Rural Broadband: Are We There Yet?

BY RICHARD BENNETT | MAY 2011

The FCC’s 2011 Broadband Competition Report finds that wireline broadband deployment to rural America has stalled, while mobile broadband deployment is accelerating across the entire country. The conclusion that leaps from the report is that we’ve reached a saturation point for wireline broadband deployment, but that continued investment in mobile broadband makes this relatively unimportant. It appears that all of the markets that can sustain wireline broadband without subsidies have been served, and it will be up to other technologies – such as 4G mobile broadband and satellite – to provide broadband service to the rest of rural America. Mobile broadband is advancing at a rapid rate in terms of both performance and penetration.

INTRODUCTION

The FCC’s 2011 Broadband Competition Report (called the “706 Report” by the policy community after the section of the Communications Act that requires it) makes two tremendously important findings:1

1. The buildout of wireline broadband networks in rural America has essentially concluded; there was no significant increase in the availability of wireline broadband in rural America between July 2009 and June 2010, the period covered by the report.
2. Mobile broadband is taking off at an enormous pace, and will soon pass wireline in total number of connections.
The first finding comes as no surprise. Last year’s 706 Report showed a slowing rate of broadband deployment. Although the $7.2 billion dollars devoted to broadband in the stimulus package should have produced a small result (and may still) essentially all of rural America with sufficient population density to sustain self-supporting wireline broadband networks has now been served. The FCC estimates that 8% of Americans lack access to a wireline or terrestrial wireless broadband service offering, and therefore must content themselves with satellite-based Internet service or old-fashioned dial-up.

The second finding should not be a surprise either. Mobile broadband is taking off and currently reaches much of rural America, but the FCC lacks detailed data on mobile coverage and is therefore unable to assess just how far 3G and 4G wireless technology extends. This shortcoming needs to be addressed in next year’s 706 report.

**THE WIRELINE PICTURE**

The two subsidy programs – the $3 billion Broadband Initiatives Program (BIP) and the $4 billion Broadband Technologies Opportunities Program (BTOP) – created by the American Recovery and Reinvestment Act (ARRA) that were meant to improve broadband coverage largely in rural America haven’t produced measureable effects so far, but the Commission expresses confidence that they will. The agencies that administered these programs, the Rural Utility Service (RUS) in the case of BIP and the National Telecommunications and Information Administration (NTIA) for BTOP, have been broadly criticized for releasing their funding too slowly and for funding second and third pipes rather than focusing on unserved areas. In any case, subsidy programs such as these (and the current Universal Service Fund that is need of reform) are the only realistic means of extending wireline broadband deeper into rural America, so a re-focusing of USF is essential if we expect future 706 reports to show improvement.

**THE OVERALL PICTURE**

The Commission’s report relies on data collected by NTIA for its National Broadband Map, a project that collects data on the census tract level. According to this map, mobile broadband is making great strides in rural America, reaching 86% penetration by census tract, more than all of the wireline technologies combined, without the benefit of subsidies.

There is, of course, ongoing debate over the substitutability of mobile broadband for wireline broadband. The current generation of coaxial cable-based broadband, DOCSIS 3, provides a 160 Mbps download channel for sharing among 200 – 400 households, and leading-edge vDSL+ tops out at 25-50 Mbps per household on short telephone twisted pair loops (the higher speed depends on bonding copper pairs, a practice currently confined to CenturyLink’s offerings.)

Mobile systems using HSPA+, such as T-Mobile’s 4G service, can provide a theoretical top speed of 42Mbps, but in practice speeds in the 5 - 10 Mbps range are more common (top speed requires close proximity to the radio tower and ideal interference conditions.) LTE technology, now being rolled out by many carriers, pushes the theoretical limit close to 100 Mbps, and doubles the practical limit where spectrum and backhaul are not limiting factors to the 10 – 20 Mbps range.
The proper conclusion to draw from the data presented in the report is that the market for rural broadband is increasingly competitive.

All of these technologies exceed the FCC’s latest definition of true broadband, 4 Mbps downstream and 1 Mbps upstream, and are therefore substitutable for the 706 report’s purposes. Mobile systems also provide the unique benefit of mobility and are not shared at the end user location as much as wireline systems are; each residential wireline connection serves the entire household, while mobile broadband typically serves an individual user per connection.3

The proper conclusion to draw from the data presented in the report is that the market for rural broadband is increasingly competitive because wireless providers – especially mobile ones – are now effectively competing with rural telephone and cable companies for the provision of broadband services. The level of service available in both urban and rural areas is also improving.

MARKET SHARE

Some advocates insist that America is headed toward a broadband monopoly because the peak speeds achievable by cable modem systems are higher than those achievable by DSL. This analysis is dubious because cable modem systems are much more highly shared than the connection-per-household method used by DSL. Highly shared systems such as DOCSIS have an advantage in terms of web surfing, but are disadvantaged for capacity-intensive applications such as video streaming relative to DSL.

The FCC’s data confirms that there is no trend toward increasing concentration of market share for cable modem, although fiber to the home (FTTH), a technology with even greater capacity than cable, is gaining on DSL. In fact, cable owns a smaller market share today that it did in 2005, when the DSL structural separation regime was finally ended.
THE COMMISSION’S CONCLUSION

While subsidy-assisted wireline networks have failed to progress in the past two years, largely because of the program’s timing relative to the weakness of the economy and the relatively poor administration of subsidy programs, mobile networks are continuing to advance in terms of coverage and performance in both urban and rural areas. Although there is scant mention of satellite-based broadband in the report, improvements are taking place with that technology as well, although it will remain the broadband system of last resort because of its half-second round trip latency.

The Commission’s majority draws a different conclusion from the one suggested by the data, however, declaring: “...we must conclude that broadband is not being deployed in a reasonable and timely fashion to all Americans.”4 This conclusion has been rightly criticized as inconsistent with the report’s data. It depends on two subjective judgments on the part of the majority:

REDEFINING “DEPLOYMENT” AS “ADOPTION”

First, the report redefines “deployment” and “availability”, its Congressional directive, in terms of “adoption and use.” Despite the fact that Congress clearly directed the Commission to focus the findings of this report on the simple buildout of broadband networks, the Commission decides that broadband adoption is a more interesting subject. Indeed, as greater than 90% of Americans (100% if we include satellite broadband) are now able to purchase broadband service, the fact that adoption and use is limited to the 65% who choose to participate in the broadband Internet becomes more compelling.
Increasing broadband adoption should now become a higher priority item for the Commission and policy makers in general, so it’s hard to fault the report completely for wishing to make this change to its mandate. But the fact remains that the policy measures that increase adoption and use are very different from those that stimulate buildout, and many advocates have blurred this distinction. The failure of network providers to extend services to rural areas requires network subsidies, but the failure of citizens to purchase necessary services (and equipment with which to use them) suggests a different set of remedies altogether. We have long argued that the United States should invest in initiatives to stimulate digital literacy, computer ownership, and broadband adoption. The nations with extremely high broadband adoption, such as Korea and Singapore, have achieved it by serious and long-running digital literacy and computer ownership programs designed to teach the broader population the benefits of Internet use. Such programs should be a major part of America’s rural broadband strategy going forward, and have relevance among urban populations as well.

MOBILE BROADBAND EXCLUSION

Second, the report also deliberately excludes mobile broadband from its conclusions about broadband availability, for two reasons: 1) the Commission’s data on actual mobile download speeds are not measurement-based and are of uncertain performance; and 2) the Commission judges that most mobile networks in use at the time that the report’s data were collected were incapable of sustaining high enough speeds to be judged “true broadband.”

If the 706 mandate were to present Congress with a static picture of the American broadband landscape, this exclusion might be permissible, but in the larger context it represents a grave error. Indeed, one of the most pernicious fallacies in communications policy is the tendency to regard network initiatives as events rather than processes. The advance of technology is continual and relentless, not isolated to once-in-a-generation events such as the allocation of a swath of spectrum to AM radio use, for example.

While policy makers could afford to make this mistake a half century ago when the pace of technological improvement was relatively slow, in an era dominated by the Internet in which applications are developed at Internet speed, it’s inexcusable. Yet it’s a mistake that policy makers continue to make. Emerging systems such as incumbents’ own rural LTE rollouts plus Verizon’s rural LTE partnership program and LightSquared’s wholesale LTE network will dramatically reshape the rural broadband landscape in America, and their results should be included in the FCC’s next survey.

CONCLUSION

Congress asked the FCC to give it a picture of progress, not simply a year old snapshot of data easily accessible to a reporting system updated once a year. Progress in broadband technology is continual. 4G broadband coverage is increasing steadily, as is the ownership and use of 4G devices and 4G adapters for personal computers.

The 4G buildout is the single most important trend for broadband in hard-to-serve areas. The redefinition of the 706 mandate and the deliberate exclusion of mobile networks from
the solution set caused the FCC to overlook the most important technology development of the past two years.

If we examine the dynamic factors driving broadband at higher speeds into more parts of the United States and the increasing willingness of people to use broadband on wireless devices and personal computers, there is reason to celebrate the progress that we’ve made as a nation. If we focus instead on the fact that the advance of mobile networks makes copper wire networking less attractive in hard-to-serve areas, we can only bemoan a lack of progress. The correct way to view the data that go into the 2010 Broadband Competition Report is that the glass, while not full, is filling in a timely and reasonable manner. It remains true that a large segment of the population chooses not to participate in the broadband revolution, and for them an active campaign needs to be mounted by community-based organizations with taxpayer support to encourage broadband adoption. Such programs have been highly successful in other parts of the world.

To suggest that the buildout is not progressing is to delude ourselves; to admit that many people are being left behind despite the progress of the buildout is to recognize an important reality, albeit one that Congress has not yet asked the FCC to address.
ENDNOTES


3 In-home sharing of wireline connections shouldn’t be confused with the sharing of the connection to the home; DSL doesn’t share the last mile while DOCSIS and wireless do.

4 Seventh Broadband Progress Report and Order on Reconsideration.


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