

Making the National Broadband Plan Work for America

**Free Press
December 2009**



Executive Summary

The Federal Communications Commission is currently engaged in the most sweeping review of communications policy since the 1930s. Tasked by Congress in the American Recovery and Reinvestment Act to create a National Broadband Plan, the FCC is charged with producing a blueprint for building a 21st-century information infrastructure — a world-class national broadband network for all Americans.

If the FCC succeeds, the National Broadband Plan will lead to sweeping changes in communications law that reflect the centrality of broadband to modern life. No longer is Internet access a “nice to have” entertainment service; it is now a “must have” critical infrastructure. If the agency fails, Americans will be stuck with failing broadband markets that hobble the potential economic and social benefits of universal connectivity.

This paradigm-shifting moment in communications policy requires bold leadership and broad public engagement. However, because many of the issues faced by the FCC are technocratic, it is difficult for interested citizens to evaluate whether the agency is on the right track. This issue brief is designed to highlight the central questions that will make or break the National Broadband Plan.

These are the key questions the FCC will have to answer:

- *Competition Policy: Will the FCC finally admit we have a problem?* The National Broadband Plan must forge a new competition policy to break from the mistakes of the past and trigger new market forces.
- *The New Digital Divide: How do we build world-class networks outside big cities?* The Plan must assess whether the economics of next generation networks will deliver a natural monopoly to much of the nation.
- *Universal Service: How do we serve rural America without breaking the bank?* The National Broadband Plan must lay out a bold blueprint for transforming the Universal Service Fund for the broadband future.
- *Middle-Mile: How do we get increasing Internet traffic from communities to the Internet backbone?* The National Broadband Plan must study how to affordably connect local networks and the Internet backbone.
- *Spectrum: Will our wireless future be consolidated or competitive?* The National Broadband Plan must account for whether reassigning the public airwaves will reduce wireless competition.
- *Adoption: How do we bring people to broadband?* The National Broadband Plan must recommend a variety of programs to bring equipment, training, and low-cost connectivity to disadvantaged communities.
- *Data: How will the FCC collect the information it needs for broadband policy?* The National Broadband Plan must set up a new system for data collection as the foundation of the next decade of broadband policy.

- *Openness: How will the FCC ensure open and competitive markets for devices and content?* The National Broadband Plan must pursue openness policies for Internet content, set-top boxes, and wireless handsets.

The success or failure of the National Broadband Plan will turn on the strength and ambition of policies to promote competition, openness, accountability and public-private partnerships for investment and innovation.

Introduction

The Federal Communications Commission's National Broadband Plan is due to Congress on Feb. 17, 2010. The document should represent the culmination of a major shift in telecommunications policy initiated by the American Recovery and Reinvestment Act — a move toward developing the Internet as critical two-way communications infrastructure. This change of governing philosophy reflects the increasing centrality of Internet access to economic, social and political life in America. No longer is Internet access a “nice to have” service for consumers — it is a “must have” service for the public like water, electricity, and telephone service. Internet access is also a key to our global competitiveness, an engine for economic growth, and a fundamental element of health care, education, and energy in the 21st century. In this light, the lack of meaningful market competition and the vast digital divide that separates millions from accessing a world-class information network pose a grave threat to our long-term economic growth, social mobility, and widespread political participation.

Unfortunately, the United States has been moving in the wrong direction in recent years, slipping down the ranks of the world's leading broadband nations. Under no global measure does the United States finish in the top 10. Our networks are several times slower and more expensive than the broadband service in many European and Asian countries. Meanwhile, even as the Internet becomes more important every day to economic and social opportunity, more than 30 percent of American households do not have Internet access. In the country that invented the Internet, we have failed to recognize that it is the critical infrastructure of the 21st century.

Consequently, the FCC must act — and fast. The agency must develop a new regulatory framework to govern broadband, trigger new competitive forces, and find a way to achieve lofty goals in very short order. This is the FCC's most important moment in modern memory, a time when a little known federal agency bears an outsized share of the responsibility for our national prosperity. The National Broadband Plan may well be the most important government program the public has never heard about.

At its core, the FCC's task is to create policies that achieve two simple and yet incredibly difficult goals:

- 1. Create a world-class broadband Internet network that is available and affordable for all Americans to serve as the public's 21st-century information infrastructure.*
- 2. Encourage a combination of market competition and government programs that move the nation toward universal adoption and maximum utilization of Internet infrastructure.*

We have a long way to go to reach either of these goals. Yet some reports indicate the FCC may be shrinking in the face of its enormous responsibility.¹ This is not a moment for plodding incrementalism or to succumb to the politics of business-as-usual in Washington. This is a moment to learn from the mistakes of the past and embrace the ideal of a national information network that will fuel our economy,

¹ See e.g. Craig Matsumoto, “FCC Explains Its Broadband Plan,” *Light Reading*, Dec. 4, 2009. Blair Levin, the FCC official in charge of the National Broadband Plan, has voiced concerns that ambitious goals may be too difficult to include in the final report.

polity and society. It is a time to kick the parochial politics of corporate special interests to the curb and uphold the public interest.

This short issue brief is intended to serve as a tool for the public to assess the National Broadband Plan. It lays out the core issues the National Broadband Plan must address. Some of these issues are relatively opaque and technocratic. But they all hold direct implications for the everyday life of nearly every American. This paper engages the arcane terminology of the FCC's debates but attempts to render them in the context of their larger implications for the public.

This analysis is not intended to be exhaustive. The FCC will take up many more issues than those discussed here. But it does include the basic components needed to deliver a world-class information infrastructure connecting all Americans. Any successful National Broadband Plan will have to address the critical questions listed below and point the FCC in the direction of good solutions. If the FCC clearly answers each of these questions, we will be in good shape. If it doesn't, we should be worried.

Critical Questions the National Broadband Plan Must Answer

Competition Policy: Will the FCC finally admit we have a problem?

For nearly a decade, the debate over broadband competition in Washington has been an increasingly tortured game of pretending we have broadband competition in America when almost any consumer can see that we clearly do not. We used to have competition: In the Telecommunications Act of 1996, Congress implemented a system that required telecommunications network owners to share their infrastructure with competitive providers. But in the years that followed, the powerful incumbent monopolists used the courts and the FCC to kill this regulatory system. As the rest of the world was successfully adopting this competitive model we invented, our leaders were abandoning it. Instead, they bet that competition between cable and telephone networks using different technologies would work out just as well. It didn't.

Now the world's leading broadband nations overseas are enjoying healthy broadband competition that has triggered higher speeds, lower prices, and wider deployment. In the United States, we're 10 years behind, and we're stuck with a market structure that is very difficult to steer back to where we were before we went off course. The facts on the ground are stark. Here in the United States, the duopoly phone and cable incumbents control 95 percent of the entire wired and wireless high-speed Internet access market.² Prices are on the rise,³ and the incumbents have executed a deliberate strategy to slow innovation and deployment, hoping to squeeze every last dime out of yesterday's technologies.⁴

What the FCC should do: First and foremost, the FCC should make a clean break with the policies of the past eight years and declare that our broadband competition policy is a failure. We've already admitted that our health care and energy policies have failed; this is just one more gut-wrenching error we need to set about fixing right away.

² See *Dismantling Digital Deregulation*, at Figure 6. This data also indicates that incumbents control 97 percent of the wired market.

³ See e.g., John Horrigan, "Home Broadband Adoption 2009," Pew Internet and American Life Project, June 2009.

⁴ See Comments of Free Press, In the Matter of *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act, A National Broadband Plan for Our Future*, GN Docket Nos. 09-137, 09-51, pp. 52-54 (Sept. 4, 2009).

The simplest way to admit our mistakes is to report to Congress an honest assessment of the state of market competition and the consequences of inaction. The National Broadband Plan must look at market power, abuses of such power, and how such abuses are costing American consumers billions in lost surplus and holding back innovation and investment.

The weak competition between the cable and phone companies is not creating the incentives needed to build a world-class infrastructure. Mobile wireless Internet access service is not a substitutable competitor, and it probably won't be anytime soon, if ever. Broadband over powerline service doesn't exist. Satellite broadband is only good compared with nothing.

As a part of the FCC's statutory mandate, it should make a *negative* finding in its annual report to Congress on the state of broadband deployment (known as the Section 706 report). This will be a reversal of the rose-colored approach of prior commissions. We can't erase the mistaken predictions and misguided decisions of the past – but we can acknowledge past failures, learn from them, and not repeat them.

Going forward, the FCC should begin a comprehensive investigation of how we can forge a competition policy that has meaningful public benefits. The National Broadband Plan should address the issue of competition in every major facet of its major policy pronouncements. If the FCC's analysis shows we are likely to have a monopoly wireline network in much of the country – how will competition policy address that problem? If the way we've divvied up the public airwaves is likely to mean further concentration in the wireless market, what measures can be taken to preserve competition? And how can we learn from the success of our international competitors and find policies that fit the circumstances of our marketplace?

The FCC commissioned one of the most important studies of international broadband ever done from the Berkman Center at Harvard University. It shows unequivocally that competition policy strongly correlates with increased broadband adoption and the deployment of world-class networks.⁵ And yet, that study has barely received as much attention from the FCC's broadband policy team as any of the more than two-dozen subjects put out for public comment. No one will fault the FCC for being thorough – but the absence of real engagement with competition policy, if it continues, will be a gaping hole in the final plan.

The New Digital Divide: How do we build world-class networks outside big cities?

Every American home that lies outside a major urban center currently represents a major policy conundrum for the National Broadband Plan. Today, we are beginning to see world-class networks deployed in the major cities. In some cities, both the local cable and telephone companies are building networks capable of speeds of 100 Megabits per second (Mbps) for downloading and uploading Internet content. There is a strong business case for Wall Street to invest in these areas. Population density, median income, and purchasing power for a suite of monthly services (telephone, cable TV and Internet)

⁵ We recognize that Berkman's conclusions are controversial. But achieving the optimal level of competition is not a controversial goal. How and whether open access policies should fit into the regulatory regime is a matter for future debate, but we believe the debate to date has been too narrow. As discussed in *Dismantling Digital Deregulation*, the Commission could develop a market power analysis that looks for specific geographic areas where competition is lacking, and surgically apply access policies in such markets. It could revisit existing policy levers that could inject much needed competition into the ISP market, such as allowing third-party ISPs to utilize the cable leased access rules to deploy alternative DOCSIS services. It could even investigate new models that encourage deployment by surgically imposing access policies in some areas lacking competition and next-generation infrastructure and forbearing those access policies once an incumbent makes investments in next generation infrastructure and offers services at reasonable prices. The bottom line is access policies are not an "all-on" or "all-off" choice, and the FCC should not limit its possibilities.

make these areas lucrative. In most cases, the economics of deployment mean that networks will first appear in rich neighborhoods and then elsewhere. Though there remains a risk of redlining low-income communities in major urban centers, over time it appears likely that most urban homes in these coastal cities will be connected to a 21st-century infrastructure.

Outside of this handful of cities, however, the calculation changes. There are whole states and regions of the country that have been written out of the business plans for world-class networks. Verizon — the nation's leader in high-octane broadband networks — sold off all of its networks in Maine, Vermont and New Hampshire in 2008 to a small company called FairPoint. So far, FairPoint has struggled to provide minimal broadband service for a year and has failed to meet benchmarks for deployment; the company is now in bankruptcy. Next, Verizon wants to sell off its lines in 13 more states to Frontier, a transaction pending approval at the FCC. And AT&T and Qwest are under pressure from Wall Street to follow Verizon's lead.

But the companies buying from Verizon — and others like them operating in these less-populated areas of the country — have no plans to offer top-notch broadband networks. Instead of the infrastructure currently being deployed in parts of New York, Philadelphia, and Washington, much of the country will see incremental improvements to the status quo, at best. The investment incentives and market structure are still calibrated for high-margin entertainment services rather than universal infrastructure. This is what the new digital divide looks like: world-class networks on the Eastern seaboard and second-class networks everywhere else. Call it the “FairPoint Problem” — one of the most difficult challenges facing the FCC.

What the FCC should do: The answer to the FairPoint Problem is a combination of interventions that include transaction concessions, public investment, competition policy, demand aggregation, and some tough decisions about the viability of maintaining both a cable network and a telephone network as competing broadband infrastructures in these regions. We will focus here on the last point on this list because it is the most difficult policy challenge the Commission must solve.

A big part of our broadband problem is that we have chosen to support a market structure premised on the notion that the market can support two wires, cable and phone, delivering broadband service into every home in America. That was largely true up until now — the pivotal moment when we're making a commitment as a country to massively upgrade our infrastructure. The economic case for two wires that deliver world-class speeds at reasonable prices can only be made in major urban areas. To get away from the FairPoint Problem, the FCC is going to have to pick a horse. One of these networks is going to deliver world-class infrastructure; the other is not. There appears to be no business case for bringing both wires up to that level. If this conclusion is accurate, then most of the country will be forced to choose between a world-class network that is a regulated, natural monopoly, or the status quo of two second-class networks. In that case, either we accept that we are headed toward a natural monopoly now — or we squander resources propping up two wires until we're forced to choose one.

Different regions may have factors supporting the elevation of one network over another. And though there has been a heavy focus on upgrading the telephone network from copper wires to fiber-optics, the economics of the regions with the FairPoint Problem suggest a different answer is needed, at least for the short term. Cable networks have deployed to over 90 percent of these households. The cost to upgrade these cable networks to the most advanced standard of cable modem service that can deliver world-class quality is a fraction of the investment needed to put fiber to all of these homes.

This is a crucial point that the FCC's team appears to be overlooking. It has stated that it would cost \$350 billion to bring 100Mbps networks to all Americans, but this estimate appears to be based on deploying new fiber optic lines to every home in the country. But this assumption overlooks the fact that the cable

industry's existing hybrid fiber-coaxial (HFC) cable infrastructure can be cheaply upgraded, providing this level of service to 92 percent of American homes for less than a billion dollars.⁶

The FCC can face this reality — or continue (at least implicitly) to support a broken duopoly of substandard cable and telephone networks that will only offer slow, incremental improvements before reaching the same inevitable conclusion. However, if the FCC is going to embrace the economic logic of marshalling resources and policy to build a single world-class infrastructure, it must allow for competitive providers to share this network rather than building their own. And the FCC must ensure that whatever network remains embraces public service obligations like universal service and emergency communications.

There are, of course, more caveats.⁷ But the FCC should begin by tackling the tough question about whether the first answer to the FairPoint Problem is accepting a natural monopoly in some areas and letting the rest of the answers flow from there.

Universal Service: How do we serve rural America without breaking the bank?

For most of the 20th century, the FCC has been tasked with the goal of bringing telephone service to every American household. The history of the policies enacted to achieve this goal is labyrinthine — but each policy, one way or another, created large sums of money to subsidize telephone service for rural Americans. The past 20 years of political machinations have given us a policy (the Universal Service Fund, or USF) that only a Washington sausage-maker could love. The lion's share of the Fund basically works by taking money from the phone bills of urban subscribers and handing it to rural telephone companies to underwrite their networks. The system is bloated, inefficient, wasteful, and backward — and yet the goal it serves is a worthy one. We do need a policy that creates subsidies to guarantee universal access to our telecommunications networks. But the one we have is broken, and the last few attempts to fix it have failed.

Consensus has been building in Washington that the subsidies for telecommunications in the 21st century should be invested in broadband infrastructure, not telephony, and that over time the total amount of the bill covered by urban ratepayers should decrease. Almost no one agrees on *how* to do that, but the basic outlines for the right policy are relatively clear. Only politics stands in the way, and the National Broadband Plan gives the FCC a trump card against all of the special interests that will stake a claim for the status quo.

⁶ The HFC network currently passes 125.7 million homes in the United States. Of these 125.7 million, more than 121 million currently can receive cable modem service. The maximum speed available to most cable customers through this HFC network is currently 10-15 Mbps where customers share 38.8 Mbps of capacity. But the actual HFC network is capable of delivering maximum data speeds of 5,000 Mbps. To unlock this potential, U.S. cable operators need to implement a new technology standard called DOCSIS 3.0. Some providers like Comcast are already deploying early versions of this technology, increasing the shared capacity to 155 Mbps from 38.8 Mbps, and using multiplexing, offering 100 Mbps packages to individual customers. Perhaps the most amazing aspect of this is that expanding the shared capacity to 155 Mbps is estimated to cost only \$8-\$10 per household. (These figures exclude the cost of a cable modem rental fee, whose costs are recouped through a separate line on a customer's bill. See Jeff Baumgartner, "Charter Talks Docsis Costs," *Cable Digital News*, Sept. 11, 2008). We estimate that the existing cable HFC infrastructure could be upgraded to DOCSIS 3.0 for a cost of approximately \$600 million. This estimation assumes a cost of \$9 per home passed, excluding areas already upgraded.

⁷ Over time, the HFC cable networks may not be able to offer future-proof quality like full fiber-optic networks — although this problem could be remedied by pushing fiber from the node to the curb. In addition to short-term investments in upgrades, we should be setting aspirational goals for future-proof networks in the medium term. And regardless of which technology provides last-mile service, there will need to be substantial attention paid to delivering the infrastructure needed to carry user-generated Internet traffic back to the Internet backbone. Eventually, we'll need to deploy fiber deeper on every network.

What the FCC should do: The agency should rewrite the rules governing USF support for rural telephone companies. First, over a period of five to 10 years, the old system subsidizing telephony must be phased out for a new one subsidizing the construction of broadband networks. Money for telephony underwrites a single service; money for broadband underwrites an entire network upon which infinite services can be offered, including voice calling.

Second, the new rules should “flip the fund around,” or structure the subsidies in a manner that recognizes the possibilities of a converged broadband network. Currently, USF subsidies pay for the ongoing operating expenses of rural telephone companies. In a world of a single application telephony networks, this made sense, as the bulk of costs were not upfront expenses, and also because the revenue-generating potential of the telephone network was very limited. But broadband is a general purpose network with low operating costs that can support voice, data and cable television services, dramatically increasing the network’s revenue-generating potential and thus reducing the need for ongoing subsidies. Instead of continuing the old subsidy model, the new USF should fund the initial construction costs for deploying high-capacity broadband lines in unserved areas. While the old support model doled out subsidies based on a regulated profit on a price-regulated basic telephone service, the new USF should base ongoing support on a provider’s total revenue-earning potential from telephone, broadband, and cable TV offered over their new, higher capacity lines. This new approach would dramatically reduce the need for ongoing support in most areas, as triple-play revenues will be more than enough to ensure that these rural networks are self-sustaining.

Once the FCC factors in these revenues, we can phase out most of the ongoing subsidies for their networks, except in the most rural of localities. Alongside tighter oversight and incentives for efficiency, this structural policy change will reduce the total cost of the Fund over time to a fraction of its current size.⁸ And it will leave rural Americans wired with a network that has a chance of achieving the standard of being reasonably comparable in quality and price to the rest of the country — which is the goal of infrastructure policy. It is not enough to bring the lowest common denominator of broadband service to rural America. We do not underestimate the complexity of achieving the many policy changes required for this scenario to be implemented.⁹ But these complexities must be faced rather than ignored or avoided.

Middle-Mile: How do we get increasing Internet traffic from communities to the Internet backbone?

If we achieve the goal of expanding the capacity of local networks to give American consumers access to world-class broadband speeds, it is possible that some of the networks that carry this traffic from our towns and cities up to the Internet backbone (known as “middle mile”) will be overwhelmed. The FCC will have to create a plan for expanding these networks to meet the demand they hope to create among broadband subscribers for high-capacity service. This challenge is compounded by the fact that the FCC has never collected data on where these “middle mile” networks exist, who runs them, and how much traffic they carry.

⁸ For a full discussion of this USF reform proposal, see “Testimony of S. Derek Turner, Research Director, Free Press, Before the United States House of Representatives Committee on Energy and Commerce, Subcommittee on Communications, Technology and the Internet, Regarding Universal Service: Reforming the High-Cost Fund,” March 12, 2009.

⁹ See “Dismantling Digital Deregulation: Towards a National Broadband Strategy,” S. Derek Turner, Free Press, May 2009, pp. 81-109 for analysis and recommendations on some of the other issues impacting USF reform. See also Letter from Ben Scott, Policy Director, Free Press, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 05-337, 06-122, CC Docket Nos. 96-45, 01-92, Oct. 24, 2008 for recommendations concerning intercarrier compensation (ICC) reform and its relationship to USF reform.

We do, however, have a few critical pieces of information to help guide the policy choices. First, there is a great deal of publicly owned fiber-optic cable in the ground — particularly in the Midwest. These lines are dramatically underutilized in most cases and could be repurposed to serve as middle-mile infrastructure. Second, we know that prices for middle-mile transport of data to and from the backbone of the Internet are dramatically higher the farther they are from the coasts. There are two possible reasons for these higher prices. One is that the existing owners (usually AT&T or Qwest) have capacity in their networks but use monopoly control to get higher prices by creating artificial scarcity. The other is that there is legitimately insufficient capacity in middle-mile lines. Assessing the nature of each middle-mile market will lead to different policy solutions.

What the FCC should do: This is going to be a multi-stage process. First, policies should be implemented to keep rates fair in areas where the FCC finds that monopoly pricing is running up the cost of network capacity. These so-called “special access” lines have been the subject of many years of debate over pricing, and it’s time to end those disputes. Second, the FCC should institute a system to collect data to map the entire middle-mile infrastructure, coast to coast, publicly and privately owned. Subsequently, this data can and should be used to guide public or public-private investments in middle-mile infrastructure. (The FCC should also keep an eye on how the Commerce Department, which has made a number of intelligent statements about investing in the middle mile, dispenses its \$4 billion in grants from the Recovery Act.)

Expanding middle-mile networks yields outsized benefits because it aids all end-user networks, whether they are cable, copper or wireless, by lowering data transport costs. One potential method of lowering middle-mile transport costs is to create a national network of fiber optics linking up public institutions like schools, libraries, government buildings, public housing projects, military bases and public media outlets. A public network with open end-points and wholesale access in nearly every American community would revolutionize this marketplace. It is essential to create a policy structure that signals to industry that capturing massive profits through infrastructure monopolies that hurt local communities will no longer be tolerated.¹⁰

Spectrum: Will our wireless future be consolidated or competitive?

We have heard frequently from the FCC that we have a “spectrum crisis”: There is not enough spectrum available for licensees to operate wireless broadband service at the speeds that will support a world-class network. At the same time, the public is told that the agency is committed to creating a more competitive wireless market.

The conditions of this “spectrum crisis” may well be true, but all of the rhetoric in the debate has focused on whether and how quickly the government should reclaim the airwaves allocated to broadcast television and auction them off to wireless companies. There may be a certain logic to phasing out old technologies and encouraging new ones – though we should be careful about pronouncing the death of broadcasting while millions of Americans are still using it. In any event, such a plan would take many years to execute, which gives the FCC time to address a conundrum implicit to the concept of the “spectrum crisis” that has received little attention.

¹⁰ In this vein, the FCC should be very skeptical of proposals offered by incumbents that would seek to use the USF to subsidize middle-mile transport costs but not do anything to address the fact that these costs are already artificially high. In short, padding the outsized profits of the monopoly special access divisions of the Bell Companies would just amount to another waste of resources. Solving middle-mile transport is a part of the USF puzzle, but porting over the failures of the old regulatory regime is not a recipe for future success.

Fixing the spectrum crisis goes well beyond finding more spectrum; it will also likely require a new framework for regulating the wireless industry. The primary argument for a spectrum crisis is that the existing wireless carriers (even the largest and best provisioned like AT&T and Verizon Wireless) have insufficient spectrum to deliver next-generation (4G) services to consumers. There's a crisis because we have no spectrum currently available for auction at the very moment that these network providers are itching to expand to meet demand. Unless we find a way to shake loose new spectrum in a hurry, they will not be able to deliver the wireless broadband that the country requires if we are to pretend that wireless is anything but a complement for wireline.

This could all be true – although we would like to see the FCC collect more information about beefing up the wireline networks that feed cellular towers and using new technologies and unlicensed frequencies to make more efficient use of existing spectrum. But for the sake of argument, let us say that the spectrum crisis is a reality. If so, the premise of expanding the spectral holdings of existing wireless networks directly contradicts the FCC's aim to encourage more wireless competition in the marketplace. If AT&T and Verizon — the industry leaders in spectrum by far — do not have enough spectrum, then what hope do the third, fourth and fifth carriers have? Even in a best-case scenario, there will not be enough new spectrum to service all of these networks with 4G-capable bandwidth.

Yet somehow the current rhetoric calls for *both* more spectrum *and* more competition. But either we're talking about freeing up new spectrum to give to AT&T and Verizon; or we're freeing up new spectrum to allow competitors to catch up with the two leaders. In the first instance, we're implicitly giving up on wireless competition among 4G carriers. And in the second instance, we're pushing competition, but we're not addressing the spectrum crisis. The FCC cannot do both.

What the FCC should do: Based on empirical analysis, the FCC must tell us clearly in which direction we're headed. We can deal with either outcome, but it is important to set the right expectations and start working on the right policy framework. If there is real hope that we can achieve both robust wireless networks and several equally viable competitors, we need to know how. And if such hope is misplaced (as is more likely), then we need to start planning for a future that sees the current trend of consolidation in the wireless industry accelerate. While we would prefer to increase competition, the spectrum crisis thesis suggests that such a strategy would require more proprietary spectrum use than is possible under the existing regulatory framework.

If the economics of the wireless broadband market converge into a duopoly, we need to plan for a much more significant regulatory system to protect consumers. Among the first steps should be a move to mandate commercial agreements between wireless companies to carry each other's data traffic — a policy known as “data roaming.” In addition, we should be looking at ways to expand the utility of unlicensed spectrum. The example of Wi-Fi suggests that the next experiment in unlicensed spectrum (known as “white spaces”) could create a new wave of innovation that has impressive consumer benefits. And the FCC should actively accelerate the exploration of and possible transition to a new spectrum allocation framework, where the proprietary rights regime of old makes way for a regulatory model based on “smart” spectrum-sharing technologies that maximize the utility of this resource for all Americans.

Adoption: How do we bring people to broadband?

Universal access to broadband will not matter if people do not subscribe to it. And, we can see in national survey data that the majority of non-adopters have broadband available to them but choose not to purchase it because it is too expensive; they do not own computers; they do not have training; or they are simply not interested. We also know that the households that are offline are the most likely to be low-

income and lack resources for education, equipment and training. The baseline goal of adoption policies is to figure out how to get people the tools and resources they need to get connected and stay connected.

What the FCC should do: To begin, the agency can deliver a careful plan for implementing a Lifeline/Link-up program for broadband. This is a program that exists today to subsidize monthly bills and connection fees for telephone service in qualifying low-income households. It is paid for out of the Universal Service Fund. While these funds are still needed for telephone service, they can be expanded to broadband. However, we should be very careful to ensure that ratepayer subsidies are not going to purchase cable modem and DSL services that are not price-capped. We should not be using public dollars to pay the bills on connections with profit margins of 50 percent and higher.¹¹

The new Lifeline/Link-up program could innovate to offer special discounts or interlocking programs with schools and libraries for qualifying households with school-age children. This kind of subsidy program should also be paired with community-based programs to provide computers and training to those in need. There are a variety of non-profit organizations that have partnered with local government to deliver these kinds of services. The FCC should seek out and encourage best practices.

Data: How will the FCC collect the information it needs for broadband policy?

Among the most trying problems at the heart of the National Broadband Plan effort is the lack of good data. Over the past two years, the FCC has started to address its woeful broadband data gathering practices and correct some of the worst problems. Unfortunately, the job isn't finished, and much of the most useful data for broadband planners simply doesn't exist. The commission doesn't have data on broadband speed and availability in residential markets at a meaningful level of granularity, nor does it have pricing information. It doesn't have any data on middle-mile networks at all. In short, the agency is making infrastructure policy without a detailed map of the existing infrastructure — its location, ownership, capacity or condition. In the area of subsidy policies, much of the data that would be most useful to calibrating appropriate levels of support in a Universal Service Fund for broadband (such as the total revenues of supported networks) remain unreported. Better data could save ratepayers money and result in more efficiency.

What the FCC should do: It is too late to gather much new data to help the FCC do its job by the National Broadband Plan's February deadline. But the FCC should set out a plan of action for collecting data that will help over the next several years as the policy recommendations in the plan are implemented.

To begin, the FCC should implement reforms to broadband availability data collection that have been ready to go for nearly a year. This will simply require that the FCC act on a pending proposal to collect

¹¹ This is a critical point that seems to be missing from the current debate. The current Lifeline program offers support for rate-regulated basic local telephone service. These subsidies ensure low-income households are able to receive basic services and that the carrier receives a reasonable rate of return for supplying these services. But unlike local telephone access, high-speed Internet access services are not rate-regulated. Several data sources indicate that the contribution margins on Internet access service are very high, on the order of 80 percent. That is, it only costs a cable ISP \$7 per month to add and support another cable modem customer, yet they charge over \$35 for such services. Thus, if we want to make the most of scarce USF resources, we should require cable modem ISPs to participate in the broadband Lifeline program and to offer service for \$10 per month to qualifying low-income homes. This price point still enables the provider to earn margins above 25 percent, and it would be essentially found money for these ISPs (i.e. the majority of participating households would have not subscribed absent the programmatic support). ISPs may be reluctant to endorse such a proposal, out of fear that it would weigh down their ARPU (average revenue per user) figures, which are closely watched by Wall Street. However, such concerns cannot stand in the way of achieving the goal of universal adoption, and achieving such a goal will not be possible if scarce USF resources are used to pad ISPs' healthy margins.

broadband availability data from all ISPs, and collect such data at the Census Block level. The FCC must also follow through on its tentative conclusions about the need for actual speed information and require ISPs report their “contention ratios,” or the level of oversubscription in their networks. This information will help the FCC monitor and address the areas of our infrastructure that are not receiving the proper level of investment as the market matures.

Monitoring prices is just as important as knowing actual speeds, so the FCC should require that ISPs report their advertised prices as well as ARPUs on a granular basis. The Commission should also act on its tentative conclusion to replace the old “ARMIS” infrastructure, cost and revenue reporting system with a new “ARMIS 2.0” system that collects such information from all broadband infrastructure owners, both last- and middle-mile. Finally, the Commission should reverse its legacy of allowing ISPs to unnecessarily claim that every piece of reported data is “confidential.” Without proper oversight, ISPs have abused this system to the detriment of the public.

Openness: How will the FCC ensure that markets for devices and content are open and competitive?

At the heart of broadband policy over the past several years are a few festering debates about who will control the future of the user experience on the Internet. The issue is how to keep the owners of infrastructure (telecom, wireless and cable companies) from abusing their power over the physical network to gain control over markets for commerce at the edge of the network for content, applications, and devices. At this crossroads are the debates over Network Neutrality, exclusive contracts between wireless companies and cell-phone manufacturers, and the standards of openness for cable set top boxes. The core question is whether the Internet will be “open” or “closed.”

In recent years, with a couple of notable exceptions, the FCC has mainly addressed these issues by dodging them or making incremental changes on the margins. The current FCC leadership, however, has said openness is imperative — a stance for which they should be applauded, as long as they deliver results to match the rhetoric.

Here’s what the FCC should do: In each case where the agency can make an intervention to tip policy incentives in favor of open markets for content, applications and devices, they should do so aggressively. The issue of Network Neutrality is currently proceeding on its own separate regulatory track, and it is unlikely to be a focus of the National Broadband Plan. But the plan must acknowledge its importance for investment and competition. A broadband market with Network Neutrality means that network owners will have the strongest incentives to respond to network demand by supplying more bandwidth, rather than with a strategy that involves discriminating between different kinds of content to manage scarcity. Openness is a policy that drives investment and grows infrastructure by foreclosing business models that privilege low-bandwidth networks. Further, an Internet with Net Neutrality is more likely to foster innovation and new applications that will drive adoption. People subscribe to broadband because of the appealing things they can do online – more appealing content equals more broadband adoption.

On the other two openness policies mentioned above, the FCC has a chance to make major advances with the National Broadband Plan. In a world where television and broadband access converge, the cable set top box is a household gateway to the Internet. Currently, most consumers pay exorbitant rates to lease low-quality set top boxes that are *not* Internet capable from their local cable company. If the cable company owns the box and controls all access to it, they have strong incentives to foreclose the emergence of online television and consumer choices that might discourage consumers from continuing to pay sky-high monthly cable bills. This incentive is one of the core reasons why there is still no open

market for cable set top boxes, despite more than a decade of fighting at the FCC. The National Broadband Plan should take an aggressive approach to achieve an open market for devices that are divorced from the cable companies and should work to ensure that Internet content reaches TV screens.

Similarly, the FCC should treat wireless companies' control over devices with skepticism and dismantle exclusive relationships. These deals inhibit competition by enhancing the switching costs between wireless providers. Recent consumer surveys show that AT&T has taken a nosedive in customer satisfaction because its network cannot keep pace with consumer usage on the iPhone. Yet the exclusivity contract ensures that the vast majority of the consumers that came to AT&T for the iPhone can't take it anywhere else to improve the service. In more rural areas, the exclusivity contracts held by major carriers are serious barriers to competition for smaller operators. Open markets for devices are not only good for competition and innovation at the edge, they are also useful tools to leverage more competitive pressure among the network operators as well.

The consumer message to the FCC is simple: When in doubt, choose openness.

Conclusion

The challenges before the FCC and its team drafting the National Broadband Plan are formidable. And the stakes riding on their success are extraordinarily high. If they succeed, the country will move rapidly toward a world-class information infrastructure that will grow our economy, increase social mobility, and enable a new era for political participation. If they fail, we will be stuck, watching in vain as the rest of the developed world pulls further ahead and huge gaps open in the quality of our infrastructure between rich and poor, rural and urban.

Because of the technical complexity of many of the issues that lie at the base of the National Broadband Plan, it will not be easy for the public to assess if the FCC is on the right track. The devil, as always, will be in the details. Hopefully, this report will serve as a guide to whether the FCC has done its job.

We have a history in this country of rising to meet challenges not unlike the one before us now, as evidenced by the roads, electricity and telephone wires that reach every corner of the nation. Critical moments like this require lofty goals, clear vision and bold action. They also require the public to watch their leaders closely and hold them accountable.