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# Advancing Consumer Interests Through Ubiquitous Broadband: The Need for a New Spectrum

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**Commissioner Meredith Attwell Baker***



## I. INTRODUCTION

Consumers benefit when they have a choice among competing providers. Rival services have a vested interest and need to innovate and differentiate their services to provide new and improved services to consumers. This is not a groundbreaking economic theory, but rather the fundamental building block for my regulatory philosophy. My role as FCC

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Commissioner is to encourage competition and investment, and ensure that both incumbent and new providers have the tools to innovate on behalf of consumers. A thriving market with competitive options will always regulate economic behavior better and more efficiently than government intervention, particularly in times of rapid technological change.

Developing a vibrant broadband marketplace that is available to all Americans lies at the heart of the FCC's work to establish a national broadband plan as directed by the American Recovery and Reinvestment Act of 2009 (Recovery Act).[1] It is a monumental challenge shaping much of the FCC's work in 2009 and will continue to dominate our agenda as we work to deliver our plan to Congress by the February 2010 deadline.[2]

To design a national broadband plan is an unprecedented task that requires a wide-ranging examination of a variety of fronts including universal service and intercarrier compensation reform, special access policy, tax and investment incentives, consumer education, and adoption. These are all significant issues and our conversations about them in this context are important. As our record emerges, it is clear that the overarching FCC objective of ubiquitous nationwide broadband networks—making sure that networks are accessible to all Americans—cannot be accomplished without significant and timely action on spectrum policy.

Three key components of spectrum reform needed to foster greater broadband access. First, we need to grant access to spectrum resources ready for allocation and use. Second, we need to rethink how we use existing spectrum resources, and whether there are more efficient means to use this finite resource through reallocation or sharing. Third, we need to ensure that our regulatory framework promotes innovative uses and investment in the spectrum resources on hand.

In this Issue, and over the coming months, the *Federal Communications Law Journal* will focus substantial attention to the concept of network neutrality. It is an important editorial exercise. There is much discussion about even the basic elements of proposed regulatory approaches, including the need for network neutrality regulation, the desired scope of any such rules, and the risks posed to investment and innovation from a new regulatory regime. While no panacea, spectrum policy can play an important role in addressing the flashpoints in the network neutrality debate by providing greater capacity to existing and

1. American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009) (codified at 47 U.S.C. § 1305(k)(1)(2)).

2. *See id.* § 1305(k)(1) (requiring the FCC to report to Congress a national broadband plan by February 17, 2009).

evolving networks, unlocking new competitors to challenge existing providers, and offering opportunities for new innovative applications and devices.

The articles in this Issue ask critical questions about the government's role in broadband and whether the government is best equipped to address all of the associated challenges. They are helpful and cautionary lessons. I hope the broadband debate will be lively and informative, and I appreciate the *Journal*'s important contribution.

## II. UBIQUITOUS BROADBAND PENETRATION MUST BE OUR HIGHEST PRIORITY AND SPECTRUM REFORM IS NECESSARY TO ACHIEVE THAT GOAL

Policymakers have long understood the impact that they can have on broadband deployments. The Clinton Administration proposed that the private sector take a lead role in developing commercial applications for the Internet.[3] Since that time the federal government has relied upon a variety of tools to foster robust broadband deployment. Congress has provided tax-free status to Internet access, provided wide-ranging research and development tax credits, and other incentives.[4] Regulatory burdens were lifted to encourage the development and deployment of new and unproven technologies to help create new business models, new companies, and new ecosystems from which we benefit every day.[5]

The private sector's development of the Internet to date is impressive. It is estimated that, between 2006 and 2007, all wireline and wireless facilities-based providers invested approximately $120 billion in "modern communications networks."[6] Similarly, the National Cable &

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3. *See* The White House Office of Science and Technology Policy, A Framework for Global Electronic Commerce, 5 (July 1, 1997), *available at* http://www.ecommerce.or.th/APEC-Workshop2002/ppt/pdf/framework-us.pdf (advising that, whenever possible, the federal government should allow the private sector to lead the way for Internet development, and "accordingly, governments should encourage industry self-regulation wherever appropriate and support the efforts of private sector organizations to develop mechanisms to facilitate the successful operation of the Internet").

4. *See* The Internet Tax Freedom Act, Pub. L. 105-277, Div. C, Title XI, Oct. 21, 1998, 112 Stat. 2681-719; codified as 47 U.S.C. § 151 (prohibiting states or local governments from instituting a tax on Internet access, or multiple discriminator taxes on interstate commerce).

5. *See* Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, *Report and Order and Notice of Proposed Rulemaking*, 20 F.C.C.R. 14853 para. 1 (2005) ("new regulatory framework for broadband Internet access services offered by wireline facilities-based providers").

6. *See* Telecom Statistics, http://www.ustelecom.org/Learn/TelecomStatistics.html (last visited Dec. 10, 2009) (citing The Telecom Sector and the Economy: How U.S.

Telecommunications Association (NCTA) reports that the cable industry invested $146 billion in infrastructure from 1996-2008.[7] And finally, CTIA—The Wireless Association reports $19.5 billion in annualized incremental capital investment in the mobile sector for 2009.[8] Looking at it differently, in 2008, the telecommunications wireline industry had capital expenditures on broadband approaching $16 billion.[9] In the same year, the wireless and cable industries spent $10 billion and almost $5 billion on broadband, respectively.[10] What is more impressive is that analysts anticipate that these industries will continue expenditures of this magnitude for at least the next five years.[11] This job is not complete, but it is worth noting the accomplishment that innovators and entrepreneurs in network development have already made in developing and deploying broadband thus far.

The challenge facing the FCC is determining what steps can be taken to ensure that *all* Americans have access to broadband. As we develop a national plan to do this, some of the tools that can be used to encourage investment are within the FCC's purview. Others are left to Congress and the Administration. The most dramatic, recent example of the latter tool is the $7.2 billion that Congress set aside for broadband investment as part of the stimulus package.[12]

Although there are a variety of issues the FCC will need to address, nothing is more critical than the lack of additional spectrum for wireless broadband deployments. The recent revolution in wireless and mobile broadband demonstrates the role that wireless technologies can play as we work to make broadband deployments more ubiquitous, particularly as durable, robust, and cost-effective solutions are sought to connect our remaining unserved and underserved communities. The record before us at the FCC strongly suggests that the networks of the future will incorporate

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Broadband Policies Are Working for America, Jeffery A. Eisenach, www.empiris.com (2008)).

7. *See* Cable Industry Capital Expenditures: NCTA.com, http://www.ncta.com/Stats/InfrastructureExpense.aspx (last visited Dec. 11, 2009).

8. *See* Wireless Quick Facts, CTIA—The Wireless Association, http://www.ctia.org/advocacy/research/index.cfm/AID/10323 (last visited Dec. 11, 2009).

9. *See* Atkinson & Schultz, Columbia Institute for Tele-Information, Broadband in America: Where It Is and Where It Is Going, Preliminary Report for the Staff of the FCC's Omnibus Broadband Initiative, 67 (Nov. 11, 2009) (analyzing data from AT&T, Verizon, Qwest, Comcast, Time Warner, Cox, Cablevision, Charter, Mediacom, and Insight, Sprint, and T-Mobile).

10. *See id.*

11. *See id.*

12. *See* Notice of Funds Availability (NOFA) and Solicitation of Application, 74 Fed. 33,104, 33,105 (July 9, 2009) (notifying the public that "the Recovery Act provides RUS and NTIA with $7.2 billion to expand access to broadband services in the United States").

wireless technologies to complement, extend, and, at times, replace the reach of our nation's current wireline infrastructure.[13]

In fact, wireless technologies are already becoming the means of choice for many people to connect to the Internet. Although only forty million Americans subscribe to commercial mobile Internet service,[14] ninety-three percent of consumers between the ages of 18-29 report using a mobile device to access the Internet or wireless online content (including video, music, or gaming) that requires broadband speed.[15] Moreover, studies estimate that, by 2020, mobile devices will constitute the primary access point for the majority of Internet users throughout the world.[16] This "smartphone effect" will drive mobile data traffic from six petabytes per month in 2008 to nearly 1400 petabytes per month in 2013.[17] That is nearly 130 percent combined annual growth in a five-year period and it is rapidly exhausting the supply of existing spectrum.[18]

## III. IMPROVING FEDERAL SPECTRUM POLICY

The FCC needs to take three steps to ensure continued investment and growth in wireless broadband to address this spectrum gap: (1) provide new market access to spectrum, (2) maximize existing spectrum resources, and (3) create a regulatory environment that promotes investment and leverages the power of innovation. While not an exclusive list, these three policy priorities are critical to stimulating wireless broadband development.

First, we must find new spectrum for commercial use, and make it available as quickly as possible. The search for new spectrum is not easy.

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13. *See infra* text accompanying notes 11-15 (illustrating that by 2020 mobile broadband will constitute the primary Internet access point for users worldwide).

14. RYSAVY RESEARCH, MOBILE BROADBAND SPECTRUM DEMAND 6 (2008), http://www.rysavy.com/Articles/2008_12_Rysavy_Spectrum_Demand_.pdf.

15. *See* John Horrigan, Pew Internet & American Life Project, Wireless Internet Use, 26 (2009), *available at* http://www.pewinternet.org/~/media//Files/Reports/2009/Wireless-Internet-Use.pdf (analyzing trends in American broadband use).

16. *See* Lee Rainie & Janna Anderson, Pew Internet & American Life Project, The Future of the Internet III 5 (2008) *available at* http://www.pewinternet.org /Reports/2008/The-Future-of-the-Internet-III.aspx (surveying Internet leaders, activists, and analysts).

17. *Mobile Broadband Spectrum Demand, supra* note 14, at 13 (expressing the unlikelihood that operators will be able to deliver satisfactory service in the future at these at these high-traffic volumes using existing spectrum).

18. *See* FCC, Commission Open Meeting Presentation on the Status of the Commission's Processes for Development of a National Broadband Plan 74 (Sept. 29, 2009) (slides available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-293742A1.pdf) (asserting that "[t]he spectrum pipeline is drying up.").

Recent reallocations to commercial use were hard-fought and took years.[19] Our first priority should be to ensure existing allocations—including white spaces, AWS, and the 2.3 MHz Band[20]—are maximized for wireless broadband. Too often the FCC delays the resolution of complex spectrum fights with the unfortunate result that the spectrum remains fallow and investment capital waits for the regulatory uncertainty to be resolved.

Further, we must ask the hard questions about whether existing spectrum resources, ideally below the 3 GHz band, could be reallocated to wireless broadband use. The FCC began this process with the Spectrum Public Notice[21] and is developing the contours of the discussion during consideration of the national broadband plan, which seeks recommendations regarding broadcast spectrum.[22] In the face of the country's exploding spectrum needs, it is appropriate to consider this and other potential spectrum resources. Simply put, in order to meet the demand for spectrum, conversations will have to be initiated with spectrum users in both the government and the private sector.

To that end, we must also work with our spectrum management partners in the executive branch to assess whether additional federal

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19. *See generally* Dawn S. Onley, *Agency Reports to Shape Wireless Spectrum Allocation*, Government Computer News, Nov. 3, 2005, http://www.gcn.com/Articles/2005/11/03/Agency-reports-to-shape-wireless-spectrum-allocation.aspx (last visited Dec. 11, 2009) (noting the Department of Defense and commercial providers have fought over the limited spectrum for years and the commercial pressures to free up more of the nation's airwaves).

20. *See* Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, *Further Notice of Proposed Rulemaking*, 23 F.C.C.R. 9859 (2008) (seeking to promote the deployment and ubiquitous availability of broadband services across the country and to facilitate the use of AWS spectrum for the benefit of consumers); Amendment of Part 27 of the Commission's Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band (WT Docket No. 07-293) and Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band (IB Docket No. 95-91).

21. *See* Comment Sought on Spectrum for Broadband, *Public Notice*, 24 F.C.C.R. 12,032 (2009); A National Broadband Plan for Our Future, *Notice of Inquiry*, 24 F.C.C.R. 4342 (2009).

22. *See, e.g.*, Coleman Bazelon, *The Need for Additional Spectrum for Wireless Broadband: The Economic Benefits and Costs of Reallocations* (2009) (available as an attachment to the Comments of the Consumer Electronics Association Comments, Spectrum for Broadband, GN Docket No. 09-137, (rel. Oct. 23, 2009)) (recommending that the FCC reallocate broadcast spectrum that is being insufficiently used); *see also* Press Release, National Association of Broadcasters, NAB Counters CEA-Funded Spectrum Study, (Oct. 27, 2009) *available at* http://www.nab.org/AM/Template.cfm?Section=Press_Releases1&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=15073 (encouraging FCC policymakers to explore spectrum efficiency choices that do not limit consumer access to the full potential of digital broadcasting).

government spectrum might be made available for commercial use.[23] It will be critical for the FCC to ensure that relevant data about spectrum ownership and usage is available in an accessible and user-friendly format. An important first step in this process could be a comprehensive spectrum inventory, which Congress continues to consider,[24] and the FCC and the National Telecommunications and Information Administration (NTIA) are already assessing.[25]

Second, the FCC must work hard with our partners in the public and private sectors to maximize the public-interest benefits of existing spectrum resources. Any approach to accomplish this should include a review of the FCC's policy on secondary markets and build-out requirements.[26] The record in the recent Rural Broadband proceeding, as well as responses to the national broadband plan Notice of Inquiry (NOI), and testimony in various FCC workshops on spectrum, suggest that much more could be done to facilitate spectrum sales, leasing, and trading. Similarly, there is evidence to suggest that certain parts of the country, usually, but not exclusively in rural areas, lack significant wireless infrastructure deployments even though the license holders in those areas are in compliance with their build-out requirements. We should assess our current regulations to see whether a different approach might be warranted.

Third, we must work to ensure that the regulatory environment promotes investment and leverages the power of innovation. The FCC should consider ways to facilitate the further development of new technologies, such as software-defined and cognitive radios, and work with industry to improve the performance of radio transmitters and receivers. In every action the FCC takes, we need to be mindful of new business models that may emerge to deal with spectrum usage. We should also examine

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23. *See* Onley, *supra* note 19 (noting that the Defense Department is the government's largest consumer of electromagnetic spectrum).

24. *See* The Radio Spectrum Inventory Act, H.R. 3125, 111th Cong. (2009) (requiring the FCC and NTIA to provide Congress with an annual report on spectrum use and availability); *see also* S.649, 111th Cong. (requiring the FCC and NTIA to provide Congress a biennial inventory of spectrum use and availability); *see also* Deborah D. McAdams, *Legislators Press for Spectrum Inventory*, TELEVISION BROADCAST, Sept. 17, 2009, http://www.televisionbroadcast.com/article/87290.

25. *See* A National Broadband Plan for Our Future, *Notice of Inquiry*, 24 F.C.C.R. 4342, at para. 44 (2009) (seeking comment on whether the FCC should engage in a spectrum inventory or census).

26. *See* Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, *Report and Order and Further Notice of Proposed Rulemaking*, 18 F.C.C.R. 20604 (2003) (Secondary Markets Report and Order and Secondary Markets Further Notice); Erratum, 18 FCC Rcd 24817 (2003).

further use of testbeds, interference requirements, and trading to see whether more intense use of existing allocations can be tolerated.

## IV. NETWORK NEUTRALITY REGULATION: SOLUTION IN SEARCH OF A PROBLEM?

The FCC recently launched a rulemaking to examine the practices of broadband Internet service providers (i.e., network neutrality) and the extent to which the FCC should regulate those practices.[27] The proceeding considers rules to preserve an "open Internet." In light of the other articles in this *Journal* that offer differing perspectives on the issue, it is worth briefly discussing here.[28]

I believe in the open Internet and the free flow of lawful content over the Internet. That does not make me unique among the sitting Commissioners, but it is an important point to make at the outset. The unrestricted flow of information on the Internet has enabled unprecedented innovation and investment in communications technologies and services, and brought immeasurable benefits to consumers.[29] However, the Internet ecosystem is still nascent, already complex, but still a rapidly evolving force. It already has, and continues to, empower new technologies, new ideas, and new jobs. In sum, it creates whole new ways of doing business.[30] As a regulator, I am humbled by this complexity and believe that

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27. *See* Preserving the Open Internet, *Notice of Proposed Rulemaking*, 2009 WL 3413028 (2009).

28. *See id.* at para. 2 (noting that the FCC has considered the issue of Internet openness in a wide variety of contexts and proceedings, including a unanimous policy statement, a notice of inquiry on broadband industry practices, public comment on several petitions for rulemaking, conditions associated with significant communications industry mergers, the rules for a major spectrum auction, and specific enforcement actions against particular parties).

29. *See id.* at paras. 20-23 (describing the transformative effects of the Open Internet on commerce, health care, education, energy usage, speech, democratic engagement, and cultural development); *see also* Julius Genachowski, Chairman, FCC, Prepared Remarks at The Brookings Institution (Sept. 21, 2009) (noting that Netscape, Facebook, and eBay were all small businesses with "little more than a good idea and a no-frills connection to the Internet" just a few years ago).

30. *See, e.g.*, Ki Mae Heussner, *TIMELINE: Internet Turns 40 Today . . . Or Does It?*, ABCNews.com, Sept. 2, 2009, http://abcnews.go.com/Technology/story?id=8466876 (last visited Dec. 11, 2009) (tracking the development of the Internet and the launches of Web sites such as Yahoo!, Amazon.com, Google, Craigslist, YouTube and Facebook); *see also* Yahoo! Company Page: LinkedIn, http://linkedin.com/companies/yahoo (free membership required) (last visited Dec. 11, 2009) (showing that the web portal, Yahoo!, founded by graduate students in 1994, now employs more than 13,000 people); *see* also Jessica Seid, *Secrets to Becoming an eBay Millionaire*, CNNMoney.com, Aug. 5, 2006, http://money.cnn.com/2006/08/04/smbusiness/ebay_entrepreneur/ (last visited Dec. 11, 2009) (estimating that some 600,000 Americans now earn part of their living by operating small businesses on eBay's auction platform).

government should be mindful of its limited ability to predict the evolution of this vital economic engine.

It is my fundamental belief that regulations should not be adopted to address unsupported anecdotes that lack fact-based evidence of a true and persistent problem;[31] and, today, I question whether there is evidence of a problem with the way networks function that needs to be addressed by government intervention.[32] Instead, we should always ask ourselves if a government-imposed solution is best for consumers and competition. Well-intentioned federal solutions should not be applied to address problems that do not exist. Any actions taken by regulators—as well as those that are not taken—have consequences and can affect markets.

At the same time, I do believe it is reasonable to take a step back to ask tough and probing questions about the Internet as it exists today and about where we want it to be tomorrow. The answers will reveal whether regulation is necessary to achieve the FCC's goals.

We need a complete and accurate understanding of the Internet ecosystem, including its law, engineering, and economics. Before imposing new rules, we need to carefully think through all potential unintended consequences that could harm consumers by increasing prices, impeding innovation, eliminating choices, or reducing quality of service.[33] For example, what does network neutrality regulation do to a satellite provider's ability to deliver broadband? How would a limit on managed services impact innovation? How would lingering regulatory uncertainty about new rules skew incentives for investment in the new network capacity and facilities that have the potential to make network management issues less problematic? How would nondiscrimination impact unlicensed networks? After review of a fully developed record in this proceeding, we may find that exercising regulatory prudence and restraint with regard to

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31. *But see, e.g.*, Formal Complaint of Free Press and Public Knowledge Against Comcast Corporation for Secretly Degrading Peer-to-Peer Applications; *Memorandum Opinion and Order*, 23 F.C.C.R. 13028 (2008); *see also* Madison River Communications, *Order*, 20 F.C.C.R. 4295 (2005).

32. *Compare* 47 U.S.C. § 230(a)(4) (2009) (finding that the Internet and other interactive computer services have flourished, to the benefit of all Americans, with a minimum of government regulation) *with Preserving the Open Internet*, *supra* note 27, at para. 50 (expressing concern about instances in which some Internet access service providers have been blocking or degrading Internet traffic, and doing so without disclosing those practices to users).

33. *But cf.* Julius Genachowski, Chairman, FCC, Prepared Remarks at The Brookings Institution (Sept. 21, 2009) ("This is not about government regulation of the Internet. It's about fair rules of the road for companies that control access to the Internet. We will do as much as we need to do, and no more, to ensure that the Internet remains an unfettered platform for competition, creativity, and entrepreneurial activity.").

network neutrality could be vital to achieving the ambitious goals of the national broadband plan.

The FCC has both the obligation and opportunity to create a regulatory environment that creates incentives for investment across the Internet.[34] Openness must thrive within the Internet as a whole.[35] We cannot confine innovation and investment to the corners of the Internet, but must enable it from end to end. If we focus investment and innovation on applications at the edge of the network at the expense of developing the network's vibrant, dynamic, and technologically evolving core, consumers will suffer.

We must be particularly careful before we risk extending any Internet principles to wireless broadband, which is rapidly becoming the driving force in Internet uptake and use.[36] Additional spectrum availability should increase the capacity of wireless networks and could give wireless network operators additional flexibility in managing traffic on their networks—without government guidance.

We must also remain aware that we are acting in an international context and that all of our actions are carefully watched—not only here, but also abroad—to gauge the future of the Internet. Since the early days of the Clinton Administration, the United States has championed the free flow of all types of lawful information over the Internet.[37] We worked to capture, preserve, and uphold this same openness throughout my tenure in the Bush Administration, at the NTIA in discussions with world leaders, and in forums such as the World Summit on the Information Society and the Tunis Commitment.[38] As we begin the Obama Administration, this free flow of information remains as important as ever, and the United States' role in defending it remains critical.

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34. *Cf.* Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, *Policy Statement*, 20 F.C.C.R. 14986, at para. 5 (2005) (stating that "[t]he Commission has a duty to preserve and promote the vibrant and open character of the Internet as the telecommunications marketplace enters the broadband age" and that it would incorporate the principles in its policy statement "[t]o foster creation, adoption and use of Internet broadband content, applications, services and attachments, and to ensure consumers benefit from the innovation that comes from competition").

35. *See* Jason Oxman, *The FCC and the Unregulation of the Internet* 3 (FCC Office of Plans and Policy, Working Paper Series No. 31, 1999) *available at* http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp31.pdf (attributing the growth and continued success of the Internet and the ability of market forces to sustain that growth to the openness of both the Internet and the underlying telecommunications infrastructure).

36. *See supra* text accompanying notes 14-18.

37. *Cf. supra* text accompanying note 6.

38. Tunis Commitment, World Summit on the Information Society, ITU Doc. WSIS-05/TUNIS/DOC/7-E, World Summit on the Information Society (Nov. 18, 2005) *available at* http://www.itu.int/wsis/docs2/tunis/off/7.html.

## V. CONCLUSION

The FCC has before it historic decisions about the proper governmental role in the future shape of broadband services. This Issue of the *Journal* provides helpful insights as we begin this process in earnest. In the end, I believe that consumers will benefit and competition will flourish if we focus our efforts on ensuring that innovators have the tools necessary to create and compete. In the broadband space, a critical tool is access to spectrum. More spectrum provides a path to ubiquitous broadband availability and greater broadband competition, innovation, and choice. I look forward to future Issues of the *Journal* as we collectively develop a better understanding of the challenges ahead in these broadband debates, and how best to ensure that all Americans benefit from the broadband age.