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Bumps on the Road to the National Broadband Plan

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The FCC's new long-term vision for broadband deployment, featuring connectivity for every citizen, increased spectrum allocation for wireless applications and so on, has been delayed and perhaps sidetracked. Why? The recent Google-Verizon proposal, network-neutrality disputes, uncertainties about the feasibility of "broadband for everybody" policy, and many more issues.

The year 2010 has been tumultuous for the US Federal Communications Commission (FCC), with far more front page publicity than the agency would customarily expect. This article examines several major national IT policy hot buttons related to the FCC that have been increasingly visible. Most publicity has been around the "net neutrality" debate (more later on its status). However, if the FCC had its choice of a single major public policy issue this year, it would have been the March introduction of its blueprint for broadband connectivity in the US — a detailed, comprehensive document called *Connecting America: The National Broadband Plan*.[1] (I call it "the NBP" throughout the rest of this article.)

The FCC introduced its plan with considerable fanfare, and the related website (www.broadband.gov) has provided an ever-expanding collection of tools and news stories related to the NBP. On the site, you can

- see detailed maps of broadband availability and gaps in the US (www.broadband.gov/maps/availability.htm),
- test an individual home or office system for download and upload speed (www.broadband.gov/qualitytest/about), and
- use the Spectrum Dashboard to learn details on spectrum license ownership and what spectrum is still available (http://reboot.fcc.gov/reform/systems/spectrum-dashboard).

The website lists all these services as beta, and the spectrum coverage maps are incomplete, indicating that some of this information isn't available.

The NPB's Goals

The FCC prepared the NBP in house but sought input from the public and private sectors as well as ordinary citizens. They received a lot of input: they held 36 public workshops with online streaming; the ensuing comments resulted in 31 public notices, which elicited 23,000 comments and 1,100 ex parte filings. Nine public hearings followed this.

The plan's centerpiece is six long-term telecommunications policy goals, which are the FCC's "compass" over the coming decade:

- At least 100 million US homes should have affordable access to actual download speeds of at least 100 Mbps and actual upload speeds of at least 50 Mbps.
- The US should lead the world in mobile innovation, with the fastest, most extensive wireless networks of any nation.
- All Americans should have affordable access to robust broadband service, and the means and skills to subscribe if they so choose.
- Every American community should have affordable access to at least 1 Gbit per second of broadband service to anchor institutions such as schools, hospitals, and government buildings.
- To ensure the American people's safety,

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every first responder should have access to a nationwide wireless, interoperable broadband public-safety network.
- To ensure that the US leads in the clean energy economy, all Americans should be able to use broadband to track and manage their real-time energy consumption.

As an example of how the NBP is directly linked with US public policy, one of its key recommendations is to make available 500 MHz of new spectrum within 10 years, of which 300 MHz would be delivered within five years for mobile use. Not long after the NBP's release, President Obama's chief economist, Lawrence Sommers, gave a major address, stating that the administration was going to auction 500 MHz of federal and commercial spectrum. He said, "we are mindful that there is revenue potential. ... What's most important here is to free up a resource for its best uses" (www.newamerica.net/events/2010/technological_opportunities_job_c reation_and_economic_growth).

The Document's Structure

The NBP's introductory chapters define major goals for "a high performance America" and give a report on the state of the broadband "ecosystem" (applications, devices, networks, adoption, and utilization). Then, three sections lay out the structural issues that motivate and justify the future of broadband in the US:

- "Innovation and Investment" covers competition and innovation, spectrum, infrastructure, and R&D.
- "Inclusion" covers availability, adoption, and utilization.
- "National Purposes" covers healthcare, education, energy and the environment, job training and workforce, local and regional economic development, public safety, implementation and benchmarks, and so on.

The plan is interesting, goal oriented, relatively easy to follow, and literally overflowing with specific recommendations — telecommunication statistics and insights, legislation, priorities, and so on. Especially valuable is the "National Purposes" section, which makes a compelling case for broadband's importance from different application perspectives. The healthcare chapter analyzes the key broadband-related elements, such as health IT, e-care, electronic health records, telehealth, and mobile health. It clearly spells out the crucial link between broadband proliferation and healthcare improvements in the US. And there are plenty of zingers. For example, if everyone had broadband, corporations could save US$500 billion over 15 years by using electronic health records and video consultations between doctor and patient.

The education chapter discusses the connection between broadband availability and the need for more teachers with science, technology, engineering, and mathematics qualifications. It also stresses online learning's importance and the crucial role of the E-rate, an FCC-managed subsidy for schools and libraries.

The chapter on energy and the environment points out that widespread broadband deployment could help prevent another $6 to $10 billion disaster such as the 2003 Northeast Blackout. All the chapters come with specific rationales and detailed government policy options.

Broadband Deployment in Underserved Areas

How popular is the FCC's broadband goal for all Americans? Lately, not very. First, here are some demographics: overall, 65 percent of American families have home broadband. That number falls to 59 percent for African-Americans and to 49 percent for Hispanics, although their broadband use has risen significantly over the past year. Not surprisingly, disparities exist across age, education, and income. Households earning over $75,000 (strongly correlated with higher education levels) have 91 percent connectivity, whereas those earning under $20,000 have less than 40 percent connectivity.

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Broadband deployment has started to level off in the US. In 2009, 63 percent of American homes were connected; in 2010, it's 66 percent. This small rise was due mostly to significant increases in use by African-Americans and Hispanics. But the idea of broadband service for everyone as a "right" isn't widely accepted.[2] A recent Pugh Foundation study found that more than half of Americans feel the government's plan to extend broadband to all citizens is unnecessary.[3]

Between 14 and 24 million Americans aren't being served at all (home, office, cell phone, and so on), reminiscent of the digital divide discus-

sions some years ago — many haves, a few have-nots. Several NBP goals are aimed directly at the problem, such as shifting the emphasis of the FCC's Universal Service Fund (USF) from wireline to broadband (which I explain later), increasing spectrum availability, and collecting better data on areas served. But is delivering broadband capability the same as generating new users? FCC Commissioner Robert McDowell calls this the difference between deployment and subscribership. Stated differently, there's no guarantee that greater availability to this underserved population will result in high usage rates.[4] Internationally, this view isn't as prevalent. On 20 September 2010, the United Nations secretary general, Ban Ki-Moon, and ITU Secretary-General, Hamadoun Touré, strongly endorsed a policy statement calling for "Broadband Inclusion for all," which describes high-speed Internet networks as "a basic civil right" (www.itu.int/net/pressoffice/press_releases/2010/33.aspx).

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Government Aid for Broadband Deployment

By the end of September 2010, the US federal government had distributed $7.2 billion of the American Recovery and Reinvestment Act stimulus funds through the Department of Commerce's National Telecommunications and Information Administration (NTIA) and the Department of Agriculture's Rural Utilities Service (RUS). The first round of applications, which began in 2009, aggregated $2.2 billion and resulted in 2,200 applications, and 150 grants were awarded — 82 by the NTIA and 68 by the RUS. The current round totals $4.8 billion.

Department of Agriculture Secretary Tom Vilsak described the characteristics of the first round's $1 billion for the RUS projects as going to 38 states and bringing broadband service to 530,000 residents, 93,000 businesses, and 3,000 anchor institutions such as schools, libraries, hospitals, and other community centers.[5] He also says that it created 5,000 immediate jobs for those laying the infrastructure. Although most of the activity involved fiber connections, 20 percent of the projects were all-wireless and another 30 percent had wireless components. Most funding went to established firms.

Vilsak also noted that most projects achieved Internet speeds greater than the NBP's minimum goals. But the NTIA and RUS will likely face dangers because they have very small oversight staffs. A recent US Government Accountability Office report cautioned that the fund allocations must be watched closely, including monitoring that each project offers service to profitable and nonprofitable entities.[6]

Reforming the USF

The $7.2 billion one-time stimulus package is a lot of funding, but the USF allocates more than that every year. The USF has four major programs:

- High Cost aims to offer service in all regions at costs "comparable to urban areas" ($4.6 billion allocated in 2010).
- Low Income offers local telephone discounts for low-income subscribers ($1.2 billion).
- Schools and Libraries (E-rate) subsidizes Internet access to schools and libraries ($2.7 billion).
- Rural Healthcare provides reduced rates for rural healthcare providers ($214 million).

The USF's total planned allocations for 2010 are $8.7 billion.

The USF, aimed primarily at wireline service to poor or underserved areas, is gradually turning its attention to the NBP's broadband goals. Most of the USF's annual expenditures are for contracts with large providers, such as Verizon, Qwest, AT&T, but how much investment is too much? A USF-funded installation in Chelan, Washington, delivered broadband service to 17 residents at an average price of nearly $18,000 each (www.washingtonpost.com/wp-dyn/content/article/2010/07/19/AR2010071905193.html). Most major players, such as the FCC commissioners, service providers, and Congress, agree that major changes must be made to the USF and its $8 billion-plus annual allocation.

But changing the emphasis from wireline to wireless will take time. The USF must make adjustments, such as

- aiming for broadband for everyone;
- realigning itself to the current broadband and wireless marketplace, not wireline connections;
- giving vendors and potential vendors time to adjust to the changed policy; and
- focusing on the highest-yield projects and making the process transparent, especially because it involves constituent services that interest Congress.

The NBP gives the following example of the USF reform complexities:

> Because broadband is not a supported service [in current FCC regulations], today there is no mechanism to ensure that support is targeted toward extending broadband service to unserved homes. Today, roughly half of the unserved housing units are located in the territories of the largest price-cap carriers, which include AT&T, Verizon and Qwest, while about 15 percent are located in the territories of mid-sized price-cap companies such as CenturyLink, Windstream, and Frontier. While current funding supports phone service to lines served by price-cap carriers, the amounts do not provide an incentive for the costly upgrades that may be required to deliver broadband to these customers.

Back to the Network Neutrality Debate

Improving access to rural areas and major overhaul of the USF would undoubtedly have been on the preferred public agenda in 2010 for the FCC. Instead, the net neutrality debate has monopolized the blogs and front pages. As journalist Greg Goth has reported in recent issues, the FCC has limited authority over broadband networks and was hoping to implement a "third way" — a group of steps that would give it responsibility and control for several aspects of broadband delivery, especially data transmission.[7,8] The US Court of Appeals' ruling in April 2010 that Comcast was within its rights to selectively limit the flow of BitTorrent traffic has complicated the FCC's hopes to have this stronger role in broadband transmission.

Who's for and who's against a stronger role for the FCC in broadband transmission? The opposition comes from ISPs such as Comcast, AT&T, Qwest, Time Warner Cable, and Verizon. They feel that greater FCC control would reduce the number of companies willing to take investment risks in building infrastructure and in other entrepreneurial activities.

On the other side are content providers and other organizations such as those represented by the Open Internet Coalition — PayPal, eBay, Amazon, InterActiveCorp (IAC), Facebook, and others. They're concerned that tiered services would reduce their reach and affect profits, permitting the ISPs to shape the content providers' fates in a less regulated world. Barry Diller, entrepreneur and IAC president, in a short interview with *Fortune*, said that net neutrality opponents want to set up a toll system on what should be a free highway (www.openinternetcoalition.org). Senator Al Franken of Minnesota worried that right-wing blogs might be able to send out opinions much faster than the opposition.

The Google and Verizon Policy Statement

The major attention-getter has been a recent agreement between content provider Google and service provider Verizon and the ensuing polarizing debate. They issued a joint policy statement that essentially set up a model for their preferred version of net neutrality.[9] Some of the statement's key aspects include[10]

- "newly enforceable FCC standards,"
- "prohibitions against blocking or degrading wireline Internet traffic,"
- "prohibition against discriminating against wireline Internet traffic in ways that harm users or competition,"
- "presumption against all forms of prioritizing wireline Internet traffic,"
- "full transparency across wireline and wireless broadband platforms," and
- "clear FCC authority to adjudicate user complaints and impose injunctions and fines against bad actors."

The statement also describes three protections:

- Providers must comply with consumer protection standards.
- New services must be "distinguishable in scope and purpose" from Internet access.
- The FCC has the right to monitor new offerings and intervene where necessary.

The two companies call their plan nothing more than a "template for legislation." Wireline services are covered pretty much as net neutrality proponents would have preferred, but wireless is specifically exempted. Opponents of this special treatment for wireless, such as Senator John Kerry of Massachusetts, fear that the major telecommunications companies will attempt to throttle competition.[11] *The Economist* weighed in recently, saying that the answer to the net neutrality problem in the US is for the major ISPs to share their networks with each other, as they do in most other industrialized countries.[12] As for the fear that open access would reduce the incentive for infrastructure development, *The Economist* says that the reverse is true — other nations have "faster, cheaper broadband than in America."

Does this mean that Google will establish special, superfast downloads for YouTube, games, or other popular content at a premium rate? Is it fair to have neutrality for wireline and non-neutrality for wireless? If fewer than half the current fixed Internet connections meet the NBP standard now,[13] will there be enough infrastructure for mobile broadband to be able to take up the slack? People are asking dozens of questions such as these, and it will probably require

legislation by Congress or, better still, constructive negotiations among all the parties to sort everything out. The FCC recently deferred any new decisions by asking for additional comments on the question of regulations governing wireless service,[14] removing it from consideration until after the midterm elections.

From a public-policy perspective, the FCC is dealing with a different set of priorities now than it anticipated six months ago, when the NBP was promulgated. Stay tuned through your wireline or wireless connections for updates. Everyone would agree with a recent statement by FCC chairman Julius Genachowski: "As we have seen, the issues are complex, and the details matter" (www.nytimes.com/2010/09/02/technology/02fcc.html). House Energy and Commerce Committee Chairman Henry Waxman tried to move a bill through Congress that would let the FCC enforce some net neutrality rules, but he admitted 29 September 2010 that this would be impossible in the near term, saying, "If Congress can't act, the FCC must" (http://online.wsj.com/article/SB10001424052748704116004575522381624084378.html?mod=rss_whats_news_technology).

References

1. *Connecting America: The National Broadband Plan*, US Federal Communications Commission, 2010; http://download.broadband.gov/plan/national-broadband-plan.pdf.
2. J. Lubin, "Broadband Access—a Civil Right in the Digital Age," *Salon*, 15 Mar. 2010; http://open.salon.com/blog/judy_l/2010/03/15/broadband_access_a_civil_right_in_the_digital_age.
3. A. Smith, *Home Broadband 2010*, Pew Research Center, 2010; www.pewinternet.org/Reports/2010/Home-Broadband-2010.aspx.
4. G. Gross, "FCC: Broadband Deployment Isn't Happening Fast Enough," *Computerworld*, 20 July 2010; www.computerworld.com/s/article/9179443/FCC_Broadband_deployment_isn_t_happening_fast_enough?source=rss_news.
5. L. Sutphin, "Secretary Vilsack Touts Efforts Made by RUS," Broadband Census News, 2010; http://broadbandbreakfast.com/2010/06/secretary-vilsack-touts-efforts-made-by-rus.
6. *Recovery Act: Further Opportunities Exist to Strengthen Oversight of Broadband Stimulus Programs*, US Government Accountability Office, 2010; www.gao.gov/products/GAO-10-823.
7. G. Goth, "The Global Net Neutrality Debate — Back to Square One?" *IEEE Internet Computing*, vol. 14, no. 4, 2010, pp. 7–9.
8. G. Goth, "Something's in the Air—Broadband Advances Depend on Wireless, *IEEE Internet Computing*, vol. 14, no. 5, 2010, pp. 7–9.
9. "Verizon-Google Legislative Framework Proposal," Verizon and Google, 2009; http://docs.google.com/viewer?url=http%3A%2F%2Fwww.google.com%2Fgoogleblogs%2Fpdfs%2Fverizon_google_legislative_framework_proposal_081010.pdf.
10. "Facts about our Network Neutrality Policy Proposal," Google, 12 Aug. 2010; http://googleblog.blogspot.com/2010/08/facts-about-our-network-neutrality.html.
11. "Kerry Renews Call for an Open Internet," press release, J. Kerry, 2 Sept. 2010; http://kerry.senate.gov/press/release/?id=1CAABB54-7CA3-41C0-AFDA-262AF3085561.
12. "The Web's New Walls: How the Threats to the Internet's Openness Can Be Averted," *Economist*, 2 Sept. 2010; www.economist.com/node/16943579.
13. *Internet Access Services: Status as of June 30, 2009*, US Federal Communications Commission, Sept. 2010; www.fcc.gov/Daily_Releases/Daily_Business/2010/db0902/DOC-301294A1.pdf.
14. E. Wyatt, "F.C.C. Seeks More Input on Wireless Internet Rules," *The New York Times*, 1 Sept. 2010; www.nytimes.com/2010/09/02/technology/02fcc.html?_r=2&th&emc=th.

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