

8 June 2009

Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Commissioners:

This letter is in response to the FCC's Notice of Inquiry, "In the Matter Of A National Broadband Plan for Our Future" MB Docket No. 09-51.

In this letter the Institute for Policy Innovation (IPI)¹ provides input regarding the direction given in The Recovery Act tasking the Commission with developing a national broadband plan by February 17, 2010. By Congress's direction, this plan shall seek to ensure that all people of the United States have access to broadband capability and shall establish benchmarks for meeting that goal. Our comments are framed with those goals in mind and with the observation that, in general, *the story of broadband deployment thus far in the United States is a story of success, not failure. Government actions related to broadband policy can enhance, but should not supplant, our existing, largely private network infrastructure.*

Overview

The economy of the United States operates under a market framework, where providers and consumers transact business largely at will within a framework of property rights, consumer protection, and regulation. Generally speaking, government intervenes only when there is some perceived market failure or bad behavior on the part of providers of goods and services.

The intention of the Telecom Act of 1996 was to move the communications market to a similar, deregulated framework. And today, after years of fits and starts, our communications marketplace is realizing the goals of the 1996 Act, meaning broadband availability is being rolled out at a breathtaking pace, on a demand-driven basis, by providers using private risk capital. Until 2009, the broadband rollout has proceeded with almost no demand on the taxpayer purse. And broadband adoption is proceeding at a pace far exceeding the adoption rates of previous critical infrastructure rollouts.

¹ The Institute for Policy Innovation (IPI) is a market-oriented public policy think tank with headquarters in Lewisville, Texas. IPI is recognized by the IRS as a 501(c)(3) non-profit organization. IPI has been involved for several years with policy analysis and research on the communications marketplace. Specifically, we have worked on policy development, including economic analysis, with regard to opening, expanding, and preserving markets for video, voice, and Internet access, including broadband.

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As broadband is being rolled out, it gives consumers and businesses not only new products and services, but also introduces new competition in phone service, Internet access and video service.

In a typical market today, consumers can choose to purchase video and broadband services from two different satellite providers, a cable provider, and often from one or more “phone companies” such as Verizon, AT&T and Qwest or hundreds of smaller, regional phone companies, as well as from national, regional and even local wireless providers

This competition is genuine, facilities-based competition—not artificial “free-rider” competition created through government regulation. The private investment companies have made in broadband networks in the last few years dwarfs the admittedly large amounts that the federal government is spending this year on broadband, and will continue to dwarf federal expenditures on an ongoing basis. So, among the benefits of deregulation is the enormous job-creating and network-building investment made by private companies, with no demand on the taxpayer.

But at the very time that the benefits of deregulation are becoming apparent all around the country, some are urging that the clock be turned back on over a decade of progress, actually re-regulating the broadband industry, and fighting old ideological fights, instead of recognizing the tremendous progress that has been made in rolling out broadband, all of which was done with private risk capital.

As the FCC formulates a broadband strategy, policymakers should resist being pulled into an old fight over unbundling, and rather should ask how we continue to roll out to consumers and businesses the bandwidth they need for the things they want to do. And how do we do so in a way that builds upon and leverages, rather than devalues, the strength of our privately financed and increasingly competitive communications infrastructure.

The Internet Has Been and Will Continue to Be Largely a Collection of Private Networks

The Internet is a vast collection of interconnected, separate networks that have agreed to exchange traffic for the benefit of the users of the various networks. The majority, often cited as 80 percent, of these networks are private, though the Internet also includes government and educational networks as well.

Networks connect to each other and agree to exchange traffic for the mutual benefit of their respective users. And the history of the Internet is a history of private actors self-organizing themselves and their networks for mutual benefit, outside of the scope and control of government, and in some cases despite the attempts of governments to prevent them from doing so.

The Internet, like so many other social benefits, developed naturally, as free people took advantage of new and existing technologies to connect and organize themselves in new and interesting ways. The government did not plan, organize or direct this effort, but rather facilitated it through the particular government role of protecting speech and property rights, enforcing contracts and ensuring predictable rule of law and a dependable legal regime.

Within the United States, the Internet for the most part is comprised of private networks, paid for with private risk capital and entirely without making demands on taxpayer funds. The rollout of

these networks has thus been demand-driven, with feedback from market mechanisms determining where networks were built and to whom they were available.

The Internet thus is not and has never been a centrally-planned, top-down, government-directed mechanism. Rather, the Internet represents a triumph of capitalism and the free-market system that something as transforming and useful as the Internet could largely arise through private capital, the self-organization of free individuals and free institutions to create something greater than themselves, property rights, market forces and the right of contract.

Some other countries can claim higher broadband penetration rates than can the United States. Many factors account for the differences in penetration rates between the U.S. and other such countries, such as population density, etc., but it should not be lost on policy makers that, in most cases, these higher penetration rates in other countries were accomplished through massive use of taxpayer dollars, while the broadband rollout in the United States has been accomplished by private risk capital with no demand made upon the taxpayer. This has been a strength, not a weakness, in the broadband rollout process in the United States, and a private risk capital approach to broadband rollout will continue to be the most economically advantageous way to accomplish the goals of any broadband strategy for the United States.

Government dollars, after all, are best spent in areas in which there is not already a demonstrable level of economic vitality, and specifically to broadband in places which are currently unserved by broadband providers. Every dollar the federal government does not have to spend on broadband rollout is a dollar the government can spend on other, perhaps more critical functions that are not primarily borne by the private sector, such as entitlements, national defense, debt repayment, and education.

■ *What Would the Future Broadband Rollout Look Like If Government Did Nothing?*

As a thought experiment, let's ask the question: What would happen if the government did nothing further regarding the broadband rollout?

If existing trends continue, which seems a likely assumption, major competitive network providers will continue to invest in rolling out new services to new areas on a demand-driven, market-oriented approach. There will continue to be a virtual race between cable, traditional telecom and wireless providers to provide service to unserved areas, and underserved areas will see the additional of new competitors.

Indeed, the private sector is investing in broadband at a breathtaking pace. Private U.S. broadband providers invested approximately \$120 billion in communications infrastructure throughout the nation over the past two years alone. This dwarfs the amounts devoted to spending on broadband from the 2009 federal stimulus efforts, and rivals what the federal government spent on all transportation networks during that same period.

In fact, with some of those investment dollars, traditional telecom providers such as Verizon and AT&T are beginning to actually compete in each other's traditional territories. Observing the former regional Bell operating companies (RBOCs) beginning to compete with each other puts the lie to accusations of conspiracy and collusion, and suggests a tantalizing potential for competition beyond even that which was anticipated by the Telecom Act of 1996, and which is far beyond the design of unbundlers.

The result of all this private investment is new and more competitive broadband availability every day in cities, towns and rural areas across America. People are coming home from work to find sales flyers in their front doors and in their mailboxes announcing that new broadband service from Company X is now available in their area. Television, radio and newsprint are filled with advertisements from competitive broadband companies urging consumers to switch to their company, and people are choosing and switching from among offerings from cable, satellite, traditional telecom, and wireless providers. Price and service competition between broadband providers is today a reality in the majority of cities and towns across America.

One staff member here at the Institute for Policy Innovation, who lives in a rural town of 300 residents in north Texas, can choose broadband from between a regional wireless service from a local provider, Verizon's FiOS fiber service, and of course, from satellite and cellular wireless services. Some of these are new options that did not exist in his area 18 months ago.

Five years from now, broadband will be available in hundreds of thousands of homes where service was not previously available, and many thousands of others will have new competitive choices where previously they had only a single choice. And this would continue to be done with private risk capital, without any demand being made upon the taxpayers through the federal treasury.

In the states, the legislatures recognize this competitive broadband reality, and are engaged in multi-year progressive deregulations of their communications regimes so as to facilitate faster broadband rollout and enhanced competition. Recognizing that decades-old regulations are no longer appropriate, states are eliminating requirements, simplifying governing structures and otherwise making it possible for companies to compete with each other on near-level playing fields as they try to please consumers with new products, new services and competitive prices.

This is the current and near-term reality, and it's a good reality. New federal policies should do nothing to supplant, to interrupt, or to devalue these enormous past, current and future investments, or to fly in the face of state communications deregulation. Rather, federal policy should be designed to harness the strength of this market-driven rollout, and should find ways to incentivize broadband rollout in areas where service has not yet arrived, or where competition has proven unlikely, in cooperation with state efforts. Later in this paper IPI will suggest several positive steps for government to achieve these goals, including *broadband enterprise zones*, as well as improvements in the deployment of wireless broadband.

The Rollout of Broadband, Thus Far, Has Been a Success Rather Than a Failure As Some Assert

While some attack the current state of the broadband rollout in the United States, in fact, the broadband rollout thus far has been an unqualified success.

As noted by the Federal Reserve Bank of Dallas in "The Economy at Light Speed: Technology and Growth in the Information Age and Beyond," new technologies penetrate 25% of the population with ever greater rapidity. Internet technology did and is spreading to the general population far faster (7 years) than did electricity (46 years), the telephone (35 years), television (26 years), the "personal computer" (16 years), or the "cellular phone" (13 years).

The trend is continuing with broadband, which is spreading through the population even more quickly. *It is instructive to note that innovation has been fastest in the fiercely competitive markets typical of the computer industry or mobile phones, markets that are largely left unregulated.*

It is important to note that “broadband” is defined in many ways, and seemingly for every study a different definition is used but almost always the definition hinges on the download speed. Focusing on speed as the metric to determine success is wrong-headed, but for purposes of examining how far broadband has come we must rely on studies that use such definitions.

According to the recent (May, 2008) Pew Internet & American Life Project, U.S. broadband penetration has increased 17 percent in one year and 31 percent in 3 years, resulting in *55 percent of all adult Americans having a high speed Internet connection at home.*

And digging into the details the story gets better. Older Americans, one of the slowest demographics to adopt new technologies, are adopting broadband rapidly, with 50 percent of those 50-64, and 19 percent of those 65 and older having home broadband access.

Rural Americans, folks often cited as falling behind in broadband access, have increased broadband in the home by 23% in just one year, with broadband now in 38% of rural homes.

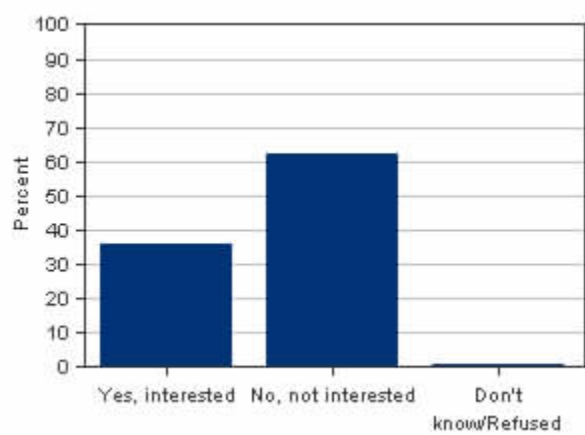
With broadband prices falling 4% over 2 years, lower middle income consumers are also rapidly adding broadband, with a 24 percent adoption rate increase in a single year bringing home broadband to 45 percent of those households making between \$20,000 and \$40,000.

And in a time of economic turmoil and household budget distress, even the “bad news” is not so bad. In households with annual incomes of \$20,000 or less broadband in the home was being adopted at a 25% rate, down only slightly from 28% a year before. And among African American households, home broadband adoption rates were down a similar small percentage, to 40%.

Perhaps the most important finding was that only 10 percent of respondents indicated that broadband simply was not available. And other than those for whom broadband was simply not available, a great many indicated that they simply did not see the value on having broadband in their home, or that online use was generally a waste of time—pointing to *a demand challenge not a supply failure.*

In the same survey Pew asked Americans with dial-up Internet access “Would you like to have a faster “broadband” connection, or isn’t that something you’re interested in?” Fully 62% responded “No, not interested.” Only 36% expressed an interest in a broadband connection. (see Figure 1 on next page)

Figure 1



Source: Pew Internet & American Life Project, April 2008

At the same time mobile phone penetration is nearly 90 percent of the population spurring a while new category of devices—netbooks. These are essentially stripped down laptops but smaller than laptops while larger than mobile phones. And while they have been selling well for “computer makers” now wireless broadband companies are beginning to sell them. According to an IDC forecast, netbook sales this year alone could exceed 2.1 million units. This new category provides yet another way to access broadband in a way convenient for consumers.

So, in a handful of years, broadband in the home has penetrated far deeper than 25 percent, easily besting the adoption rates for telephone, cell phone, the Internet, and even electricity. Even the recent December, 2008 OECD data shows that the large landmass and population diffuse U.S. has a nearly 27 percent adoption rate for what they define as broadband, not just availability but *adoption*, and a total number of those with broadband that is almost as many as the four next closest countries. (While the U.S. has more than 80 million broadband adopters, Japan with the second greatest total has a mere 30 million).

It is clear that, in general, the approach taken thus far by Congress and the FCC, with frequent guidance from the courts, has resulted in a robust broadband rollout that is reaching the majority of population centers within the United States, and that is providing broadband choice in many of those same areas. This despite claims by critics that the approach has been a series of terrible mistakes, and that virtually everything that has been done in the past decade on broadband should be undone and replaced by a system of government mandates, regulations, abrogations of property rights, and devaluations of existing private investment. Such a move would be a tragic and economically wasteful mistake.

Government Should Do Nothing to Devalue the Existing Private Investment

As we have pointed out, the successful broadband deployment in the U.S. has been almost exclusively done by the private sector, with very little involvement from government actors.

While the FCC has been directed by Congress to draft a report to send to Congress regarding a plan for broadband access across the country, the FCC and Congress must make sure both the

FCC and Congress recognize the primary role the private sector has played and will continue to play (unless discouraged to do so) in broadband deployment.

The private investment made by the communications industry to provide broadband to consumers is enormous, as noted previously \$120 billion last year, and in fact continues to grow year over year. AT&T has announced plans to invest between \$17 and \$18 billion this year alone, a majority in wireless capacity. Verizon had \$17 billion in capital expenditures last year. Combined, Comcast and Time Warner invested more than \$2.25 billion in the first quarter of this year alone. And these numbers do not take into account the dozens of other players in the marketplace who are similarly investing to cover more area, increase the capacity of their systems and to bring greater broadband speeds to all of their customers. This level of investment continues even in the face of US business investment dropping at a 38 percent annualized rate in the first quarter of this year.

So, regardless of the specifics of the plan, no part of it should fail to take into account that *current levels of private sector investment could virtually never be surpassed with government spending*. And because the private sector investment is magnitudes larger than any conceivable government spending, all caution must be given to make sure that a government plan does not alter the current market incentives for current and future investment, and that would not devalue the investments already in place.

Failing to consider the economic impact of a new plan on current or planned investments risks a complete failure of the marketplace by, at a minimum, introducing perverse incentives to chase government money rather than serving the needs in the marketplace, or worse, altering the economic, and ultimately financial, conditions of a company or industry to the extent that it fails.

Policymakers should avoid efforts designed to create additional competitors where competition already exists, and should prioritize rolling out service to unserved areas, rather than creating new competition in areas with current broadband service.

Certainly, prioritizing unserved areas would seem to be obvious, since getting broadband access to unserved areas should have a greater marginal impact than adding a second or a third competitor.

However, policy makers will be under pressure to prioritize creating competition in areas already served by activists who want to use the Broadband Notice of Inquiry as an occasion to go back and fight again over unbundling. We will not in these comments go into great detail on this point except to mention that there was a deep philosophical disagreement on the best way to accomplish the build out of next generation networks. One side of the debate, which eventually prevailed, was to free network operators to build out their networks with the assurance that their new networks would not be subject to forced access requirements, such as the failed TELERIC formula and unbundled network element (UNE) requirements.

The other side endorsed forced unbundling of broadband networks, which would have removed almost all incentives for broadband providers to enthusiastically build out networks. It would have created “artificial” competition with no incentive to build anything, which would have resulted in the kind of paralysis and lack of innovation that characterized the wireline voice business when subjected to a similar regime.

Today it is well recognized by most observers that unbundling did not create the facilities-based competition in voice services that was envisioned by the FCC in its implementation of the Tele-
com Act of 1996. Indeed, the broadband rollout was delayed by uncertainty over whether the
FCC would attempt to enforce unbundling upon new broadband networks. When it became clear
that new networks would be unhindered by counterproductive unbundling requirements, the
broadband rollout kicked into high gear.

Policymakers should recognize unbundling efforts as failed and as a mistake, and should resist
the call of activists to return to an unbundling scheme for broadband networks. To impose un-
bundling requirements now on broadband networks that were built under the assumption that
they would be free of such requirements would not only enormously devalue the existing broad-
band infrastructure, but would almost certainly result in another wasted decade of legal
challenges.

■ ***How Do You Say “Unbundling” In Italian?***

While it is true that in Europe, many countries have embraced unbundling within their broadband
networks, several differences in beginnings and outcomes should be noted. First, most European
countries began with a single, state-owned monopoly provider. To move from a single state-
owned provider to an unbundled environment was a step in a more competitive direction in those
countries. But, thankfully, in the United States, we were not burdened with a single state-owned
provider, so we were able to move in a more robust competitive direction. To move to unbun-
dling in the United States would be to take a step backward, not forward.

It should also be noted that under the unbundling regimes in Europe we do not observe intermo-
dal competition between, say, both cable and traditional telecom providers. And, because of
unbundling, European nations do not see the level of facilities construction and network building
that characterizes the broadband market in the United States.

Unbundling would be a step backward, not forward, for the U.S. broadband market, and calls for
such a wrong-headed direction should be avoided by policy makers.

■ ***The Problems with Municipal Networks***

Potentially most damaging to current and future private investment is the scenario of a govern-
ment-owned and government managed network.

Government ownership of facilities that produce goods and services will make the private sector
reluctant to enter those markets. Even when inefficient, government-run systems have the advan-
tage of being able to draw upon a virtually bottomless source of capital from a captive taxpayer
base. They do not compete with the private sector for capital. They issue bonds with preferential
interest rates. They need not use service revenues to repay the debt, as taxpayers and the full
faith and credit of a governmental entity are backing them up. Governments can cede themselves
preferential access to municipal rights of way, and price their product below cost. Some gov-
ernment leaders boldly suggest that every citizen should have free Wi-Fi or WiMax. But of
course the provision of service is not free, and costs must be met from by tax revenues. This is in
essence predatory pricing.

Government entry is unfair to private businesses and bad for the populace as a whole. It means
that consumers will never reap the benefits of competition. When government owns and operates
the facilities that produce a product or service there is no return on investment and hence little or

no capital formation as a result of the production. Capital contracts on the private sector side and jobs are lost. Perhaps even worse, current private sector investments are devalued often making continued operations ineffectual, driving current participants from the market in part or whole.

Some compare broadband to the basic services provided by government such as roads, water and sewer systems—all systems that receive heavy taxpayer subsidies. But there isn't a city on planet Earth whose mass transit system isn't heavily subsidized by taxpayers and doesn't consistently lose money. There is a limit to just how much the public should be required to subsidize. But broadband networks are much more complicated to operate than roads or water systems, and communications networks have more limited lifespans, becoming obsolete and requiring upgrade soon after completion. How much stranded investment in antiquated infrastructure should taxpayers be forced to eat in write-offs?

Again and again, municipalities have gotten into the telecommunications business only to see their efforts fail. Many have pointed to customer enrollments far below projections, costs more than double projections, and operating losses extending indefinitely into the future. Higher taxes and political scandals are the hallmark of municipal networks. Marietta, Georgia took a \$24 million loss. One Washington public utility district has been absorbing losses of \$15,000 to \$17,000 per year. Trion, Georgia spent \$1,800 per resident, reducing a municipal budget surplus to 10 cents on the dollar.

Providers have now begun to admit that challenges in meeting customer expectations have been difficult. As on-line services become more sophisticated and the desire for greater speed grows, customers have become accustomed to regular upgrades, challenging the ability of governments to keep up with demand.

Further, municipal networks invite the ominous threat of government content control. This is why, with rare exception, government entities in the United States do not own or operate radio stations, television stations or newspapers of general circulation.

In considering a Missouri law prohibiting municipalities from getting into the telecommunications business, the Supreme Court explained that states have the right to bar government ownership and operation of communications networks to protect their citizens' interest in a free market and free speech. Many states including Missouri have similar laws.

Once government controls the distribution of broadband, the channel for communications, control of content is nearly an unavoidable next step. It is a dangerous direction to travel.

The challenge of operating a municipal network actually serves as only one example of the same principle – that government should not involve itself in areas where it has no demonstrated competence. Notwithstanding the intelligence or experience of any person working for the government as regulator, legislator or bureaucrat, government itself has no history of competence in many areas.

Government Has Demonstrated No Particular Expertise at Designing, Running or Managing Networks

■ *Focus On Policy Goals, Not Means*

The National Broadband Plan should stick to specific goals and objectives and refrain from micro-managing network architectures, technologies, or operational methods. A clear statement of goals and objectives will allow the plan to make meaningful progress by preventing it from becoming sidetracked into issues of national pride or technology booster-ism. Specifically, it's not productive for the United States policy makers to be overly obsessed with comparisons to other countries which may not be based on reliable measurements taken in comparable conditions. Rather than concerning ourselves with our position in artificial rankings, we should establish measurable goals for penetration and network performance. The performance measurements should encompass more than raw network capacity at a point in time; many applications are more constrained by latency than capacity under conditions of unbounded delay.

A measurement approach that uses snapshots rather than trends should also be avoided. The history of broadband networking is one of continuous upgrades to capacity, latency, and reliability, and networks that lack a business case will be doomed to effectively degrade as they fail to benefit from this upgrade cycle. The key to continuous upgrades is a sustainable business model, not merely a one-time injection of taxpayer funds. A reasonable set of goals for the plan would call for a particular percentage improvement in capacity and latency for each of the next five years, and an expansion of area covered measured in a similar way.

Goals and objectives will also permit the plan to progress in a technology-neutral fashion. It's neither necessary nor productive for the plan to pick technology winners and losers. There is no "gold standard" for network physical infrastructure, as a number of different systems rise to the top of the assessment list under different assumptions about density, distance, installation cost, and operational expense. Rather than concerning itself with specific techniques of cabling or antenna propagation, it will be productive for the plan to look at least one level deeper to such physical infrastructure components as towers, trenches, and conduit. Flexible systems open to a twenty-five to fifty year upgrade cycle promote progress in cable and wireless physical layer systems, particular cable specifications don't.

■ *Openness vs. Discrimination*

The broadband networks of the future will be called upon to support a more diverse mix of applications than those currently in use, and prevailing regulatory wisdom is not likely to properly predict their requirements. Specifically, the "Open Access" provision requested by the Congress conflicts with the "Non-Discrimination" provision proposed for addition to the Internet Policy Statement. The conflict is evident when we consider the interaction between two emerging applications, video calling and peer-to-peer file sharing.

Video calling (an optional and increasingly popular feature of free VoIP systems such as Skype and AIM) requires low-latency delivery of synchronized voice and data packet streams, preferably less than 100 milliseconds end-to-end. Its bandwidth requirements are high but regular and predictable. Providing bandwidth in excess of the amount needed for the transfer of the audio and video streams has no benefit for this application and will not be used. Peer file transfer, on the other hand, is designed to saturate users' upstream and downstream data channels up to a preset limit, which can be 100%. Experimental file sharing protocols, such as BitTorrent, Inc.'s

uTP, are effective at driving data channels to saturation, in part because they don't rely on TCP and therefore aren't throttled by standard Internet congestion control.

When these two applications are combined on a common network, whether that network is a home network, a shared DOCSIS cable segment, or a wireless channel using WiMax, they directly compete for network bandwidth, and this competition can have only one outcome if the network operator is forced not to "discriminate" between their respective packet streams: the file sharing application will run well, and the video calling application will not. If the network operator is allowed to discriminate (in the sense of delaying file sharing packets that arrive during the periods when video calling needs network access,) both applications can achieve acceptable performance. Adding network bandwidth is not an alternative, because file sharing is designed to use all available bandwidth. Adding bandwidth is not always an option in any case: unlicensed wireless networks are bandwidth constrained, and will remain that way; their capacity is only increased by new generations of technology

■ ***Relationship of Standards and Regulations***

Network engineering is an evolving discipline. Networks which are economical to deploy, reliable, and friendly to the diverse mix of applications likely to emerge in the next twenty years will combine already-understood technologies with new ones. As these new networks develop, industry standards bodies with specific expertise will develop operational rules for them, as they have done quite effectively for the past thirty years. Industry standards of this sort have given us Ethernet, Wi-Fi, DOCSIS, Wi-Max, Internet standards such as MPLS, MPEG, and VoIP. This productive and creative activity should retain its function as the bridge between network research and the networking marketplace. It's appropriate for government to monitor the progress of standards bodies, especially to facilitate their work by clearing regulatory hurdles. Two specific examples of how this interaction should work have been discussed at recent networking conferences:

1. The regulatory power limit for Ultra-Wideband is 10 dBm too low to allow for effective operation, as the FCC went too far to protect largely obsolete analog services. UWB has been a market failure because its power limit does not allow for sufficient propagation.
2. The TV White Spaces order has a similar defect. As this regulation is currently defined, it's not useful for unlicensed providers of rural broadband, one of the primary applications that could otherwise make productive use of it. Increasing the power limit by itself will not make such systems practical, however, as the use of such higher power needs to be mediated by a standards-based spectrum sharing protocol. This protocol does not currently exist, and will not unless an industry standards body creates it; no one else has the expertise to devise it.

The regulatory process needs to be reformed to prevent such failures in the future. Bad open spectrum regulations are harder to correct than regulations of any other kind, so they need to be right the first time. Until these evident failures are corrected, the FCC should refrain from engaging in additional experiments in open spectrum.

■ *Other Lessons from Recent History*

A careful review of the Commission's recent order complaint filed against Comcast by Vuze et. al. is an object lesson in the unintended consequences of government efforts to impose specific network management mandates. The Commission issued the order without conducting an independent investigation, relying solely on witness testimony to determine the facts. Several witnesses gave false or misleading testimony to the effect that the management technique amounted to a blocking of P2P applications, when in reality it was a quota system that limited the amount of upstream bandwidth allocated to P2P applications in the unattended seeding mode to 50% of designed capacity. Acting on this false testimony, which confused behavior at the application level with behavior at the TCP level, the Commission, in effect, ordered Comcast to deliver free bandwidth to Vuze.

The bandwidth Vuze obtained was used for a number of things, including a new service that indexes and retrieves content from known piracy sites such as The Pirate Bay, recently found guilty in a Swedish court of law of facilitating crimes against intellectual property². Vuze has recently launched a new service that sells high-definition adult movies and other hard-core pornographic content³ for a fixed monthly fee. While the national broadband plan has many goals and objectives, we question whether encouraging piracy and enabling faster downloads of pornographic material should be among them. Were the Vuze service focused on more legitimate on-line activities, it's unlikely that a grant of free bandwidth would have been required.

The system employed by Comcast was in any case a stop-gap against a critical management problem that prevented VoIP services such as Vonage and Skype from working well on network segments carrying large quantities of P2P traffic. While the company itself admits the system was crude, it was at the time the best they could do while waiting for a new generation of management equipment from specialized vendors.

Network operators work on a timeline dictated by real-time events on their networks, ringing telephones in customer service centers, and human dissatisfaction. This setting is far different from the timelines enjoyed by policy makers and regulators, and often requires immediate action with tools that are poorly crafted for the job at hand. The history of the Internet and of communication technology generally teaches us that most technology crises are unanticipated. Regulatory policy should recognize this fact.

Open Access to network applications is generally touted as the cure to the alleged sterility of devices such as the Apple iPhone⁴ that impose limits on application developers and require approval before new applications are released. Despite the sensible controls imposed on iPhone developers, there are now more than 30,000 applications available for the platform, with more approved every day. Effectively, the iPhone is an ideal of the platform and network conditions of sale and use that lead to a rich choice environment for consumers. It's unlikely that any government Open Access mandate will ever produce such salutary effects. Reasonably open access is not dependent on government fiat, as it represents good business for the firms invested in networks and network devices. Regulation can only do harm in this area by pushing network

² Mikael Ricknäs, "The Pirate Bay Four Found Guilty," *PC World*, April 17, 2009. Web: http://www.pcworld.com/article/163317/the_pirate_bay_four_found_guilty.html

³ TorrentFreak blog, *Vuze Cashing in on Porn BitTorrent Users*, May 16, 2009 (<http://torrentfreak.com/vuze-cashing-in-on-porn-bittorrent-users-090516/>) "In a bid to increase their revenue, among other things, Vuze has added a catalog of HD adult videos to their BitTorrent client. For a few dollars a month Vuze users can subscribe to the latest hotness."

⁴ Jonathan Zittrain's book *The Future of the Internet and How to Stop It* is the leading example.

operators into a condition where they're forced to afford more freedom to the small number of customers who will abuse it to the detriment of their neighbors.

■ ***The Economics of Network Management***

In fact just the economics of network management make government operation of a communications network a tricky business and most certainly an impediment to innovation.

A necessary part of the efficient and effective function of any network is management of that network, whether it is a network for electricity, water, airline and automobile traffic, or traditional telephone service. In fact, there have recently been efforts to build *more* intelligence (read: capacity for management) into such networks, especially air traffic control and the electrical grid, which has been the subject of much campaign rhetoric and current spending policy.

Today, broadband network companies manage their networks and are making enormous investments in order to give consumers the performance, products and services they want. And consumers want HDTV that does not pixellate on the night of the Super Bowl. They want their VoIP communications (and especially VoIP communications between first responders and hospital emergency rooms) to be clear and crisp without degradation because of resource drain to massive applications operations. They want spam and viruses contained to the degree possible by the network itself.

Broadband networks are not public infrastructure, but rather almost entirely a collection of private networks that have agreed to exchange traffic for the benefit of their customers. Seen in this light, the Internet is a demonstration of the success of markets in finding ways to provide useful goods and services to consumers.

The question, then, is to what degree should government interfere in the functioning of private broadband companies? And the right answer, given the economic experience of the 20th Century, is that government should only interfere when and if *significant* problems are demonstrated.

Otherwise, the owners of the many networks have the right to manage their networks in the way they think best serves their customers. But maybe even more to the point, broadband companies have an *obligation* to manage their networks.

In almost all cases, network management today is unnoticed by consumers. The opposite, a total lack of management, would be immediately apparent. If network operators were precluded from managing their networks, consumers would clearly be negatively affected. Imagine a day where, as some would have it, all “management” was abandoned. The result could be a complete or partial breakdown of our communications infrastructure.

Critics suggest that, rather than network management, the solution is simply ever-greater amounts of bandwidth. But this criticism ignores a basic tenet of economics—scarcity.

Networks have to be managed because Internet bandwidth, like every other resource, is “scarce” in the economic sense. “Scarce” does not mean rare, but rather means that there isn't enough of it that everyone can have as much of it as they want.

Policymakers run into real problems when they deny scarcity. For instance, assuming an unlimited supply of water has led to a lack of sound water management policies, such as growing rice

in the deserts of California while people only a hundred miles away are experiencing water rationing for their homes.

Not only is there not enough Internet bandwidth today, but Internet bandwidth will always be scarce. Say's Law (simplified) says that "supply creates its own demand." Say's observation was that, whenever there is an abundant supply of a valuable commodity, people find useful things to do with it.

The Internet is a perfect example of Say's Law. As soon as broadband became widely available, suddenly people started posting video clips on websites such as YouTube. As soon as we had an increased supply of Internet bandwidth, people found new ways to consume it.

This will continue to happen. It won't matter that we'll have more bandwidth in the future than we have today. By then there will be amazing new applications that will demand it all. And then, as today, that bandwidth will have to be managed, even as some who fixate on "speed" will demand that all users need greater speed.

A functioning market is an information-processing machine. Experiments with business models result in either failure to be learned from, or success to be emulated. Either way, the market assimilates the information and moves on to greater production. And this is one of the critical functions lost in any system that proposes a "single operator" and is the heart of the problem with technological mandates, whether specifying certain technology or limiting the free use of that technology. Some would determine who offers broadband, the amount that can be charged for various services, and how traffic is managed on these networks. And while those people may dream of "perfecting the system" that in fact just the opposite occurs as the innovation feedback loop is curtailed. Simply put, government intervention and regulation biases the information-processing function of markets, and skews the outcome of such business model experiments.

What Should Be the Goals of a National Broadband Strategy?

At first blush the notion of ensuring access to all people of the United States may seem to mean that a plan must be developed that would end up with wires strung to every remote mountaintop log cabin, far-flung desert adobe home, or isolated forest glen cottage, but in fact this should not be the goal at all.

■ *Don't Ignore Diminishing Returns*

The notion of diminishing returns is an economic idea indicating that at some point the return on the investment begins to decrease, or said another way, at some point the cost to provide access to broadband or to convince someone that broadband is a value to them gets increasingly expensive for each person, or household, added.

Businesses face this reality and make financial decisions accordingly that affect almost every aspect of business—how many people should be hired, how much should be spent on advertising, how much should production capacity be expanded? All questions posed with the understanding that the margins will shrink and ultimately vanish if the goal is simply to serve everyone.

With this immutable law of economics in mind one must then examine the facts of broadband availability and adoption.

No matter whether one is more persuaded by the Pew data or the OECD data, and their respective definitions of broadband and means of collecting and defining data, the fact is that broadband adoption, not just availability, has been growing faster than any previous technological advance. There are no signs that adoption will suddenly fail as even in tough economic times those least able to likely afford broadband are still hanging on to it. Simply put, the speed of significant availability and adoption is moving more quickly than anyone could have hoped, all without government involvement in “facilitating” demand or supply.

Further, even at its best, telephone penetration was 94-96% depending on the survey and definition. And of course, today landline use is decreasing. Even today public roads do not guarantee 100% availability much less use. A landowner might well find that the federal interstate is miles away from her property, and that county or city streets may only come within yards. At that point a property owner typically sets about designing a way to easily and effectively get to their house via a private drive, often the cost of living in a more remote area.

To mandate that broadband must be supplied, at taxpayer cost, to every household across this vast nation makes little economic sense if access is somehow defined as each home having fiber or a cable strung to it, or even an antenna placed close enough for adequate service. The diminishing returns of reaching each household in this way rapidly overcome virtually any amount of money that could be considered “profitable,” or in the language of government, politically viable.

Importantly then, policy makers must consider the role of technologies well beyond mere wireline. Wireless options certainly expand the area of economic viability a great deal, but still other technologies must also be considered such as satellite, or emerging technologies such as broadband via electrical lines or perhaps others not yet even known, because the reality is that in some places, for some households, no other option will be viable given the enormous expense to reach them.

■ ***Chasing 100% “Coverage”***

Generally speaking, broadband means enough bandwidth to carry multiple voice, video or data channels simultaneously, or enough capacity at the right speed to fulfill the need for the task at hand such as quality voice communication, video viewing, or application completion. Channels are separated by “guard bands” (empty spaces) to prevent interference. The technical definition of “broadband” is a moving target especially when constantly seen only as a speed rather than as a tool necessary for completing other tasks. Sometimes, “broadband” even refers to any high-speed, always-on Internet connection like DSL and cable. Wireless broadband services like WiMax are being rolled out, promising to bring low-cost broadband to remote areas.

The FCC has classified cable broadband service as an “information service” instead of a “telecommunications service” and thereby kept broadband lightly regulated, a decision upheld by the Supreme Court in 2005. The FCC also has classified telecom-provided DSL broadband as an information service. This was, in our view and in the view of the marketplace, the right decision, and has helped unleash the private sector broadband rollout. Certainly, all forms of broadband should be, or remain, deregulated on an equal basis.

Wider broadband deployment, especially in rural areas, will be an important driver of economic growth and expanded consumer benefits. The FCC has previously recognized that broadband regulation would impede the investments needed to build out broadband networks. Imposing “open access” rules requiring cable broadband networks to carry their competitors’ signals reduces the incentives of competitors to build their own networks, and deprives those investors of the promise of return on their investment. The same is true of access or unbundling requirements on DSL.

The threat that such rules would be imposed on broadband is one reason that deployment in the United States initially lagged behind that of some other countries, and would again cause private sector investment to lag if such a threat reemerged. The comparatively low population density of areas of the U.S. is another reason for differences in broadband availability. 2003 census data shows that while only 4.7 percent of urban Internet households believed broadband was not available, 22.1 percent of rural Internet households did. Local governments can best encourage broadband deployment by making rights of way available and keeping taxes and regulation low. All governments can best encourage broadband deployment by not trying to force it through regulation.

Alternatively, America’s power companies own significant rights of way along their power grids. If their power lines could be used for broadband, these companies would offer extraordinary competition against DSL and cable modem services. Power companies might bring broadband to areas not served by cable or DSL. Transmitting signals over power lines is problematic, but advances in chip technology have made it possible, and it is now being offered in cities in Pennsylvania, Ohio, and Virginia, and the technology is becoming easier for consumers and less expensive.

But power companies and traditional broadband face growing competition from wireless providers. Power companies are still regulated by state commissions, some still using rate-of-return regulation. Power companies might be able to make broadband a profit center, but if regulation deprives them of a good return, they will not make the investment. Broadband over power line should be regulated lightly as an information service, as should all broadband technologies.

And, of course, new technology is never simultaneously deployed to everyone at once. The term “digital divide” has been thrown around for a while now—that new communications technologies will reach low-income or other disadvantaged populations more slowly than others. This “glass is half empty” theory is not a problem in practice. The technology glass is half full—and filling fast. To entrepreneurs, and to many philanthropic organizations, any unserved population is an opportunity and an untapped market.

The “doom and gloom” scenarios involving the spread of technology to the disadvantaged can be quite misleading. A NTIA (National Telecommunications and Information Administration) report, based on 2003 data, shows that although there is a gap between white, black, and Hispanic households, use is growing in all three groups at a healthy pace. Education levels are more closely correlated with Internet usage than race.

Even the lowest-income groups become target market. For example, prepaid long-distance telephone services are targeted at low-income immigrants, who often need to call overseas, may not have ordinary long-distance phone service, or may not have the credit record to be billed monthly.

Sometimes development is slower than we would like, especially in rural areas. The costs of wiring areas of low population density are substantial. But satellite or terrestrial wireless technology drastically reduces these costs. Low taxes, direct to taxpayer subsidies and deregulation are the best ways to speed entry into rural areas.

Legislatures often provide tax incentives for growth in the form of exemptions, deductions, credits, or reduced assessment ratios to encourage capital formation and investment in rural areas. Legislators have the authority to use such policies to support technological innovation and deployment in rural America.

But one reality will remain the same—100% coverage and adoption will be an elusive goal, at least in the short to medium term, and policy is better targeted at realistic goals and setting realistic expectations instead of making grandiose promises ultimately doomed to fail.

■ ***Chasing “Broadband”***

The idea of broadband is fairly simple—fast, or faster, access to the Internet, greater speed to enable more complicated and sophisticated applications or expanded capacity to allow for ever more expansive uses. And there is more or less agreement on what is not broadband, that is to say “too slow” to be broadband. Definitions of broadband change constantly, study to study and from time to time. Those definitions have ranged from 64 kilobytes per second up to 1.0 megabits per second and many points in between.

Recalling Says Law—the chase for faster and faster broadband will never end because as faster speeds become mainstream they will be put to use, pushing the boundaries of the possible, necessitating the deployment of greater speed which will then be used to maximum effect pushing the bounds of the possible, and so on. This is why over time the threshold of “broadband” changes as the marketplace rolls out faster service.

Defining a broadband goal in terms of a numerical standard may be interesting for international data compilation, and perhaps appealing to those who think that Americans want to emulate Korea and live in tiny apartments in what are little more than giant concrete bunkers with government broadband pipes on which they can play computer games and otherwise interact with “real life.”

But measuring speed is simply the wrong approach. The question that needs to be asked is not “How fast is it?” but rather “Does the system perform to meet the needs of users/consumers/taxpayers in this case?,” or “Are we meeting the goals and vision as laid out by our public officials—have we made it to the Moon?”

Given the many policy debates that have been elevated lately given the proposals for the federal government to spend enormous amounts of money on broadband deployment, and to use broadband to meet other goals, some of the potential goals should be clear—creating economic opportunity, to drive capital investment in broadband infrastructure, to enhance, encourage and drive innovation, to provide increased opportunity for energy independence, to provide enhanced healthcare, to drive job creation, or to improve education and public safety.

Asking “what speed” is the wrong first question. We need to ask, as a nation, where do we want to go today?

If arbitrary bandwidth speeds are not an appropriate way of gauging whether a market is served, other considerations should be considered. For example, if a purpose of broadband rollout is intended to enhance voice competition, then sufficient bandwidth should be sufficient to allow for VoIP service. If a goal is to allow access to e-government services, then even DSL speeds are sufficient to access government websites and to participate in e-government mechanisms.

■ ***Access To eGovernment? (Transparency)***

Government should be aggressively looking for ways to *deploy* technology broadly, to specifically *use* communications technology and applications, to reduce the cost of government services—saving money and better serving the taxpayer by moving more services online driving greater efficiencies and ease of use. Improved government services delivered via the Internet would drive demand for Internet access services, creating a market, driving greater competition in those lesser served areas.

Certainly just having the many government services via thousands of government programs would provide just the sort of broadly used apps that would drive greater numbers to desire home broadband.

One immediate benefit of moving all, or nearly all, government programs and information to the Internet is to facilitate transparency in government services. We have recently seen the results of what happens when legislative information is kept secret, with closed door meetings and political favors tucked into legislation because no one reads the bill. While we entrust those we elect to manage government for us, we have not surrendered our rights to know what they are doing with our money.

■ ***Enough Bandwidth For Video? (Competition)***

If a purpose of broadband rollout is to enhance video competition, then sufficient bandwidth must be available to carry video services in addition to VoIP and data service. But we hasten to note that enhanced video competition was not originally the intention of the Telecom Act of 1996, but rather was a strategy designed by network providers themselves in order to create demand, or a “killer app,” for their broadband services. Enhanced video competition is thus a happy result of the broadband rollout, rather than any intentional design on the part of policy-makers.

But importantly, no matter how much bandwidth is available, it will never be enough. Experience thus far proves that innovators and consumers will come up with new and interesting things to do with an abundant supply of broadband such that there will always be demand for greater and greater speed among certain populations, and traffic management of networks will always be necessary. Supply creates its own demand.

What Should Government Do or Not Do?

■ ***Stop Slowing the Private Broadband Rollout***

While asking what government can do to enhance broadband availability and penetration, we should hasten to point out things government does that have the effect of slowing broadband rollout.

For instance, to meet ever-increasing demand for mobile coverage, mobile phone companies must constantly increase capacity by putting up new antennas, sometimes new towers and other times simply attaching an antenna to some already existing tower. To do so they must seek the permission of the local authorities, even to allow them to erect a tower on private property and pay for a lease. Often those local authorities balk, but more often they simply drag their feet, refusing to act on applications for new towers and additions ones.

Requests to place a new tower or affix a new antenna to an existing structure can languish for months, and even years.

Why would local authorities not act promptly on such applications? For one thing, an army of local communications consultants works these issues at the local level, and frankly these consultants have every incentive to drag out the process in order to maximize their fees.

It's also likely that local authorities are simply avoiding or dodging the issue, since there will almost always be someone in the local community who doesn't like the site of the tower or the temporary intrusion of construction crews in the area.

But in the meantime, the delays have hampered access to 911 calls for emergencies by limiting coverage for consumers, limited, or not allowed in the first place, coverage for certain consumers and thereby denying digital opportunity to many, and limited innovation at the edge of wireless networks.

Of course, if decisions were simply made in some reasonable time virtually all of the problems would be solved even as more customers would be afforded the opportunity to gain the benefits of greater broadband availability.

In this case it makes sense for the FCC to require local franchise authorities to act within a defined amount of time on applications for new tower and antenna sitings.

■ ***Create a Business Case for Hard-To-Serve Areas—Broadband Enterprise Zones***

We have asserted that the broadband rollout is going well in areas where demand and market forces sufficiently incentivize private network companies, and we've argued that federal actions must not devalue or weaken incentives for private investment. But there obviously remains the problem of areas where, for reasons of geography, population density, or other issues, a business case for deploying broadband is a challenge.

At the same time the policy tool box provides several options for how to encourage greater supply of broadband beyond government mandates or government provision of broadband.

One possible federal program to incentivize broadband rollout to unserved areas is to designate them as "broadband enterprise zones." Within broadband enterprise zones, broadband providers would receive preferential federal tax credits which might not only be used to offset taxes within the zone, but which might also be used to offset some of the provider's other tax obligations in other jurisdictions.

A further feature of broadband enterprise zones might be vouchers issued to households within the zone that could be used to pay for charges related to installation and initial service hookup for households. Federal subsidies which are thus carefully targeted to encourage adoption, and

which are paid directly to consumers, are the most efficient way to deploy federal funds while incurring the least risk of dependency and gaming of the system.

Within broadband enterprise zones, regulation would be minimal in order to hasten the rollout of networks in these areas. Rules would be neutral regarding which technologies may be used. In a given area, a wireless technology might be more appropriate than a wired technology. Any provider that can supply an acceptable level of bandwidth to enable VoIP, data and video services, or other applications would qualify to provide service within the broadband enterprise zone.

It should be noted that attaching special regulations, network management requirements and other obligations to services within broadband enterprise zones would serve as a disincentive, and would defeat the whole purpose of the broadband enterprise zone. Such discriminatory regulations should be resisted.

Further, because broadband enterprise zones would be a federal program, the federal government would preempt states and localities from charging discriminatory fees and taxes within the zone, and would also preclude states from placing additional reporting or management requirements within the zone.

The tax credits, vouchers, and other incentive programs within broadband enterprise zones would phase-out over a period of five (5) years, so that networks are not built simply for the purpose of subsidy. At the end of five years, network providers must have achieved a sustainable level of paying customers for whom to maintain the network profitably. Under no circumstances would permanent or long-term government tax breaks or subsidies be envisioned within broadband enterprise zones.

The Institute for Policy Innovation (IPI) has proposed broadband enterprise zones as a market-friendly and economically efficient means of incentivizing broadband rollout to areas where market forces have proven to be insufficient up through the present time.

Outside of broadband enterprise zones, there may still be a role for tax credits to incentivize the rollout of service to unserved areas. However, neither broadband enterprise zones, tax credits or subsidies should be available in areas where existing private infrastructure investments have already been made and thus where broadband service is already available. To do so would be to devalue the existing infrastructure investment and unfairly bias competition in favor of the new entrant and against the incumbent.

■ ***Don't Make the USF Mistake***

Most analysts familiar with the federal universal service fund (USF) would argue that it is in serious need of reform, and that as currently structured, the USF serves poorly as a model for broadband availability. Policy makers should thus avoid making the USF mistake with regard to broadband networks.

The idea of universal service was promulgated in the early days of two-way voice-grade telephone service to enlarge and protect a monopoly—"one system, one policy, universal service." Today universal service is an anachronism, and the federal universal service program is widely regarded as too large, too redistributive, and with potential for serious problems due to lack of oversight.

The Telecommunications Act of 1996 established the \$7 billion federal Universal Service Fund (USF). The states determine eligibility to receive federal USF support. In addition, many states have their own universal service programs for low-income residents, and half have programs for local phone companies that provide service in “high-cost” (usually rural) areas. Both the federal and most state USF funds are in need of review, overhaul, and phase-out.

Federal universal service is funded by a line item on customers’ bills for interstate phone service. Many (not all) state programs are still funded by hidden (“implicit”) charges on intrastate long distance and business revenue. Universal service programs grew up in an age of monopoly. In this competitive era, they are unsustainable.

In a rare bit of good news, many states are reforming and even phasing-out their state USF programs, and are implementing truth-in-billing for what were formerly hidden charges.

Not so at the federal level, where total federal universal service spending has increased from \$1.8 billion in 1997 to \$6.5 billion in 2005. Much of the increase is due to regulators’ efforts to transfer subsidies from “hidden” carrier charges to “explicit” fees and funds. But this is little comfort if it brings no added accountability or limits. And the system is rigged to grow out of control.

Technology has outgrown the whole system of universal service. Understanding this is vital to competition. Holding prices down for wireline service—or any mode of service for that matter—discourages new entrants (studies show that consumers become more willing to substitute wireless for wireline when the price difference is as little as \$6-\$7 a month). Subsidizing high costs reduces incentives to develop and deploy low-cost technologies. It is unfair to expect some (not necessarily well off themselves) to pay more so that others (perhaps very well off indeed) may pay less.

Currently, the system is at a crossroads. Political pressure only serves to expand the USF, rather than to reform and to contract it. Ultimately, radical reform of the USF regime is necessary. However, because the USF system has powerful political constituencies, incremental reforms may be as much as can be expected, and would represent a distinct improvement.

Given the proven political difficulty of even minor reforms to the federal USF system, regarding the national broadband plan, the government should avoid making the “USF mistake” for broadband. IPI’s “broadband enterprise zone” proposal is, in our estimation, a far superior way of achieving broadband penetration to unserved areas.

However, if anything resembling a USF program for broadband rollout to unserved areas is contemplated, several principles should be considered absolutely essential:

Maintain Accountability. Make sure consumers can see universal service charges on their bills. Some states have impeded this process by making it harder for carriers to offer “line items” on the bills.

Legislative Caps. The political process is more effective than regulators in limiting costs. Colorado’s fund grew from \$35 million to over \$60 million within a few years, enraging consumers. This ended when Colorado legislators capped the fund at \$60 million. Some federal legislative proposals have contemplated caps.

Make carriers compete for support. Auction the right to be the eligible carrier in a given region to the lowest bidder. Or, make the subsidies “portable,” so that when a carrier loses a customer, it loses part of the subsidy.

Target support to needy areas. In Washington state, all the carriers dedicate their support to high-cost areas within the state, while low-cost areas receive no support.

Economic Development Incentives. Legislatures often offer tax incentives in the form of exemptions, deductions and credits or reduced assessment ratios to encourage capital formation and investment in economic development. This is a direct way to encourage technological innovation and deployment in rural America.

Give support to means-tested customers, not companies. While unpopular with small phone companies, this approach is fairest for consumers now paying to subsidize service to other consumers who are no worse off .

■ ***Maintain Technology Neutrality***

Any new plan, if government incentives are included, must not condition acceptance of those incentives with the imposition of new regulations which would only attach to one participant or to one portion of the broad range of communications industry.

Today those who compete in the communications marketplace look increasingly similar. For over 100 years “telecommunications” referred to two-way voice-grade analog wireline service. But today the reality is that new applications and technologies make prior stovepipe definitions and regulatory or legislative approaches irrelevant and anti-consumer.

With the dominance of convergence, communications is not just voice communication. As analog technology gave way to digital, voice service has merged with all other forms of data transmission. Similarly, “broadband” is not just a story of faster email or speedier downloads, rather it is about data availability and use. Today communications is the transmission and distribution of multiple forms of data (voice, text, video and more) through a variety of means for a variety of uses, by a variety of people.

Convergence in communications continues to bring extensive competition between new and old firms using very different technologies—transmission technologies may differ but the “content” sent across them is indistinguishable.

Consumers use various technologies and applications for communications, and do not distinguish among them except to choose the most convenient service and best value. The federal governments, and state or local for that matter, must understand this fact when making policy or providing oversight. Understanding this paradigm is the key to long-term industry and technological growth.

These continued trends point to one policy conclusion – that the communications marketplace should be seen as a whole, not a collection of various sub industries defined by means of transmission or as a group of companies defined by a business model or history.

Simply put, public policy should be technologically neutral. Why should one method for accessing the Internet be regulated in one way while others are not?

Even in the wholesale market, if regulation is necessary, only a very light touch should be used. Discriminatory rules that are opportunistically applied, under the aegis of acceptance of government incentives are best viewed as only as harmful to the marketplace, depriving consumers of the best potential products and services.

■ ***Protect Property Rights***

Property rights are fundamental to functioning markets. Without property rights, investors don't invest and innovators don't take risks. Without property rights, contracts aren't executed because they are neither dependable nor enforceable.

Within the broadband marketplace, two aspects of property rights are critical. First, as we have noted, the property rights of those who have already built networks must be respected. Policy changes designed to devalue or even nationalize existing infrastructure are clear violations of property rights, and would likely qualify as a "taking" upon judicial review.

Network owners must also be free to execute contracts as an extension of their property rights. And almost all contracts are, by their nature, exclusive in some way. It is entirely appropriate and not at all novel for network owners to be able to sign contracts for exclusive access to specific types of content. It is entirely appropriate and within a traditional legal understanding of property rights and contract law for Direct TV to enter into an exclusive contract with the National Football League in order to offer an exclusive product or service to Direct TV customers. Similarly, ESPN offers a "ESPN 360" product on a contract basis with certain network providers. These types of contracts facilitate creativity and competition within the marketplace, and should not be discouraged by new policies or new regulations, however well-intentioned.

It is also entirely within a traditional view of property rights and contract law for network owners to contract agreements with hardware providers for exclusive access to new and compelling hardware that access their networks. AT&T's contract for exclusive access to Apple's iPhone, for example, and Sprint's contract to be the first network to offer Palm's new Pre phone, are examples of entirely traditional and appropriate uses of contract law and property rights between free parties operating within a market framework. The right of network owners to contract with content or hardware providers in order to compete in the marketplace should not be discouraged by new policies or regulations, however well-intentioned.

The second critical aspect is protection of intellectual property. Unless intellectual property rights are protected, content owners will withhold, rather than make available, their content. In order for our broadband networks to meet consumer expectations, they need to be rich with content. The U.S. economy produces more rich content than any other nation, and this creative content is an important component of U.S. global competitiveness. Rich content made available over broadband networks can become an even more important component of U.S. economic growth so long as property owners are assured of the ability to protect their content.

The fusion of the property rights of network owners and content owners is the ability of the content and network industries to work together on solutions that lead to content availability and protection over broadband networks. It is in the interest not only of consumers but also of network and content owners that means for protecting intellectual property over networks, including digital technologies for watermarking authorized content and detecting unauthorized content, be

permitted to develop and to be deployed. Most important, the existing legal regime for protecting copyright should not be weakened or abandoned under some confused understanding of the meaning of “openness” or “convergence.” Innovation and economic activity will always depend on and demand protection of property rights.

■ ***Protect Personal Security***

Similarly, a feeling of security, of safety, must be pervasive for a mass market, or a town square, to truly develop and for all consumers to take greatest advantage of the many potential benefits of broadband. Security, including identity management/protection, must be addressed so that consumers feel as comfortable online as they might in the local shopping mall and comfortable enough to engage in a variety of transactions including entertainment, education, healthcare and financial.

As President Obama recently noted, “This new approach starts at the top, with this commitment from me: From now on, our digital infrastructure—the networks and computers we depend on every day—will be treated as they should be: as a strategic national asset. Protecting this infrastructure will be a national security priority. We will ensure that these networks are secure, trustworthy and resilient. We will deter, prevent, detect, and defend against attacks and recover quickly from any disruptions or damage.”

As is fairly well known to law enforcement and network operators, the dangers for the unwary via the Internet, and even more quickly via broadband, are many. Whether aggressive tactics such as cyber-stalking or hacking, preying on the unwary for various reasons such as spam or phishing, or even content threats, from the vile such as child pornography to that protected by free speech but unsavory to many such as pornography or “hate” speech, some digital content can cause great harm to those who interact with it. Because many consumers would flee and because providers seek to protect their systems while providing an effective, efficient system, many network operators manage their systems to guard it and their customers—they seek to maximize the quality of the experience for all participants and often see this role as their responsibility.

This sort of security does not come without significant investments in both human and technological resources. The ability to provide network security is in large part enabled through network management—this sort of behavior should be encouraged.

And other government efforts will address some of the dangers and what can be done about them. Notably, the NTIA’s Online Safety and Technology Working Group convened for the first time just last week. This group will submit a report to the NTIA and Congress to evaluate industry efforts and to make recommendations to promote online safety for children through education, labeling, and parental control technology. The Working Group will also evaluate and make recommendations on industry efforts to prevent and respond to criminal activity involving children and the Internet.

Those industry efforts to prevent and respond to criminal activity are, in fact, network management. That various providers protect those online from spam and other interference already helps to create the type of environment to attract more use of broadband. More security, and

promotion of those security efforts, will draw more people to use broadband and to use it more as an integrated part of life. Just as citizens will “take back” formerly derelict neighborhoods once they know their physical safety is a given, so too will broadband use increase when those online know that they, their identities, and their families are digitally “safe.”

■ ***Understand the Limits to Driving Demand***

Increasing demand above the current trend faces similar challenges in large measure because the current adoption rate is so rapid.

There are persistent calls for the government to provide greater “education” regarding the benefits of broadband so that consumers will increase their rate of broadband adoption. However, as the Pew survey, and various other surveys, shows there are many reasons that folks don’t take up broadband.

Certainly one factor is cost but it is not the most pervasive reason given. Rather, a combination of factors are listed many of which demonstrate that real decisions have already been made about the worth of the Internet, and thereby the need for broadband, to the individual. To ignore that many consumers who have the option to receive broadband choose not to have it is a bit like telling someone who has refused ice cream because they do not like the taste that they should take one more bite because in fact they are wrong. (Admittedly no one in their right mind would refuse ice cream).

Given the pervasive media coverage, marketing by competitors, and general social understanding of the benefits of broadband, the question must be asked whether taxpayers should even support the notion of government “education” in the area of broadband, particularly considering the likely rapidly diminishing returns.

Government should focus efforts on deployment and accept the diminishing returns of persuasion and advertising.

Conclusion

In conclusion, the Institute for Policy Innovation (IPI) urges policymakers to have an honest and appropriate appreciation of the tremendous progress that we have made in rolling out broadband services to a significant portion of the American population—all done using private risk capital and deployed in a demand-driven, market-oriented manner.

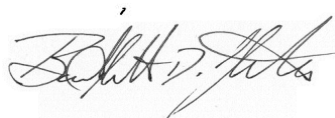
We urge that government policy leverage and supplement rather than devalue this tremendous current and ongoing private investment in broadband infrastructure, and we have made a specific suggestion for broadband enterprise zones to address those areas where demand is insufficient or where market forces have thus far proven insufficient. And we have urged policymakers to not return to failed policies such as unbundling, which they will no doubt be urged to do by others providing input.

We thank the FCC for this opportunity to provide input, and we would be happy to participate in further hearings and discussions related to the formulation of this crucial broadband policy initiative.

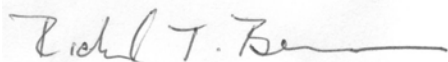
Sincerely,



Tom Giovanetti
President
Institute for Policy Innovation (IPI)



Bartlett D. Cleland
Director
IPI Center for Technology Freedom



Richard Bennett
Research Fellow
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