Remarks of Commissioner Meredith A. Baker

Four Action Items for 4G

Law Seminars International Conference on Spectrum and Broadband:
National Broadband Plan Implementation
Washington, DC
19 October 2010

Good afternoon. I want to thank the program co-chairs - Michele Farquhar, Kathleen Ham and Dale Hatfield – for inviting me and for organizing such an important, timely and relevant conference. The past two days have featured engaging sessions that have highlighted a number of promising developments in efficient spectrum use, as well as the many issues we must address as we seek additional spectrum for mobile broadband. I am happy to be with you today to share a few of my own thoughts on encouraging more 4G deployments, which is an important step to resolving some of our broader spectrum challenges.

The Power of 4G

As I have travelled around the country to meet with and listen to innovators, entrepreneurs and technical experts, I have come to increasingly respect both the power and potential of 4G technologies to benefit businesses and consumers. Importantly, as I have developed a better understanding of the capabilities of 4G, I believe its technical requirements should inform our spectrum policies and service rules.

4G technologies like LTE and WiMAX represent a significant step forward in spectral efficiency. Ultra-efficient air interfaces feature innovative technological approaches that spectrum experts have long coveted and called for, including more opportunistic spectrum use, smart antennas, scalable carrier bandwidths, channel bonding, and spectrum aggregation. These advances are coupled with increasingly sophisticated network management tools to maximize the capacity of available spectrum. The resulting high data rates, low latency and dramatically increased capacity enable new functionalities like streaming HD videos and mobile video conferencing. They power smart grid, smart highway applications, and enable telemedicine and tele-learning in remote communities and much more.

4G recasts mobile broadband as a viable substitute for fixed broadband. Where 3G technologies merely impress, 4G technologies will compete, particularly when coupled with ease-of-use Internet access devices like tablet computers and smarter handhelds. 4G simply makes it easier for people to consider cutting the other cord, their home broadband connection.

To date there has been good progress in 4G deployments. Clearwire, or Clear, has WiMAX 4G service in 56 markets and covers 62 million people today, and up to 120 million people by the end of the year.[1] Clear also provides the underlying 4G network of Sprint Nextel, Comcast and

[1] Clearwire Corporation (August 4, 2010). "Clearwire Reports Strong Second Quarter 2010 Results." Press Release. Retrieved 2010-10-14. Available at: http://newsroom.clearwire.com/phoenix.zhtml?c=214419&p=irol-newsArticle&ID=1456462&highlight=

Time Warner Cable. Combining Clearwire's 4G service with its own 3G offerings, Sprint Nextel, for example, recently launched the nation's first 4G smartphones, the popular Epic and EVO.[2]

Metro PCS just launched the country's first commercial 4G LTE service. LTE's spectral efficiency will enable Metro PCS to manage surging data loads within the confines of its relatively limited spectrum holdings in many markets.[3]

Other wireless players are also investing heavily in 4G. In his keynote address at CTIA in San Francisco two weeks ago, Verizon's Lowell McAdam confirmed that Verizon Wireless will launch 4G LTE in 38 major metropolitan areas covering more than 110 million Americans by the end of this year. In addition, the company is deploying 4G LTE in more than 60 commercial airports coast to coast.[4]

AT&T has reportedly spent over $700 million to date on its 4G LTE network and expects to launch commercial LTE service by mid-2011, covering up to 75 million consumers by the end of next year.[5]

Data traffic statistics help explain these deployments, and the commercial need to invest in 4G. Forty percent of all mobile phones today are smartphones.[6] By the middle of next year, sixty percent of those users will be watching video. Twenty-six percent of mobile network traffic is expected to be video streaming by 2014. Content creation models are changing and individual users are becoming important parts of the news and entertainment value creation chain. Operators can't keep up without the spectral and operating advantages of 4G. We need to consider how we can help them deploy 4G to better serve consumers today and tomorrow.[7]

4 Action Items for 4G

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[2] Matt Hamblen, "4G czar at Spring backs WiMax 'Singularity,'" Computerworld, August 11, 2010. Available at: http://www.computerworld.com/s/article/9180584/4G_czar_at_Sprint_backs_WiMax_singularly_?taxonomyId=15

[3] Marguerite Reardon, "MetroPCS launches first 4G LTE market and phone," CNET News, September 21, 2010. Available at: http://news.cnet.com/8301-30686_3-20017102-266.html

[4] Verizon Wireless (October 6, 2010). "Verizon Launches 4G LTE in 38 Major Metropolitan Areas By the End of the Year." Press Release. Retrieved 2010-10-14. Available at: http://news.vzw.com/news/2010/10/pr2010-10-01c.html

[5] Phil Goldstein, "AT&T to launch LTE by mid-2011," FierceWireless, September 16, 2010. Available at: http://www.fiercewireless.com/story/t-launching-lte-mid-2011/2010-09-16

[6] Kristen Purcell, Roger Entner, & Nichole Henderson, "The Rise of Apps Culture," Pew Research Center at 2, September 15, 2010. Available at: http://pewinternet.org/~/media//Files/Reports/2010/PIP_Nielsen%20Apps%20Report.pdf. *See also*, Kevin Schram, HTC Co-Founder Expects 40% of Mobile Phones To Be Smartphones in 2013," TFTS, March 24, 2010. Available at: http://nexus404.com/Blog/2010/03/24/htc-cofounder-expects-40-mobile-phones-smartphones-2013-cher-wang-expects-big-smartphones-future-htc-expected-continue-dominance-market/

[7] *See*, *e.g.*, Lance Whitney, "Smartphones to dominate PCs in Gartner forecase," CNET News, January 14, 2010. Available at: http://news.cnet.com/8301-1001_3-10434760-92.html; "Allot IDs Mobile Trends," FierceWireless February 15, 2010. Available at: http://www.fiercewireless.com/press-releases/allot-ids-mobiletrends; Marguerite Reardon, "Streaming video to outpace P2P traffic growth," CNET News, June 2, 2010. Available at: http://news.cnet.com/8301-30686_3-20006530-266.html

The best help we can provide is obviously more spectrum. 4G works best when it is deployed in large spectrum blocks, which makes getting useful spectrum even harder. The Commission's broadband policy agenda includes making hundreds of additional MHz of spectrum available. It is fundamentally a long term project. But we can't lose momentum on 4G deployment while we work on longer term reform. So with that in mind, I would like to propose four ideas for short-term Commission action on 4G: 1) completing our proceedings on repurposing the MSS bands for terrestrial use; 2) enhancing our spectrum trading and leasing rules to get more spectrum into the hands of those who are ready to deploy 4G; 3) reviewing and revising our current technical requirements and service rules to ensure they can accommodate 4G deployments; and 4) developing a targeted strategy to promote 4G deployments in rural areas.

MSS Bands. Our work on repurposing the Mobile Satellite Services (MSS) bands should be a top priority. A quick look at our spectrum allocation table suggests that we have too much satellite spectrum and not enough terrestrial spectrum. To be sure, some MSS spectrum, notably in the L-Band, is used for mission-critical services that will need to be protected. Taken as a whole, however, the MSS bands have been significantly underused and represent the greatest 4G spectrum opportunity available to the Commission in the short term. The MSS bands are ready for action today.

I am pleased that at our July Open Meeting we initiated a proceeding that raises important questions about the future of the MSS bands.[8] In particular, the *NOI* we adopted considers how to best promote the introduction of new mobile broadband services in the 2GHz band and how to increase value, promote utilization, investment and innovation in terrestrial mobile broadband. The *NOI* also asks about best approaches for creating opportunities for stand-alone terrestrial uses in the 2GHz band.[9]

I believe we must move with deliberate speed to conclude these proceedings to make that spectrum available for 4G use. There are obviously many open issues. For example, we must clarify our approach with respect to the future of the so-called "Ancillary Terrestrial Component." ATC allows terrestrial deployments in satellite allocations, but there are strict gating requirements that include mandatory multi-mode handsets that can complicate handset design.

A related concern is developing an appropriate means to compensate taxpayers if the spectrum is transitioned from satellite use, which was free, to terrestrial mobile broadband use, which has historically been auctioned. Incentive auctions, in which incumbent licensees may relinquish rights in spectrum assignment to other parties or to the FCC, are an attractive way forward. I am hopeful Congress will soon provide the Commission with authority to conduct incentive auctions and to give us the tools we need to manage spectrum more effectively.

Trading and Leasing. Other countries, like Japan and Germany, are allocating new, large blocks of spectrum for 4G. Our options are more limited. We must encourage the creation of larger spectrum blocks through private transactions, and we must ensure unused spectrum is built out.

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[8] *Fixed and Mobile Services in the Mobile Satellite Service Bands*, ET Docket No. 10-142, Notice of Proposed Rulemaking and Notice of Inquiry, ¶ 26-34 (2010).

[9] *See*, *Fixed and Mobile Services in the Mobile Satellite Service Bands*, *supra* note 8, at ¶ 27-30.

We do not have the thriving secondary market or abundance of spectrum leases that could help aggregate larger spectrum blocks. However, I am not yet convinced that we need changes to our secondary market rules. Instead, we can make more information about unused and underutilized spectrum available to more potential bidders. We can also facilitate and encourage those who are working to make transaction costs more transparent. Our new spectrum dashboard is a starting place, but it needs more comprehensive information to be useful. For example, there may be ways to incorporate information about potential buyers or lessee-side interest.

We must also encourage private initiatives. Earlier in the year I joined Chairman Genachowski in commending Verizon Wireless for its rural mobile broadband initiative.[10] Under their plan, if Verizon does not intend to build out a 700MHz market within the next three years, rural operators can lease spectrum from Verizon and build it out themselves. While I look forward to more information about the progress that is being made, this initiative looks promising on many levels. I hope other operators will consider similar approaches. It is a win for consumers and operators alike.

Finally, we need to address our enforcement policies because they can play an important role in promoting spectrum transactions. It is likely that more parties would share or lease spectrum if they felt confident their rights would be adequately and cost-effectively protected.

Technical Requirements and Service Rules. We must ensure that current service and technical rules enable license holders or lessees to deploy 4G technologies in currently available spectrum. Where possible, we must eliminate technical requirements that complicate network and end user equipment design.

A survey of commercial spectrum would be useful to see what rules should be modified, either on a permanent basis or through a waiver or exemption process, to support 4G deployments. For example, current rules like those for out of band emissions were established for earlier technologies that do not require wide channel bandwidths.[11] However, they still govern important operational aspects of wireless services. They need to be updated to accommodate the wider-block spectrum requirements of 4G. In addition to promoting 4G in the United States, this will align the U.S. with important international standards and allocations. Because 4G deployments are ongoing, we must work quickly to develop an action plan.

A Rural 4G Action Plan. We have started action on several items that could improve deployment in rural areas this year, but we need to do more. I think we can better advance the goal of 4G deployments in rural areas through a more thorough and coordinated approach. We need to take another, more focused look at the many issues associated with encouraging the roll out in rural areas and develop a logical, short term action plan.

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[10] Joint Statement of Chairman Julius Genachowski and Commissioner Meredith A. Baker On Verizon Wireless' Rural 4G Initiative, May 12, 2010. Available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-298131A1.pdf

[11] *See, e.g.*, Emission Limits, 47 C.F.R. § 27.53 (2009).

There is a brief list of near-term activities that the Commission can undertake, including, but not limited to harmonizing backhaul rules across spectrum bands wherever feasible; authorizing licensed backhaul in rural areas in unused TV bands[12]; reviewing authorized power levels in rural areas[13]; and, promoting the deployment of appropriately regulated signal boosters and femtocells. In addition, much as we did during the DTV transition, we should concentrate on consumer education and encourage outreach that will promote adoption. Finally, we must work closely with Native American communities to address the challenges of mobile broadband deployment in Indian country. Simple steps, but taken together it is a package that will bring great benefits.

Conclusion

I am hopeful the Commission could complete work on these four projects in the near term to lend additional encouragement to 4G deployment efforts while we continue the hard work of finding more spectrum.

The task before us is of course much larger. Developing robust national mobile broadband networks will require additional action on a number of levels. New infrastructures will have to be built in unserved areas and deployed to off-load capacity where there is congestion. New technologies like pico cells and self-forming networks will have to become commonplace. The development of new approaches for public venues and in-building systems will have to continue, as will work on mobile broadband multicast and related services. We will have to master different quality of service requirements and network management realities that make today's challenges look straightforward. And we have to look at comprehensive changes to our universal support mechanisms to make them appropriate for the mobile broadband age. I look forward to addressing all of these challenges with so many of you in this room.

Thank you for your time.

[12] *See* Statement of Commission Meredith A. Baker On Unlicensed Operation in the TV Broadcast Bands, Sept. 23, 2010. Available at: http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db0923/FCC-10-174A6.pdf

[13] *Bringing Broadband to Rural American: Report on a Rural Broadband* Strategy at ¶ 145, May 22, 2009. Available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-291012A1.pdf