THE NEW NETWORK COMPACT

Making the IP Transition Work for Vulnerable Communities

A report commissioned by the Benton Foundation

By Ted Gotsch

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Making the IP Transition Work for Vulnerable Communities

The Benton Foundation works to ensure that media and telecommunications serve the public interest and enhance our democracy. We pursue this mission by seeking policy solutions that support the values of access, diversity and equity and by demonstrating the value of media in meeting basic human and community needs.

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EXECUTIVE SUMMARY

The nation's telephone network stands on the precipice of great change. The public switched telephone network (PSTN) and its copper-wire infrastructure is slowly being replaced in some areas with high speed networks that allows telephone service, as well as faster broadband speeds and video offerings for consumers. Eventually, all telecommunications infrastructure likely will be Internet Protocol (IP)-based. And few doubt that the IP infrastructure of the future is the better technology and the better path for the U.S. in the long run. But what will become of the tens of millions of Americans who already face hurdles in accessing existing telephone and broadband networks? How can we ensure them easy and affordable access to future networks?

In order to make certain that everyone will benefit from this complex transition, policymakers will need to take pragmatic steps to understand the opportunities and barriers; and ensure that our newest technologies continue to support some of our oldest values.

The Federal Communications Commission formed the Technology Transitions Policy Task Force and charged it with exploring the impact and opportunities of the IP transition. To maximize the benefits for all Americans and guarantee any decisions are consistent with the nation's core values, the Task Force and the Commission need to be diligent and consider a wide array of vulnerable communities that could be unfairly disadvantaged during this conversion. Depending on how this transition is done, these communities stand to benefit immensely or be disproportionately harmed. Only by fully understanding the possible pitfalls and opportunities of such a change can the FCC develop a set of "rules of the road" that will best serve all of the country's residents.

This report highlights the concerns of vulnerable communities through the eyes of the individuals and organizations who work on a daily basis with children, people with disabilities, low-income families, communities of color, rural residents and senior citizens. As an integral part of their jobs, these advocates must understand

the struggles of these vulnerable populations to help them overcome the obstacles they face. As such, they are well-suited to help the Task Force and the full FCC make better, more-informed decisions about this transition.

The Benton Foundation has identified 10 interrelated principles to help guide the transition to all-IP networks—whether they are delivered via fiber, microwave, coax, wireless or some other technology—in order to guarantee that all Americans have an opportunity to succeed using the networks of tomorrow. In sum, these principles are intended to guarantee that all Americans will have access to IP-enabled networks that are: 1) fairly priced; 2) offer a high quality of service with the capability of running essential applications; and 3) allow people—regardless of age, ability, location, or economic status—the chance to develop and share content as well as use and create new technologies.

How to get there, however, remains the grand challenge before the FCC.

TEN PRINCIPLES FOR THE IP TRANSITION

1. **Ubiquity:** Every American needs to have *affordable* access to high-speed fixed and mobile broadband networks.
2. **Accessibility:** The 54 million Americans with disabilities and other vulnerable populations must be able to make full use of broadband networks and the video and voice services that run over these networks.
3. **Diversity:** In addition to ubiquitous availability, Americans must have the ability to access and distribute content that reflects the country's diversity of viewpoints.
4. **Openness:** Consumers must retain their rights to utilize any legal applications, content, devices, and services of their choosing on the broadband networks they use.
5. **Competition:** Policies should encourage new entrants into the emerging IP-enabled network market.

6. **Interconnection:** Regulators must ensure that competing network providers are able to interconnect in areas where there is legacy market power. Subscribers must be able to reach subscribers on any other network.
7. **Trustworthiness:** As technology moves forward, *consumers must retain key protections* that ensure a fair and safe experience.
8. **Robustness and resiliency:** To ensure *public safety,* consumers need to be able to rely on networks in emergencies.
9. **Speed:** Consumers need fast networks that allow them access to and choice of a full range of services to meet their needs.
10. **Innovation:** For consumers, the promise of the IP transition is new services and ways to collaborate and communicate that are better and more advanced than current basic telephone communications.

In 1913, AT&T Vice President Nathan Kingsbury sent a letter to U.S. Attorney General George McReynolds "[w]ishing to put [the company's] affairs beyond fair criticism" of anticompetitive practices. In the letter, AT&T promised to sell its stake in Western Union Telegraph, resolve interconnection disputes, and refrain from acquisitions if the Interstate Commerce Commission objected. The letter became known as the Kingsbury Commitment. One hundred years later, AT&T seeks to retire the copper-based phone system. But the nation cannot retire the commitment Attorney General McReynolds understood to create "full opportunity throughout the country for competition in the transmission of intelligence by wire." As we embark on the IP transition, we need a new network compact for the 21st century that guarantees that the public, not just industry, benefits from the migration to digital networks.

INTRODUCTION

The nation's telephone network stands on the precipice of great change. The public switched telephone network (PSTN) and its copper-wire infrastructure is slowly being replaced in some areas with high speed networks that allows telephone service, as well as faster broadband speeds and video offerings for consumers.

There are already signs that the telecommunications landscape has changed forever. In a recent speech, Federal Communications Commissioner Ajit Pai highlighted some Federal Communications Commission (FCC or Commission) research which found:[1]

- Last year, about one in seven households with plain old telephone service delivered over copper wires dropped their landlines. Over the last four years, 33.6 million (or 43 percent) of American households with copper landlines gave them up.
- Forty-two million households subscribed to voice-over-IP (VoIP) service in 2012, about twice the number from four years earlier. Indeed, last year 43.5 percent of residential landlines were VoIP.

In addition, 95 percent of households no longer solely depend on a traditional home telephone to stay connected.[2] In all, about 34 percent of American households have cut the cord when it comes to telephone service, with more than 39 million households relying only on wireless.[3]

Given these statistics, incumbent telecommunications companies and their supporters say it makes no sense for them to sink more dollars into PSTN "legacy" networks when the future is in IP infrastructure. Of late, much attention has been focused on a petition[4] filed last year by AT&T that asked the FCC to move forward on what's being called the IP transition. The Commission is now in the beginning stages of what will be a years-long process to improve the nation's infrastructure to better suit America's 21st century communications needs.

Most observers agree that the new infrastructure could provide greatly improved services. However, many are left to wonder

whether everyone will have affordable access, whether some existing services will be degraded, whether our most vulnerable populations are prepared to take full advantage of the power of Internet Protocol (IP) networks — and how policymakers can help make that happen. The question is will critical and time-honored consumer protections and societal values currently in place be updated and extended to these networks of the future.

While the biggest telephone carriers are planning a transition to IP-enabled networks, most do not have plans in place to offer these advanced services to people in the poorest or most remote communities. Instead, the companies are rolling out services that are vastly different from what consumers are used to and pairing them in ways that consumers may not want. In some places, this means replacing today's wireline telephone network with fiber infrastructure that can offer advanced broadband speeds, voice, video and data over the same network. However, in other places—especially less-populated and less-prosperous regions—this may mean relying on less-capable, all-wireless technologies. In such areas, consumers may not join in the leap forward.[5] Any potential shortcomings must be addressed before unplugging yesterday's PSTN network, which millions of Americans currently rely upon for basic phone service. **The question is: Will critical and time-honored consumer protections and societal values currently in place be updated and extended to these networks of the future?**

New Federal Communications Commission Chairman Tom Wheeler seems to understand that everyone needs to benefit from this transition. During his first day on the job, he told Commission staff they have a big job before them. "The challenge America faces, and that this agency faces, is to secure the future through the actions of the present—by encouraging investment and innovation; preserving competitive opportunities; protecting consumers; and assuring the opportunities of the new network extend to all," he said.

First and foremost, people must have affordable access to high-speed IP networks to make the transition successful. Other countries—including developed countries such as Sweden and

Japan, as well as less-developed ones like Portugal and Russia —are well on their way to replacing their standard telephone connections with state-of-the-art fiber-optic connections that can boost speeds and lower costs to consumers.[7] America is woefully behind Azerbaijan[8], Qatar[9], South Korea, Australia[10] and many other countries that are advancing fiber-based IP networks capable of 100 megabits per second (Mbps) to every home and providing vast consumer benefits. Major commercial roll outs of fiber-based IP networks like Verizon's FiOS service, which generally serve more affluent communities, have stalled.[11] Often U.S. providers are not extending these networks to rural, poor or minority populations. The Communications Workers of America notes:[12]

- In Boston, areas without access to Verizon's FiOS service are home to 52% minority populations, compared with wealthier suburban areas with access that are home to populations that are just 23% minority.
- In Buffalo, areas without access to Verizon's FiOS service are comprised of 45% minority populations, compared with wealthier suburbs with access that are just 5% minority.

In some places, such as Hurricane Sandy-ravaged Fire Island, N.Y., Verizon attempted to deploy a service that appears to be inferior to the PSTN network. It is impossible to make a successful transition without truly high-speed IP networks.

Although there are some promising municipal and other gigabit speed IP networks being deployed that are capable of carrying high-quality voice, video and data services, American communities often lack the kind of high-speed IP networks that would most benefit consumers, thereby making the IP transition successful.

Beyond access to physical networks, the U.S. still has Internet adoption issues, and efforts to close this gap appear to be plateauing. Even though 76% of U.S. adults use the Internet at home,[13] 9% of adults use the Internet, but lack home access. These Internet users cite many reasons for not having Internet connections at home, most often relating to issues of affordability. Some 42% mention financial issues such as not having a computer, or having a cheaper option

outside the home. And, as of May 2013, 15% of American adults ages 18 and older do not use the Internet or e-mail at all.

Asked why they do not use the Internet:

- 34% of non-Internet users think the Internet is just ***not relevant*** to them, saying they are not interested, do not want to use it, or have no need for it.
- 32% of non-Internet users cite reasons tied to their sense that the Internet is ***not very easy to use.*** These non-users say it is difficult or frustrating to go online, they are physically unable, or they are worried about other issues such as spam, spyware, and hackers.
- 19% of non-Internet users cite the ***expense*** of owning a computer or paying for an Internet connection.
- 7% of non-users cited a ***physical lack of availability or access*** to the Internet.

If the IP Transition is to be successful for all Americans, then, broadband networks must be available, accessible, affordable, trustworthy, and relevant to new adopters.

For consumers, there are also a number of technological hurdles to address if the IP transition is to be a seamless one. As new FCC Chairman Tom Wheeler pointed out in a memo sent before he took charge of the agency to then-FCC Chair Julius Genachowski on stranded PSTN investments, "Many homes and businesses still use devices that depend on specific characteristics of the PSTN (e.g., auto-dialers, alarm systems, ATMs, PoS terminals)." Wheeler cautioned that "[t]hese services and devices will have to be replaced and the accompanying construction and inspection 'codes' revised."[14] In addition, under current law, consumers have many protections that guarantee them affordable access to quality telephone service no matter where they live or how much they earn. They can call whomever they want—regardless of the receiver's service company—and be confident the call will be completed. They have state regulators who represent them and are empowered to make sure local phone companies are following the rules protecting consumers.

As it stands now, while consumers can benefit from newer technologies, policymakers must answer a number of critical questions to make sure that the newest of technologies can support some of our oldest values—including basic consumer protections:

- Will consumers have access to reliable, redundant and resilient IP networks from more than one provider?
- How do we ensure that these networks will be accessible and affordable for minorities, low-income families, rural residents, people with disabilities and senior citizens?
- Will consumers have access to truly high-speed IP networks that allow for competition in voice, video and data services over those networks?
- Will consumers have barrier-free access to competitive choices for innovative new voice, video and data services over these advanced networks, even when those services directly compete with the incumbent IP provider's own offerings?

Simply put, how do we ensure that every American can benefit from advanced IP networks that are fast, open, competitive, innovative and accessible?

Top lawmakers are asking these same fundamental policy questions. "As we look to the future, we must make sure that comparable communications services are available at comparable rates for everyone in the country, no matter who they are and no matter where they live," Senate Commerce, Science and Transportation Chairman John D. (Jay) Rockefeller IV (D-WV) said at a recent hearing. "Even as networks evolve and as companies upgrade their technology, the principles undergirding decades of communications law and policy remain."[15]

The FCC's Technological Transitions Policy Task Force is currently reviewing what path the IP network transition should take. The Task Force, is making recommendations to the FCC. The full Commission will then be faced with critically important decisions.

TEN PRINCIPLES FOR THE IP TRANSITION

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1. **Ubiquity:** Every American needs to have *affordable* access to high-speed fixed and mobile broadband networks.
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It is unclear how any of these foundational principles will be advanced by deregulation. As the FCC precedes with any IP transition trials, it should seek to advance each of these principles from the outset.

What follows are the concerns of vulnerable communities through the eyes of the individuals and organizations who work on a daily basis with children, people with disabilities, low-income families, communities of color, rural residents and senior citizens. As an integral part of their jobs, these advocates must understand the struggles of these vulnerable populations to help them overcome the obstacles they face. As such, they are well-suited to help the Task Force and the full FCC make better, more-informed decisions about the IP transition.

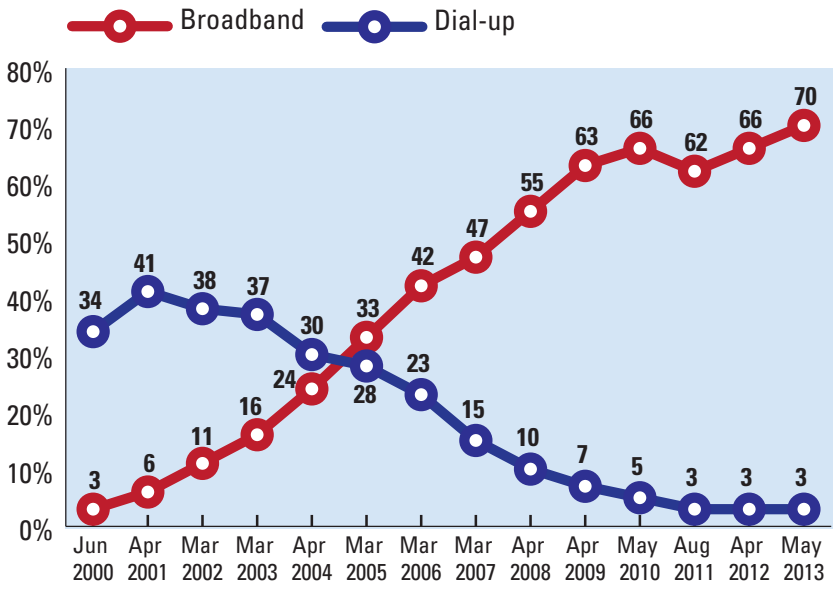
1. UBIQUITY

Every American needs to have affordable *access to high-speed fixed and mobile broadband networks.*

The idea of voice service for all has been an ideal going back to the earliest days of telephone service. Universal service was a principle of the first federal communications law, the Communications Act of 1934, and was enacted as a federal program in its current form as part of the Telecommunications Act of 1996. U.S. telecommunications law imposes an obligation on the Federal Communications Commission to take affirmative steps to provide all Americans with an equal opportunity to access broadband. The law both compels the FCC to promote ubiquitous access to broadband and to avoid steps that would undermine this goal.

Under the Communications Act, Congress directed the FCC to promote the deployment of broadband services to all Americans. In particular, in 1996, Congress stated that the FCC "shall encour-

Home Broadband vs. Dial-up



Source: Pew Research Center

age the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans."[16] Congress specifically determined that broadband offerings are included within the definition of "advanced telecommunications capability."[17]

Moreover, the law obligates the FCC to monitor the deployment of broadband and to take steps to promote broadband deployment if it is not being deployed to all Americans on a timely basis.[18] If this determination is made, the FCC "shall take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market."[19]

Likewise, Congress determined that "[i]t shall be the policy of the United States to encourage the provision of new technologies and services to the public."[20] Congress also mandated that "[a]ccess to advanced telecommunications and information services should be provided in all regions of the Nation."[21]

In February 2009, Congress reaffirmed its commitment to ensuring ubiquitous access to broadband. Under the American Recovery and Reinvestment Act of 2009 (the "ARRA"), Congress charged the FCC with developing a national broadband plan that "shall seek to ensure that all people of the United States have access to broadband capability and shall establish benchmarks for meeting that goal."[22] As the FCC has noted, the ARRA "reshaped national priorities by bringing increased intensity to the national goal of ubiquitous broadband deployment."[23] In light of the ARRA, "the nation's broadband policy goals now seek to encourage increased utilization of broadband in addition to the ubiquitous deployment of broadband facilities."[24]

The FCC has repeatedly recognized Congress's goal of promoting the ubiquitous availability of broadband and has embraced it as an agency goal as well. The FCC determined that the "[r]apid deployment and ubiquitous availability of broadband services across the country are among the Commission's most critical policy objectives." [25] The FCC also stated that its "end goal is to ensure the ubiquitous and affordable availability of broadband for all Americans." [26]

We need to make sure that every American, regardless of the zip code they live or the color of their skin, have access to truly high-speed IP networks capable of supporting voice and video communication that is more capable than the PSTN. But today, millions of American's lack IP networks at home. The kind of high-speed fiber networks we need to not only keep up with other countries seeking to out-compete us, but to deliver on the full-promise of the IP transition are not getting to the poor, minority, and rural communities that can benefit most. Thus, to ensure the IP transition succeeds, we need high speed networks that are as truly ubiquitous as the PSTN is today.

In the age of broadband, how do we make certain that IP networks are as ubiquitous as the PSTN network? The FCC spent parts of the last four years revamping all four Universal Service Fund (USF) programs to help spur the deployment of high-speed networks.

Many, however, are raising questions about how to achieve an IP future that includes all Americans. Olivia Wein, a staff attorney with the National Consumer Law Center, observed, "We are concerned about rural American and low-income communities. Is [the service] comparable or better? If it is not, we would argue it isn't ubiquitous." [27]

Edyael Casaperalta, a program associate with the Center for Rural Strategies, shared similar concerns. She noted that upwards of 96% of homes currently have voice service nationwide, but tribal communities lag far behind. Broadband access and adoption numbers in these communities are even smaller, and she worries disparities will increase significantly with the switch to IP.

"When we think about ubiquity, we think about coverage of 100%," she said. [28] But she wondered what would happen to the 19 million Americans still without access to any wired network. Will telecommunications carriers expand their infrastructure? "Will they have reason enough to serve those areas?"

There is some concern that too much of the burden will be placed on the Universal Service Fund to pay for deployment of the

broadband networks needed to ensure a successful transition. Several advocates said that program cannot do all the heavy lifting alone.

A few stakeholders do see an essential role for the USF's rural-focused program as it transitions into the broadband-focused Connect America Fund (CAF). Wally Bowen, Founder and Executive Director of the Mountain Area Information Network, said commercial providers cannot be depended on to bring upgraded networks to all. "By contrast," he noted, "the two business models used by local networks necessarily are the private nonprofit or the public/municipal." Bowen feels strongly that local nonprofit and municipal networks should be made eligible for CAF support.

He strongly emphasized the historical analogue of the rural electric cooperatives, of which more than eighty percent were private nonprofits locally owned and controlled and completely independent of any government ownership. "Indeed, for many unincorporated rural areas, there was/is NO municipal government with which to partner," Bowen said. "My fear . . . is that the public interest community is too set in its ways and will continue to fight — and lose — the wrong battle: trying to force the incumbents to serve areas which their corporate self-interest compels them to neglect,"[29] he said.

Other advocates said the deployment needed is possible using a mix of IP-enabled technologies, including wireless, that would allow for cheaper deployment to rural and the most remote areas. They insist it is not realistic to expect all Americans to have access to the same telecommunications services using IP networks when they don't have access using the PSTN or wireless networks where they live right now.

Tom Kamber, Executive Director of Older Adults Technology Services, said more stakeholders need to embrace the changes and work to reduce any negative aspects. He commented, "The issue is how do you manage a market trend like [the IP transition]. It is happening already."[30]

Some advocates think that differences among different IP-enabled infrastructures are being overemphasized. Matthew

Rantanen, Chairman of the Native Public Media board of directors, said that the Tribal Digital Village initiative that he oversees in Southern California, which uses fixed wireless, delivers 500 Mbps to its data center and up to 10 Mbps service to the 19 reservations it serves in San Diego and Riverside counties. He said it is time to stop discounting the technology. "People don't give it the chance it deserves," Rantanen said. [31] "You can make a very good deployment platform based on wireless." However, as reports out of Fire Island, N.Y., and elsewhere reveal, not all wireless IP services are created equally or capable of delivering high speeds and a full range of communications services.

Given the FCC's statutory mandates and its established priorities, the agency should closely analyze how the IP transition will impact the digital divide. By performing this analysis, the FCC will acquire the information it needs to ensure that its IP transition policies are consistent with its determination that ubiquitous access to broadband is one of the Commission's most critical policy objectives. [32] Specifically, the FCC should craft any new rules and policies in a manner that ensures, to the extent possible, that the transition will be instrumental in *closing* the digital divide.[33] The Commission should also consider the importance of focusing on broadband adoption, education and training when crafting IP transition trials and policies. The importance of adoption, barriers to adoption, and means of achieving adoption, especially among minority, multilingual and vulnerable populations, should be at the top of the agenda for negotiating a successful transition. The Commission should aim at enabling underserved populations — in particular, rural and low-income households — to acquire and make effective use of broadband service.

2. ACCESSIBILITY

The 54 million Americans with disabilities and other vulnerable populations must be able to make full use of broadband networks and the video and voice services that run over these networks.

Having telecommunications services reach all Americans is part of the solution. The FCC also has to ensure that any transition to IP networks grants all people the ability to use those services as they want. In an increasingly technology-dependent world, there are more and greater benefits available to many communities than ever before.

For people with disabilities, broadband holds tremendous potential to:

Foster Effective Communication

- *Interpreting Revolutions:* Presence of Interpreters: Remote interpreting, an innovative and effective mode of interpreting, has been developed with the assistance of high-speed communications and low-cost digital cameras. Broadband is necessary in this transaction because it provides a sharp and clear image.
- *Broadband-based Video Relay Services (VRS):* These calls connect deaf to hearing and hearing to deaf callers. They enrich daily lives because more than 80% of all Americans who are deaf have hearing parents and/or siblings, many of whom never learned to sign fluently. VRS, too, supports the participation of deaf individuals in conference calls, facilitating employment at middle and upper levels of management.
- *Peer-to-Peer Signing:* With the use of two-way broadband video, people with hearing disabilities are able communicate in a more clear and visual manner. With broadband, individuals who may not be literate in e-mail or instant messaging benefit from the visual services of peer-to-peer signing.
- *Searchable Text:* Broadband technology offers a practical solution for the large amounts of bandwidth that are required for text conversion to audio so that it can be navigated by someone who has vision impairments.

Expand Opportunities for Employment

Many people with disabilities are unable to work because of mobility issues, hearing or vision disabilities and hostile work environments that are not accommodating to the disability community. VoIP, assistive technology devices, video services and other technological advances that broadband supports expand employment opportunities and make it easier for people with disabilities to be more productive and effective in the work place. Broadband could help to generate a larger work force which would create enormous economic benefits for the United States. An increased labor force will mean higher output for the economy as a whole and fewer citizens would have to rely on entitlement and social programs for support.

Provide Substantial Health Care Benefits

As broadband services continue to evolve, their impact on the disability community and health care costs is likely to be substantial and valuable. Developments like telemedicine, which make it possible for the delivery of healthcare remotely, have a huge impact for the disability community. Specialists who are geographically removed from patients can view very high-quality images, enabling them to consult on specialized care even for rural residents who have disabilities. Some of the most effective telemedicine applications are home health monitoring and support for self-care. Health monitoring can come in the form of broadband-enabled hand-held devices that enable health practitioners to communicate with their clients at home. These devices will "conduct dialogues" with the patients, ask questions and provide health tips and reminders. In this way, doctors can monitor their patients daily and assess their need for treatment. Small portable or wearable devices are also used to automatically monitor the health of a patient and report results back to the doctor's office. In addition, patient to doctor video conferencing technologies are an effective way to save time and create independence for both patients and doctors. With high-speed video visits and remote consultation, the health professional can examine the

patient, test blood pressure, monitor medication intake and observe wound healing among a host of other services.

Improve the Quality of Life for People with Disabilities

Broadband creates communication links, connecting people with disabilities to diverse programs and services and developing important interactions with the surrounding world. Because of broadband, people with disabilities can participate in lifelong learning, independent living and increase their social interactions.

- *Lifelong Learning:* Distance learning, enabled by broadband, can fundamentally change the definition of education. Through advanced communication technologies, individuals with disabilities can earn a degree through online classes and enhance their career skills with guidance from live instructors. For those individuals with disabilities interested in other forms of lifelong learning, broadband provides a medium for self-education and personal research through assistive devices and services. Education and lifelong e-learning opportunities provide engaging mental stimulation and a sense of self-reliance. Yet, broadband is needed for valuable e-learning so that it can be conducted in various forms including video or other rich multimedia applications.
- *Independent Living:* Individuals with disabilities gain immense freedom when they have access to broadband. It enables them to live independently by supporting their daily activities and keeping them closely connected to the outside world. In addition, tele-presence, or having a "continuous window open into another space" drastically improves capabilities for independent living with the option to be online at all times.
- *Social Interaction:* Whether due to physical or environmental barriers, individuals with disabilities can be disconnected for long periods of time. With high-speed broadband access, people with disabilities could participate in online dialogues and make long-lasting friendships. Also, they could communicate frequently with friends and family in various text and video

platforms, enhancing the emotional bandwidth between loved ones. Lastly, broadband would provide individuals with disabilities the opportunity to participate more fluidly in civic activities, like attending town meetings.

Karen Peltz Strauss, Deputy Bureau Chief of the FCC's Consumer and Governmental Affairs Bureau, said that, for people with certain disabilities, the phone and Internet are a lifeline to the rest of the world. That's why access — be it video, texting or voice — is even more critical for them. "It levels the playing field for those with disabilities," she said.[34]

She also commented that the issue is a priority for the agency, noting that it has either adopted or initiated 10 rules during the past three years in an effort to implement the 21st Century Communications and Video Accessibility Act. "That reflects on the Commission's strong commitment that all Americans have access to broadband networks," she said.

Advocates for accessibility expressed concern over price, as many who might experience accessibility challenges are low-income. Everyone, whether a person with a disability, a senior citizen or a non-native English speaker, has something to gain from improved networks. However, they may need some assistance in realizing such gains. Olivia Wein of the National Consumer Law Center said it is important for the FCC to ensure that vulnerable populations have the opportunity to "enjoy the facilities many enjoy."[35]

Of course, part of ensuring accessibility will be educating different populations on the changes the IP transition may bring. Several advocates said that is especially true for seniors, who are used to using the phone they have and are less technologically inclined than other populations. As a result, these advocates emphasized the importance of including the elderly in any pilot programs that test the transition.

Part of the challenge will be teaching seniors to overcome negative preconceptions they might have about new technology. "The most important thing we can do . . . is to make sure they use elders in tests," said Tobey Dichter, Founder and Chief Executive Officer

of Generations on Line. [36] "For example, the new tablet tutorial we just developed included 30 multi-centered usability studies of older adults – producing completely unexpected results."

Explaining the process is also an important component for seniors, said Tom Kamber of Older Adults Technology Services.[37] "It is really important during the IP transition to roll out education materials," he said. "Let's roll out . . . a balanced and information-based education program to help them [i.e., older adults] understand the IP program."

There are also legitimate worries when it comes to health monitoring. These services are often dependent on the PSTN, and as residents of Fire Island temporarily found out, the infirm can be left without a way to be observed remotely if the wireline network is replaced with only a wireless one. [38]

3. DIVERSITY

In addition to ubiquitous availability, Americans must have the ability to access and distribute content that reflects the country's diversity of viewpoints.

The Commission has for many years adopted policies to promote diversity; it should continue to embrace this goal in the IP transition.

Diversity advances the values of the First Amendment, which, as the Supreme Court stated, "rests on the assumption that the widest possible dissemination of information from diverse and antagonistic sources is essential to the welfare of the public."[39] In considering media ownership regulation, the FCC has elaborated on the Supreme Court's view, stating that "the greater the diversity of ownership in a particular area, the less chance there is that a single person or group can have an inordinate effect, in a political, editorial, or similar programming sense, on public opinion at the regional level." These values do not change with the migration to digital networks. In fact, since, as FCC Commissioner Pai recently said, "[c]onvergence is now the norm,"[40] it only makes more sense to keep diversity in mind when considering information and telecommunications services. The IP transition should advance:

- *Viewpoint diversity* to make sure that the public has access to a wide range of diverse and antagonistic opinions and interpretations. The diversity of viewpoints ultimately received by the public should be increased by providing opportunities for varied groups, entities and individuals to participate in the different phases of the broadband industry.
- *Outlet diversity* to ensure a variety of independent owners control broadband outlets.
- *Source diversity* so the public has access to information and programming from multiple content providers.
- *Program diversity* to provide a variety of programming formats and content.

By advancing diversity in the IP space, the Commission will also advance its goal of broadband adoption by helping to create a service that is more relevant to people's lives.

Research has already identified diversity to be an issue in broadband adoption. Consumers of color are less likely than whites to have access to home Internet service.[41] So, especially for those individuals, access to reliable phone service remains critical – for access to health advice, social services, civic participation, employment opportunities, information, or contact with family and friends.[42]

The Internet presents an opportunity to bring together populations that are often isolated, including rural communities and seniors. Traditionally, the voices of larger audiences took precedence in the media until the creation of the Web, which offered a user-generated platform for a broader diversity of voices. The IP transition needs to ensure that continues, several advocates said.

Being able to create content is essential, Tony Sarmiento Executive Director of Senior Service America, Inc. observed, "When we talk about programs, there is an overemphasis on people consuming information and not enough on producing content," he said.[43] "Everyone needs to be able to get their message out."

A diversity of opinions and views made available via the Internet is essential for different communities to gain a better understanding of one another, said Tobey Dichter of Generations on Line. "Diversity means to understand the experiences of everyone," she said.[44] "If [policymakers] don't understand that, we are going to be in big trouble as a nation."

Many commented that Internet availability is particularly important for people who do not have daily social interactions, be it due to location, age or some other reason. Edyael Casaperalta of

Steps of local content and knowledge sharing

Creation	Preservation	Dissemination	Utilization

Source: OECD and UNESCO

Center for Rural Strategies noted that many in rural areas don't feel "well represented in national conversations."[45] Moreover, often when they are represented, it is in a stereotypical manner. She noted that the creation of an Internet news service called the Daily Yonder, for example, helps keep rural Americans informed about issues important to them.

The same is true of senior citizens, said Tom Kamber of Older Adults Technology Center. He noted his group runs www.seniorplanet.org, a New York City-based site geared towards seniors. While some of the content is geographically specific, the issues generally are relevant for older Americans everywhere. "Older adults are thriving and full of good ideas," he said. "It is an important resource for them." [46]

Web sites like that show what is possible if the IP transition is allowed to flourish, he added. "The IP transition could be [an] . . . amazing opportunity to build these long-lasting partnerships," Kamber said.

4. OPENNESS

Consumers must retain their rights to utilize any legal applications, content, devices, and services of their choosing on the broadband networks they use.

The story behind open telephone networks goes back more than 45 years, to a Texan named Thomas Carter who invented a device that extended the reach of a telephone into the oil fields so supervisors could stay in touch.[47] Since the FCC's 1968 ruling in the case known as Carterphone, consumers have been allowed to connect any legal device to the network and new technologies have flourished. Such a policy is just as essential in the age of IP as well.

If our IP networks are going to replace our analog voice, video and data networks, then they must be able to support robust voice and video competition — even if those services compete directly with services offered by the incumbent IP network provider.

Some stakeholders, however, are concerned about the future of voice and video competition with incumbents when these companies own and control both the networks and the services that run over them. They suggest the policy could be in jeopardy as a shrinking number of telecommunications providers exert their control over a significant portion of the network.

In 2012, the Department of Justice apparently opened an antitrust investigation into whether cable companies are acting improperly to quash nascent competition from online video.[48] The query included issues such as setting data caps, limits to the amount of data a subscriber can download each month. Internet video providers like Netflix have expressed concern that the limits are aimed at stopping consumers from dropping cable television and switching to online video providers. They also worry that cable companies will give priority to their own online video offerings to stop subscribers from leaving their networks.

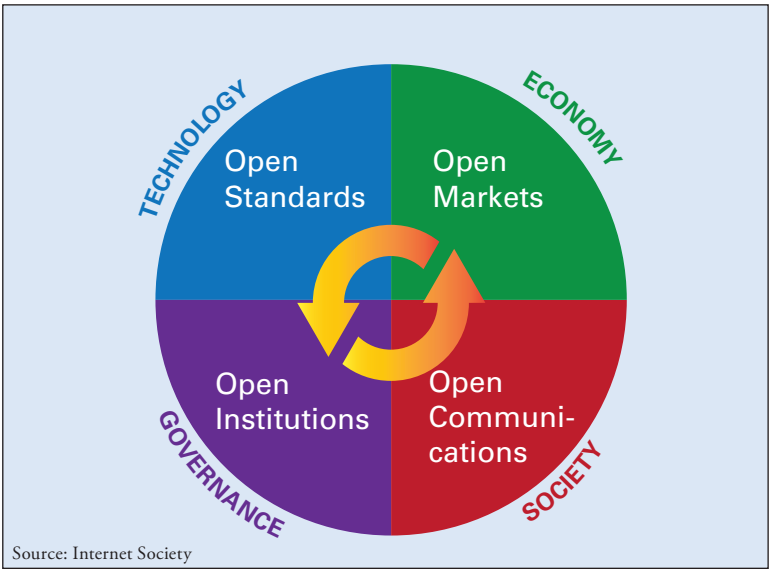
The cable companies have shown little inclination to get out of the business of packaging television channels to become mere

conduits for other companies' data. Some major entertainment companies also have an interest in preserving the current model of television viewing because they want cable companies to take bundles of their channels, rather than just cherry-picking the most popular ones. Another issue that investigators have asked about is whether cable companies are acting anti-competitively by making viewers have a cable subscription before being able to access certain online programming.

Rules could be put in place that benefit carriers but hurt consumers, especially when it comes to choice and cost. This is a special concern of advocates who represent vulnerable populations, some of whom are banding together.

"We are going to demand an open Internet, whether it is wired or wireless," said amalia deloney of the Center for Media Justice. [49] "We are not going to stand for a second-class Internet for people of color."

The Virtuous Circle of an Open Internet



Source: Internet Society

Others agree, saying there is a need to ensure that disadvantaged communities don't get left behind due to corporate consolidation. They also said it is essential that the same policies exist for both wireline and wireless networks going forward.

In 2013, AT&T's decision to block Apple's video-calling program on its cellular network for certain customers raised the ire of consumers and public interest groups. After AT&T offered its rationale on its decision to limit video over FaceTime to customers who have signed up for its Mobile Shared Data plan, Stacey Higginbotham[50] offered two explanations. AT&T wanted to: 1) push more consumers over to its Mobile Shared Data plan; and 2) establish a precedent that would put AT&T's Wi-Fi network on the same legal footing as its cellular one, especially when it comes to network neutrality. Success in the first effort would help AT&T in the near term as it would drive people off their grandfathered unlimited plans and tiered plans, while success in the second would give AT&T more wiggle room as it fights the FCC and consumer advocates over network neutrality.

"If openness applies to one technology, it should apply to all technologies," said Cheryl Leanza of the United Church of Christ.[51] She noted FCC rules currently don't offer as much protection to wireless consumers as they do for wireline users. She is concerned that could disproportionately affect minorities, who rely on mobile devices for their Internet use more than whites. If IP wireless networks are going to be a replacement for fixed PSTN services, then we need to ensure that they have the same protections as wired IP networks in terms of openness.

Edyael Casaperalta of the Center for Rural Strategies agreed that wireless network requirements will have to be beefed up, especially if more homes and businesses in remote areas become dependent on wireless for their Internet needs. "You don't want to have a limit on where you can go because providers want to limit it," she said.[52] Casaperalta said networks have to have strong requirements regarding openness.

5. COMPETITION

Policies should encourage new entrants into the emerging IP-enabled network market.

One of the core tenants of the 1996 Telecommunications Act has been that competition enables consumers to benefit from lower prices, new services, new investment, and more innovation. In the National Broadband Plan, the FCC said, "Competition is crucial for promoting consumer welfare and spurring innovation and investment in broadband access networks. Competition provides consumers the benefits of choice, better service and lower prices."

Competition means deploying high-speed IP networks throughout the country and enabling many innovative, community-based broadband options. Policymakers should be wary of arguments that seek to advance IP networks and the IP transition merely by deregulating services at the expense of competition.

One significant concern that stakeholders have raised is that the end of the PSTN will limit the number of carriers that provide both residential and business service, especially in rural and remote areas. As the National Broadband Plan recognizes, "Building broadband networks — especially wireline — requires large fixed and sunk investments. Consequently, the industry will probably always have a relatively small number of facilities-based competitors, at least for wireline service."

If companies replace their existing copper networks with fiber or just a wireless alternative, it will reduce choice for many. Some suggested it could also limit regulatory oversight and threaten consumer rights.

amalia deloney, a senior policy director with the Center for Media Justice, said "We have seen time and time again that the monopoly and duopoly system does little for the consumer. We are very interested in seeing more networks and more choice."[53]

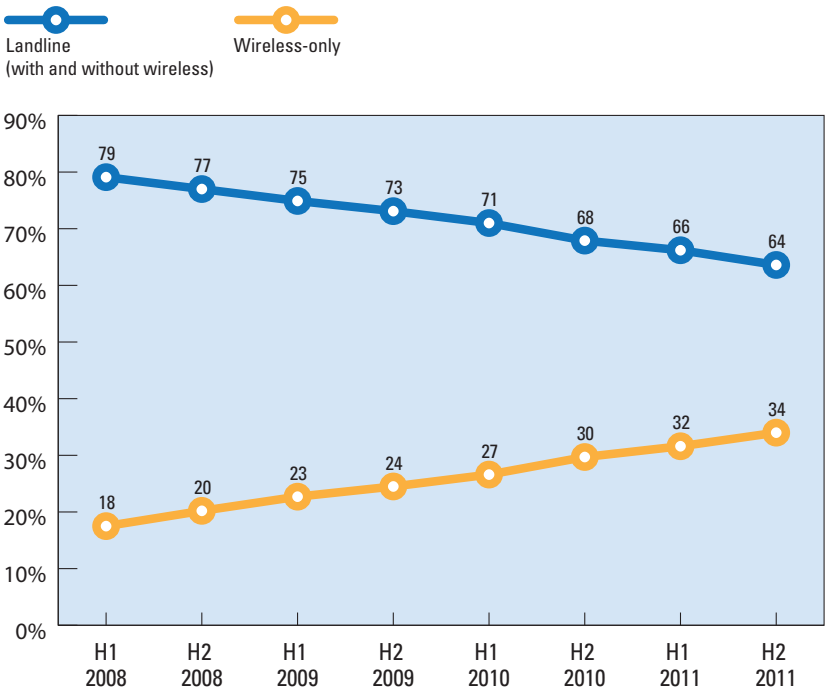
Testifying before the Senate Commerce, Science and Transportation Committee in July 2013, Jerry James, Chief Executive Officer of CompTel, which represents the competitive carrier sector,

said wireline networks are an "essential component" of the telecommunications market that must be protected for the good of business and residential consumers.[54]

Without competition, some said, there is the possibility that incumbent providers will just look at the IP transition as a way to bundle together services to sell to consumers. "Because companies are going to want to sell these new packages, they have conflicting incentives," said Cheryl Leanza of the United Church of Christ's Media Justice Ministry.[55] "The new technology should not result in the degradation of services."

If consumers are forced to buy a bundled Internet and video service, for instance, that could dissuade them from using an online video competitor such as Netflix or Hulu. And that, in turn, will hurt competition, stakeholders said.

US Household Telephone Service



Others stressed the need for rules to protect the rights of localities and public-private partnerships to build their own IP-enabled networks where local providers aren't interested in investing. Supporters of such efforts say allowing such "alternative" networks would not only bring better service, but, in many cases, lower prices for consumers.[56] Nineteen states have either placed restrictions on or stopped the building of such networks.

Matthew Rantanen of Native Public Media noted that some of the tribes served by Tribal Digital Village began to have a choice of providers about four years ago. He indicated he doesn't fear the competition because he is confident that he provides a superior service.

"If you want to create a network and you are doing it within the rules . . . you should be able to do it,"[57] he said. "I don't think there should be a restriction." He said the broadband pipe should be treated as a utility service in the future.

But rural advocates said competition is largely a dream in their areas where it is a struggle to get even one broadband provider. "The principle of 'competition' is only relevant in densely populated urban areas where market dynamics are operative," said Wally Bowen of the Mountain Area Information Network.[58] "Rural and underserved areas, by definition, lie outside the spheres of operative markets. Their lack of service is a product of market failure. Moreover, unqualified allegiance to the principle of competition obscures the true nature of the political economy in which rural and underserved exist."

As the Department of Justice describes the issue, the critical question is not "some abstract notion of whether or not broadband markets are 'competitive'" but rather "whether there are policy levers [around competition policy] that can be used to produce superior outcomes, not whether the market resembles the textbook model of perfect competition. In highly concentrated markets, the policy levers often include: (a) merger control policies; (b) limits on business practices that thwart innovation (e.g., by blocking interconnection); and (c) public policies that affirmatively lower entry barriers facing new entrants and new technologies."[59]

In addition to the consumer broadband market, to lay the foundation for America's all-IP future the FCC should foster robust competition for American businesses. This competition requires particular attention to the role of wholesale markets, through which providers of broadband services secure critical inputs from one another. Because of the economies of scale, scope and density that characterize telecommunications networks, well-functioning wholesale markets can help foster retail competition, as it is not economically or practically feasible for competitors to build facilities in all geographic areas. Therefore, as the FCC considers the IP transition, it must keep in mind how wholesale access policies affect the competitiveness of markets for retail broadband services provided to small businesses, mobile customers and enterprise customers.

6. INTERCONNECTION

Regulators must ensure that competing network providers are able to interconnect in areas where there is legacy market power. Subscribers must be able to reach subscribers on any other network.

In U.S. telecommunications law, interconnection is defined as "the linking of two networks for the mutual exchange of traffic."[60] FCC Chairman Wheeler recently described Internet interconnection this way: "The Internet . . . it is a collection, not a thing. It is the 'Inter' net, short for its original description, 'Internetworking,' because multiple open, disparate networks exchange information seamlessly. ***Absent the interconnection of the parts of the collective we call the Internet there is no Internet."***[61] Chairman Wheeler went on to insist that ensuring "the Internet exists as a collection of open, interconnected facilities is a highly appropriate subject" for federal regulators.

An IP transition that enables competition simply won't be able to occur if competitors are unable to interconnect in areas where there is legacy market power. In addition to physical interconnection of IP networks, to make the IP transition successful, voice traffic needs to be exchanged in an IP format (Session Initiation Protocol, or SIP, format). All incumbent PSTN providers need to begin exchanging their traffic in native SIP formats.

As noted earlier, interconnection has been a huge public interest concern for at least a hundred years and was a main tenant of the 1913 Kingsbury Commitment. Rules governing the ability of a caller who uses one service provider to be connected with the subscriber of another carrier were also put in place both as part of the 1934 Communications Act and the 1996 Telecommunications Act.[62] Without these rules, large providers would rule the market and competition would be severely impaired.[63]

In 2012, the FCC's Technological Advisory Council (TAC) examined the issue of VoIP interconnection and concluded that, although "VoIP Interconnect[ion] is happening all over the world, at a rapid rate," implementation in the United States has been "delayed" aside from the efforts of some cable companies and competitive

local exchange carriers (CLECs).[64] AT&T instigated a firestorm with non-incumbent carriers as well as industry stakeholders when it stated to the FCC that legacy rules should be removed as part of any IP transition.[65] While incumbent providers like AT&T might argue the system can continue using voluntary agreements between parties, smaller carriers, advocates and some state regulators have significant concerns about such a system.

A blog post by Kathleen Ham, T-Mobile's Vice President of Federal Regulatory Affairs, summed up the feelings of many on the topic:[66] "Because no telecommunications network can stand entirely on its own – on the simplest level, one carrier's customer must be able to call another carrier's customer – deregulating, as these largest carriers suggest, would be devastating to competition and consumers. It would also undermine the very efficiency and reliability purposes of converting to 21st century technology."

The importance of interconnection was also raised during a July 2013 Senate Commerce, Science, and Transportation Committee hearing, where several of those testifying said it is essential that callers be able to contact each other regardless of provider or technology. Absent that, the nation's communication system in the age of IP-to-IP calls would fail.

"As the PSTN transitions to new physical facilities and IP protocols, it is critical to the competitive future of the market that the law and rules ensure carriers will continue to interconnect and rules will continue to promote competition in the marketplace to the benefit of consumers," stated Gigi Sohn, then Public Knowledge's President and Chief Executive Officer in her Senate testimony.[67]

Those representing vulnerable populations agreed. "If there is no requirement to interconnect with a network, then a small provider can't connect with a larger provider," said Edyael Casaperalta of the Center for Rural Strategies.[68] "Interconnection and competition go hand-in-hand because you need to make sure policies encourage competition."

Interconnection, observed amalia deloney of the Center for Media Justice, ensures that everyone will be able to communicate

and participate in society. "This is a vital infrastructure, like water, like roads and electricity," she said.[69]

One way to solve the issue would be to declare voice-over-IP a telecommunications service. John Burke, a member of Vermont's Public Service Board and chairman of the National Association of Regulatory Utility Commissioners' committee on telecommunications, urged the FCC to do so and bring regulatory certainty to the issue instead of moving forward with trials.

"An FCC-blessed 'real-world VoIP interconnection trial' will not help the Commission clarify the statutory basis for incumbent LECs' [local exchange carriers'] duty to provide VoIP interconnection," he testified during an October 2013 House subcommittee hearing.[70] "That clarification begins and ends with an interpretation of the statute."

7. TRUSTWORTHINESS

As technology moves forward, consumers must retain key protections *that ensure a fair and safe experience. This includes, but is not limited to, consumer protections like privacy, truth-in-billing, blocking unwanted solicitation and preventing cramming and slamming.*

Consumer protections are largely seen as being built into the PSTN. Will they continue under IP networks?

Part of the issue, said Olivia Wein of the National Consumer Law Center, is that consumers will have the expectation that their protections — whether it's stopping unwanted calls and unsolicited charges or "truth-in-billing" provisions that warn consumers about escalating monthly wireless bills — remain the same. Since the average person has no idea about the underlying network, they will be befuddled by any change. She said there needs to be "a solid and consistent" regulatory regime in place. "If companies don't like that, maybe they should go into a different business," she said.[71]

Advocates for children and senior citizens are especially concerned about a possible loss of regulations that could compromise these vulnerable populations. Curbing of online predators that operate financial scams against the elderly or threaten children is key to ensuring people feel safe to participate in the IP transition.

"Children are going to be online more and . . . want to know what is happening," said Eileen Espejo, Children Now's Director of Media and Health Policy.[72] "Parents especially need to be educated on how to protect their children's privacy."

Tobey Dichter of Generations on Line agreed. "You can't make assumptions that people understand these terms," she said.[73] Just creating an online registry to prevent scamming, for example, is not a solution for elderly populations. "Don't assume everyone is going to sign up online," she stated. "That population is really not [going to sign up online], especially [lower income seniors]."

Tom Kamber of Older Adults Technology Services stressed the need to inform the public about any rule changes that govern online behavior in an all-IP world. He calls for a balance of education and

regulation to maximize the benefits of new technology and believes it would be useful to look for new ways to enforce existing laws to reduce criminal activity. For example, he noted New York has prosecuted those who target the elderly in financial schemes using the Internet under hate crime laws.[74]

In addition, concerns have been expressed that states will lose their ability to oversee consumer protection resulting from the switch to IP-enabled networks. While a report by the National Association of Regulatory Utility Commissioners emphasizes that the 1996 Telecommunications Act ensures that state regulators have a role to play in overseeing telecommunications services,[75] states have seen their role diminish as the FCC has moved to a more limited and centralized regulatory scheme.

8. ROBUSTNESS AND RESILIENCY

To ensure public safety, *consumers need to be able to rely on networks in emergencies.*

The universal service concept has, perhaps, most frequently been promoted as a way to ensure that all Americans have a way to contact the authorities in the event of an emergency to preserve life and limb. And, so, when it comes to using the telephone or any telecommunications service, a basic question is whether it will work.

The PSTN, renowned for its reliability for both making and receiving calls, is powered internally so that it can continue operating even when power is lost for days. Moreover, it steers first responders to the address from which a call is made. The same can't always be said for wireless or fiber-based networks that have battery backup, which often only lasts for hours before failing.

Karen Peltz Strauss of the FCC notes that several of the public safety changes made in recent years are rooted in concerns expressed by the disability community. She stated that the requirements to ensure accessible televised emergency announcements and efforts to implement text-to-911 access are two examples that have been strongly advocated for by those with disabilities. Of course, these requirements have practical uses for all people.

"In some ways the needs of the disability community are helping pave the way to how we evolve to next generation 911, which is broadband networks," she said.[76] Peltz Strauss is hopeful that the IP transition will not lose sight of the need for such access. "When people put their heads together, they find accessibility solutions. If you put the engineers on it, they find solutions."

Advocates for people with disabilities, seniors and those living in rural areas identify public safety as a top concern for the populations they serve, and they raise questions about whether IP networks would function during disasters, noting that when it comes to emergency situations, wireless networks, in particular, aren't as accurate at pinpointing a location as a phone using the PSTN. Several stressed the need for the FCC to enact stricter laws to make sure those in danger can be found when they place a call to 911.

What Voice Link Doesn't Do That Copper Does

Questions	Traditional Copper Phone Service	Verizon Voice Link
Will 911 work during congestion?	✓	✗
Will medical alerts work?	✓	✗
Does it provide access to broadband?	✓	✗
Will home security systems work?	✓	✗
Does credit card processing work?	✓	✗
Can you make international calls (without a separate international calling plan)?	✓	✗
Will you be able to use calling cards?	✓	✗
Will you be able to receive collect calls?	✓	✗
Will you be able to make a local call without an area code?	✓	✗
Will fax machines work?	✓	✗

Source: Public Knowledge

Edyael Casaperalta of the Center for Rural Strategies said there cannot be any reduction in the current rules for wireline networks and that access to public safety must remain available before, during and after an emergency. It is especially important in rural areas. "[In remote areas], you need to have a reliable network. It is not a chance you can take," she said.[77] "It is one of the biggest issues with the IP network out there."

There is also a question about ease of use. Tony Sarmiento, at Senior Service America, Inc., worries that service issues can't easily be addressed by the elderly. He noted that during a recent call to Verizon about his FiOS service, a technician asked Sarmiento to get on his hands and knees to access the installed Verizon box to follow instructions to resolve the issue.[78] "I can't imagine all older people being able to do it," he said.

Others said while all IP-enabled networks won't be able to rep-

licate exactly what's available on the PSTN today, that doesn't mean they won't be able to provide a high level of service that can ensure the safety of all Americans. Tom Kamber of Older Adults Technology Services said there shouldn't be "fear mongering" when it comes to IP technology changes, and that soliciting input from a working group made up of stakeholders could prove helpful. "This is a transparency issue,"he said.[79] "I don't think Verizon or AT&T wants to roll something out where they have a problem."

Matthew Rantanen of Native Public Media also expressed confidence in the resiliency of wireless-based service during natural disasters, arguing that the wireless network is more dependable because it can be brought back online quicker than wired alternatives (e.g., by running on propane or even solar if the power goes out).[80]

FCC Chairman Tom Wheeler has noted that we need new metrics to measure broadband network quality if we are to successfully transition to IP networks arguing that "developing metrics beyond throughput speed to measure the quality of Internet Protocol (IP) broadband networks is important for helping the IP ecosystem flourish."[81] He added, "Simply measuring broadband networks by throughput speed does not provide a full picture nor set sufficient performance parameters to support uses with 'extended' quality requirements such as healthcare monitoring, emergency services, alarms, etc." In addition, Wheeler argues that "in transitioning to IP-based networks . . . [we need to be] identifying how reliability can be characterized in a multi-modal environment — where reliability is provided by having many alternate paths, means and/or modes of communications. The FCC should initiate the steps necessary for determining how this aspect of the transition will impact the basic architecture of emergency services."

More recently, Chairman Wheeler identified public safety and national security as the third component of what he calls the Network Compact.[82] "Our networks must continue to be the safety backbone during an emergency," he stressed. "We must have the ability to summon emergency help, to coordinate an emergency response, and to do so via a network that is as secure as possible from cyber attacks."

9. SPEED

Consumers need fast networks that allow them access to, and choice of, a full range of services to meet their needs.

In replacing the PSTN, consumers need truly high speed networks with low-latency and jitter so that these networks are capable of fully supporting legacy PSTN services like faxing, modems, and text telephone (TTY) services that are sensitive to network quality.

All stakeholders we spoke with agreed that people want fast networks. That said, the issue of equity when it comes to Internet speed is a strongly held value among many advocates. Their stance relies on language going all the way back to the 1934 Communications Act that addresses access to similar services no matter where subscribers reside. The issue is complicated, however, and technically challenging.

Although progress is being made in increasing the speed of transporting data over wireless-based networks, most areas are still a work in progress. More and more people, led by communities of color, are relying on smartphones as their main connection to the Internet – most often because of cost.[83] On top of that, rural areas will become increasingly dependent on the technology as people in remote areas see their old wired networks retired and replaced by wireless. Given that reality, how should the FCC proceed? "There should be some standards on issues of fairness and equity – this isn't just about leveling the playing field rhetoric. It's about actually addressing preexisting disparities with real world consequences," said amalia deloney of the Center for Media Justice.[84] She noted that most people have no idea of what their Internet speed is or what they are supposed to receive.

Some advocates believe that given the growing use of the Internet for academic purposes as well as testing, the FCC should be forward-thinking. "As a goal, we should aim high," said Olivia Wein of the National Consumer Law Center.[85] "If we don't expect excellence, we are not going to see it. We should demand it." She said students should be able to access needed materials no matter

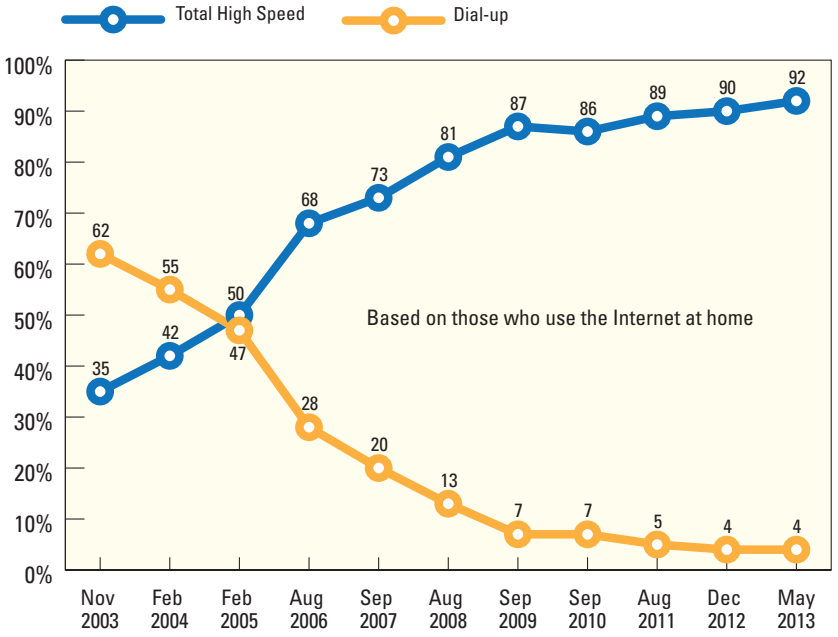
where they live. If they can't, she said, "It will have huge, damaging ramifications."

Matthew Rantanen of Native Public Media agreed. As a member of the San Diego Broadband Consortium, he has looked at minimum speeds needed for educational purposes and believes that educational information should guide any speed standards set as part of the IP transition. "If a learning tool needs 5 megabits, [the minimum speed] should be 5. If it is 10, it should be 10,"he said.[86] However, as reports out of Fire Island, N.Y., and elsewhere reveal, not all wireless IP services are created equally or capable of delivering high speeds and a full range of communications services.

Speed is not just important for learning, however. For people with disabilities, faster networks allow them to communicate more effectively and efficiently using the latest technology. "Anyone who relies on broadband as their primary communications vehicle will want speed," Karen Peltz Strauss of the FCC stated.[87]

And while some may think seniors don't have a need for faster Internet, that is just not the case, said Tom Kamber of the Older Adults Technology Services. "You could argue seniors aren't using high-speed bandwidth right now," he said.[88] "But the older adults we are getting online are flooding to the social media sites or the video sites."

US Household Telephone Service



Source: Pew Research Center

10. INNOVATION

For consumers, the promise of the IP transition is new services and ways to collaborate and communicate that are better and more advanced than current basic telephone communications.

High-quality networks across the country will ensure that people in all communities have the ability to create, invent, and use products and services that can enhance our world. Broad access to high speed IP networks is essential to making sure technology continues to evolve. Just as important, however, is ensuring that a regulatory regime is in place that allows development of the next big thing to continue unabated.

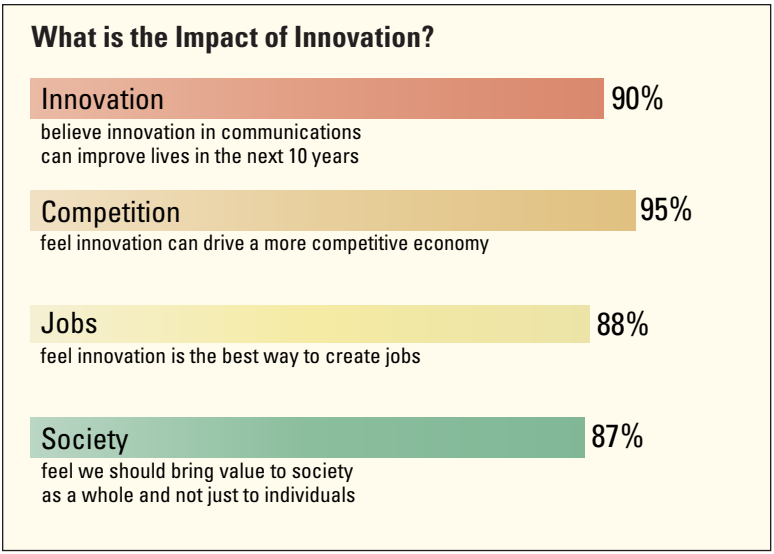
Some in Washington seem to recognize the issue. Rep. Greg Walden (R-OR), Chairman of the House Communications and Technology Subcommittee, said during an October 2013 hearing that a real balancing act is needed to get the IP transition right. "We must strike the appropriate balance between protecting consumers, promoting competition and not slowing the pace of needed innovation," he said.[89]

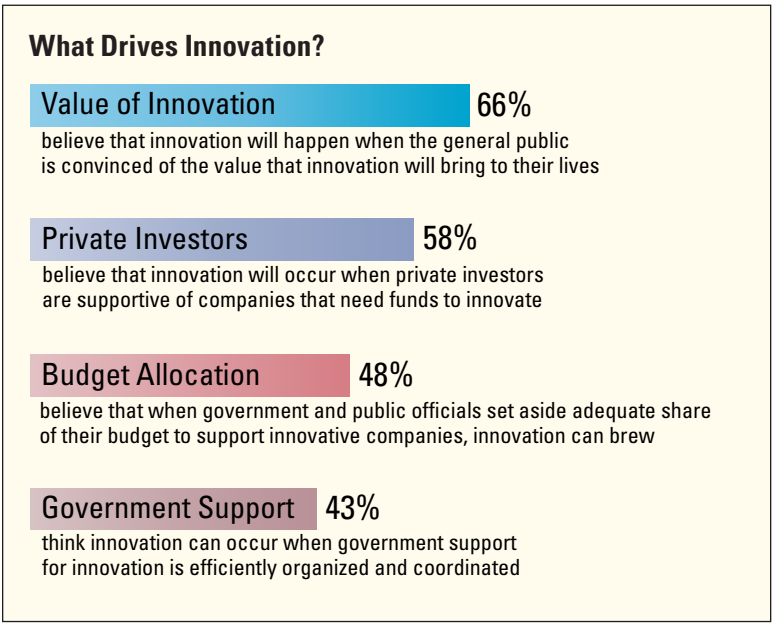
FCC Commissioner Jessica Rosenworcel said in a speech late last year that regulators need to demonstrate some "humility" when they make decisions and "respect the power of innovation to, without warning, alter what we think we know."[90]

As the FCC's Technology Transitions Policy Task Force recognizes, VoIP interconnection could actually unleash innovation making available new services and features such as high definition (HD) audio, additional video and text media formats, and secured caller ID.[91]

Edyael Casaperalta of the Center for Rural Strategies said creative minds in the industry will be curbed and consumers won't be able to benefit from future developments in telemedicine and other applications if access to infrastructure is restricted. "We want to have access to these networks so we can continue to innovate," she stated.[92]

The loss of the PSTN would take away a vehicle that many competitive carriers have used to kick start new technologies since





Source: Independent survey of 1000 senior business executives across 12 countries

incumbent wireline providers are required to lease the network out to other providers. Fiber and licensed wireless networks have no such requirements, which might make it more difficult for innovators to create. This explains why some stakeholders believe that new requirements for IP networks will be needed to ensure continued technological innovation. A lack of innovation could result in fewer providers in the market and higher prices for consumers. "Competition is key and innovation is key . . . to drive the price down," said Matthew Rantanen of Native Public Media.[93] "If you only have one player in town . . . whatever they decide to do, you don't have a choice."

CONCLUSION

The IP transition promises improved communications networks, but can it ultimately deliver? To successfully negotiate the transition, the FCC must include a broad set of stakeholders in the process and their concerns need to be taken into account.

The initial efforts by some telephone companies to replace their traditional wireline telephone service have not been encouraging. Residents of Fire Island, N.Y., for example, rebelled against Verizon's efforts to end wireline service and provide residents and businesses on the resort island with only its wireless VoiceLink product. After months of protest, Verizon relented and announced it would install a fiber network to replace the copper one that was damaged by Hurricane Sandy the year before.

That failed experiment shows the potential pitfalls that could emerge from this transition. Replacing the PSTN with a network that isn't as good as the infrastructure it is supplanting is not progress and is unacceptable. Creating standards that improve offerings and opportunities for all Americans must be a requirement of the IP transition.

For decades, America's telecommunications network was the envy of the world because of, not in spite of, regulation. What's not needed now is deregulation, but smart policy choices that ensure our societal values – the public interest – remain embedded in the networks of tomorrow.

FCC Chairman Wheeler calls these policy choices the Network Compact,[94] the basic rights of consumers and the basic responsibilities of network operators. As conveyed here, to ensure the benefits of broadband reach all Americans, especially those most at risk of being harmed in the transition, **we need a new compact for these new networks. The compact must encompass ubiquity, accessibility, diversity, openness, trustworthiness, robustness, resiliency, and speed. The compact must embrace competition and interconnection so the networks and the services provided over them continue to evolve and innovate.**

In December 1913, AT&T Vice President Nathan Kingsbury sent a letter to U.S. Attorney General George McReynolds "[w]ishing to put [the company's] affairs beyond fair criticism" of anticompetitive practices. In the letter, AT&T promised to sell its stake in Western Union Telegraph, resolve interconnection disputes, and refrain from further acquisitions of independent telephone companies if the Interstate Commerce Commission objected. The letter and the promise to address concerns about competition became known as the Kingsbury Commitment. One hundred years later, AT&T seeks to retire the copper-based phone system. But the nation cannot retire the commitment Attorney General McReynolds understood to create "full opportunity throughout the country for competition in the transmission of intelligence by wire."

Ensuring "competition in the transmission of intelligence by wire" is even more crucial in 2013 and beyond. As Chairman Wheeler recognizes, "the new information networks are the new economy. Earlier networks enabled ancillary economic activities . . . what today's new networks haul isn't an input to a product, it is the product itself. Our growth industries are today based on the exchange and use of digital information. As such, information networks aren't ancillary; they are integral."[95]

As we embark on the IP transition, we need a new network compact that guarantees that the public, not just industry, benefits from the migration to digital networks.

No one can be left behind in this great movement away from the PSTN. That means all children can use the new networks for learning, all seniors can access health services and information and all adults can look for jobs or start a business using them. The nation's future depends on it. How can we truly say the U.S. offers opportunity for all if the 21st century's main knowledge tool isn't available for everyone?

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16. Section 706(a) of the Telecommunications Act of 1996 (codified at 47 U.S.C. §1302(a)).
17. 47 U.S.C. §1302(d)(1) ("The term 'advanced telecommunications capability' is defined . . . as high-speed, switched, broadband telecommunications capability . . . .").
18. See 47 U.S.C. §1302(b) (stating that "the Commission shall determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.").
19. 47 U.S.C. §1302(b). The legislative history underlying Section 706 confirms Congress's intent regarding the Commission's obligation to promote the ubiquitous availability of broadband. The Joint Conference Report provides that the Commission – as part of its obligation to monitor whether advanced broadband offerings are being deployed to all Americans – "shall include an assessment . . . of the availability, at reasonable cost, of equipment needed to deliver advanced broadband capability. If the Commission makes a negative determination, it is required to take immediate action to accelerate deployment." H.R. Conf. Rep. No. 104-458, at 210 (1996) (emphasis added), reprinted in 1996 U.S.C.C.A.N. 10.
20. 47 U.S.C. §157(a). Broadband is certainly a new technology or service within the meaning of the statute.

21. 47 U.S.C. §254(b)(2).
22. American Recovery and Reinvestment Act of 2009, §6001(k)(2), Pub. L. No. 111-5, 123 Stat. 115 (2009).
23. Sixth Section 706 NOI ¶13, n. 43.
24. Sixth Section 706 NOI ¶46; see also ARRA §6001(k)(2)(B), (D) (declaring that the National Broadband Plan shall include "a detailed strategy for achieving affordability of such service and maximum utilization of broadband infrastructure and service by the public" and "a plan for use of broadband infrastructure and services in advancing consumer welfare, civic participation, public safety" and a number of other national purposes); see also ARRA §6001(b)(5) (declaring that one of the purposes of the Broadband Technology Opportunities Program is to "stimulate the demand for broadband"). Underscoring the importance of broadband and Congress's commitment to achieving ubiquitous access to broadband, the ARRA provides up to $7.2 billion in broadband stimulus funds to accelerate the deployment of broadband infrastructure and services throughout the nation.
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