

# The National Broadband Plan: Bringing Rural America into the 21<sup>st</sup> Century or Bringing it to its Knees?

Dale Lehman<sup>1</sup>

The release of the National Broadband Plan marks the Federal Communications Commission's effort to carve a government policy to deliver world class broadband service throughout the nation to all its citizens. Some say this policy initiative is long overdue. Ironically, the details of the Plan threaten the very foundation upon which universal telephone service has been established and extended throughout rural America. This document describes these details and the dangers they pose for rural communities served by rural telecommunications companies.

## Summary

The National Broadband Plan (NBP) abandons the explicit legislative universal service goal of "reasonably comparable rates and services" for an arbitrarily chosen divide between what is to be available in urban and rural areas of the nation. The relatively modest broadband targets envisioned for rural America stand in stark contrast to what is likely to be enjoyed in urban areas. When combined with the technological capabilities available today, the NBP imposes a wireless broadband footprint for rural areas, with no assurance that a robust wireline infrastructure will be available for the future. This is the product of a number of factors combined in the plan: reliance on a single "cost-efficient" technology in each community, dramatically riskier revenue flows for rural carriers, and a fixed size Universal Service Fund being called upon to do more, which result in potentially significant reductions in revenues for incumbent rural ILECs.

The NBP proposes to pay for broadband, in part, by imposing price cap regulation on rural ILECs. This is expected to lead to efficiency gains and it should. However, the efficiency gains are likely to come at the expense of universal service – price cap regulation is intended to emulate the incentives of a competitive marketplace – the same competitive marketplace that cannot be relied on to provide universal service. It has been the relative certainty associated with rate of return regulation that has enabled rural carriers to deploy advanced infrastructure even when it may be inefficient to do so.

The plan expects loss revenues for rural ILECs to be offset (partially) by increased contributions from vertical services offered over broadband platforms. Yet these platforms themselves will promote retail competition in vertical services that promise to make such profit contributions temporary at best, but more likely illusory. The plan provides no mechanism for recovery of investments *already made* under the current rules, to provide universal service to rural communities. The result is increased uncertainty for small rural carriers – a surefire way to undermine further investment in rural networks.

---

<sup>1</sup> Dale Lehman is Professor of Economics and Director of the MBA and Executive MBA programs at Alaska Pacific University. He has published extensively in the areas of demand analysis and public policy in the telecommunications industry. He has a BA in Economics from SUNY at Stony Brook and MA and PhD degrees in Economics from the University of Rochester.

The NBP proposes to expand the extent to which large price cap carriers will receive support for providing broadband, while maintaining the current size of the fund. It offers this support without any commensurate duties imposed on the receiving carriers – no common carrier requirements and no assurance that the support will be used to further the goals of universal service.

NBP cost estimates are based on one crucial assumption which is not supported by any evidence. It is that a wireless broadband infrastructure can adequately substitute for a wired one. There is much evidence for the ability of narrowband wireless to substitute for the voice services offered over traditional wireline networks. There is also considerable evidence that wireless broadband will be used extensively. What is missing is evidence that wireless broadband will be used as a *substitute* for wireline broadband rather than as a complement to it. Yet the NBP envisions 83% of communities to be served by a wireless broadband infrastructure, and jeopardizes the wireline infrastructure that has been (and continues to be) built in these rural areas.<sup>2</sup>

This white paper will examine the NBP in terms of the goals of universal service policy, its mechanisms, and the crucial assumptions that the plan relies on. The picture that emerges is one of rural communities being shut out of a robust and reliable broadband future rather than an articulation of a universal broadband policy for the next century.

## **The Goal of Universal Service Policy**

The National Broadband Plan (NBP) represents a significant departure from prior universal service policy. The Telecommunications Act of 1996 (the “96 Act”) stated specifically that “Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications *and information services*, including interexchange services and advanced telecommunications and information services, that are *reasonably comparable* to those services provided in urban areas *and that are available at rates that are reasonably comparable* to rates charged for similar services in urban areas.” (Section 254 (b) (3), emphasis added) Reasonably comparable services at reasonably comparable rates has been the benchmark for universal service policy since 1996.

The NBP proposes to abandon this legislative standard and enshrine a digital divide standard. Despite claims that the NBP process would be evidence-based (“This process would also be data-driven, meaning there would be no pre-baked conclusions”)<sup>3</sup> the NBP plan goals themselves appear not to be developed from any fact-based inquiry. More disturbingly, the NBP adopts a constraint that the total Universal Service fund should be no larger than it is presently – with no supporting evidence provided that such levels are sufficient.

---

<sup>2</sup> As Chapter III of OBI Technical Paper No. 1 states (at page 35), “One issue with this approach is that it assumes that existing networks will be available on an ongoing basis. To the extent that existing networks depend on public support, such as USF disbursements, the total gap for providing service in unserved areas could be significantly higher than the incremental calculation indicates.” The sweeping changes embodied in the NBP undermine this assumption of continued availability of existing networks.

<sup>3</sup> Chairman Julius Genachowski, Prepared Remarks on National Broadband Plan, FCC Open Agenda Meeting, December 16, 2009.

Goal No. 1 calls for 100 million U.S. homes to have affordable access to actual download speeds of 100 Mbps (upload speeds of at least 50 Mbps), a goal likely to be met by market forces on their own, while Goal No. 3 says that “Every American should have affordable access to robust broadband service.” This ubiquity goal is not defined until chapter 8, which provides “an initial universalization target of 4 Mbps of actual download speed and 1 Mbps of actual upload speed.”

The NBP calls for the Commission to reexamine the universal target (initially set at 4 Mbps downstream/1 Mbps upstream) every 4 years to ensure that it is adequate. The credibility of the Commission in meeting such reexamination requirements is questionable, however. The plan contains no criteria concerning adequacy, nor any requirement that speeds be upgraded to match urban availability. Absent criteria to use to determine how target speeds should evolve, periodic reexamination is likely to become more political than an evidence-based decision.

We should recall that the 96 Act called for the Commission to revisit the definition of universal service: “The Joint Board may, from time to time, recommend to the Commission modifications in the definition of the services that are supported by Federal universal service support mechanisms.” Despite such a recommendation by the Joint Board in November 2007 (noting that the definition had remained unchanged after a decade “despite numerous proposals for change”), the Commission did not act on this until the NBP. Further, under section 706, the Commission was to issue regular reports on the availability of advanced telecommunications capabilities to all Americans. In the most recent such report (Fifth Report, GN Docket No. 07-45, June 12, 2008), the Commission concluded “that the deployment of advanced telecommunications capability to all Americans is reasonable and timely.” (at paragraph 59) Commissioner Copps dissented from the report, stating that “We can write reports that conclude that Americans are receiving broadband in a reasonable and timely fashion. But the facts are always there, glaring and staring us in the face, showing us where we really stand.”

The Commission’s record suggests that such temporary targets (4/1 Mbps) should be viewed as semi-permanent, subject to change only when political forces demand such change. This is particularly true given the proposed changes in USF – changes that threaten the financial viability of providers that would be investing in infrastructure capable of delivering speeds beyond the ubiquitous 4/1 target. Thus, the universal target in the NBP is really a bifurcated target (100 squared for urban America and 4/1 for the rest). This digital divide is enshrined by a combination of policy changes envisioned to the universal service mechanisms in chapter 8 of the NBP.

## **The Mechanisms of Universal Service Policy**

There are a number of reforms to universal service support that, while individually may have a sensible basis, when taken together will undermine universal service and delegate rural America to a second class network. The primary reforms at issue are:

Single Low Cost Provider: The NBP calls for support to flow to a single provider (at most) in any region, that being the one with the lowest cost of provision. Reverse auctions are but one means to achieve this. Given the low bar (4/1 Mbps) set for broadband service, this is likely to be met mostly through

wireless technology. In fact, the Broadband Availability Model estimates that wireless is the low cost technology for 83% (2278 out of 2745) of the counties in the US with unserved households. While the benefits of wireless technology are obvious and valuable, wireless is presently a limited solution for high-speed broadband access. Availability, quality, and upgrade characteristics are inferior compared with wireline technologies. While this may change in the future, it is not certain that wireless will offer an acceptable substitute for wireline broadband access. Consumer needs for broadband speed will also increase in the future, so the relative gap between the two technologies may not close over time.

The NBP plan broadband gap technical paper does provide analysis of alternative speed targets for ubiquitous access. For speeds higher than 4Mbps downstream, only wireline technologies are considered. Thus, the NBP does not consider wireless technologies to be proven substitutes for wireline broadband if the target speed is set much higher than the envisioned 4/1 Mbps. We can expect wireless technology to improve, but we should also expect that broadband bandwidth needs will continue to increase. While good evidence has not yet been developed, it is plausible that wireless costs increase more rapidly than wireline costs as bandwidth needs rise.<sup>4</sup> Figure 1 is illustrative of the likely relationship between wireless and wireline broadband costs and the ubiquity target for a given area:

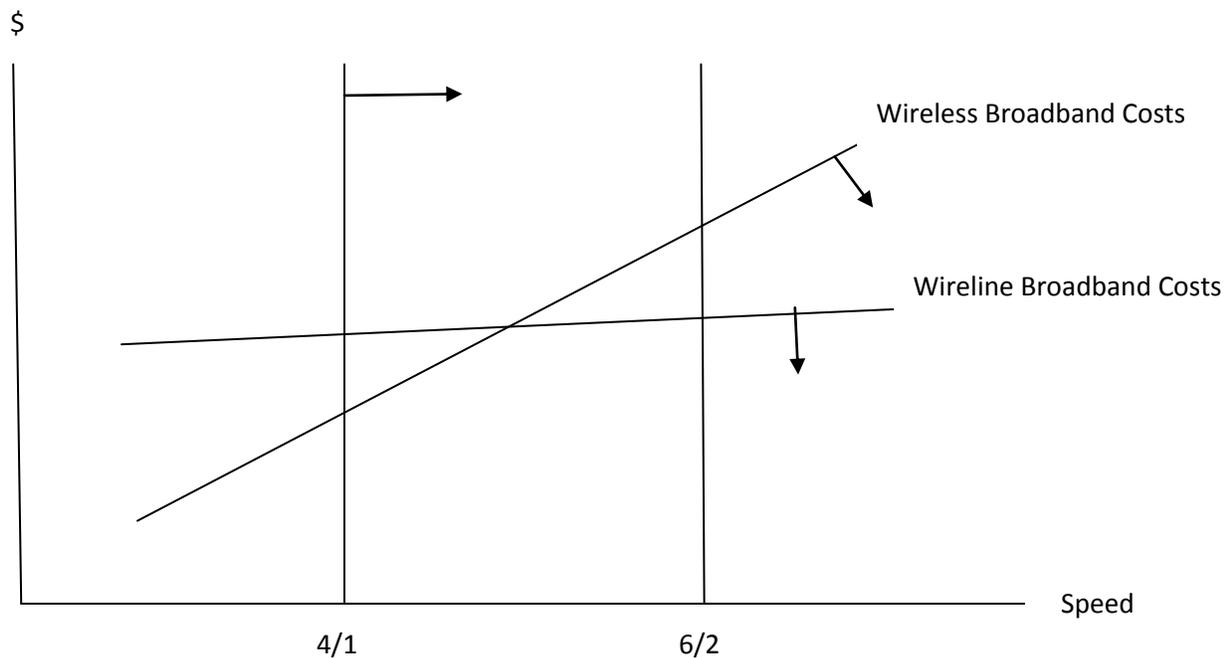


Figure 1: The Relationship between Alternative Technology Costs and Universal Service Target Speeds

Figure 1 is indicative of a single (hypothetical) community where the NBP envisions wireless broadband to be the most cost effective technological choice for meeting the 4/1 speed target. It also shows that wireline is the more efficient technology for some higher speed target (such as the speculated 6/2

<sup>4</sup> One reason for this speculation is that wireless is a shared medium so that the bandwidth available to a single subscriber depends on the total number of simultaneous subscribers. In addition, increased bandwidth requirements would require increased numbers of towers, a very costly proposition in sparsely populated rural areas.

shown in Figure 1). The figure shows that wireless costs increase more rapidly than wireline costs as speed requirements increase (illustrated by the steeper line for the wireless costs). Finally, the arrows indicate the likely direction of future changes: both technologies will experience improvements and cost decreases and the speed requirements will also increase. A cost efficient technological choice for one broadband speed may not be cost efficient for a different speed target. Further, a cost efficient technological choice for today may not be the efficient choice in the future. Absent evidence on the precise shapes of these relationships and their likely shifts over time, the FCC's Broadband Gap Analysis is an incomplete and perhaps shortsighted view of broadband for rural America.

The limitation of USF support to the single low cost provider will limit much of rural America to a wireless future not equal to what is available in urban areas. Wireless technology has an essential role to play in rural economic development, but it is as a complement to wireline technology and not a substitute for it (more on this later).

Elimination of Rate of Return Regulation (RORR): The NBP calls for price cap regulation to replace RORR, citing the better efficiency properties of the former. This is inconsistent with the observation in the NBP that "roughly half of the unserved housing units are located in the territories of the largest price-cap carriers." (at page 141) Price cap regulation has performed as theory predicts: under price caps, firms only undertake profitable investments. Providing ubiquitous broadband service to rural America is not a profitable endeavor. So, the NBP seeks to impose a regulatory regime on rural carriers that undermines their incentive to invest in ubiquitous broadband. Most rural ILECs have invested in broadband infrastructure beyond what constitutes profitable business decision-making, based on the assumption that the current support system would remain in place.<sup>5</sup> The NBP would put an end to this behavior in the name of "universal service policy." It is inappropriate to try to emulate a competitive market outcome when forming universal service policy. The purpose of universal service policy is to achieve an outcome that would *not* be produced by a competitive market.

Extension of USF to the Largest Price Cap Carriers: The NBP, in recognizing the large gap in broadband availability in regions served by the largest price cap carriers, proposes to "target" support to such areas. Undoubtedly, these carriers will be willing to invest in infrastructure if USF pays them to do so. This is particularly true if USF will pay them to extend their wireless infrastructure in rural areas, as all of the largest price cap carriers have publicly stated that their future is as wireless carriers. Provision of support to these carriers may indeed be good policy, but when combined with a desire to cap the size of

---

<sup>5</sup> For example, a detailed study in Missouri ("Commissioners' Report on Missouri Broadband Availability," September 18, 2007, Missouri Public Service Commission) found that "small, rural telecommunications carriers have been more aggressive in offering broadband to customers throughout their service territories than their larger rivals." One particular finding was that in exchange areas with less than 10,000 households, DSL was available to 80% of households, while large carriers offered broadband access to only 59% of households in communities with less than 15,000 households (and evidence suggests that the population density of communities served by large carriers is higher than those served by small carriers, even after adjusting for community size). These large carriers are price cap regulated, so we can take their deployment as an indication of the extent to which a sound business case exists for broadband provision. Thus, it is evident that small carriers have provided broadband beyond what market incentives alone would dictate. Moving these carriers to price cap regulation is a step in the wrong direction for the communities they serve.

USF at current levels, it can only mean significantly diminished support for the smaller ILECs that have been serving rural America all along.

It is also premature to simply extend USF to these price cap carriers without considering a number of complicating circumstances. These carriers voluntarily adopted price cap regulation, often “paying” for it through significant infrastructure investments, yet these “upgrades” failed to deliver broadband to many rural communities.<sup>6</sup> Many of these carriers’ rural lines were part of previous mergers and/or acquisitions and subject to numerous conditions as part of these transactions. A number of states have applied their own resources to address broadband availability in the regions served by these large price cap carriers. Finally, absent strong monitoring and accountability safeguards (regulatory requirements that these carriers have been systematically attempting to dismantle), there can be no assurance that these carriers will use USF support for the purposes for which it is intended. All of these circumstances need to be carefully considered before shifting USF support from current recipients to these large price cap carriers.

Use of Unsustainable Revenues to Offset Broadband Costs: The NBP calculates a Broadband Availability Gap by estimating the incremental costs associated with broadband deployment and then netting out revenue, “whether the revenue comes from the sale of voice, data or, in limited cases, multichannel video services.” (chapter 8, at page 137). This revenue is based on estimated subscription rates and prices for these broadband-based services. However, this methodology belies the nature of the market for these value added services. They are either competitive enough to ensure that no supra-normal profit can be earned, or they lack competition in ways that would render the net contribution of these services to carrier profits negligible or even *negative*. Voice and data services appear to approach conditions of a contestable market. Entry and exit is fairly easy and relatively inexpensive. The array of services already available through broadband is large and rapidly growing. For example, consider the following table illustrating a portion of Voip services available over a broadband pipe:

Service	Price	Selected Features
Magic Jack	\$39.95 first year, \$19.95 extra years	Unlimited North American calling
PhonePower	\$14.95/month	Free North America calls, cheap international calls
ITP	\$9.99 for 500 minutes	Unlimited global calls for \$24.99/month
Vonage	\$25.99/month	Unlimited free calling to 60+ countries
Skype	Around \$0.02/minute to landlines and mobiles worldwide	Free unlimited in-network calling
VoiceLine from net2phone	\$24/month	Unlimited North American calling

<sup>6</sup> This may have been due to poor carrier decisions or “regulatory failure” to properly articulate the goals of these infrastructure upgrades. The story may differ depending on the carrier and the state. The point is that these complexities should be considered before USF support is simply expanded to include the rural lines served by these carriers.

Google voice (formerly Grand Central)	Free at present	Extensive call and number management capabilities
<a href="http://www.voip-info.org">www.voip-info.org</a> lists well over 100 such services in the US and many more worldwide		

Notably, all of these services include the full range of vertical features for no additional cost. With broadband, there are no contributions to be earned through voice services, so the NBP should not impute any to offset the costs of providing the broadband capability.

For video services, the picture may be more extreme. As discussed below, *wholesale* video markets are not as competitive as internet based voice and data services (nor are they as competitive as *retail* video delivery markets), particularly given the trend towards media concentration.<sup>7</sup> If any revenue from these services is used to offset broadband provisioning costs, then it should be the net revenues – that is, revenues net of costs (especially programming costs). While large telecommunications carriers may view video (and associated triple-play bundles) as a lucrative venture, small ILECs are likely to offer such services to meet their customers’ needs, even if the business case is marginal (or worse). It is possible that incremental revenues from video services will not offset the incremental cost. An example of the evolving video marketplace is ESPN 360 which uses a business model familiar to TV. ISPs contract with ESPN, paying a fee for every broadband subscriber in place of selling service directly to retail customers. In such a model, the revenues will flow from the broadband provider to content providers, rather than the other way around. Small ILECs cannot count on earning any contribution from other parts of the value chain to offset incremental broadband costs. The business case for broadband must rest on a revenue flow (including USF) that fully recovers the incremental costs of offering broadband capabilities.

There is a way to resolve the issue of offsetting revenues that also addresses the thorny issue of net neutrality. The Connect America Fund (CAF) is envisioned to replace the high cost USF for a broadband world. Given that the CAF is to address the gap between the costs of providing broadband in high cost areas and the potential revenues, we are looking at areas that lack the economies of scale and density that make broadband provision a self-sustaining market decision. In that setting, it makes sense to require any recipients of CAF to abide by a reasonable set of common carrier principles, including:

- A goal of promoting competition in the provision of competitive applications and services utilizing broadband internet access.
- A goal of not funding duplicative facilities in market areas that do not possess the economies of scale to support commercial development.
- A requirement to provide broadband access service of comparable quality and at comparable rates to that available in urban areas.
- A requirement to provide all customers with broadband internet access service on the same terms and conditions (non-discriminatory access). Customers should be permitted to attach devices of their choice and to transmit and receive content of their choice in accordance with the Commission’s Network Neutrality principles.

<sup>7</sup> The proposed COMCAST-NBCU merger is only the latest in the trend towards consolidation in the mass media. For detailed evidence on consolidation in media markets, see Eli Noam, *Media Ownership and Concentration in America*, Oxford University Press, 2009. While Professor Noam finds a complex picture overall, he documents rising concentration in mass media markets.

- A guarantee that the carrier will have an opportunity to earn a competitive return on its broadband access investments. This means that they are entitled to recover their investments in broadband access, as well as earning a competitive return on those investments. It means that they should not be required to cross-subsidize the provision of universal broadband service with the provision of competitive services and applications that utilize this access.

Recipients of CAF would be permitted to offer competitive applications and services, but given the common carrier principles above, these value added markets are contestable. This means that there are no excess profits to use to offset the investment in universal broadband access. If a carrier manages to earn any profits from their value-added services, it must be due to higher quality and/or unique cost efficiencies – otherwise, the common carrier principles permit other market participants to copy these offerings and compete away any excess rents. Thus, the CAF must fund the entire gap between the costs of providing universal broadband access service and the revenues that can be earned solely from universal broadband access service (at comparable rates to those in urban areas). Net neutrality and common carriage simplify the calculation of this gap by separating the access service from services that ride on top of this access.

Reform of Intercarrier Compensation (ICC): The NBP proposes that the FCC eliminate per-minute ICC charges, noting that they are unsustainable in a broadband environment. This is certainly true and reform is urgently needed. However, the NBP fails to recognize the scale of the problem and its unique importance to rural ILECs. Small rural ILECs derive 29% of their total revenues from federal USF and 31% from interstate and intrastate access charges.<sup>8</sup> This level of support needs to be shifted to a sustainable base, but it cannot be eliminated without undermining the financial viability of these companies. By definition, ICC payments must net to zero, so a decrease of \$2 billion for rural ILECs means a windfall gain of \$2 billion for other carriers. Whatever the efficiency gains that may accompany reductions in ICC payments, this large wealth transfer can only jeopardize universal service goals – especially when the recipients of this transfer are not required to use it to promote universal service.

Capping USF while expanding eligible recipients and services, and shifting ICC to USF is an equation that does not balance. To be sure, there are savings to be realized through the elimination of duplicative and unnecessary support (such as multiple wireless CETC recipients within the same region), but the scope of the savings does not match the scope of the proposed additions to USF.

Stranded Investment: The NBP makes no provision for stranded investment. The cost estimates used in the Commission’s Broadband Availability Model assume that the existing network infrastructure continues to be available at no additional cost.<sup>9</sup> Rural ILECs are assumed to provide a backup network, and continue investing in and maintaining it, without any additional support. About half of the investment by rural ILECs is currently unrecovered and any universal reform plan must include full recovery of these prudent investments that were made under the previous system. This issue reappears under the various upgrade options considered in the Model. The Model finds that it is generally better

---

<sup>8</sup> D. Lehman, “The Next Three Years: Likely Revenue Scenarios of Rural Incumbent Local Exchange Carriers,” OPASTCO White Paper, May 30, 2008.

<sup>9</sup> See footnote 2 above.

to meet the 4/1 Mbps target now and wait until the future for further upgrades. This result is driven mainly by the discounting of these investments as they are moved further into the future. However, it is not clear whether the Model fully recovers the initial network investments under these scenarios. For example, if the demand for bandwidth increases more rapidly and 4/1 Mbps is not adequate in 10 years time, then the initial broadband investment (which utilized a 20 year depreciation life) must be recovered in 10 years time, not 20. It is not clear that the Model has included accelerated depreciation in its incremental cost calculation, just as it did not include the full investment recovery of today's wired network. The result of these issues is that investment by rural ILECs becomes far riskier. A national broadband plan that diminishes the investment incentives of those carriers completely devoted to the needs of rural telecommunications consumers cannot achieve its objectives.

### **Landline and Wireless: Substitutes or Complements?**

The NBP sets a low speed threshold for ubiquitous broadband access and implicitly assumes that wireless and wireline technologies are substitutes for meeting this target. The Model estimates the least cost technology and assumes that only one provider will be supported in each area. The perception of substitutability, however, is a misperception. Little evidence exists concerning the extent to which wireless and wireline *broadband* access are substitutes.<sup>10</sup> What does exist is substantial evidence that wireless and wireline *voice* access and usage are substitutable.

For example, the most recent evidence from the Centers for Disease Control show that 24.5% of American homes had only wireless access during the last half of 2009.<sup>11</sup> But, "households are identified as "wireless-only" if they include at least one wireless family and if there are no working landline telephones inside the household." This data does not indicate whether the household has broadband access at all. Similarly, almost all studies of wireless/wireline substitutability examine voice usage substitutability, or substitutability between second fixed access lines and mobile access. It is likely that many "wireless-only" households have a wireline broadband service as well. To the extent that they only have wireless access to any telecommunications service, they are likely to be demographic groups for which their choice is between wireless-only access or no access at all (for example, young teenagers living at home, who would not have their own access if it were not a wireless subscription).

To put wireless substitution in further context, the most recent FCC data<sup>12</sup> shows that 20% of residential lines are VOIP interconnected lines. This is of a similar magnitude to the 24% that the CDC reports as "wireless only." While these two sets of households are certainly not the same, there is probably significant overlap. Some of the "wireless only" households have wireless + broadband + VOIP. So, the

---

<sup>10</sup> Vogelsang, "The relationship between mobile and fixed-line communications: A survey," *Information Economics and Policy*, 22, 2010 notes the need for empirical work on the degree of substitutability between fixed-line and mobile broadband service. Among the sources cited in this survey, is a discussion paper by Stumpf ("Regulatory Approach to Fixed-Mobile Substitution, Bundling and Integration," WIK Discussion Paper No. 290, 2007) which finds that "fixed-mobile substitution at the broadband access level is still nascent."

<sup>11</sup> Centers for Disease Control, "Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, July-December 2009," May 12, 2010.

<sup>12</sup> Local Telephone Competition: Status as of December 31, 2008, FCC June 2010.

degree of substitutability of wireless broadband for wireline broadband cannot be ascertained from current data on households that have “cut the cord.”

A notable exception is a research study from Europe.<sup>13</sup> While it finds significant substitutability between fixed and mobile usage, it concludes that “mobile access is not a substitute for fixed access for private users.” (at page 21) This study did not look at fixed/mobile substitution for broadband access, nor am I aware of any such study at this time. There is one study that has examined the effect of broadband penetration on the adoption of 3G wireless service: it finds that “the higher the use of broadband and the wealthier the people in a country the more likely it is that they will adopt third generation services. It may, however, be the case that third generation mobile will substitute for fixed broadband at a later time, if it crosses a certain performance/price level threshold.”<sup>14</sup>

In the absence of any evidence, the degree of substitution between fixed and mobile broadband access is unknown. It is easy to imagine cases where they are substitutable: an individual with a smartphone forgoes wireline access and relies on their mobile broadband access alone. However, it is also easy to imagine that the same individual has a very high speed broadband connection at home, and uses mobile broadband while away from home. Mobile broadband is fine for browsing the web, but opening and reading large documents is still easier on a personal computer at home. As technology evolves, both wireless and wireline speeds will increase, but so too will consumer demand for speed.<sup>15</sup> Editing video files, for example, requires a very fast connection. To declare these broadband access paths as substitutes at this time will limit the economic and social value of broadband access for rural America. For example, a future university student may be able to access an online class over their smartphone, but may not have the wireline broadband access at home required to fully participate in their education.

## Future Investment

Broadband is merely the next stage in network evolution. Future telecommunications networks will depend on continued investment in, and maintenance of, networks. Rural networks have always been more costly to build and operate, lacking the economies of scale and density of urban areas. Many rural ILECs owe their existence to the fact that large carriers did not find it profitable to incur the significant costs to install and maintain rural networks. Rural ILECs depend on USF and intercarrier compensation payments for a significant portion of their revenues. Investment funds come from retained earnings and

---

<sup>13</sup> Briglauer, Schwarz, and Zulehner, “Is Fixed-Mobile Substitution strong enough to de-regulate Fixed Voice Telephony? Evidence from the Austrian Markets,” September 2009, published online by ePub, <http://epub.wu-wien.ac.at>. While this study was focused on voice service, it did provide separate estimates of cross elasticities for access and usage.

<sup>14</sup> Bohlin, Gruber, and Koutroumpis, “Diffusion of new technology generations in mobile communications,” *Information Economics and Policy*, 22, 2010, at page 55.

<sup>15</sup> A study by Vantage Point Solutions (*Providing World-Class Broadband: The Future of Wireless and Wireline Broadband Technologies*, NTCA ex parte in GN Docket No. 09-51, May 20, 2010) finds that “The amount of bandwidth per customer is significantly greater for a FTTP network when compared to a wireless network...The bandwidth advantage for FTTP will increase significantly in the coming years due to technology advances with the electronics.” (at page 12) Also not factored into the NBP are impending changes in the way that mobile services are priced. Recent introductions of usage limits on broadband data plans may impact both the usability and cost of wireless broadband services.

debt. The NBP threatens these revenue flows, rendering the availability of future investment funds questionable.

Capital markets dislike uncertainty – and the NBP represents uncertainty about the majority of the revenues of rural ILECs. Lack of “sufficient” and “predictable” funding equates to higher capital costs and less availability of funds for investment.<sup>16</sup> Whatever the merits or deficiencies of the NBP, there can be no doubt that the NBP creates a more uncertain environment for future rural ILEC revenues. Accordingly, there can be no doubt that the result is to inhibit the ability of these carriers to continue to invest in rural networks.

Other nations appear to be more cognizant of the need to continue investing in rural networks. While the NBP sees 83% of the unserved households being served by wireless broadband, Finland is investing in fiber to the home for rural areas. For example, Supermatrix, a joint effort of the Finnet Association (27 rural carriers) and computer hardware and software manufacturers, is investing EUR 1 Billion over the next ten years for the Finnet Group:

“The model is expected to spread globally. The project aims at bringing 100-megabits and faster connections to homes and desktops, making personal computers obsolete. This is the world’s first project where the operator aims to virtualise users’ computers and will provide the whole desktop as a service.”

This is in a country which is one of the world’s leaders in broadband adoption, and a nation that has a high penetration of wireless broadband already. The vision is not to settle for a relatively low speed mobile broadband connection, but instead to invest in fiber to the home:

“The local telecom operators participating in Supermatrix project are within their districts committed to providing every house with a fibre optics connection to the nearest datacenter located in local telecom switch center. They are also committed to providing every household a multiple 100 MB/s connections – which is quite enough for HDTV, and also for lightly compressed computer display and audio digital streams. This makes it possible to have a computer in a datacenter and its’ peripherals in a user’s home.”<sup>17</sup>

This vision of ubiquitous cloud computing may or may not turn out to be accurate. But the NBP is placing a bet on the sufficiency of wireless broadband to serve the needs of much of rural America. This seems foolhardy. Rather than determining the future of rural networks based on today’s understanding, it would be better to let market forces have more sway. This requires financially health rural carriers with the ability and incentive to invest in rural networks and a universal service policy that clearly establishes the goal of comparable services at comparable rates for rural and urban areas alike.

## Conclusion

---

<sup>16</sup> Section 254 (b) (5) refers to “specific and predictable support mechanisms,” while 254 (e) states that “[A]ny such support should be explicit and sufficient to achieve the purposes of this section.”

<sup>17</sup> See <http://www.supermatrix.fi>.

The FCC has been handed a significant task to design a national broadband plan. The current effort contains much useful information and modeling – but, as a planning effort falls far short of the goal. Rather than starting with a clear vision and determining what resources would be required to attain it, the NBP has started with a clear constraint – that the existing size of the Universal Service Fund should be maintained – and attempted to determine what objective could be achieved with these resources. The result is not visionary for rural America. The plan’s bifurcated targets are likely to be achieved for urban areas without any actions by the FCC. Rural areas, however, will not be served by the targets the FCC has set.

The Commission should return to the first step of the process. They should articulate a universal service goal for broadband – one that builds on past legislative intent and recognizes the importance and reality of a broadband world. Rural areas should have comparable services available at comparable rates to what is available in urban areas. This means that last mile costs, middle mile costs, and content costs must all be considered as part of the equation. Only after the funding requirements for such a goal are established, can the means for meeting this challenge be examined.

Rather than recognizing the essential role played by small rural ILECs in meeting the challenge of a universal broadband future, the NBP poses a grave threat to their future viability. Small rural ILECs have historically played a crucial role in bringing modern telecommunications infrastructure to uneconomic, high-cost, low-density regions of the nation. They continue to play this role today. In this era of “too big to fail” let’s not relegate rural America to the status of “too small to survive.”