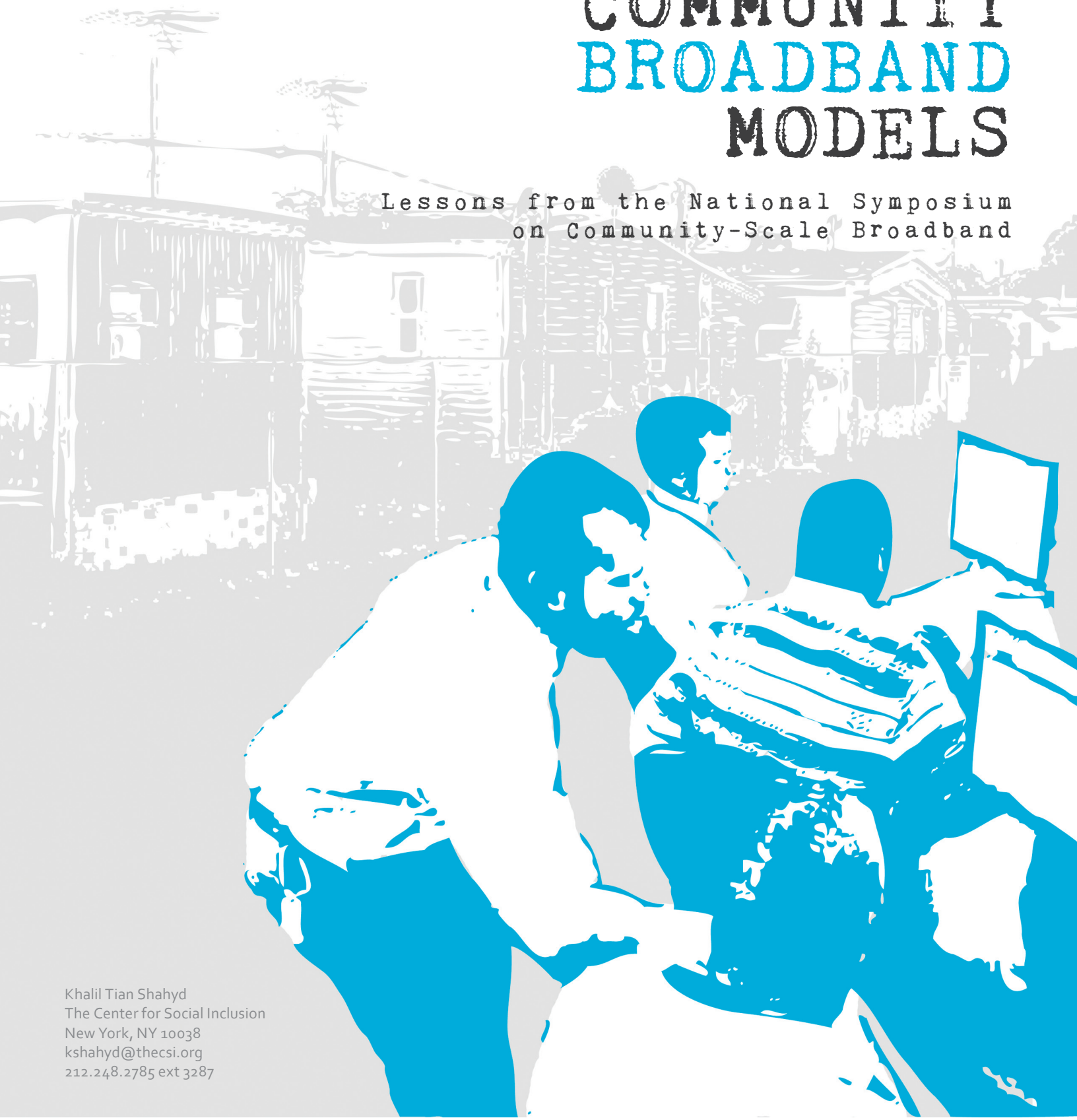
The Promise & Challenge of

COMMUNITY BROADBAND MODELS

Lessons from the National Symposium on Community-Scale Broadband



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EXECUTIVE SUMMARY

While most of us have access to broadband, more than 28 million Americans today live in areas where Internet access is not available. Communities of color bear the brunt of this digital exclusion even as broadband Internet technologies become more crucial to our nation's social and economic development. With access to broadband affecting more and more aspects of our lives, digital exclusion creates additional barriers to opportunity and sustainable livelihoods for people already constrained by their race, gender and geography.

This report, **The Promise and Challenge of Community Broadband Models: Lessons from the National Symposium on Community-Scale Broadband,** summarizes some of the key findings and insights of Advancing Community Broadband, a discussion held on December 7, 2010 in Washington, DC. The symposium engaged panelists with a range of expertise to examine the current state of broadband deployment and the emerging opportunities for federal support to community-scale infrastructure models that can meet access and adoption challenges in communities of color and other unserved and underserved areas.

Key Points

- Broadband Internet is not a luxury, but a new form of digital literacy and mission-critical infrastructure for participation and progress in a twenty-first century society.

- Ensuring equity in broadband infrastructure buildout requires consideration of the unique needs and challenges in diverse communities, moving beyond simplistic and misleading definitions of universal service to a focus on ubiquity and access as a digital right of all people.

- Broadband infrastructure development strategies must not treat people and communities as mere consumers of Internet service. Flexibility and a focus on **service, content and applications** are vital to ensuring that broadband technologies allow for local adaptations, widening of opportunity and community empowerment.

- Public investments in broadband must recognize the value of diverse ownership models as a means of reaching full ubiquity in infrastructure and service penetration.

- Promoting genuine competition is vital to ensuring broadband services are affordable and progressively moving toward the highest standards of speed and capacity.

- Communities and local governments have the right to build their own networks and provide quality Internet services. These local initiatives should be eligible for support from the Universal Service Fund in order to meet local needs and support innovation.

Many communities of color, low-income neighborhoods and rural areas face challenges in attracting private investment to connect their businesses, residences and civic institutions to high-speed data networks. To achieve the national goal of universal access to

broadband, these communities should have the public support necessary to build their own paths to the digital future.

We hope that this report will continue and expand the discussion that began at the symposium on community-scale broadband and we invite you to continue to engage with us around these important issues.

From left: Khalil Shahyd (CSI), Bruce Lincoln (CTICE), Plinio Ayala (Per Scholas), Craig Settles (Successful.com), Maya Wiley (CSI), Todd Wolfson (Media Mobilizing Project), Nolan Bowie (Harvard University), Joanne Hovis (National Association of Telecommunications Officers and Advisors) and Jacquie Jones (National Black Programming Consortium).

ABOUT THE CENTER FOR SOCIAL INCLUSION

The Center for Social Inclusion (CSI) works to unite public policy research and grassroots advocacy to transform structural inequity and exclusion into structural fairness and inclusion. We work with community groups and national organizations to develop policy ideas, foster effective leadership, and develop communications tools for an opportunity-rich world in which we will all thrive. In recent years, CSI has undertaken research, policy analysis and public education to draw attention to the need to invest in broadband that produces health, educational and economic benefits for communities of color and the tremendous progress that such investment could create for our nation as a whole.

ABOUT THE NATIONAL SYMPOSIUM ON COMMUNITY-SCALE BROADBAND

Advancing Community Broadband was convened by the Center for Social Inclusion and co-hosted by the Center for Technology, Innovation and Community Engagement (CTICE) of the Fu Foundation School of Engineering and Applied Sciences at Columbia University.

PANELISTS

Maya Wiley, Founder and Executive Director, Center for Social Inclusion

Melissa Bradley, Chief Executive Officer, Tides Network

Nolan Bowie, Adjunct Lecturer in Public Policy and Senior Fellow of the Joan Shorenstein Center on the Press, Politics and Public Policy, Harvard University

Bruce Lincoln, Entrepreneur in Residence, Center for Technology, Innovation and Community Engagement at Columbia University

Sascha Meinrath, Director, New America Foundation Open Technology Initiative

Jabari Simama, Author, *Civil Rights to Cyber Rights: Broadband & Digital Equality in the Age of Obama*

Plinio Ayala, President and CEO, Per Scholas

Joanne Hovis, President-Elect of the Board of Directors, National Association of Telecommunications Officers and Advisors

Jacquie Jones, Executive Director, National Black Programming Consortium

Craig Settles, Founder and President, Successful.com

Todd Wolfson, Co-Founder, Media Mobilizing Project

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BACKGROUND: THE FEDERAL LANDSCAPE OF BROADBAND

WHAT IS BROADBAND?

Broadband, or high-speed Internet, is an Internet connection that offers "always on" service independent of telephone or television lines and that has a much higher transmission rate than dial-up Internet connections. Dial-up Internet speeds typically reach up to 56 kilobytes per second (kbps) of download capacity and require a dedicated telephone line for each unit, creating added costs, as additional lines must be installed for each Internet connection. Broadband, on the other hand, allows multiple users to share the same primary connection while allowing normal function of telephone and television signals, all at much higher speeds. In the United States, the Federal Communications Commission ("FCC") defines broadband as those Internet connections which reach a minimum transmission speed of at least 4.0 megabits per second (mbps).

In the spring of 2010, the FCC released the country's first National Broadband Plan, which aims to "ensure all people of the United States have access to broadband capability and... [to] establish benchmarks for meeting that goal."[1] An ambitious document that lays out long-term goals for increasing broadband adoption and speed quality across the country, the plan identifies the need to make 500 megahertz of wireless spectrum available to increase the carrying capacity of the nation's broadband networks.

Despite the call for universal access, much of the 2010 policy agenda was dominated by the intense debate over net neutrality. The net neutrality discussion focused attention on the important issue of open Internet rules.[2] Proponents of net neutrality advocated for the FCC to clarify its authority to regulate the net by reclassifying broadband Internet from an information to a telecommunications service. Reclassification would enable the FCC to regulate broadband services ensuring that competition produced lower cost and faster innovation. The telecommunications industry has opposed such reclassification, framing the debate on broadband policy as a dispute between those who favor more regulation and government control against those who would defend the freedom of consumers and free markets. Under this frame, American communities are regarded only as consumers of services that telecommunications companies provide, not as citizens with a stake in maintaining the net as an open platform for ideas, engagement and opportunities. Telecommunications lobbyists have defended their opposition on the dubious claim that net neutrality regulations would lead to job losses.[3]

On December 21, 2010, the FCC, led by Chairman Julius Genachowski, approved a watered-down version of the net neutrality protocol that failed to reclassify broadband as a telecommunications service and relies more on self-policing by industry. In addition, greater responsibility is placed on consumers and content providers to show that net neutrality rules are being openly violated in order to spur action by the FCC. Without reclassification, the FCC can still take steps to ensure consumer protection and the benefits of an open Internet, but the legal grounding for these steps is less secure. As a result, the FCC's ability to actually enforce its net neutrality rules is weakened, making the rules more of a voluntary agreement than a regulatory rule. Further, the rules adopted by the FCC completely neglect to address wireless services, which is especially concerning for communities of color that disproportionately rely on wireless broadband services to access the Internet. Despite these weaknesses,

[1] "What Is Broadband?" Federal Communications Commission. 2010. Online at www.broadband.gov.

[2] Chettiar, Inimai M., J. Scott Holladay and Jennifer Rosenberg. "The Value of Open an Update on Net Neutrality." The Institute for Policy Integrity, September 22, 2010. Online at www.policyintegrity.org/publications/detail/the-value-of-open2/.

[3] Studies that have claimed possible job losses resulting from regulation have only analyzed job projections within the telecom sector specifically and have done little to explain how regulation would hinder growth in the telecom industry. They have not included the aggregate job growth in other sectors of the economy that would almost certainly result from increased buildout and adoption of broadband technologies. Further, these studies have overlooked the decade-long trend of job losses within the telecom sector despite record profits in the industry during these years. See Grant Gross, "Study: Net Neutrality Rules Would Cost Telecom Jobs." *PC World*, 2010. Online at www.pcworld.com/article/194891/study_net_neutrality_rules_would_cost_telecom_jobs.html.

many billed the protocols as a win-win for the industry and for consumers since some form of rules was successfully adopted and the measure garnered the support of at least one major telecom company , AT&T.

As Congressional and legal challenges to the net neutrality rules begin to take shape, discussions of how best to implement the National Broadband Plan and of potential reforms to the Universal Service Fund have emerged as major considerations in federal broadband policy. Created by the 1996 Federal Telecommunications Act to support the universal deployment and adoption of telephone service, the Universal Service Fund could, if expanded in its scope, provide a crucial source of support for the expansion of broadband services. Meanwhile, while the National Broadband Plan acknowledges the crosscutting implications of broadband deployment—including enhanced educational and health services, expanded innovation and economic development opportunities, and increased civic participation in our national and local politics—it does not address actual strategies and processes through which communities can get or develop broadband infrastructure.[4] Without this, the message to the many communities that lack reliable broadband infrastructure is clear: "It's up to you."[5]

But they can't do it alone. The Advancing Community Broadband symposium offered solutions for the federal government to support local communities. Panelists emphasized the importance of treating local people and communities as producers of knowledge, culture and information, not just passive consumers of Internet technologies. They are entrepreneurs with products, services and skills to market to the wider world. They are students, young and old, who want to learn and share what they have learned. They are people who want to be socially and politically connected to the wider world.

BROADBAND: A NEW LITERACY

As broadband has become increasingly integrated into virtually every aspect of our lives, it has become essential to supporting a healthy, successful society. Broadband is a means to connect people across distances, cultures and languages in ways never before possible or even imagined by previous information telecommunications systems. Among broadband Internet's many applications, few are as important as its role as a driver and tool for economic development. Broadband is particularly crucial as a means to connect marginalized communities to wider opportunities and networks. For example, CSI's recent research on the relationship between broadband and economic opportunities in the Mississippi Delta strongly suggests that expanded broadband access increases job growth and business investment.[6]

Whether accessing job opportunities, starting a small business, purchasing health insurance or completing homework assignments with a child, citizens now need digital literacy to function in modern society.

"It all boils down to us as a society accepting the principle that access to this technology should be universal, that it is a new literacy, and just like we all must be able to read, and write, and learn mathematics, that this fourth literacy now is a digital literacy, and without it you will be marginalized even more."

–JABARI SIMAMA, AUTHOR, CIVIL RIGHTS TO CYBER RIGHTS: BROADBAND & DIGITAL EQUALITY IN THE AGE OF OBAMA

"The business models that have fueled the technology revolution are not colorblind. They are specifically designated to support those who can afford it."

–MELISSA BRADLEY, CEO, TIDES NETWORK AND BOARD MEMBER, CSI

[4] Settles, Craig. "National Broadband Plan? Think Globally, Act Locally." Fighting the Next Good Fight, 2010. Online at www.roisforyou.wordpress.com/2010/03/29/national-broadband-plan-think-globally-act-locally/.

[5] Ibid.

[6] "Broadband in the Mississippi Delta: A 21st Century Racial Justice Issue." Center for Social Inclusion, 2010. Online at www.centerforsocialinclusion.org/publications/. See also "Capturing the Promise: Using Broadband Internet to Increase North Carolina's Competitiveness and Sustainability in the Global Economy" (E-NC, 2009). Online at www.e-nc.org/documents/0000/0094/capturing_the_promise_10yr_internet_plan.pdf

A 21ST-CENTURY RACIAL JUSTICE ISSUE

The National Broadband Plan establishes goals for ensuring that at least 100 million homes have affordable access to broadband speeds of up to 100 megabytes-per-second upload and download rates. Accomplishing these goals, however, will require us to think beyond the traditional, and to consider broadband not simply as an industry or sector of the economy within which some seek profit or earn a living but as an important driver of growth and opportunity across the board. In the words of C-TICE's Bruce Lincoln, broadband must be understood as "vital, mission-critical infrastructure for the 21st century."

As reliance on high-speed Internet continues to increase, too many Americans are being left behind. In 2010, the FCC reported that between 14 and 24 million Americans lack access to broadband[7] and found that unserved areas are disproportionately rural or low-income.[8] An additional 80 million people do not subscribe to broadband at home, and 50 million do not use the Internet at all.[9]

Overall, the U.S. has fallen from a position of first to fifteenth in broadband penetration of industrialized nations, making our nation less able to compete globally, as President Obama noted in his 2011 State of the Union address. The burdens of that stalled progress have hit communities of color and other marginalized groups hardest of all—a lag that is especially worrisome when one considers that these groups are the nation's fastest-growing populations, upon which our future depends.

Low-income households and people of color are still far less likely than others to have regular Internet access at home and in their communities. According to a 2010 report from the Joint Center for Political and Economic Studies, about 56% of adults with family incomes of less than $20,000 use the Internet, compared to 94% of those earning more than $50,000.[10] A 2010 Pew Center study found that while 66% of all adults now have broadband at home, just 56% of black people, 66% of Latinos and 45% of those making less than $30,000 a year do. Though there are some signs of progress—broadband adoption among African-Americans has risen over 20% between 2009 and 2010[11] (largely fueled by mobile broadband adoption)—still total broadband adoption has slowed dramatically.[12]

Tides Network CEO and symposium keynote speaker Melissa Bradley noted, "The number one challenge that's facing this issue is lack of visibility for the broader American public. Most people just assume [that]... everybody must have [broadband access]. And so there's a gap that exists right now in the public debate around the real need to even have access to technology. It's just assumed."

DIGITAL REDLINING

Much of the disparity in broadband access and adoption rates can be explained by the persistence of digital redlining. Digital redlining is the latest step in a long history of discriminatory decision-making that has left many rural areas and communities of color with inadequate housing, transportation, and other infrastructures and services. Lack of sustained public investment in these communities, coupled with decades of decline in the manufacturing industries and years of capital flight to more "desirable" neighborhoods, severely hindered economic development and left many rural areas and communities of color to crumble.

[7] "FCC Finds 14 to 24 Million Americans Lack Access to Broadband."

[8] Federal Communications Commission "Sixth Broadband Deployment Report," July 20, 2010. Available at www.fcc.gov/Daily_Releases/Daily_Business/2010/db0720/FCC-10-129A1.pdf (last accessed 9/1/2010).

[9] "The Broadband Gap." *The New York Times*, August 5, 2010.

[10] "National Minority Broadband Adoption: Comparative Trends in Adoption, Acceptance and Use" Joint Center for Political and Economic Studies, February 2010. Online at www.jointcenter.org/ (last accessed 9/1/2010).

[11] Smith, Aaron. "Home Broadband 2010." Pew Research Center, August 11, 2010.

[12] Ibid.

The extreme poverty that emerged as a result of widespread policies of neglect and exclusion led many rural areas and communities of color to be deemed "unprofitable" and "risky" for early private sector telecommunications investments. As private telecommunications companies declined to lay copper cables and fiber optics in many of the areas most in need, those communities were at a great disadvantage when broadband technologies came along and telecommunications firms looked to existing infrastructures as the readiest and most cost-efficient avenues for deployment.

"The nature of the global economy has changed significantly. We now live in a global knowledge-based economy in which those who have ready access to the right kinds of information and knowledge have strategic advantages over all of their competitors, whether they're talking about other individuals, firms, nation-states, or regions of the world. And increasingly in order to get access to ready information that's relevant, you have to have access to the right kinds of infrastructures and appliances."

–NOLAN BOWIE, ADJUNCT LECTURER IN PUBLIC POLICY AND SENIOR FELLOW OF THE JOAN SHORENSTEIN CENTER ON THE PRESS, POLITICS AND PUBLIC POLICY, HARVARD UNIVERSITY

In this way, communities denied earlier communications infrastructure investments a decade or two ago have continued to suffer the consequences of their exclusion and now find themselves at the margins once again. Private telecommunications firms, unwilling to bear the costs of new infrastructures and unable to pass such costs on to poor communities, have largely declined to develop broadband services in places that do not look "viable" from a profit perspective. Lacking broadband access and devalued by the telecoms' assessment of their communities as risky sites for development, local entrepreneurs and civic leaders face an uphill battle attracting other forms of investment.

This becomes a vicious cycle of further deterioration, multiplying the conditions that were used to justify the initial lack of broadband investment. Low-income people of color, both rural and urban, are among the most likely victims of digital redlining because they are more likely than whites to live in older buildings that pose infrastructure development challenges and within racially identifiable, concentrated poverty communities where potential subscriber bases are assumed to be low.

PUBLIC GOOD VS. PRIVATE PROFIT

The incentive structure that guides investment decisions of major telecommunications and cable companies is often at odds with the needs of communities. Craig Settles, one of the expert panelists of the national broadband symposium and author of *Fighting the Next Good Fight: Bringing Broadband to Your Community*, explains:

> Despite the many potential economic benefits that may accrue to communities from expansion of broadband infrastructures—including attracting new businesses while allowing for growth and expansion in others, enhancing the human skill capacity of the work force, and making public services and energy use more efficient and less costly through smart grid technologies and digitization—the returns to incumbent providers may be too small or take too long to manifest in order to justify investment. In short, what's good for communities often does not meet the bottom line of private sector service providers. Unless the provider has visionary management, or feels forced to enter a particular market (if a city threatens to build its own network, for example), [the provider] won't service that community. So communities that want a broadband network must either create and run it themselves or come up with some package of incentives to entice a provider to build out... Communities can't enter this thinking that they will win over private sector providers' support based on the noble nature of their mission.[13]

"Communities that want a broadband network must either create and run it themselves or come up with some means to entice a provider to deploy there... Communities can't enter this thinking that they will win over private sector providers' support based on the noble nature of their mission."

–CRAIG SETTLES, AUTHOR, FIGHTING THE NEXT GOOD FIGHT: BRINGING BROADBAND TO YOUR COMMUNITY

Speaking to her experience as a venture capitalist who invested in early infrastructure development projects, keynote speaker Melissa Bradley noted that private broadband

[13] Author's personal communication with Craig Settles, January 2010.

corporations were rarely held responsible for producing clear community benefits, and developed infrastructure, services and pricing as they saw fit—often without consideration for those most in need. "We didn't address the issue of cost," Bradley noted. "We never addressed the issue of quality of service." The consequences of this lack of oversight and accountability are still being felt today. As Sascha Meinrath, Director of the New America Foundation's Open Technology Initiative, emphasized, "the primary barrier to widespread use of broadband is pricing—this by the FCC's own data."[14] Despite their enormous profit margins—for example, in the second quarter of 2009, Comcast had a profit margin for its cable Internet service of almost 70 percent[15] — major telecoms have little incentive to provide reasonably priced, quality services. The resulting neglect leaves communities of color in the digital dark, less able to create or attract tech sector jobs in their communities, help kids compete in a twenty-first century economy and get connected to the rest of the country and world.

LACK OF COMPETITION IN BROADBAND MARKETS

Price is mentioned repeatedly as the primary barrier to home adoption of broadband Internet among low-income communities, but the problem of broadband price in the United States isn't limited to low-income households. Compared to other industrialized nations studied by the Organization for Economic Cooperation and Development (OECD), the U.S. ranks among countries with the highest cost for broadband Internet subscriptions, despite providing far slower services. For example, in the U.S., on average a consumer can expect to pay up to $45 per month for broadband services that provide at maximum between 6 and 12 mbps.[16] Meanwhile, Hong Kong recently released an Internet plan offering 1 gigabit of download capacity for only $26 monthly.[17] There is a clear relationship between the fact that average download speeds in the U.S. have not kept pace with other industrialized nations and the continued high cost of service.[18] The high prices and slow rates of improvement in service are directly related to the lack of real competition in broadband service markets.[19]

Telecom and cable companies argue that the reason for maintaining high prices is the cost of building the networks. However, with most of the network lines completed in the 90s, these companies should have already paid off almost all the costs associated with building out their infrastructure.[20] According to analyst Shane Greenstein, "We are approaching the end of the first build-out, so competitive pressures should have led to price drops by now, if there are any. Like many observers, I expected to see prices drop by now, and I am surprised they have not."

Telecom and cable companies are now operating their broadband as almost "pure profit," devoting only a small fraction of subscriber revenues to maintenance and upgrading of services.[21] Without new entries on the market to increase competition—most urban areas have at most two different broadband suppliers to choose from, and rural areas have even fewer—there are few incentives to lower prices or invest in the network upgrades that would increase speeds.

THE MYTH OF SPECTRUM SCARCITY

Major telecommunications firms and their supporters have justified the continued centralization of broadband networks both as an expression of the workings of the free

[14] See Horrigan, John, "Broadband Adoption and Use in America: OBI Working Paper Series No. 1," page 5. Federal Communications Commission, February 2010. Online at www.broadband.gov.

[15] Lynn, Adam. "Cable Companies' Big Internet Swindle." Free Press, November 24, 2009. Online at www.freepress.net/node/74796.

[16] Bode, Karl. 2007 "US Broadband Price Comparisons Prices/speeds/bundles of eight major providers compared". www.dslreports.com/shownews/83886

[17] Osborne, Brian. 2010 "Hong Kong gets 1 Gbps broadband service for $26 a month". www.geek.com/articles/news/hong-kong-gets-1-gbps-broadband-service-for-26-a-month-20100420/

[18] Lardinios, Fredric. 2010 "Broadband Speeds Increase Around the World - But Not in the U.S."

[19] Greenstein, Shane and McDevitt, Ryan, "Why Broadband Prices Haven't Decreased Why Broadband Prices Haven't Decreased. Creating the first broadband consumer price index," Kellogg Insight, www.insight.kellogg.northwestern.edu/index.php/Kellogg/article/why_broadband_prices_havent_decreased (2010).

[20] Ibid.

[21] Ibid.

market and as a means of ensuring the most efficient use of the broadband spectrum, which they claim to be limited. However, research suggests that the U.S. actually uses very little of its available capacity. For example, panelist Sascha Meinrath of the New America Foundation's Open Technology Initiative reminded the audience of "a recent National Science Foundation study documenting how much spectrum is actually in use. During the height of the 2004 Republican National Convention held in New York City, we used only 13.1% of total capacity and that was the maximum ever registered." As panelist Nolan Bowie, Adjunct Lecturer in Public Policy and Senior Fellow of the Joan Shorenstein Center on the Press, Politics and Public Policy at Harvard University, explained, "Spectrum scarcity is largely a myth. The problem isn't spectrum; the problem is the licensing process that allocates public spectrum for private profit rather than public good." Having succeeded in monopolizing the licensing of much of the spectrum available for broadband, incumbent service providers are now reluctant to share the spectrum with potential competitors, instead basing their business model on a false scarcity they themselves perpetuate.

In an environment where increased technological efficiency has left much of the spectrum unused, the "scarcity" touted by broadband incumbents refers not to a real lack of capacity but a shortage created by the incumbents and a spectrum licensure system that has allowed them to corner the market. Making matters worse, what little spectrum is still available for licensure is extraordinarily expensive and for the most part affordable only to incumbents, not to the communities or emerging entrepreneurs most in need. Reforming the process of spectrum licensing will be key, both to enable communities of color to have the opportunities to invest and own new infrastructure, and to ensure that spectrum capacity can meet the needs of increased demand made possible by successful roll-out.

THE GAP BETWEEN ACCESS AND ADOPTION: WHEN "UNIVERSAL" ACCESS ISN'T

Too often, discussions on broadband policy limit our attention to the question of accessibility. The emphasis on access assumes that the mere presence of a service in a community guarantees that any individuals or households who want and would benefit from connecting to broadband services will be able to do so. But the realities of people and communities struggling to connect are far more complicated. As keynote speaker Melissa Bradley noted, even though people may theoretically be able to access broadband in certain public spaces, such as libraries, "the reality is that [that system] still supports a level of marginalization, particularly for low-income communities and people of color." Bradley went on to describe the numerous difficulties a working parent attempting to use publicly available Internet to apply for a job might face: limited library hours that might conflict with their work schedule, the need to care for young children, the strict time limits many public facilities must impose on users, and the difficulty those with limited digital literacy face as they strive to use their limited time efficiently. Given these challenges, it is no surprise that a 2010 FCC survey found that a lack of digital literacy skills was the second most common reason households had elected not to adopt broadband.[22]

As panelist Nolan Bowie argued, the definition of the term "universal broadband"—once thought to imply a system in which all people are able to and do use high-speed Internet—has narrowed in its meaning to imply that access is available in all locations. Actual usage rates and the capacity of individuals to effectively utilize broadband services are ignored under this narrow view.

[22] Horrigan, John. "Broadband Adoption and Use in America: OBI Working Paper Series No. 1."

UNEQUAL OPPORTUNITY: THE ECONOMIC CONSEQUENCES OF THE DIGITAL DIVIDE

The persistence of the digital divide increases the likelihood that people in unserved or underserved communities will be trapped in low-skill, low-wage occupations and will have fewer resources to support skill building, social networking and small business development. As panelist Plinio Ayala of Per Scholas explained, "There is a significant skills gap that exists in this country between the current labor force and the jobs that are being created, and... it continues to grow. And many of the jobs... will require individuals who are incredibly digitally literate and technology-savvy, and those individuals who do not have those skills will not be able to enter the future labor force."

Ayala stressed the dramatic difference that digital literacy and access can make in the lives of low-income workers, noting a recent study that found that those who were familiar with basic office programs, Web browsing and email made roughly $125 a week more than their peers. "For a low-income parent trying to support their family, $6000 is huge," said Ayala. "Take that amount and multiply that by a whole bunch of folks... That has huge economic implications for this country."

But the extraordinary impact that broadband access can have on individuals and communities struggling in poverty is virtually never taken into consideration by the business models of the telecom and cable companies charged with developing broadband infrastructure. Instead, assessments of potential locations for broadband infrastructure investment look only to short-term gains, severely undervaluing communities of color and the positive impact that investments can have in the long term.

WHAT IS COMMUNITY-SCALE INFRASTRUCTURE?

Community-scale infrastructure encompasses both the hard infrastructure (wired or wireless) required to carry a signal and the Internet service provision necessary to connect to the Web. Community-scale infrastructure development also implies a different approach to conceptualizing deployment strategies and thinking about how technology is utilized. Under traditional business models, communities are framed as consumers of a service. Community-scale infrastructures acknowledge the agency inherent within each of us and enable us to reposition ourselves and our communities as empowered agents able to use technologies to meet our needs, enhance our quality of life and pursue livelihoods that give us meaning.

EXISTING EFFORTS TO EXPAND BROADBAND SERVICE & INFRASTRUCTURE

Efforts to expand new communication technologies currently follow two primary tracks:

- Within areas already enjoying some level of network coverage, policies have aimed to increase adoption by driving down the cost through promoting competition and by pooling usage through construction of a single wireless network that many people share (for instance, using mobile phones), rather than by attempting to build wire line infrastructure to individual households.

- Within areas with very limited coverage, policies have sought to expand access collectively (through Internet and telephone kiosks), or through publicly funded tele-centers[23] and Internet cafes that utilize an established network infrastructure.

The main obstacle to expanding access in communities that do not already have it is simple: installation costs are often higher because of lack of developed infrastructure. The prospect of making substantial front-end investments in areas believed by major telecoms to have less to spend on services—i.e. communities with sparse populations and/or low household incomes—is yet more economically unattractive.

Conventional approaches have focused on attracting investment and inducing existing telecom operators to address poorer areas, if necessary using public and donor funding to spur private initiatives. Rather than calling into question the basic economic logic behind conventional approaches—that the bottom-line profits of telecom companies, rather than the needs of communities, are of utmost concern—policy reforms have sought to incentivize network extension into poorer areas by making these areas more attractive and profitable to major telecom operators. This is typically accomplished through technology-neutral licenses,[24] the allocation of Universal Service Fund dollars to private enterprises, the creation of guaranteed pools of subscribers, and "smart subsidies" to attract commercial operators.[25] However, direct financial subsidies to encourage private incumbent providers have failed in becoming self-sustaining and in addressing the scale of the problem of inequalities in deployment or adoption.[26] Ultimately, if private sector priorities and public imperatives are at odds, privatized models of creating broadband infrastructure are not likely to work in the communities that need the infrastructure the most.

[23] Siochrú, Seán Ó and Bruce Girard. "Community-Based Networks and Innovative Technologies: New Models to Serve and Empower the Poor." United Nations Development Program, 2007. Online at www.propoor-ict.net/content/pdfs/Community_Nets.pdf.

[24] A technology-neutral license allows a broadband service provider to offer services across many different technology mediums, such as allowing phone companies to offer television services and cable companies to offer telephone services using one single license agreement rather than forcing them to apply for multiple licenses for each service rendered.

[25] Ibid.

[26] Meddie, Mayanja. "Rethinking Tele-Centre Sustainability: How to Implement a Social Enterprise Approach; Lessons from India and Africa." International Development Research Center, 2006. Online at www.ci-journal.net/index.php/ciej/article/view/324/265.

"UBIQUITOUS" UNIVERSAL SERVICE

In most cases, when we hear the term "universal" access it refers to only whether broadband access is theoretically available every*where*. In contrast, an approach rooted in equity wants to ensure that broadband is available to every*one*. It pushes policy to address the many barriers that keep people from actually adopting and utilizing broadband technologies.

Understanding how the technology becomes an integral part of the everyday lives of communities helps to underscore the necessity of developing individual capacity in order to reach ubiquitous adoption. Symposium panelist Nolan Bowie of Harvard University called this approach the search for "ubiquity." He explained, "A national approach with the goal of achieving ubiquitous expansion that is inclusive of all communities is necessary so that the issue is not framed as one of special interest to a few." Infrastructure development strategies that seek to achieve ubiquitous universal service must recognize each community's diverse needs and potential applications and implement investment and adoption strategies designed to meet those unique challenges.

WHAT IS UBIQUITOUS UNIVERSAL SERVICE?

Ubiquitous universal service means broadband access anytime, anywhere, by anyone and through anything, including both fixed and mobile broadband devices. Ubiquitous universal service makes technology available and ready to be adopted in all aspects of our daily lives. A focus on ubiquitous universal service requires us to look at more than mere "access." It requires examining whether and how people are able to utilize broadband services and what capacities the Internet then enables in their everyday lives. Ubiquitous universal service demands a focus on equity by considering not only where service is available but by whom, how, and whether it enables progressive improvement in the value of our lives and connections to others.

THE PROMISE OF COMMUNITY-SCALE BROADBAND NETWORKS

Community-scale broadband networks are uniquely positioned to meet the challenges of achieving ubiquitous, truly universal service. Locally owned and managed, such networks can fill important gaps in the extension of broadband infrastructure, improving connectivity and promoting innovative uses of broadband to address local needs. Community-scale broadband models mean building infrastructure and Internet services that:

- Are owned by local cooperatives, municipalities or small business owners. Community-scale infrastructures can be publicly owned municipal networks, non-profit community owned entities, or network infrastructures and services operated by local entrepreneurs who have a stake in the community and are responsive to its residents.

- Are affordable and accountable to those who utilize the services, and

- Empower communities to make creative choices on how broadband infrastructure deployment and service provision can best serve their social and economic development needs. For instance, a community might decide to use wireless technologies to extend services to hard-to-reach areas.

Community-scale development projects can be particularly important for unserved and underserved communities that private sector providers have deemed unworthy for investment. According to panelist and symposium co-convener Bruce Lincoln of the Columbia University Center for Technology, Innovation and Community Engagement, "we are in a period of time called the New Localism. This is why we are engaging in the micro-scale model. Whether it is the church or cooperative, the delivery of content and applications over broadband can also return a proportionate stream of revenue that goes back to the community and is reinvested. This will encourage the kind of local innovation that will address community-specific issues."

These models present new and innovative opportunities to extend services and prove the viability of underserved and unserved communities by changing the cost structure of the investment model. Local owned infrastructures allow communities to build to suit local needs, geographic strengths and bottlenecks in ways that can greatly reduce cost. The mobilization of local innovation and initiative can also inspire increased civic engagement and participation through the development and use of local media.

Community-scale infrastructures (and wireless technologies in particular) can enable local residents to shift the current calculus of broadband deployment. Instead of waiting for infrastructure to be extended to their communities in the "last mile," local actors can position their communities as sites for "first mile" buildout that begins with the grassroots.

As panelist Jabari Simama, author of *Civil Rights to Cyber Rights: Broadband & Digital Equality in the Age of Obama*, explained, "Why community scale? Because all revolution is local. We all live in neighborhoods, and if we don't have jobs it is the neighborhood that suffers. We feel the loss of public investment most immediately and noticeably at the level where we live. If this is to have a global impact it needs to have an impact in my neighborhood—on my employment prospects, my education and children's schools, on my local health. This is about making us as a nation more sustainable, and more competitive. If it is to empower us, it therefore must come to and from the neighborhood level."

THE TELE-WORK CENTER MODEL

CSI, in partnership with CTICE, Per Scholas and the Data Conversion Laboratory, is developing an innovative project that will provide a model for using broadband to promote community economic development. The project will create sustainable livelihoods for community residents by generating tech sector data conversion jobs. The project will attract investment to build a community-scale wireless infrastructure network by emphasizing the tele-work center's potential to provide skilled work training in the tech sector while creating additional demand for broadband services. Existing and next generation wireless broadband technologies will enable communities to build networks at much lower cost of initial investment than the traditional approach, lessening the capital burden for those who can least afford it.

SEIZING THE OPPORTUNITY: THE FUTURE OF COMMUNITY-SCALE BROADBAND

The debate on national broadband policy, including the debate surrounding net neutrality, has tended to regard people as consumers of a service rather than as empowered users of technology. Panelist Craig Settles, industry analyst and broadband business strategist, identified this as an important limitation to our conception of the role of broadband policy: "We have this laundry list of benefits: economic development, telemedicine, and all kinds of great and grand things that we want to try to accomplish, but we're wrapping it around a business model that is consumer-focused, and more specifically... focused to meet the needs... of large incumbents."

Rather than positioning communities as end users whose value exists only as potential consumers for major telecoms, we must underscore the importance of broadband as a tool for community empowerment and encourage more direct citizen engagement in infrastructure development. The promise of broadband lies in its ability to connect people across distances, cultures and languages in ways never before possible or even imagined, but maximizing this potential will require expanding our metrics of success beyond bottom-line profits. Cost-benefit analyses must begin to look beyond the short-term profit margins of infrastructure developments and incorporate new measures that consider the impact of development projects on equity, community economic development, political engagement and other social impacts of the expansion of the technology.

ENCOURAGING UBIQUITOUS ADOPTION

The continuing expansion of broadband to communities that remain unserved or underserved must be matched by on-the-ground efforts that encourage digital literacy and ensure that broadband will be widely adopted and meaningfully utilized. Jacquie Jones, Executive Director of the National Black Programming Consortium, was among the many panelists to underscore the critical importance of hands-on community engagement to foster basic digital literacy skills. "Mobilizing these resources into productive outputs requires local, human intervention," Jones explained. "It's not enough to ship a computer to a school, for instance, and expect that people will begin using it immediately. In the same way, just providing access—as in the form of broadband—is not sufficient unto itself." Panelist Todd Wolfson, co-founder of the Philadelphia-based Media Mobilizing Project, also emphasized this idea, citing his organization's efforts to empower low-income communities to incorporate broadband technology into comprehensive social justice campaigns. "Adoption in and of itself is meaningless," said Wolfson. "We need to talk about what adoption means. What it does for economic development, what it does around civic engagement and college access."

LEVERAGING PUBLIC-PRIVATE PARTNERSHIPS

Many of the panelists at the symposium urged the need to rethink broadband business models and encourage innovative public-private partnerships for infrastructure development. Such partnerships could empower communities to determine the best technologies and structures to meet their development needs, encouraging

"The reason that I believe in local and state government as one part of our solution is that those are the entities that have not the luxury but the charge of thinking about all of the benefits to the community that are not in the [telecom] financial statements: education, environment... economic development... It's not the return on the financial statements that's the reason we care about broadband—that's only true for people who happen to be investors in five companies. It's all those other things that matter."

–JOANN HOVIS, PRESIDENT-ELECT OF THE BOARD OF DIRECTORS, NATIONAL ASSOCIATION OF TELECOMMUNICATIONS OFFICERS AND ADVISORS

innovation and potentially generating sustainable revenue for community-based businesses. Speaking to the relatively slow pace of infrastructure expansion to date, Melissa Bradley suggested that community-scale development could be fast-tracked through effective cross-sector engagement. "The reality is that if we were able to turn this into a business proposition... this would be a very different discussion," said Bradley. "The public-private partnership would be instantaneous. The dollars generated to support this would be amazing."

The nature of public-private initiatives must be reconsidered. Too often, public-private partnerships imply a relationship in which public tax dollars finance private sector projects. The result is that while the public takes on the entire cost burden, even in the case of failed projects, the private partners reap all the rewards in the form of increased profits and the greater political influence that accompanies them. The concept of public-private partnerships needs to be expanded to include innovative community-scale and cooperatively owned ventures. Rather than simply providing public financing to traditional models—many of which have failed to generate the investment funds necessary to start new projects—public-private partnerships can and should prioritize innovations.

MAKING BROADBAND A PUBLIC POLICY PRIORITY

What must happen to make community-scale infrastructures a viable option? The short answer is policy reform. "Policy matters," CSI Executive Director Maya Wiley observed. "It drives opportunity and drops barriers, especially in underserved communities." The sheer scale of the need demands a national policy response that encourages partnerships, fuels innovation and promotes long-term investment. For instance, studies show that increasing the nation's broadband penetration level by about 1 percent, or 300,000 connections, would cost roughly $300 million—a potentially low estimate.[27] And according to the National Exchange Carrier Association (NECA), an association of local telephone companies, the cost of upgrading 5.9 million rural telephone access lines to a speed capable of delivering voice, video, and data to rural customers would be $11.9 billion.[28] While individual community-based projects can—and already do—connect marginalized groups to the benefits of modern technology, it will take a substantial investment at the federal level to bring such models to scale and close the service gaps that years of reliance on private telecoms have left unheeded.

As panelist Nolan Bowie explained, "We don't want government to be neutral on this issue ... [W]e want government to be fair, we want government to be activist in promoting universal access." Ubiquitous, universal broadband adoption is fundamentally about democracy. Panelist Jabari Simama put it clearly: "This discussion is about ... the struggle to obtain access to digital technology and therefore the benefits of democracy and economic prosperity."

[27] Kohlenberger, Jim. "Universal Affordable Broadband for All Americans: How to Modernize Universal Service for the 21st Century and Connect Americans to a New Era of Digital Opportunity." Benton Foundation, 2010. Online at www.benton.org/node/8537.

[28] Ibid.

CONCLUSIONS & POLICY RECOMMENDATIONS

As CSI Executive Director Maya Wiley observed, "There is no more basic infrastructure for the twenty-first century than broadband. Education, energy, health, and community ownership of businesses are impossible without high-speed Internet to support development and provide the basis for sustainability." However, despite the need for innovative solutions and the many examples of successful community-scale infrastructure projects, barriers remain to the implementation of projects that can accomplish the goal of ubiquitous universal service.

The monopolization of broadband wire infrastructure by a few large incumbents creates a powerful force aimed at protecting the current business model—one that leads to digital redlining, exclusion of communities of color, and higher costs and lower speeds for all subscribers. Incumbents consistently lobby against municipal or community ownership of broadband infrastructure and undermine both the possibility and efficacy of such ownership. But this is a cycle we can break.

Knowing the tensions that exist between the interests of private telecoms and the needs of everyday people, we must rethink our nation's approach to building out broadband and the role that communities can play in owning and managing broadband infrastructure. The FCC must embrace policies that recognize broadband infrastructure as a public good and a public infrastructure, and must pay attention to how broadband translates into public services, content and applications useful to individuals and communities.

The symposium identified several major steps that must be taken in the movement toward ubiquitous universal service:

1) Lower price.
Price is the primary barrier to broadband adoption, and policies must be crafted to address both the immediate needs of low income consumers and the more widespread structural forces that have left the U.S. with some of the most expensive and slowest broadband services of all of the industrialized nations.

- The Universal Service Fund must be reformed to ensure provision of cost supports to low income users, as greater affordability dramatically improves adoption and usage rates.
- Local initiatives should also be eligible for support from Universal Service Fund programs in order to meet local needs and support innovation. In the early part of the twentieth century, when incumbent electric utilities left rural America in the dark while they electrified more lucrative urban centers, public and cooperatively owned power utilities were created to fill the void. More than 2,800 such facilities are still operating successfully today, providingelectricity to 27% of all Americans.[29] With the appropriate policy interventions, public support can play a similar role in advancing broadband deployment today.

2) Increase speed.
In low-income communities, municipal facilities often represent the only connection, resulting in excessive sharing of bandwidth. There are two solutions to this problem:

- Build more network nodes so that fewer users share each individual node, and
- Increase the available spectrum to allow space for greater Internet traffic.

What will produce opportunities in the community around broadband access? What are the policies that we need to be looking at? What are the community-scale models that can create a triple and quadruple bottom line in communities of color, both rural and urban?

–MAYA WILEY, EXECUTIVE DIRECTOR, CENTER FOR SOCIAL INCLUSION

[29] National Rural Electric Cooperative Association, 2003. "The Cooperative Promise: A Community and Economic Development Guidebook for Electric Cooperatives."

3) Reform Inter-Carrier Compensation.
Inter-carrier compensation is broken in the United States, as evidenced by the recent spat between Comcast and Level Three. Entrepreneurs who conduct business over the Web and Web-based content providers such as Netflix do not own or control the infrastructure over which their content must travel. This puts the telecom and cable companies in a position that they hope to use to extract additional revenue, particularly from service or content providers that compete with their own. This increases the cost of doing business, particularly for small and community-based companies.

4) Treat wireless and wire-line services equally.
The net neutrality provisions adopted by the FCC largely exclude wireless broadband services. This oversight threatens to exacerbate the digital divide by leaving unregulated the wireless broadband services upon which communities of color disproportionately rely.[30] To make matters worse, the differing regulatory environments of wired and wireless broadband services may encourage telecoms to prioritize investment in the unregulated wireless market, endangering the development of fixed wire infrastructures in underserved communities of color and rural areas. The FCC must extend net neutrality legislation to cover wireless services as well as wired.

5) Reform spectrum licensing to eradicate false spectrum scarcity.
The current process for spectrum licensing creates artificial scarcity in broadband service markets, often increasing cost. Moreover, the centralizing tendencies of the traditional business models continue to hinder local communities from building out networks. As many as eighteen states have enacted de-facto or outright bans on the development of local broadband networks, supporting the interest of incumbents to limit competition in these areas. This process needs to be reformed to enable reallocation of spectrum to ensure that community-based businesses have access to the bandwidth necessary to function and thrive in the global economy.

6) Conduct new research.
Funding for research in broadband networks is woefully inadequate, particularly in relation to peer nations. We need funding for research and development for the next generation of community-scale networks, and for making necessary improvements to broadband deployment tracking metrics. These should include additional measures which consider the distribution and impact of federal broadband funding on the quality and duration of employment, as well as the race, gender, and zip code of job recipients.

7) Aim for truly universal access—and make sure we're achieving it.
Current definitions of access and adoption are often misleading and overstate both. We must create appropriate metrics of success that are not limited to access and penetration but address actual rates of broadband adoption, use, and impact on meeting community needs.

8) Prioritize community participation and ownership.
Communities and local governments should have the right to build their own networks and provide quality Internet services. Many unserved or underserved rural and urban areas face challenges in attracting private investment to connect civic institutions, businesses and residences to high-speed data networks. In the absence of such investment, we affirm the right of local community groups and municipalities to move forward and build networks that serve their needs, with the same levels of federal support available to incumbent providers. The prospect of such competition would challenge incumbent

[30] According to a recent study, 64% of African-Americans' and 63% of Latinos' primary access to the Internet is through mobile wireless handheld devices such as cell phones or laptops. See "Mobile Access 2010." Pew Research Center, July 2010. Online at www.pewInternet.org/Reports/2010/Mobile-Access-2010.aspx (last accessed 1/24/2011).

telecoms to increase speeds and lower prices, a dynamic that would stand to benefit all subscribers and bring the U.S. closer to the levels of deployment and quality of service currently enjoyed in other industrialized nations.

9) Encourage greater involvement and support from social entrepreneurs and social venture business models.
If federal funding is not forthcoming—conservative attacks on deficit spending coupled with the economic downturn suggest that significant federal investment in mission-critical infrastructure may not be available in the immediate future—federal policy can nevertheless be leveraged to develop a climate in which private investment in infrastructure is encouraged. With appropriate incentives and seed opportunities, social entrepreneurs can establish partnerships with local municipalities, community groups and the private sector, bridging diverse actors to achieve strategic development objectives. Such business models have the potential to create value and jobs while encouraging further investment in communities that have too long been left behind.

The debate over how best to reform the Universal Service Fund offers a new opportunity to re-center issues of access, adoption and the need for open Internet protocols within the context of strengthening local capacities and deepening opportunities for democratic engagement, civic participation and local innovation. The conversations that emerged from the symposium suggest a richer, more nuanced vision of broadband policy and its potential impacts and a more complete answer to how we can support ubiquitous universal service adoption. This vision is built around these core ideas:

- Broadband Internet is not a luxury—it represents a new form of digital literacy and mission critical infrastructure for participation and progress in a twenty-first century society.

- Ensuring equity in broadband infrastructure buildout must consider the unique needs and challenges for access and adoption in diverse communities, moving beyond simplistic and misleading definitions of universal service to a focus on ubiquity and access as a digital right of all people.

- Broadband infrastructure development strategies must consider needs beyond those that label people and communities as consumers of Internet services. Broadband development and deployment strategies must recognize that the potential uses of the technology are boundless, and should allow and encourage local innovations to support new applications. A focus on service, content and applications is vital to ensuring that broadband technologies be flexible enough to allow for adaptation and widening of opportunity.

- Public investments in broadband infrastructure must recognize the value and opportunity of diverse ownership models as a means of reaching full ubiquity in infrastructure and service penetration.

The Center for Social Inclusion works to unite public policy research and grassroots advocacy to transform structural inequity and exclusion into structural fairness and inclusion. We work with community groups and national organizations to develop policy ideas, foster effective leadership, and develop communications tools for an opportunity-rich world in which we all thrive.

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