent broadcasters, but also licensed mobile operations – including public safety operations – in certain markets.<sup>23</sup>

Importantly, the database can change the list of acceptable and unacceptable frequencies at any time. This means that if the Commission decides to repurpose broadcast spectrum in the future, it can order that the database reflect the new band plan.

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<sup>20</sup> Reply Comments of CTIA – The Wireless Association® at 15 (filed Nov. 5, 2009); Reply Comments of CTIA – The Wireless Association® on NBP Public Notice #6, Spectrum for Broadband, at 25 (filed Nov. 13, 2009). Although CTIA does not oppose the use of white space devices *per se*, it suggests that white space access is a “short term” issue that could “inadvertently hinder long-term access to valuable broadcast spectrum.” *Id.* at 26.

<sup>21</sup> *White Spaces Order* ¶ 46.

<sup>22</sup> *See* 47 C.F.R. § 15.711(b).

<sup>23</sup> *See* 47 C.F.R. § 15.712(d).

The result would be that all white spaces devices would operate only in the new frequencies designated by the Commission. *This is true of all white space devices, even those devices that already would be in consumer hands.* Therefore, consideration of reallocating broadcast spectrum is not a reason to delay acting on the final white spaces matters, or “slow rolling” or otherwise restricting white space deployments.

Finally, as the Commission has explained, its white spaces rules represent only a “conservative first step” toward more efficient spectrum use through the use of sophisticated devices and systems.<sup>24</sup> Given the pressing demand for broadband spectrum, it is critical that the Commission move forward with the remaining white spaces matters immediately to encourage further development of devices and techniques that improve spectrum efficiency. While reassigning certain spectrum blocks will help alleviate demand for spectrum in the short run, innovative applications in the white spaces have the potential to foster breakthroughs that enhance the use of spectrum for broadband for years to come.

#### **IV. CONCLUSION.**

Dell and Microsoft appreciate the Commission’s continued interest in the uses of spectrum currently licensed to television broadcasting. As with the National Broadband Plan more generally, any recommendation to repurpose broadcast spectrum should ensure that the public benefits from both licensed and unlicensed spectrum access models, and should continue to promote efficiency-enhancing breakthroughs by enabling use of white space devices as quickly as possible. By doing so, the Commission will help ensure that

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<sup>24</sup> See *White Spaces Order* ¶ 1.

spectrum is available to meet the rapidly growing demand for wireless broadband in both the near and long term.

Respectfully submitted,

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