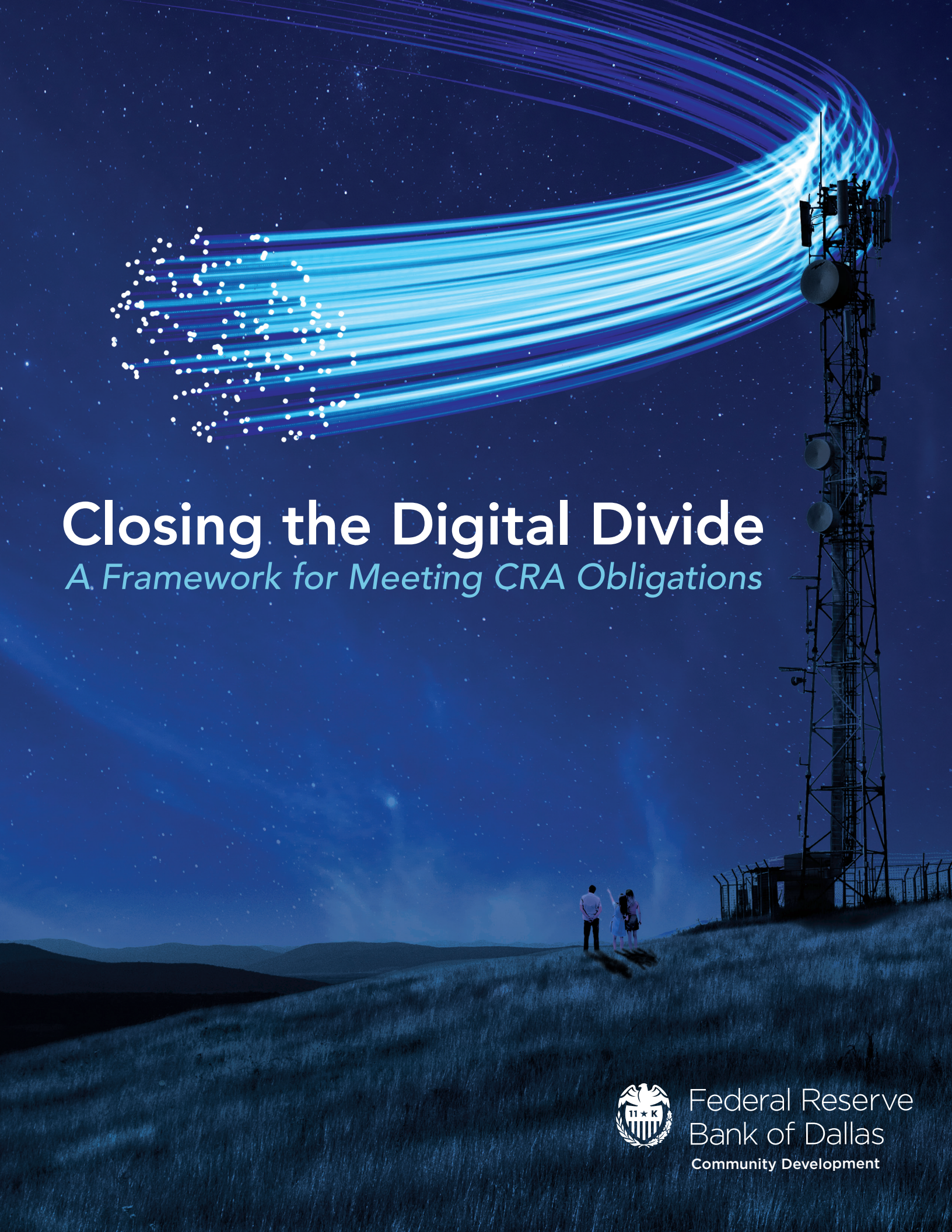


Closing the Digital Divide

A Framework for Meeting CRA Obligations

Federal Reserve Bank of Dallas

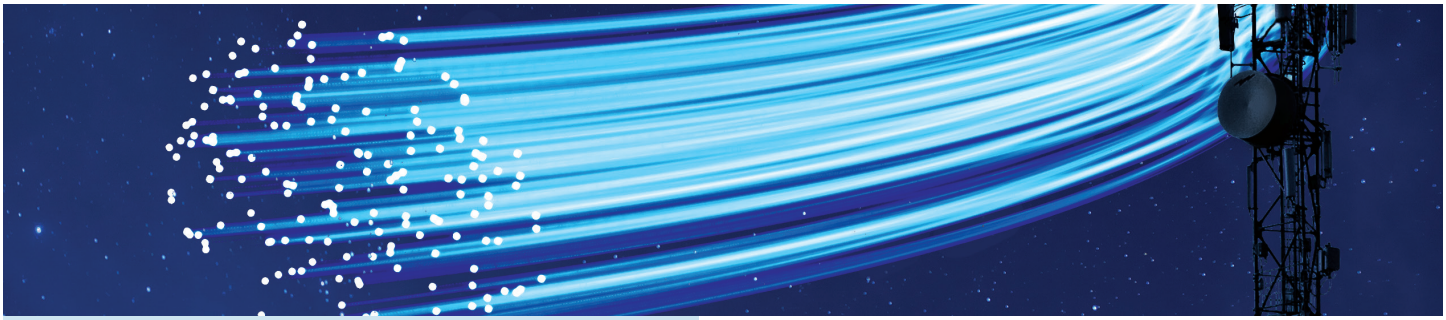
Community Development

The purpose of this publication is to provide financial institutions:

PART ONE:	An understanding of how broadband is now an integral part of community development and meets the "primary purpose" definition of the Community Reinvestment Act (CRA).
PART TWO:	A road map of best practices for closing the digital divide.
PART THREE:	A selection of references and examples to help identify opportunities to close the digital divide in their communities.
PART FOUR:	A list of tips for preparing their case for digital opportunity investments and CRA reference guides to help ensure planned CRA activities meet regulatory requirements.
PART FIVE:	A template to make their case, which highlights the types of lending, service and investments that are valuable to their institution and target communities.
PART SIX:	Appendixes of broadband resources for understanding the needs and opportunities in their assessment areas.

"This publication provides a toolkit for bankers seeking to bring digital opportunity to underserved, rural and tribal communities through access to high-speed broadband. Bank investments as well as partnerships with local governments, nonprofits and educational groups can help ensure equitable access to the growing digital economy."

Robert S. Kaplan
President and CEO,
Federal Reserve Bank of Dallas



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Introduction

In recent decades, broadband has transformed our personal lives, how we do business and the economy at large. Access to broadband has become essential to make progress in all areas of community development—education and workforce development, health, housing, small-business development and access to financial services.

Furthermore, as the digital economy grows, digital inclusion represents economic inclusion. Yet broadband access and adoption continue to lag behind for certain population segments, including low-income and rural communities. This is referred to as the digital divide—i.e., the gap between people who have access to broadband services and know how to use the internet and those who do not have such access or knowledge.[1] The digital divide leads to further economic, social and political disparities for low-income and underserved populations.

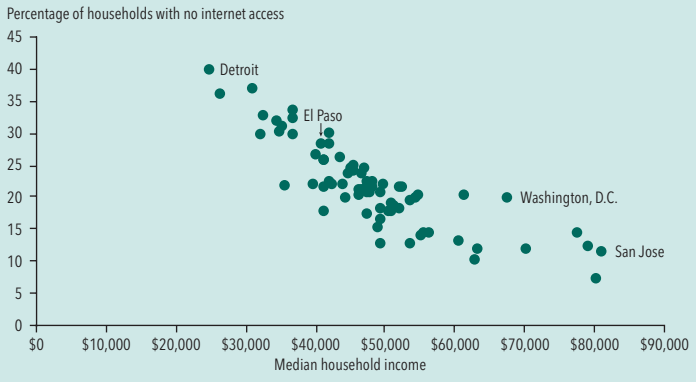
TABLE 1 U.S. Cities with 100,000+ Households Ranked by 'Worst Connection': Median Household Incomes vs. Percent of Households With No Internet Access

	City	Median household income	Percent of households with no internet access		City	Median household income	Percent of households with no internet access		City	Median household income	Percent of households with no internet access
1	Detroit	$24,820	39.9	25	Omaha	$47,512	22.9	49	Boston	$53,583	19.9
2	Miami	$31,070	36.8	26	Albuquerque	$48,357	22.9	50	Denver	$51,089	19.2
3	Cleveland	$26,096	36.1	27	Pittsburgh	$42,004	22.7	51	Arlington	$51,400	18.9
4	New Orleans	$36,631	33.8	28	Tampa	$42,649	22.4	52	St. Paul	$49,469	18.6
5	Buffalo	$32,392	32.6	29	Fort Wayne	$39,878	22.2	53	Long Beach	$52,116	18.6
6	Memphis	$36,722	32.3	30	St. Petersburg	$43,894	22.2	54	Orlando	$41,345	18.1
7	St. Louis	$34,488	31.9	31	Corpus Christi	$49,686	22.1	55	Charlotte	$51,034	18.0
8	Milwaukee	$35,186	31.2	32	Tucson	$35,720	22.0	56	Minneapolis	$50,563	18.0
9	Baltimore	$42,266	30.4	33	New York	$52,223	21.9	57	Lexington-Fayette	$47,535	17.6
10	Cincinnati	$34,605	30.3	34	Mesa	$47,561	21.8	58	Lincoln	$49,419	16.7
11	Toledo	$31,907	29.8	35	Greensboro	$41,150	21.8	59	Aurora	$49,142	15.6
12	Philadelphia	$36,836	29.8	36	Fort Worth	$52,430	21.8	60	San Francisco	$77,485	14.9
13	El Paso	$41,129	28.7	37	Los Angeles	$48,466	21.7	61	Austin	$56,351	14.9
14	Dallas	$41,978	28.5	38	Nashville-Davidson	$46,803	21.5	62	Portland	$55,571	14.8
15	Fresno	$40,179	27.0	39	Oklahoma City	$46,232	21.4	63	Raleigh	$55,170	14.4
16	Wichita	$43,538	26.6	40	Jacksonville	$47,424	21.1	64	Henderson	$60,819	13.5
17	Tulsa	$41,495	26.2	41	Sacramento	$48,034	21.1	65	Colorado Springs	$53,550	13.2
18	Indianapolis	$41,361	26.0	42	Las Vegas	$49,289	20.9	66	Madison	$49,546	12.9
19	San Antonio	$45,399	25.3	43	Atlanta	$46,485	20.8	67	Anchorage	$79,045	12.8
20	Chicago	$47,099	24.9	44	Urban Honolulu CDP	$61,559	20.8	68	Seattle	$70,172	12.2
21	Houston	$45,353	24.9	45	Bakersfield	$54,763	20.8	69	San Diego	$63,456	12.0
22	Kansas City	$45,551	24.4	46	Oakland	$54,394	20.2	70	San Jose	$80,977	11.6
23	Phoenix	$46,601	24.1	47	Columbus	$44,426	20.0	71	Virginia Beach	$62,855	10.5
24	Louisville/Jefferson County	$44,893	24.0	48	Washington, D.C.	$67,572	20.0	72	Plano	$80,448	7.7

SOURCE: Census Bureau, 2013 American Consumer Survey.

Lack of broadband access disproportionately affects low- and moderate-income (LMI) communities. Households in the U.S. making $25,000 or less have a broadband adoption rate of 47 percent, while those making more than $100,000 have an adoption rate of 92 percent.[2] Table 1 compares median household income and the percentage of households with internet access in the 72 U.S. cities with 100,000 households or more, and ranks them by internet connectivity. The corresponding Chart 1 illustrates a clear correlation between household income and internet access at home.

CHART 1 U.S. Cities with 100,000+ Households Ranked by 'Worst Connection'

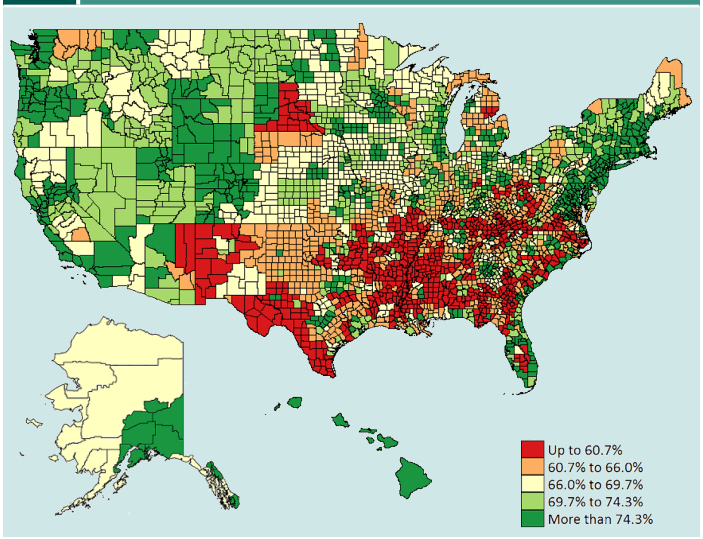


SOURCE: Census Bureau, 2013 American Consumer Survey.

The map in Chart 2 illustrates internet adoption in the United States by county. As noted by the Census Bureau, the map suggests that both income and geography help explain the digital divide.[3] Although the county-level data offers a view of the big picture, even within counties with high levels of broadband adoption, there are often LMI neighborhoods that do not have access. Financial institutions and nonprofit community development organizations can use the U.S. Department of Commerce National Telecommunications and Information Administration's (NTIA's) *National Broadband Maps: How Connected Is My Community?* mapping tools to zoom in to the city and neighborhood level.[4]

While these mapping tools can be used as general guides, they are not diagnostic tools. When the mapping tools are used in relation to a particular project, it is critical to understand whether the local broadband network can deliver the necessary connectivity speed for the intended goals of a community.

CHART 2 Internet Adoption in the U.S. by County, 2013



SOURCE: Census Bureau, 2013 American Consumer Survey.

The Federal Communications Commission (FCC) defines broadband as a download speed of 25 Mbps (megabits per second) and an upload speed of 3 Mbps. However, communities should be aware that some applications of broadband require connection speeds that exceed the FCC definition. Indeed, many experts in the broadband field seek to help communities develop next generation (i.e., gigabit) fiber optic capacity to support current and future needs.

The CRA provides a significant opportunity to help close the digital divide across communities while simultaneously benefiting financial institutions and improving economic stability. The CRA is a law that encourages banks to make loans and investments and provide services to LMI communities. The law was passed in 1977 to address redlining—the denial of credit to individuals based on where they live. Every year, the CRA helps bring more than $100 billion in capital to LMI communities across the country. The law is intended to be broad, flexible and responsive to changes within communities.

Understanding Broadband, Community Development and CRA

PART ONE

"Like electricity a century ago, broadband is a foundation for economic growth, job creation, global competitiveness and a better way of life. It is enabling entire new industries and unlocking vast new possibilities for existing ones. It is changing how we educate children, deliver health care, manage energy, ensure public safety, engage government, and access, organize and disseminate knowledge."[5]

— Federal Communications Commission (FCC)

Infrastructure

Under the CRA, infrastructure investment includes facilitating the construction, expansion, improvement, maintenance or operation of essential infrastructure or facilities for health services, education, public safety, public services, industrial parks or affordable housing. An investment or loan applied to broadband infrastructure would need to be for the purpose of serving LMI individuals and/or geographies or revitalizing or stabilizing an LMI geography or nonmetro middle-income geography.

Broadband is now a basic infrastructure needed in all communities. Yet according to the FCC's 2016 Broadband Progress Report, 34 million Americans lack access to fixed broadband at speeds of at least 25 Mbps for downloads and 3 Mbps for uploads.[6] When addressing the nature of a community's digital divide, the "three legs of the stool" of broadband adoption should always be considered:

1. Broadband access
2. Computer access
3. Training and technical assistance

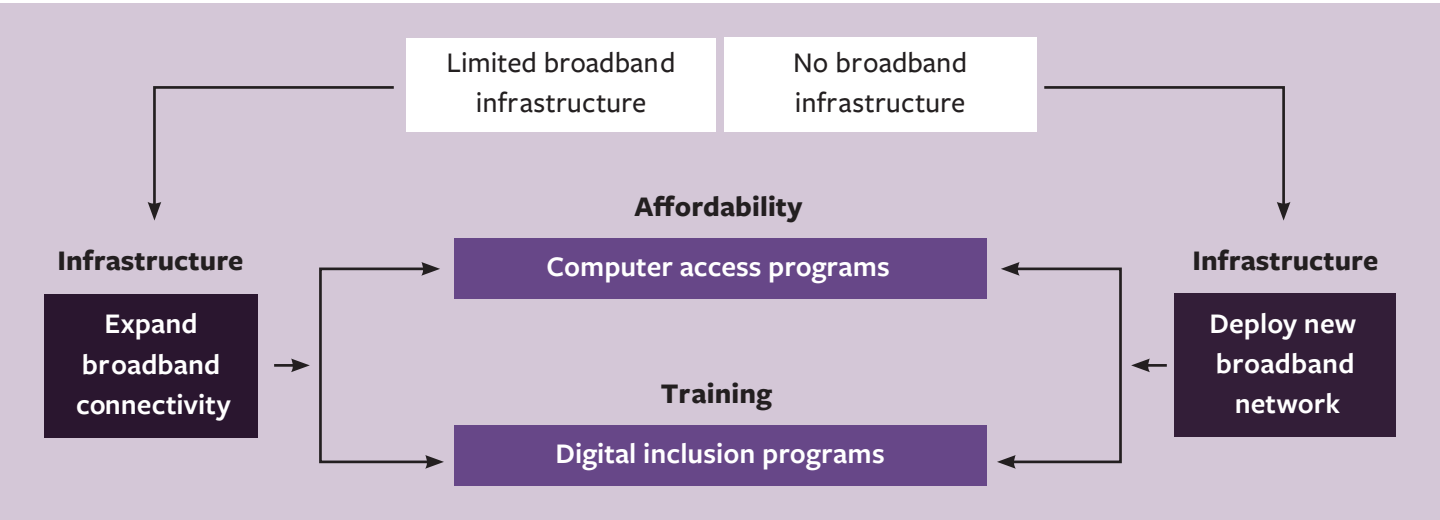
However, the three legs of the stool are not equal. As illustrated in Diagram 1, in communities with limited broadband infrastructure or no broadband infrastructure, investment in computer access or skills training will not be effective until investment in broadband infrastructure is developed. This is because owning a computer and knowing how to use it effectively are not relevant unless there is a sufficient connection to the internet.

For types of broadband infrastructure expansion and deployment strategies, see Appendix A.

Workforce Development

Workforce development, a key area of community development under the CRA, is a valuable tool for lifting people out of poverty and for creating upward mobility.

DIAGRAM 1 Broadband Infrastructure: The Prerequisite for Closing the Digital Divide in Low- and Moderate-Income Communities



SOURCE: Federal Reserve Bank of Dallas.

Workforce opportunities are hindered when LMI communities lack broadband access. Today, 60–70 percent of jobs are posted online. More than 80 percent of jobs for those with bachelor degrees or better are posted online.[7] According to the Pew Research Center, "37 percent of nonbroadband adopters indicate that it would not be easy for them to create a professional resume if they need to do so; 30 percent would find it difficult to contact an employer via email, or fill out an online job application; and 27 percent would have a hard time finding online lists of available jobs in their area."[8] Additionally, many job training programs are only offered online. For individuals who live in areas without workforce development centers or community colleges, or who lack transportation or experience barriers due to long distances, internet access could help them participate in training and certification programs.

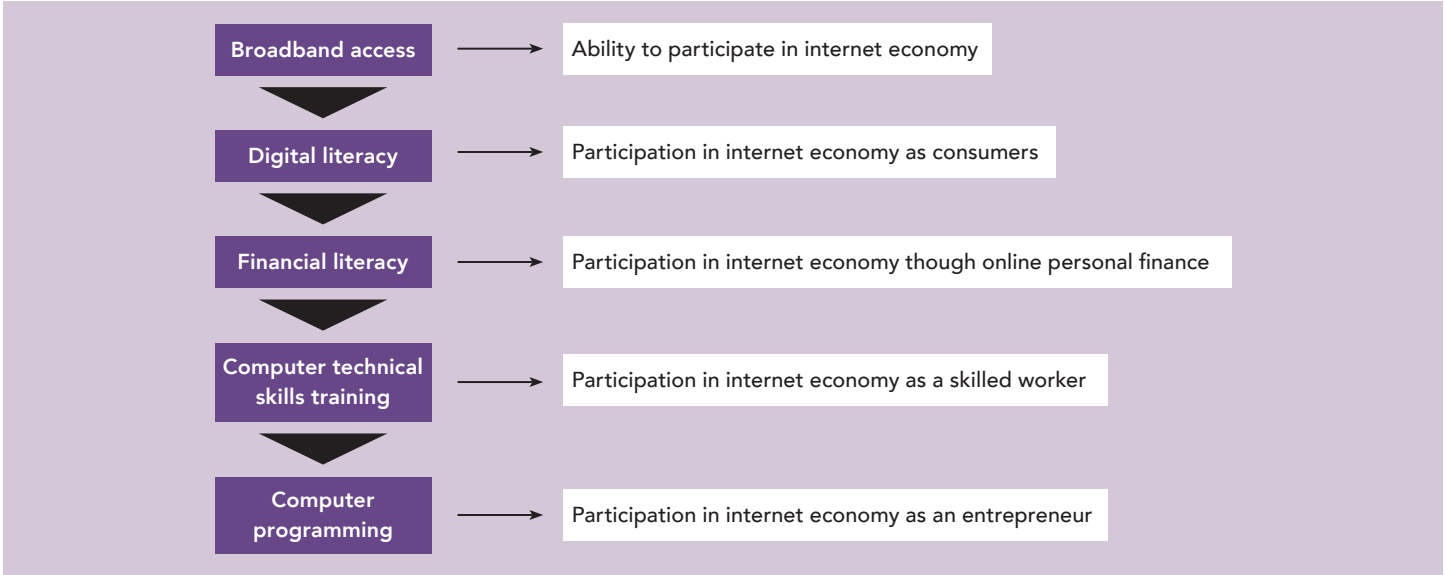
Digital Skills Gap. Computer and internet skills are critical in today's job market. As the nation recovers from the Great Recession, growth for digital-intensive middle-skill jobs has been equivalent to the growth of high-skilled positions over the same period (4.8 percent for digital middle skills and 4.7 percent for high-skill positions from 2010–13). "Middle-skill jobs are those with less than 80 percent of postings calling for a bachelor's degree and with a median hourly wage above the national living wage of $15.

Nearly 8 in 10 middle-skill jobs in today's workforce require digital skills, representing 32 percent of all labor market demand in the nation. Digitally intensive middle-skills jobs have grown more than twice as fast as other middle-skill jobs in the past decade, and pay wages, on average, 18 percent higher than middle-skills jobs without a digital component."[9] Indeed, middle-skill jobs that are not digital-intensive have had the slowest growth of any category, behind even low-skilled positions—1.9 percent for nondigital middle-skill jobs between 2004 and 2013 compared with 2.9 percent for low-skilled jobs. These positions, which are primarily in transportation, construction and installation/repair, lag in pay, growth and opportunity.[10]

Capital One and Grovo developed the Future Edge training program for nonprofits to prepare workers for middle-skill and high-skill jobs that require digital literacy. The program educates participants on 10 basic digital competencies, including Microsoft Office Suite, computer fundamentals and online communication and etiquette.[11] The program recognizes that after achieving broadband access, the first step on the pathway to full participation in the digital economy is digital literacy. Diagram 2 shows the relationship between digital inclusion training programs, such as Future Edge, and the internet economy.

DIAGRAM 2

Relationship Between Digital Literacy Training and the Internet Economy



SOURCE: Federal Reserve Bank of Dallas.

TABLE 2 Households with School-Age Children that Do Not Have Broadband Access

Percent lacking a high-speed connection at home	All	White	Black	Hispanic	Asian
Annual income under $50,000	31.4	24.6	38.6	37.4	15.5
$50,000+	8.4	6.7	13.0	12.8	4.0
Percent with a high-speed connection at home					
All households with school children	82.5	88.0	71.5	72.2	92.3
Annual income under $25,000	60.3	67.9	53.6	54.8	79.0
$25,000–$49,999	75.7	80.6	71.2	69.2	88.8
$50,000–$99,999	88.2	90.5	84.1	82.1	94.0
$100,000–$149,999	94.3	95.1	91.7	90.6	96.5
$150,000+	96.7	97.0	93.5	93.9	97.9

SOURCE: Pew Research Center Analysis of 2013 American Community Survey.

Education and the Homework Gap. Access and skill in using the internet effectively have become essential for educational and economic opportunity. It is reported by the Census Bureau that education and broadband adoption are positively related, meaning that households with less educational attainment have lower rates of broadband adoption. Only 43 percent of individuals without a high school diploma use the internet, compared with 90 percent for those with a college degree.[12] Thus, to provide a curriculum that is relevant and prepares students for the job market, teachers are increasingly assigning homework that requires internet access. Low-income students are at distinct a disadvantage. It is common to hear stories of students doing their homework in fast-food restaurants or outside of school buildings after hours to access free Wi-Fi hot spots.[13]

Eighty-four percent of the nation's K–12 teachers report the digital divide is growing in their classrooms due to unequal access to essential learning technology resources at home. As shown in Table 2, "roughly one-third (31.4 percent) of households whose incomes fall below $50,000 and with children ages 6 to 17 do not have a high-speed internet connection at home. This low-income group makes up about 40 percent of all families with school-age children in the United States. ... By comparison, only 8.4 percent of households with annual incomes over $50,000 lack a broadband internet connection at home. In other words, low-income homes with children are four times more likely to be without broadband than their middle or upper-income counterparts." This is referred to as the "homework gap."[14]

Access to Financial Services

The provision of retail banking services in LMI communities is fundamental to the CRA service test. Having a relationship with a bank is an essential tool for building wealth and assets. In a study of low-income residents in south Dallas, the Dallas Fed reports, "... Owning a checking account is positively related to owning a savings account, having a mortgage and cashing paychecks through direct deposit or at a bank. When other factors are held constant, individuals with a checking account are 4.6 times as likely to have a savings account and 2.3 times as likely to have a mortgage or cash their paychecks through direct deposit or at a bank."[15] The digital divide can be a barrier to improving the number of people with full access to banking. And, the reverse is also true: Closing the digital divide can open up opportunities for LMI individuals to gain access to safe financial services and products, especially due to the rate at which technology is transforming banking and how people access services.

More and more services are now available without making a trip to a branch. A few examples include:

- Online (internet) banking—accessing a bank account via a laptop, desktop or tablet
- Mobile banking—using a smartphone to access a bank account
- Remote deposit capture—scanning checks on a bank's mobile phone app and sending them to the bank electronically for deposit

Additionally, banks recognize the necessity of having an online presence. According to the Pew Research Center, 61 percent of total internet users bank online. Thirty-five percent of cell phone users said they had used their phone to check their bank account or perform transactions, up from 18 percent in 2011.[16] The Federal Deposit Insurance Corp. (FDIC) notes the following trends:

- Total number and density of banking offices declined during the post-2008 Great Recession period.
- Total office closures exceeded openings since 2010.
- The impact of technology on transactions is strongest amongst younger consumers, i.e., weekly branch usage was 38 percent lower among consumers aged 18-29 than among consumers aged 30-39.
- Branch transactions have declined. From 1993 to 2013, teller transactions per office declined by 45 percent, and from 2003 to 2012, paper checks fell from 43 percent of non-cash payments to 15 percent.[17]

Based on the trends provided by the FDIC and a recent study by the Federal Reserve System on consumers and mobile financial services, there is a significant shift toward mobile and online banking. According to the Federal Reserve report, "the three most common mobile banking activities among mobile banking users were checking account balances or recent transactions (94 percent), transferring money between an individual's own accounts (58 percent) and receiving an alert (e.g., a text message, push notification or e-mail) from their bank (56 percent)." Furthermore, "43 percent of adults with mobile phones and bank accounts reported using mobile banking, an increase of 4 percentage points from the prior year's survey."[18] In May 2016, the FDIC released a mobile banking report which found, "while not a cure-all, mobile financial services can help banks address many of the core financial service needs of underserved consumers, especially in areas where traditional banking channels may be perceived to be less successful."[19]

Additionally, the ever-growing number of apps and innovations in the financial technology industry, or "fintech," represent a recognition of the vast market opportunity in all income categories, especially with the millennial generation. The top fintech startup companies include, Betterment, WePay, Affirm and CommonBond.[20]

It is important to note that for some types of transactions, mobile or online are the most efficient choice for banks and for people who have access. However, establishing a personal relationship with a bank can be more effective in applying for a loan or receiving financial guidance, i.e., a personal relationship and knowledge of an individual's character, one of the "Five C's of Credit" can be more accurate than an algorithm alone.[21] The 2015 FDIC study shows that lower-income people use in-person banking more than those with higher incomes.[22] And, a Gallup study confirms that certain services—such as applying for loans—are much more likely to happen at brick-and-mortar locations than through mobile access.[23] In "U.S. Smartphone Use in 2015," Pew finds that low-income Americans are more dependent on smartphones for internet access than higher income Americans because they lack other broadband service at home or have limited options for getting online other than a cell phone. Simultaneously, the study found that low-income Americans are more susceptible to lapses in their internet service due to nonpayment or limited data plans.[24]

Moreover, in light of the digital divide, the need for online access does not supplant the need for brick-and-mortar presence in LMI communities. Similar to the current national discussions on striking the most appropriate balance between in-person medical care and telemedicine, a balance between online and face-to-face banking is optimal to provide LMI communities the range of opportunities that will best serve them and our nation's financial institutions. Under the CRA service test, banks will need to demonstrate that their alternative delivery methods for providing retail banking are successfully serving LMI people in their assessment area.

Small-Business Development

"Uber, the world's largest taxi company, owns no vehicles. Facebook, the world's most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world's largest accommodation provider, owns no real estate. Something interesting is happening."[25]

— Tom Goodwin, Havas Media

One of the goals of the CRA is to promote economic development through small-business development, which broadband access profoundly impacts. Communities with high-speed broadband infrastructure provide an environment that promotes small-business development. A 2014 study notes that "communities where gigabit broadband was widely available enjoyed higher gross domestic product (GDP), relative to similar communities where gigabit broadband was not widely available." The 14 communities in the study "enjoyed over $1 billion in additional GDP when gigabit broadband became widely available." The study refers to the Chattanooga, Tennessee, municipal-owned gigabit broadband service that has created "1,000 new jobs, increased investments and a new population of computer programmers, entrepreneurs and investors."[26]

A recent study by the Boston Consulting Group finds that the impact of the internet on GDP in the U.S. is 4.7 percent, i.e., the internet accounted for $684 billion, or 4.7 percent of all U.S. economic activity in 2010. The study further reports that "the internet economy in the developed markets of the G-20 will grow at an annual rate of 8 percent over the next five years, far outpacing just about every traditional economic sector, producing wealth and jobs."[27] Membership in the G-20 includes 20 of the world's largest advanced and emerging economies "representing about two-thirds of the world's population, 85 percent of global gross domestic product and over 75 percent of global trade."[28]

With some knowledge of coding and a great idea to meet a human need, Google and Facebook were created—a testament to the entrepreneurial spirit and innovation that the internet unleashes. The key to growing entrepreneurship in the internet economy is to promote the expansion of broadband networks. Consider that before the advent of the internet, telecommunications and information technology innovations happened at the center of the network and were created by the engineers working in the industry. The internet, however, makes unbounded innovation possible on the periphery of the network, i.e., with a person and a computer.[29] Closing the digital divide for budding and established entrepreneurs makes it possible for them to have access to the internet for realizing their innovative business ideas.

The internet is a valuable tool that makes basic business processes, such as payroll and payments, more efficient. Furthermore, entrepreneurs are able to capture an audience and customers, sell a product and promote and conduct their businesses in a cost-effective and accessible way. It opens up the global marketplace to companies and facilitates potential partners or allies within the same industry. This "partnering" of companies within the same industry is clearly the trend in fintech. As fintech startup companies have proliferated with mobile apps for payments, investing, lending and more, the discussion has centered on the "disruptive" nature of the companies to the traditional banking industry.

The success of the new companies in reaching more people more efficiently and effectively can be seen as a threat. However, the recent trend has been for banks to partner with the fintech companies, such as the partnership between marketplace lender OnDeck with JPMorgan Chase & Co.[30] Furthermore, the implication for rural communities is significant since access to high-speed broadband can help businesses thrive and no longer be dependent on physical proximity to a broad customer base. Having broadband infrastructure has the potential to make geography irrelevant for some types of businesses.

Affordable Housing

Investment in affordable housing for LMI communities is a key aspect of community development under the CRA and provides opportunities for banks to partner with local public housing authorities (PHAs) and community housing development organizations (CHDOs) to not only build affordable housing, but to also close the digital divide.

Acknowledging that broadband internet connectivity is now considered a basic public utility such as electricity and water, federal agencies such as the U.S. Department of Housing and Urban Development (HUD) have made broadband access in the home a priority. For example, ConnectHome is a joint effort of HUD and the White House to encourage broadband adoption by residents living in HUD-assisted housing developments across the U.S. The pilot program includes 28 communities across the country and encourages collaboration between local governments, public housing agencies, internet service providers, philanthropic foundations, nonprofit organizations and other relevant stakeholders in an effort to create local solutions for closing the digital divide.

ConnectHome seeks to:

- Make broadband more adoptable by building new models to provide broadband infrastructure and to offer residents free or discounted service
- Make broadband internet more valuable by giving residents localized, free and culturally sensitive training in essential digital literacy skills that will allow them to effectively use high-speed internet
- Make broadband internet adoption sustainable by providing devices and technical support to residents[31]

ConnectHome was well received in 28 pilot communities across the nation, and HUD is planning ConnectHome 2.0 to reach more communities.

A recent article in *The New York Times* highlights the impact of the digital divide in Detroit, which has "the worst rate of internet access of any big American city, with four in 10 of its 689,000 residents lacking broadband. ... The consequences appear in the daily grind of finding connectivity, with people unable to apply for jobs online, research new opportunities, connect with health insurance, get college financial aid or do homework." Public libraries are often looked upon as replacements for broadband in the home; however, this solution has limitations. Time limits on computer use and long wait times at public libraries and community centers can prevent those most in need from accessing the internet for these basic services.[32] Even if a person goes to the library to apply for a job online, he may not be able to return to the library every day to check email to see if he has been granted an interview.

To address the need for affordable broadband access in the home, the FCC released the Lifeline Modernization Order in April 2015. This order expands the Lifeline universal service program to include broadband. The program "was created in 1985 and currently provides a monthly $9.25 subsidy for telephone voice service to over 13 million low-income households." In addition, "the FCC's Consumer and Governmental Affairs Bureau will develop a digital inclusion plan. ... The plan will engage consumer groups, community and philanthropic organizations, local government, and industry stakeholders to explore strategies to increase the availability of affordable service and equipment, digital literacy training, and relevance programming."[33]

Another HUD program that allows funds to be used for broadband projects is the Community Development Block Grant (CDBG) program. The CDBG program provides communities with resources to address a wide range of unique community development needs, including affordable housing and broadband. On May 17, 2016, HUD Secretary Julián Castro issued a proposed rule change that would require broadband infrastructure to be incorporated into most HUD-financed multifamily housing developments during construction or when existing facilities are rehabilitated. Secretary Castro said, "Ensuring that future HUD funded properties are broadband ready reaffirms our commitment to closing the digital divide beyond modems and laptops. ... We want to give our residents and their children the opportunity to connect to the world and compete in the 21st century."[34]

Access to Health Care

Health is fundamental to individuals, families and the economy. "Good health reduces poverty, protects family assets, improves educational performance, increases labor productivity, enhances the investment climate and, through all of these things, stimulates economic growth."[35] Health is considered an important area of the CRA, and in 2014, the Dallas Fed published a framework for financial institutions to invest in healthy communities. The publication makes the case that good health is good for the economy at the

individual and household level and for regional and national economies.[36]

Today, the provision of quality health care relies on the use of digital health information and tools. Increasingly, health providers expect their patients to use digital tools and applications to ensure better health outcomes. Without broadband access, digital literacy training and technical support, LMI patients are at a disadvantage when it comes to managing their health outcomes in a digital society. In addition, some geographies with broadband access may not have sufficient speeds to accommodate the transmittal of certain data used in telemedicine.

The World Health Organization defines telemedicine as "the delivery of healthcare services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuting education of health care providers, all in the interests of advancing the health of individuals and their communities."[37] This publication uses the terms telehealth and telemedicine interchangeably.

Many LMI communities across the U.S. lack access to quality and appropriate health care due to geographic location, such as the Texas–Mexico border region with a mix of urban and rural areas that have a lower ratio of health care professionals to population and a scarcity of specialists in their communities.[38] Broadband access is an essential means for these communities to create alternative opportunities for accessing health care through proven technologies such as telemedicine. The Department of Health and Human Services' Office of the National Coordinator for Health Information Technology identifies telehealth as a means to improve the care provided to Americans by addressing gaps in access and quality of health care services, assisting in the transformation of primary health care practices, and by overcoming geographic barriers to health care.[39]

Many government agencies use telehealth to serve their diverse patient populations. In fact, federal agencies such as the Department of Defense and the Department of Veterans Affairs administer the country's largest telehealth programs, which provide direct patient care. With broadband access at sufficient speeds, specialists can see patients, share health information and confer with primary care doctors who are hundreds of miles away.

State agencies, including the Texas Health and Human Services Commission (HHSC), now offer online and mobile applications for people to conveniently assess eligibility and apply for state programs such as Supplemental Nutrition Assistance Program food benefits, Medicaid, the Children's Health Insurance Program or Temporary Assistance for Needy Families benefits. The goal of the "Your Texas Benefits" app is to make it possible for people to find out if they are eligible for state benefits through their smartphone. Additionally, as noted in an HHSC publication, "One of the most common reasons people visit our offices is to drop off documents, and we want to make that process easier for people who work or have children or limited transportation."[40]

Identifying Best Practices

PART TWO

As digital access became more important, the progress schools and other nonprofits made in closing the digital divide came intermittently. For example, in some cases, computers would be handed out to students who had no training or internet access at home. Or training would be given to older adults, but they would have no online access in their daily lives. In those cases, the intended goal was not achieved. To achieve success, it is critical to invest in community programs that include all of the **"three legs of the stool"** of broadband adoption:

Broadband access	Computer access	Training & technical assistance

When there is an opportunity, banks can blend or layer the types of investments they make in broadband to include the "three legs of the stool." An example would be investing in infrastructure with a loan for a middle-mile fiber-optic project and supporting adoption programs through grants that provide computers and technical assistance/training to LMI families. To take their work even further, bank employees can offer online financial education/online banking training as part of their efforts to provide relevant skills that help people apply the usefulness of the training in their everyday lives.

Measure outcomes to identify what works. The U.S. Department of Commerce National Telecommunications & Information Administration's (NTIA's) Broadband USA is working with communities to define the measures that accelerate local, regional and national broadband efforts. The goal is to provide metrics to help communities better measure and demonstrate the impact of their programs or projects. See NTIA Broadband USA in Appendix C.

Programs need to consider the barriers to adoption people experience: access, cost, relevance, perception and skills. For example, an organization can make training relevant by teaching computer and internet skills by having participants complete online workforce development certification programs or apply for jobs online or by offering financial literacy modules that include learning how to use online banking features, such as remote deposit. Best practices for broadband adoption are provided in the NTIA Broadband Adoption Toolkit.[41]

Best practices for effective public-private partnerships in providing broadband to communities can be found in three key publications. The White House publication, "Community-based Broadband Solutions"; Gig.U's *The Next Generation Network Connectivity Handbook: A Guide for Community Leaders Seeking Affordable, Abundant Bandwidth*; and the U.S. Department of Commerce's, National Telecommunications and Information Administration's *NTIA: Public–Private Partnership Guide*.[42]

Communities should consider the internet speed that will meet their economic development goals. For example, a community may have plans to work with hospitals and clinics to use telemedicine to bring health care to underserved areas, some of which requires gigabit speed. Or, a local university may need gigabit speed to conduct advanced research.

Training programs for youth and adults should cover the subject of internet safety and security. A useful resource is the nonprofit Common Sense Media's K-12 digital citizenship curriculum. For this and related resources for educators, parents and youth, visit www.commonsensemedia.org.

Definitions

Middle Mile—The wire-line infrastructure that runs between the internet service provider's central office and internet point of presence. Middle-mile infrastructure connects places or communities to infrastructure, but doesn't connect individual homes or buildings.

Fiber-to-the-Premises(FTTP)/Fiber-to-the-Home (FTTH)—High-speed internet infrastructure that connects directly to residents' homes. By comparison, some communities have fiber infrastructure that connects business districts or community anchor institutions like schools and hospitals.

Dark Fiber—Fiber that is in place but not being used. Communities and businesses often deploy dark fiber during a construction project for other purposes, such as fixing sewer lines, since the incremental cost of such deployment is low compared with the significant cost of construction solely for the sake of deploying the fiber. The fiber can be "lit" at such time as the demand justifies providing a service over fiber.[43]

Last Mile—Broadband service to the end-user devices through an intermediate point of aggregation. In most cases, the last-mile connection goes from the end-user device (in the home) through an intermediate point of aggregation (i.e., a remote terminal, fiber node, wireless tower or other equivalent access point) to a primary internet provider (IP) routing entity in a centralized facility.[44]

A student from PSJA ISD's Garza-Peña Elementary School participates in a computer skills class. Photo credit: Pharr-San Juan-Alamo ISD.

Identifying Opportunity

PART THREE

Become familiar with state and local experts and projects. See Appendix C for resources to understand the digital divide in your assessment area, and use the best practices noted in part two to evaluate opportunities.

Use the Census Bureau and U.S. Department of Commerce NTIA for map resources showing broadband connectivity in various geographic areas—national, state and local. See Appendixes C and D.

Examples of Initiatives to Close the Digital Divide

For successful examples of public-private partnerships that provide local broadband infrastructure, see "Community-based Broadband Solutions" and The Next Generation Network Connectivity Handbook: A Guide for Community Leaders Seeking Affordable, Abundant Bandwidth.[45] The stories of Chattanooga, Tennessee, Lafayette, Louisiana, the Choctaw Nation Tribal Area, Oklahoma, and others are highlighted.

Successful examples of programs that focus on the adoption of computers and broadband in LMI communities can be found in the U.S. Department of Commerce's, NTIA Broadband Adoption Toolkit.[46] Additionally, for an example of a web tool designed to be used by digital inclusion programs, see Money Smart Kansas City, a resource created by the FDIC, the Kansas City Fed and other partners.[47] Featured below are three additional examples.

Digital Opportunity for the Rio Grande Valley (DO4RGV), South Texas

www.dallasfed.org/microsites/cd/colonias/econop.html

In 2015, the Dallas Fed released a report about Texas colonias—low-income peri-urban and rural informal settlements along the Texas border region—characterized by their lack of basic infrastructure and substandard, often self-built housing. The study involved focus groups with colonia residents. One theme that arose from the conversations with residents was the lack of access to the internet. The report found that the digital divide was a factor preventing residents from accessing regional labor

market opportunities. Additionally, the report described the challenges colonia students face in school because of their inability to complete homework assignments due to lack of internet service and computers at home.[48] Of the 381 metropolitan areas in the U.S., those with the lowest rates of internet use by individuals include three Texas border metropolitan statistical areas (MSAs) (Chart 3).

CHART 3 Broadband Access Falls Short in Texas Border Metro Areas vs. Austin–Round Rock

SOURCE: Census Bureau, 2013 American Consumer Survey.

The serious concern about the digital divide in the border region led the Dallas Fed to convene a collective impact group of Rio Grande Valley community members to discuss the issue and determine possible approaches to solving the problem. The members of the collective group include:

- Dallas Fed
- University of Texas Rio Grande Valley (UTRGV)
- Texas Association of Telecommunications Officers and Advisors (TATOA)
- Pharr–San Juan–Alamo (PSJA) Independent School District (ISD)
- City of Pharr
- La Joya ISD
- Region One Educational Service Center
- ACT
- Health and Human Services Commission
- City of McAllen
- City of Brownsville
- Deep South Texas Financial Literacy Alliance
- Doctors' Hospital at Renaissance and others

Out of the initial meeting, the DO4RGV was formed, and the quest to find the solution began. The colonias report revealed that policy approaches that address issues in silos don't solve the biggest challenges in the region, and great value is left on the table. As the group discussed how broadband had been approached in the past, members realized that working in silos led to piecemeal or "band aid" projects that did not get the desired results. The group learned that what was needed was a comprehensive, holistic approach for the region.

With the knowledge that TATOA brought to the table in meetings with local officials, DO4RGV was able to identify the ultimate goal: The creation of a robust fiber-optic regional network that connects the major anchor institutions and provides the infrastructure for companies or co-ops to cost effectively provide last-mile, fiber-to-the-home or Wi-Fi service to LMI residents. The group began to understand how it could transform the economy of the region.

To start building the network, the group decided to implement a demonstration middle-mile project with the city of Pharr and PSJA ISD focusing on:

Infrastructure. DO4RGV is mobilizing resources and working with local governments, PSJA ISD and the city of Pharr to build and own its own broadband network that will be used as a springboard to incentivize the last mile. The goal is for internet service providers to lease from the municipal network to provide the last-mile services to residents, as Google Fiber announced it would do in Huntsville, Alabama.[49] CTC Technology has been hired to complete the strategic plan/feasibility study for the project.

School district. In fall 2016, more than 100 students and their families from PSJA will be provided with computers, broadband access and bilingual training and technical support as evidence of the impact DO4RGV can achieve for the region.

The purpose of the demonstration is to create a successful replicable model to roll out across the Rio Grande Valley. Regional anchor institution, UTRGV, has been involved throughout the project and will be an important player in taking the project to scale across the region. In addition, a partnership with UTRGV's College of Business

and Entrepreneurship will provide trained IT students who will work with the students and families at PSJA. Together, the college students and the K–12 students will make up the "Digital Opportunity Corps" who will serve as experts in their communities.

Local banks have stepped up to support the project. BBVA Compass, the bank with the most branches along the U.S.–Mexico border, has provided a grant for the strategic plan/feasibility study. BBVA also offered to make its online financial education program a part of the digital inclusion training for students and parents at PSJA. Additionally, Capital One provided seed money for the demonstration.

Objectives:

- Improve educational opportunity and results for Pre-K–12 students and their families across the region (close the "homework divide")
- Improve access to workforce opportunities, including training and job opportunities
- Improve access to health care providers and telemedicine
- Improve access to the internet and online marketing for microentrepreneurs in the region
- Improve access to financial services and online banking
- Improve financial literacy through access to online training platforms

West Central Minnesota Fiber-Optic Cooperative

www.ilsr.org/wp-content/uploads/downloads/2016/04/rs-fiber-report-2016.pdf

This example in rural Minnesota demonstrates how banks can make loans and investments in broadband for LMI communities or distressed and underserved nonmetro middle-income geographies.

City councils in 10 west central communities were dissatisfied with the state of their telecommunication services. Existing networks were insufficient to carry the volume of data at speeds necessary to meet future economic development needs. The incumbent providers were unable to find a way to invest in a fiber-to-the-home-and-farm network. Even after the communities said they would be passive investors and allow providers to retain their customers, the incumbents were still unable to work with the cities. This was the motivation behind the development of the fiber-optic cooperative. RS Fiber Cooperative, named because the entire network was located in Renville and Sibley counties, is in the first year of a six-year construction schedule to build a $45 million telecommunications network. This network will provide high-speed fiber-optic connectivity to communities in south central Minnesota and provide broadband service to homes, farms, businesses, health care facilities, schools and local government in competition with current commercial providers.

This unique initiative received full support from the 10 municipalities and 17 townships involved. The main objective is to provide affordable and quality broadband access along with other services such as cable and telephone. To achieve this, the 10 cities bonded for more than half the $15 million Phase One cost. The bond proceeds were loaned to the cooperative, and that loan was made subordinate to additional loans. Phase Two, which will cost $30 million, will extend fiber-to-the-farm in each of the townships that have elected to join the project. RS Fiber Cooperative hired Hiawatha Broadband Communications (HBC) to provide the internet, telephone and television services across the network. The project is expected to result in enhanced economic development opportunities for businesses and job creation for local residents.

An informal consortium of community banks, including the First National Bank of Fairfax (FNB Fairfax), has participated on a construction line of credit. FNB Fairfax has also committed an equity investment in RS Fiber Cooperative. It received permission to do so under the Public Welfare Investment Authority as determined by its regulator, the Office of the Comptroller of the Currency (OCC). FNB Fairfax is a national bank operating in the RS Fiber Cooperative's proposed service area.

The Public Welfare Investment Authority allows national banks to make investments that are not otherwise expressly permitted under the National Bank Act. State member and nonmember banks also have public welfare investment (PWI) authority. It is a tool a bank can use to help meet the credit needs of its communities. Banks may make investments, directly or indirectly, that are

primarily designed to promote the public welfare such as by providing housing, services or jobs under the investment authority in 12 USC 24 and the implementing regulation, 12 CFR 24. "Investments" include both equity investments and debt investments, such as equity equivalent investments or other debt. PWIs are investments that primarily benefit LMI individuals, LMI areas (as well as distressed or underserved nonmetropolitan middle-income areas), or other areas targeted by a government entity for redevelopment, or if the investments would receive consideration under 12 CFR 25.23 (the CRA regulation) as a "qualified investment."

If consideration is to be given under the CRA, a bank's PWI must meet the "primary purpose" requirement and benefit at least one of the following (12 CFR 24.3):

- LMI individuals
- LMI areas
- Areas targeted by a government entity for redevelopment
- The investment would receive consideration under 12 CFR 25.23 (the CRA regulation) as a qualified investment.

This precedent, set by the OCC, makes it easier for other banks across the country to receive approval to use PWI to support local broadband infrastructure projects. Fiber-optic investments are novel PWIs. It is recommended that banks seek prior approval from their regulator before proceeding.

Wi-Fi on Wheels, Coachella Valley Unified School District (CVUSD), California

www.cvusd.us/pages/coachella_valley_USD

At the CVUSD in Southern California, the superintendent and school board had a serious "homework gap" challenge—40–50 percent of their students did not have access to Wi-Fi to search for information and complete their homework assignments. The school district, with 22 schools in Riverside and Imperial counties, serves 18,850 students—97.2 percent are Hispanic, and 87.2 percent of the students are eligible for free and reduced lunches.[50]

To meet the challenge, the superintendent, Darryl Adams, decided to propose a novel approach. CVUSD provided iPads to students and made the school buses mobile Wi-Fi hotspots so students could do their homework while riding the bus to and from school. CVUSD covers a large geography and many rural areas, so there is a great deal of time spent on buses. However, the leadership realized that students also needed access at home, after school hours. So, they decided to park the buses (starting with three buses) in the highest-need neighborhoods and reservations. The students in those communities then had 24/7 Wi-Fi access. However, they faced the challenge of how to power the Wi-Fi devices on the buses overnight. Initially, they were going to use the bus battery, but quickly found that the battery would drain and the bus couldn't start the next morning. Not to be daunted, the leadership decided to install solar panels on the buses, which have been an ideal solution.[51]

The superintendent has now expanded the successful program to more buses in more neighborhoods. Other school districts have also now developed similar programs. This CVUSD initiative to help close the homework divide was featured on PBS NewsHour.[52]

CVUSD students complete their homework in front of a CVUSD Wi-Fi-enabled school bus. Photo Credit: Coachella Valley unified school district.

Preparing Your Case

PART FOUR

Understanding how their community development activities meet CRA requirements is vital information for CRA and compliance officers when they are communicating with internal management, customers, community partners, target communities and bank examiners.

In July 2016, the Federal Reserve, the Office of the Comptroller of the Currency and the Federal Deposit Insurance Corp. published an updated CRA guidance—the 2016 Interagency Questions and Answers. In the new Q&A, broadband is included as a form of infrastructure investment, and the agencies identify communications infrastructure as an essential community service and describe how investing in new or rehabilitated communications infrastructure is consistent with the CRA regulatory definition of community development. For examples of the types of infrastructure investment that may be needed in your community, see Appendix A. The new Q&A also provides guidance on alternative delivery systems for providing retail banking services, such as online banking.

The CRA Q&A is available on the agencies' websites and on the Federal Financial Institutions Examination Council website: www.ffiec.gov. The Q&A is not meant to be exhaustive; thus, the Federal Reserve Bank of Dallas produced this publication to help financial institutions understand how to invest in broadband access and digital inclusion. This publication also illustrates (in Part One) how broadband access has become an integral part of the key areas of community development and the CRA.

To help ensure that the community development activities they are considering or planning meet CRA requirements in a safe and sound manner, financial institutions should refer to the information in the tips and CRA documents listed below. For more detailed data, financial institutions should consult the CRA webpage of the Federal Financial Institutions Examination Council. Additionally, they should also contact their CRA examiners to obtain specific feedback on the strengths and weaknesses of their community development activities and opportunities for improvement.

Tips for Preparing Your Case

- The Community Development (CD) definition (under the CRA) includes activities that revitalize and stabilize LMI areas. A bank could receive credit for helping supply broadband to targeted LMI areas if it could demonstrate that it helps the LMI areas/people—such as enhancing access to banking services, social services, health care and educational activities. The activities would have to meet the definitions of CD loan, investment, service. Examiners will also determine whether the activity is consistent with the community's formal or informal plans for the revitalization and stabilization of the low- or moderate-income geography.
- Q&A § __.12(g)(4)(i) – 1: What activities are considered to "revitalize or stabilize" an LMI geography, and how are those activities considered? A1: Activities that revitalize or stabilize a low- or moderate-income geography are activities that help attract new, or retain existing, businesses or residents. Examiners will presume that an activity revitalizes or stabilizes an LMI geography if the activity has been approved by the governing board of an Enterprise Community or Empowerment Zone (designated pursuant to 26 U.S.C. 1391) and is consistent with the board's strategic plan. They will make the same presumption if the activity has received similar official designation as consistent with a federal, state, local or tribal government plan for the revitalization or stabilization of the low- or moderate-income geography.
- Under the CRA service test, banks should provide evidence that their "alternative delivery systems" using online banking and financial technology are being used/adopted and are effective in providing services to LMI individuals. If banks support the work of nonprofits, economic development corporations, schools and public housing authorities that are serving communities in closing the digital divide, they will potentially be developing an LMI customer base that will have broadband access and knowledge of online banking (if the training program includes online banking and financial education, as some do). The key for banks will be to provide the evidence. The 2016 Q&A adds evaluation

criteria that examiners will use to make this determination. The new evaluation criteria are: 1) ease of access, whether virtual or physical; 2) cost to consumers, as compared with the institution's other delivery systems; 3) range of services delivered; 4) ease of use; 5) rate of adoption and use; and 6) reliability of the system.

- Q&A § __.22(b)(5), Innovative or Flexible Lending Practices, answers, "What are the range of practices that examiners may consider in evaluating the innovativeness or flexibility of an institution's lending under the lending test applicable to large institutions?" This Q&A describes how examiners may give consideration for innovations when they "augment the success and effectiveness of the institution's lending under its loan programs that address the credit needs of low- and moderate-income geographies or individuals." Thus, a bank can go for the trifecta in its approach to the digital divide in its community. It can provide: 1) a loan to support broadband infrastructure deployment; 2) a grant to provide computers and a broadband adoption training program; and 3) bank employees who offer technical assistance in the form of teaching or serving as a resource for a nonprofit working to promote digital literacy skills. The grant and technical assistance training are intended to impact the effectiveness of the infrastructure loan. Therefore, by supporting a broadband adoption program, the ultimate goal of the loan—providing broadband to LMI geographies and individuals—is met.
- New Markets Tax Credit eligible investments are examples of qualified investments under the CRA. The U.S. Department of the Treasury, Community Development Financial Institution Fund's 2015 Application FAQs include broadband as an eligible New Markets Tax Credit (NMTC) Program investment. Question 41: "Can NMTCs be used to finance broadband infrastructure or related activities? Broadband infrastructure and related activities are eligible for NMTC investments provided that these activities meet the IRC regulations related to a business qualifying under the NMTC program. For additional details, please see IRC 45D and related IRS guidance."[53]
- Cite this publication in your community development story as: "Closing the Digital Divide: A Framework for Meeting CRA Obligations" by Jordana Barton, Federal Reserve Bank of Dallas, July 2016.

CRA Reference Guides

"Interagency Questions and Answers (Q&A) Regarding Community Reinvestment," Federal Financial Institutions Examination Council, July 2016
www.ffiec.gov/cra/qnadoc.htm

FedCommunities, Federal Reserve System
www.fedcommunities.org

CRA OneSource, Federal Reserve Bank of Kansas City
www.kansascityfed.org/community/cdi/craonesource

"A Banker's Quick Reference Guide to CRA," Federal Reserve Bank of Dallas, 2005
www.dallasfed.org/assets/documents/cd/pubs/quickref.pdf

"CRA Loan Data Collection Grid," Federal Reserve Bank of Dallas, 2015
www.dallasfed.org/assets/documents/cd/pubs/craloan.pdf

"Community Development Decision Flow Chart," *e-Perspectives*, vol. 7, no. 4, 2007
www.dallasfed.org/microsites/cd/epersp/2007/4_3.cfm

"An Introduction to CRA: Community Reinvestment Act," video
www.frbsf.org/community-development/initiatives/community-reinvestment-act

A Template for Financial Institutions to Tell Their CRA Story

PART FIVE

Your Financial Institution's Community Development Story

Section A: Background

I. Your mission and/or purpose

II. Your geographic market(s):

A discussion of demographic data related to income, deposit market share, Home Mortgage Disclosure Act market share, CRA small-business/small-farm share and identified needs. For demographic information, a bank can use the Census Bureau data (some of which is provided in this report), the broadbandmaps and the community's economic development plan.

III. Define the CRA

Below is sample text.

- "Under the Community Reinvestment Act (CRA), it is our responsibility to identify and invest in low- and moderate-income (LMI) communities. These activities must benefit both our financial institution and these communities."
- "The CRA defines community development as that which encompasses affordable housing (including multifamily rental housing) for LMI individuals; community services targeted to LMI individuals; activities that promote economic development by financing businesses or farms that meet the size eligibility standards of the Small Business Administration's Development Company or Small Business Investment Company programs or have gross annual revenues of $1 million or less; or activities that revitalize or stabilize LMI geographies, designated disaster areas or distressed or underserved nonmetropolitan middle-income geographies designated by the Federal Reserve Board of Governors, the Federal Deposit Insurance Corporation (FDIC) and the Office of the Comptroller of the Currency (OCC)."

IV. Examples of how your financial institution has met your CRA obligations

Below is sample text.

- "There is a distinct digital divide in our assessment area (see NTIA broadband map for our assessment area below) and this is how LMI people are affected. … Our work with *(give name of partner, such as nonprofit, economic development center or school)* to bring broadband infrastructure to LMI communities is designed to revitalize and stabilize the LMI geography. … *(Provide evidence of impact on workforce development, access to health care through telemedicine, small-business development or improved educational outcomes.)*
- "Specifically, we provided a grant *(amount)* to offer home Wi-Fi and computers, as well as training for students at the local high school to help close the homework divide. The majority of students at the high school are LMI (>51 percent of the students qualify for free and reduced lunches.)"

- "We work with *(provide name of Community Development Financial Institution (CDFI))* in training LMI small-business owners on how to use internet marketing to expand and grow their businesses."
- "We work with community development housing organization *(name)* to provide construction loans for affordable housing that includes broadband infrastructure." *(Share success stories.)*
- "We provide grants to CDFIs *(list dollar amount in specific time period)* to make broadband Wi-Fi infrastructure available to LMI microbusinesses and small businesses. These organizations are. …"
- "We provided an equity equivalent investment (EQ2) to a CDFI community loan fund *(name)* that will in turn finance broadband infrastructure in LMI geographies and in nonmetro middle-income geographies."
- "Local community leaders have identified a need for making broadband available for LMI residents. We have joined a collective impact initiative to close the digital divide. …"
- "Our partnership with an LMI local middle school to close the digital divide involves training parents and students in improving their financial literacy skills by using an online financial education platform called. …"
- "We partner with the public housing authority to support their Connect Home program. Specifically, we provide funding and serve as trainers to help LMI residents who have thin or no credit to build credit. Building a credit score is important because it is used to determine loan terms such as APR (annual percentage rate) and the down payment amount and rates charged for insurance products such as motor vehicle insurance. Here are examples of how we help them build credit through our online training program. …"
- "In an LMI community that did not have access to a brick-and-mortar bank, we worked with the local school district to provide access to bank accounts, computers, and training for parents on how to use online banking to meet their needs. Below are the results of our efforts. …"
- "Through online banking, parents are able to access products and services for their daily financial needs and reduce trips to the brick-and-mortar branch. They learn that online banking provides the flexibility that LMI families often need because of the difficulty in leaving work during traditional banking hours."
- "We partner with a community development corporation *(list name of CDC)* that includes fiber to the home as part of the design of the housing development and neighborhood. The cost-effective model the CDC has developed fits the budget of working households that live or work in a distressed/underserved/designated disaster area. These families would otherwise have few options for safe and affordable housing with broadband connectivity. …"
- "We use low-income housing tax credits to help build a multifamily housing complex *(give the number of affordable units)* with the city's Housing Authority and built-in fiber to the premises to be able to provide online workforce development training, financial literacy and have an impact on closing the homework divide for LMI residents. … *(describe how the credits were used)*. Our partners were. … *(List public, private and nonprofit organizations.)*"
- "Using New Markets Tax Credits, we helped build a new university health clinic in a low-income neighborhood that lacked access to affordable care *(provide stats)*. We worked with the health clinic to serve as an anchor institution in bringing broadband connectivity to the surrounding neighborhood. For neighborhoods in our assessment area but further away from the new clinic, we provided grant support in the amount of *(give amount)* to support the clinic's efforts to serve customers long distance through telemedicine. Our partners were. … *(List public, private and nonprofit organizations.)*"

Section B: Our Current Area(s) of Focus

I. Background: The Closing the Digital Divide Framework

- "Due to the detrimental effects of the digital divide on LMI communities in our assessment area, we are now using the Dallas Fed's "Closing the Digital Divide: A Framework for Meeting CRA Obligations" to help guide our community development strategy."
- "The digital divide disproportionately affects LMI communities, and broadband access is the foundation for much of our work in community development. We met with community leaders who had identified the digital divide as a key impediment to having citizens lift themselves out of poverty and access regional labor market opportunities. For example, to have an impact on workforce development in our assessment area, it was evident that families needed access to the online trainings that were offered through the local community college, as well as access to online job postings and applications. As noted in the Dallas Fed's "Closing the Digital Divide: A Framework for Meeting CRA Obligations," 80 percent of jobs are posted online, and not having access presents a significant barrier for LMI residents."

II. Our Community Development Focus

- "LMI communities are disproportionately affected by the digital divide. As noted by the White House in its Connect America initiative, "Internet adoption rates in the most affluent homes reach 80–90 percent, while the homes with the lowest median incomes have internet adoption rates of around 50 percent." At *(name your financial institution)*, we are becoming actively engaged in helping change this statistic in our CRA assessment area by supporting *(nonprofit, school).* … This area consists of. … *(Define the geographic area.)*"
- "In the area of workforce development and human capital, we partnered with a nonprofit *(name)* and school district *(name)* that were bringing Wi-Fi to school buses to help close the homework divide. The program provides access to students during their ride to and from school. The program also parks the school buses in LMI neighborhoods overnight so students can access broadband for homework. To be sure the initiative included the "three legs of the stool" described in the Dallas Fed's publication, "Closing the Digital Divide: A Framework for Meeting CRA Obligations," our institution invited in university partners who developed a program to refurbish computers and provide them to the families along with computer-skills training. We conducted a baseline survey and year-end survey and found: 1) the number of times that the parents were able to communicate with teachers and resolve problems increased by *(state the percentage)*; 2) children were performing better in school as determined by *(state metrics used)*; 3). … "
- "We conducted research on our assessment area by meeting with community leaders and local nonprofits and used the tools laid out in Gig.U's, *The Next Generation Network Connectivity Handbook: A Guide for Community Leaders Seeking Affordable, Abundant Bandwidth*, to understand the opportunities for broadband investment in LMI communities. The following is an overview of the broadband gaps we identified, the actions we took and partnerships we formed to close those gaps."
- "As noted in the Federal Reserve Bank of Dallas report, "Las Colonias in the 21st Century: Progress Along the Texas–Mexico Border," that covered our assessment area, the lack of broadband access in our LMI communities is a factor in keeping people from regional labor market opportunities and breaking the cycle of poverty. We joined a collective impact group in the area with the goal of closing the digital divide in our region. As a group, we have taken action and our institution played the following role. …" *(Give specific examples.)*
- "We decided to focus on the following local digital divide projects: *(List your partnerships and activities.)*"

Section C: Our Projected Impact

The following information may be helpful in sharing your community development story with internal management, customers, community partners, target communities and bank examiners.

- "We decided to focus on broadband access in conjunction with our other community development activities because the significant digital divide in our community was an impediment to every other area of community development: workforce development, small-business development and access to financial services. As noted in "Closing the Digital Divide: A Framework for Meeting CRA Obligations," broadband is and essential infrastructure for all communities.
- *(Explain which community leaders identified the need and how you decided that it made business sense.)*
- "The consultant our local Economic Development Corporation hired to provide the feasibility study for building the city's *(give name)* middle-mile network, provided a cost analysis and demonstrated the savings over time, as well as the new income stream the city would gain by investing in the network, thus building the productive assets of the local government. The following cost analysis was provided. … The analysis also included the benefits to LMI residents when a local government invests in its broadband infrastructure. …"
- "The return-on-investment (ROI) is expected to be strong for both our financial institution and the communities in which we invest. Outlined below are estimates of the financial returns."
    - Financial ROI to your financial institution: *(Explain who calculated this, how it was calculated and the estimated time frame.)*
    - Financial ROI to your community partners: *(Explain who calculated this, how it was calculated and the estimated time frame.)*
- "It will generate a savings that is estimated to be. … *(Explain who calculated this, how it was calculated and the estimated time frame.)*
- "The impact is expected to be positive for both our financial institution and the communities in which we invest. Written below are estimates of the financial and social impacts."
    - Financial impact to your financial institution: *(Explain who calculated this, how it was calculated and the estimated time frame.)*
    - Financial impact to your community partners: *(Explain who calculated this, how it was calculated and the estimated time frame.)*
    - Financial impact to your community: *(Explain who calculated this, how it was calculated and the estimated time frame.)*
    - Social impact to your financial institution: *(For example),* "Our community development activities entail developing and maintaining strong community partnerships, which are vital to building mutual trust and respect between us and the community."
    - Social impact to your community partners: *(For example),* "This is what our community partners are saying about our community development activities."
    - Social impact to the community: *(Explain who calculated this, how it was calculated and the estimated time frame.)*

- "The financial impact of our investments in broadband infrastructure on our institution is neutral/negative in the short term. However, the positive regulatory impact and the financial impact of creating an economy in the region where entrepreneurship can thrive, and where all income levels have access to online banking, are projected to generate a positive financial impact in the long term. Specifically, the people we help today will grow into our customers tomorrow. Here's how: . …" *(Explain your strategy/plan.)*
- *(Describe the community collaborative that you're involved in that is promoting broadband in your communities. For example),* "In our assessment area, we are involved in a collaborative/partnership/initiative called. … Its purpose is to. … The collaborative meets our community development obligations by focusing on. …" *(List at least one of the four community development purposes: 1) affordable housing; 2) community services that target LMI individuals; 3) economic development; 4) revitalization or stabilization. Next, explain the model that the collaborative is using to identify the community's priority areas and assess its impact. Examples are below.)*
    - "The model that we are using to identify our priority areas and assess our impact is outlined in the "Closing the Digital Divide: A Framework for Meeting CRA Obligations." … These are the components of our program. … Following is a list of our accomplishments and plans in the near term."
    - "The model that we are using to identify our priority areas and assess our impact is the collective impact model."[54] *(List the backbone and support organizations.)* "We play a leadership role by serving on the advisory committee and providing financial guidance *(give specific examples of the type of financial guidance you are providing)*, and we provided a grant in the amount of *(provide amount)* to support the broadband infrastructure component of the project. Following is a list of our accomplishments and plans in the near term."

Section D: Our Leadership Role

I. Our Specific Leadership Role

- "We are playing a leadership role in our assessment area by supporting the community development best practices identified by *(cite source, i.e. The Federal Reserve Bank of Dallas, The White House, NTIA, Gig.U or Next Century Cities)* and introducing our community partners to the community development best practices. Here's how. …" *(List specific examples.)*
- "Given the significant digital divide in the communities in our assessment area, we stepped up to help those communities. We met with city officials and local nonprofits. … The description of our efforts is outlined below. …"

II. Putting Our Leadership Role in Context

- "The White House and NTIA Broadband USA recognize that closing the digital divide is essential to every area of community development, including educational attainment, workforce development small-business development and access to financial services."
- "Using the Public Welfare Investment authority to invest in broadband has not been used by financial institutions in our assessment area. The project *(provide name)* allowed us to demonstrate leadership in broadband infrastructure investment. In *(name)* project, we used PWI authority to make an investment *(amount)* in a fiber-optic infrastructure project and invoked the precedent set by the OCC in 2015 in approving the investment of First National Bank of Fairfax in the West Central Minnesota Fiber-Optic Cooperative."

- "The initiative we funded in the amount of *(provide amount)* supports broadband adoption through an online training program to promote workforce development and, specifically, digital skills to help LMI individuals access living-wage jobs. The impact of the program is outlined below. …"

Financial institutions should touch base with their examiner throughout the planning and execution to ensure they have the data needed to receive community development credit for their project(s). Banks should also reassess the community development needs in their assessment area every 12 to 18 months and refresh their plan on an ongoing basis.

Conclusion

Income and wealth inequality in the U.S. are at the highest levels since the Great Depression. The Federal Reserve's 2014 Survey of Consumer Finances found that, "The top 3 percent account for 30.5 percent of all income and hold 54.4 percent of all the net worth."[55] As noted by the Pew Research Center, "America's upper-income families have a median net worth that is nearly 70 times that of the country's lower-income families, also the widest wealth gap between these families in 30 years."[56] As basic services and tools that are fundamental to upward mobility become increasingly digitized, the digital divide creates a structural barrier to closing the income and wealth gaps. It creates a barrier to LMI individuals' ability to move up the economic ladder through education, workforce development programs and employment, entrepreneurship and access to financial services.

By working with nonprofits and other local partners to bring broadband access and adoption to LMI communities, banks can have a powerful impact on the very "infrastructure of opportunity"[57] in this country.

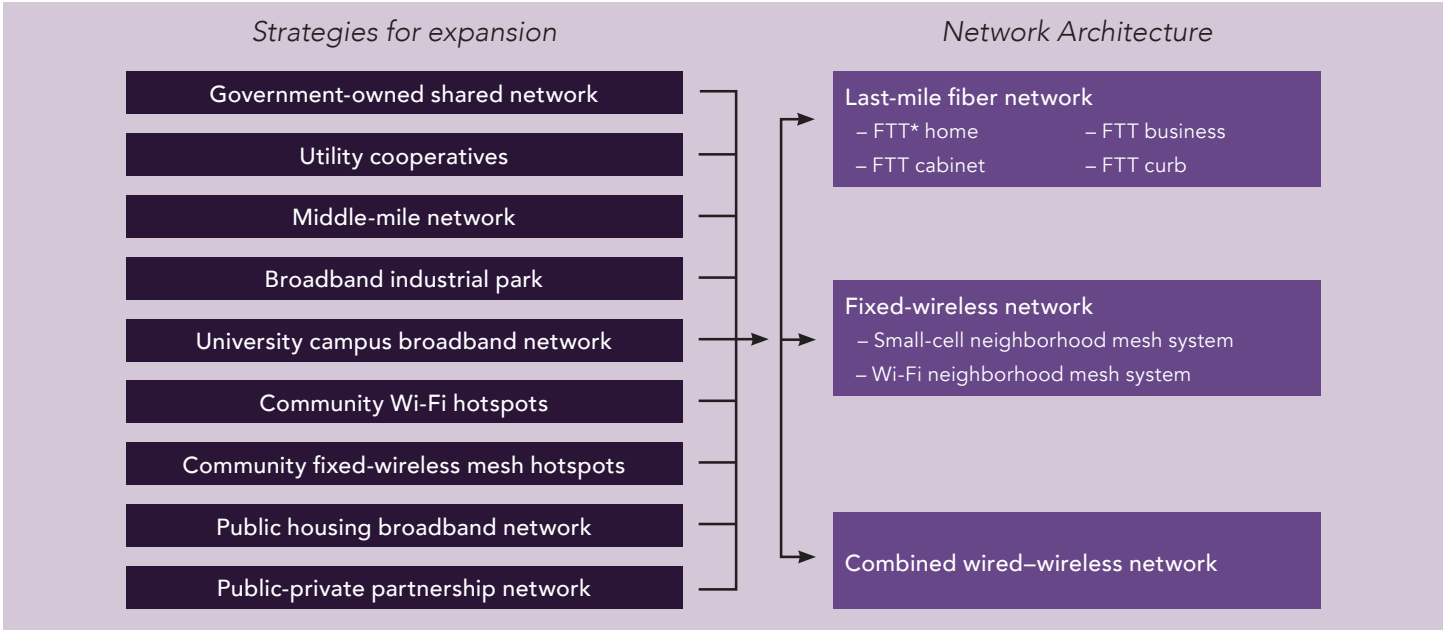
This publication seeks to highlight best practices and "what works"[58] to provide a roadmap for successful lending, service and investments to close the digital divide for LMI families and rural communities. Moreover, this framework provides clear evidence of how investments in broadband can improve the lives of individuals and can help create an inclusive and vibrant entrepreneurial economy.

Appendixes

PART SIX

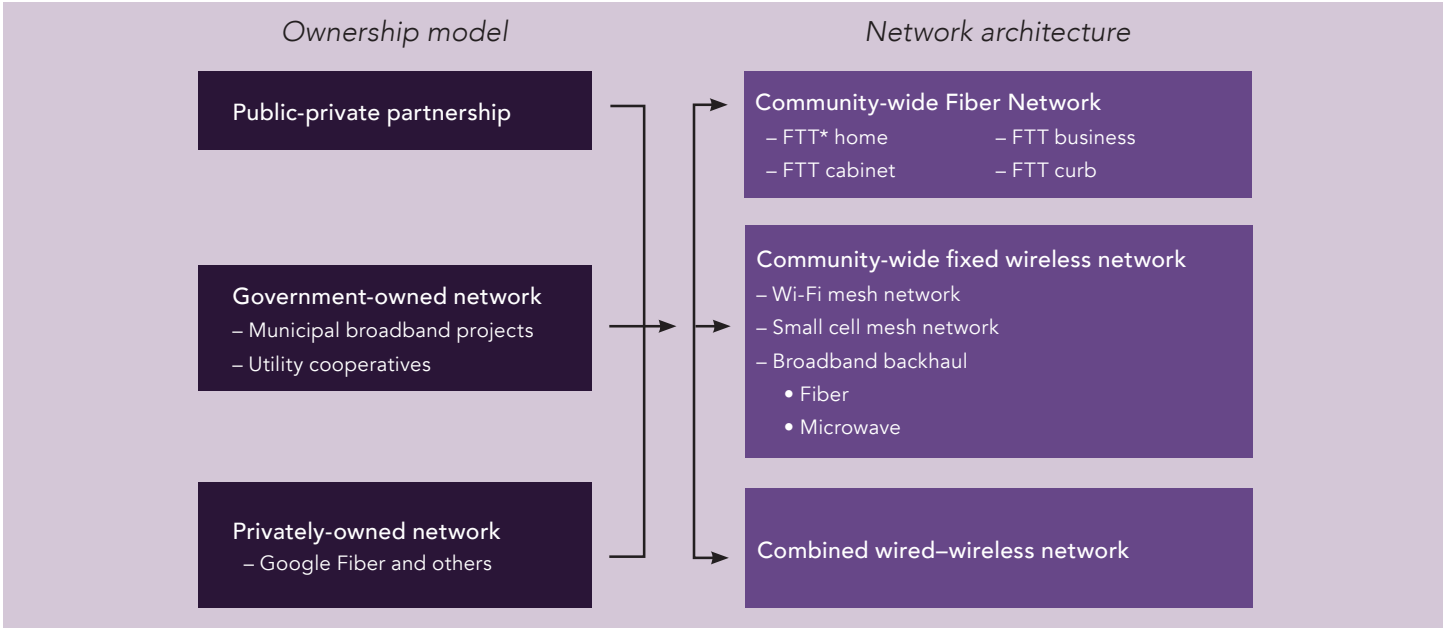
Appendix A: Broadband Infrastructure Strategies

DIAGRAM 3 — Strategies for Expansion of Broadband Connectivity Within Communities



*FTT is an acronym for "Fiber-to-the. …"
SOURCE: Federal Reserve Bank of Dallas.

DIAGRAM 4 — Strategies for Deployment of New Broadband Networks Throughout a Community



*FTT is an acronym for "Fiber-to-the. …"
SOURCE: Federal Reserve Bank of Dallas.

Appendix B: Types of Affordability and Digital Inclusion Programs

This appendix includes lists affordability and digital inclusion programs that can be used to close the digital divide.

Affordability Programs

- Grants for new or refurbished desktop computers and laptops
- Computer manufacturer gift of desktop computers, tablets and laptops
- Governmental agency gift of used desktop computers and laptops
- University or nonprofit gift of refurbished desktop computers and laptops
- School programs that grant students laptops
- Municipal libraries that allow citizens to borrow laptops
- School computer centers
- Municipal library computer centers
- Nonprofit technology centers with access to computers

Digital Inclusion Programs

- City/school/nonprofit digital literacy programs—teach how to use a computer and navigate the internet
- City/school/nonprofit financial literacy programs—teach basic concepts of personal financial management and introduction to online banking
- Boy Scouts of America Personal Management Merit Badge—six-month program that teaches the basics of personal finances and budgeting, including opening and maintaining a checking account and online banking
- School/university/nonprofit software coding training program
- School/university/nonprofit computer refurbishing skills program
- School/community college computer hardware and software technical skills certification and associate degree programs

Appendix C: Experts in Closing the Digital Divide (In Their Own Words)

This appendix lists experts in closing the digital divide and provides a synopsis of each entity's activities in its own words. The appendix information comes from the entities' websites as of April 2016.

The appendix is not an all-inclusive list but includes those that are well known and well documented. The Federal Reserve Bank of Dallas does not endorse these entities.

Department of Commerce, National Telecommunications and Information Administration (NTIA)

www.ntia.doc.gov/category/broadband-opportunity-council

The National Telecommunications and Information Administration (NTIA), located within the Department of Commerce, is the executive branch agency that is principally responsible by law for advising the president on telecommunications and information policy issues. NTIA's programs and policymaking focus largely on expanding broadband internet access and adoption in America, expanding the use of spectrum by all users and ensuring that the internet remains an engine for continued innovation and economic growth. These goals are critical to America's competitiveness in the 21st century global economy and to addressing many of the nation's most pressing needs, such as improving education, health care and public safety.

Specific NTIA activities include:

- Managing the federal use of spectrum and identifying additional spectrum for commercial use
- Administering grant programs that further the deployment and use of broadband and other technologies in America
- Developing policy on issues related to the internet economy, including online privacy, copyright protection, cybersecurity and the global free flow of information online
- Promoting the stability and security of the internet's domain name system through its participation on behalf of the U.S. government in Internet Corporation for Assigned Names and Numbers (ICANN) activities
- Performing cutting-edge telecommunications research and engineering with both federal government and private-sector partners

In addition to working with other executive branch agencies to develop administration positions, NTIA represents the executive branch in both domestic and international telecommunications and information policy activities. NTIA is also a leading source of research and data on the status of broadband availability and adoption in America.

NTIA Broadband USA

www.ntia.doc.gov

Broadband USA is a U.S. Department of Commerce NTIA program. NTIA developed BroadbandUSA in response to public demand to provide assistance to communities that want to expand their broadband capacity and promote broadband adoption.

Broadband USA provides expert advice and field-proven tools for assessing broadband adoption, planning new infrastructure and engaging a wide range of partners in broadband projects. Broadband USA knows each community is unique and no "one-size-fits-all" approach will work.

BroadbandUSA brings stakeholders together to solve problems, improve broadband policies, share best practices, connect communities to other federal agencies and funding sources, and improve coordination among agencies.

BroadbandUSA works with stakeholders from local and state government, federal agencies, policy organizations, trade associations and the public to:

- Provide online and in-person technical assistance to communities as they consider how to improve broadband access and use broadband more effectively
- Convene regional workshops to support decision-makers, based on best practices and lessons learned from local communities

- Publish guides and tools that provide communities with proven solutions to problems in planning, financing, construction and operations
- Bring together federal agencies and broadband stakeholder groups to promote interagency coordination, expand options for broadband funding and ensure information and resources are getting to communities quickly and effectively

President Obama on March 23, 2015, signed a presidential memorandum creating the Broadband Opportunity Council and appointing the Commerce and Agriculture Departments as co-chairs. The Broadband Opportunity Council includes 25 federal agencies and departments that will engage with industry and other stakeholders to understand ways the executive branch can better support the needs of communities seeking broadband investment. It will also help identify regulatory barriers unduly impeding broadband deployment, adoption or competition and recommend steps to remove such barriers. On Sept. 21, 2015, the White House released the council's report, which includes action items and milestones for each agency. BroadbandUSA will support the council as it continues its work to monitor implementation of the action items and explore additional steps that can be taken to remove barriers to broadband deployment and adoption.

The University Community Next Generation Innovation Project (Gig.U)

www.gig-u.org

The University Community Next Generation Innovation Project, or Gig.U, is a broad-based group of more than 30 leading research universities from across the United States. Drawing on America's rich history of community-led innovation in research and entrepreneurship, Gig.U seeks to accelerate the deployment of ultra high-speed networks to leading U.S. universities and their surrounding communities.

How will America lead in developing the next generation of internet applications if other countries use more advanced networks?

How will America's research universities continue to lead in international research if researchers, faculty and students in other countries have access to far better tools?

These two questions have profound implications for the American economy and society. America enjoys a leadership position today in many aspects of the broadband ecosystem because of investments made decades ago, just as it enjoys a leadership position in research institutions because of investments made in centuries past. That leadership, however, will not go unchallenged. In a climate of greater international competitiveness and constrained public investment, leadership in both areas requires new approaches if it is to be sustained.

To meet the dual needs of strengthening research institutions and leadership in developing next-generation applications, a group of leading research universities, working in partnership with their local communities, came together to form the University Community Next Generation Innovation Project ("the Project").

The mission is simple: accelerate the deployment of world-leading, next-generation networks in the United States in a way that provides an opportunity to lead in the next generation of ultra high-speed network services and applications.

Through a request for information, the Project will work with current and potential network service providers, as well as others, to create a critical mass of next-generation test beds by accelerating the offering of ultra high-speed network services to its communities. While economic hurdles impede upgrading networks in all communities, those hurdles are smaller in university communities as they enjoy characteristics that both lower the cost of deployment and increase demand, making them the most attractive targets for initial next-generation network deployments.

The Project will build on the foundation already in place, such as organizing done through the Google Community Fiber initiative, to create an environment in which private risk capital has sufficient incentives to provide next-generation services. This effort will focus business leadership and policymakers on a critical but often overlooked point: from both an economic and a policy perspective, a small amount of financial capital and political capital focused on upgrading university communities can yield major gains for both the future of America's leadership in research and for the American economic leadership.

The National Association of Telecommunications Officers and Advisors (NATOA)

www.natoa.org/web

NATOA is the premier local government professional association that provides support to its members on the many local, state and federal communications laws, administrative rulings, judicial decisions and technology issues impacting the interests of local governments.

Founded in 1980, NATOA offers a wide range of advocacy services to individual and agency members representing cities, towns, counties and commissions across the country. NATOA actively analyzes and addresses emerging issues in areas such as:

- Local government communications and internet policy
- Broadband planning best practices
- Cable franchising
- Operation of Public, Education and Government (PEG) access channels
- Wireless zoning
- New technology initiatives and advancements

The National Digital Inclusion Alliance (NDIA)

www.digitalinclusionalliance.org

The NDIA is a unified voice for local technology training, home broadband access and public broadband access programs. It works collaboratively to craft, identify and disseminate financial and operational resources for digital inclusion programs while serving as a bridge to policymakers and the general public. The NDIA includes leaders of local community organizations, public libraries, towns and other institutions working hard to reduce digital disparities among its neighbors. To improve the daily lives of all community members, the NDIA calls for digital inclusion public policies that reflect its expertise and diverse experiences.

The NDIA's approach is based on the knowledge that broadband adoption is most effectively promoted by community-driven efforts combining:

- Affordable home broadband service
- Public broadband access
- Locally trusted technology training and support

The group's purpose is to:

- Build a national organization of local, regional and national broadband adoption providers' advocates and individual supporters
- Develop and empower a community of on-the-ground broadband adoption providers
- Engage with affiliates and national partners to develop or identify local, state and federal policies that strengthen (financially and politically) local broadband adoption programs
- Keep affiliates informed about current and proposed local, state and federal policies that may impact local broadband adoption programs
- Engage with affiliates and national partners to create new philanthropic and corporate digital inclusion partnerships
- Support the development of research and evaluation that can inform public policy and digital inclusion programs

White House Connect America

www.whitehouse.gov/connect-america

ConnectALL is a White House initiative to provide Americans from every state and all income brackets not only access to the internet, but also the tools to take full advantage of it. On March 9, 2016, the Obama Administration submitted a recommendation that the FCC reform a $1.5 billion per-year phone subsidy program and turn it into a national broadband subsidy. In addition to this filing, the administration also released a study on the economic significance of broadband. Lastly, the administration set a goal of connecting 20 million more Americans to broadband by 2020.

ConnectALL could be considered the second phase of the earlier White House initiatives, ConnectED and ConnectHome, which provided more than 20 million K–12

students with broadband access in their classrooms and libraries and provided 28 communities' public housing units with broadband access to enable students to do their online homework at home.

Both of these initiatives shared the goal of providing broadband access to Americans living without it, based on research that found children who do not have broadband access at home face a digital divide because they are placed at an academic disadvantage in comparison with children who do have access to broadband at home. ConnectALL targets the much wider target demographic of LMI families based on an issue brief by the Council of Economic Advisers that outlines how adults, particularly job seekers, without broadband access are disadvantaged because they are unable to access online job search tools and otherwise participate in the internet economy. The ConnectALL initiative seeks to accomplish its goal through several means:

- First, it aims to increase the affordability of broadband for low-income Americans through the modernization of the FCC's Lifeline program.
- Second, it proposes the creation of a national service effort to deliver digital literacy skills through the Corporation for National and Community Service (CNCS), a federal agency, and the Institute of Museum and Library Services (IMLS).
- Third, it announced that the NTIA's BroadbandUSA program is launching the Community Connectivity Initiative, which will create a comprehensive online assessment tool to help community leaders identify the broadband needs of their community and connect them with expertise, tools and resources to overcome their challenges.
- Fourth, it also announced that Cox Communications will host more than 200 events across the nation for low-income K–12 families to determine if they qualify for a low-cost broadband option, and will with partner with Univision to promote internet adoption in several markets in the western U.S.
- Lastly, it called on philanthropic support for digital inclusion at a summit focused on fulfilling the initiative's 2020 goal.

Schools, Health and Libraries Broadband (SHLB) Coalition

www.shlb.org

The SHLB Coalition promotes government policies and programs that enable schools, libraries, health care providers and other anchor institutions and their communities to obtain open, affordable, high-speed broadband connections to the internet.

The SHLB Coalition was created in 2009 in Washington, D.C., to help address the shortage of adequate broadband for anchor institutions and their communities. ("SHLB" is pronounced "SHELL-bee.") The SHLB Coalition is a broad-based organization of anchor institutions, commercial companies and nonprofit broadband providers, foundations, public interest groups, and others that work together to develop and support policies to improve broadband connectivity for anchor institutions and their communities in all regions of the country—urban, suburban and especially rural. The SHLB Coalition receives financial support from membership dues, events and the Bill & Melinda Gates Foundation.

The SHLB Coalition is founded on the belief that deploying broadband networks to serve anchor institutions is a cost-efficient and vitally important investment in the nation's future. Deploying broadband to anchor institutions can improve broadband access to millions of people (students, low-income and elderly people, migrants, etc.) who may not otherwise have access to the internet. Anchor institution personnel can train people about broadband services and technologies, thereby stimulating broadband usage and demand. Furthermore, high-capacity middle-mile broadband networks serving community anchor institutions can be used as "jumping off points" to serve surrounding residential and business consumers. Several studies show that building high-capacity broadband for community anchor institutions has a multiplier effect that generates tremendous economic growth for the community and the nation.

The SHLB Coalition urges policymakers at all levels of government to develop and implement programs that encourage broadband investment and enhance anchor institutions' ability to serve their communities through broadband technologies.

Next Century Cities (NCC)

www.nextcenturycities.org

Next Century Cities supports community leaders across the country as they seek to ensure that all have access to fast, affordable and reliable internet.

Across the country, innovative municipalities are already recognizing the importance of leveraging gigabit-level internet to attract new businesses and create jobs, improve health care and education, and connect residents to new opportunities. NCC is committed to celebrating these successes, demonstrating their value and helping other cities realize the full power of truly high-speed, affordable and accessible broadband.

NCC believes there is no single pathway to a smart, effective approach to next-generation broadband. What matters is meaningful choice, dedicated leadership and smart collaboration. Participating leaders and communities are committed to the following principles:

- High-Speed Internet Is Necessary Infrastructure: Fast, reliable and affordable internet—at globally competitive speeds—is no longer optional. Residents, schools, libraries and businesses require next-generation connectivity to succeed.
- The Internet Is Nonpartisan: Because the internet is an essential resource for residents and businesses in all communities, the provision of fast, reliable and affordable internet transcends partisanship. This collaboration welcomes leaders of all affiliations and beliefs who believe fast, reliable and affordable high-speed internet access is essential to secure America's internet future.
- Communities Must Enjoy Self-Determination: Broadband solutions must align with community needs—there is no perfect model that is universally appropriate. Towns and cities should have the right to consider all options—whether public, nonprofit, corporate or some other hybrid—free from interference.
- High-Speed Internet Is a Communitywide Endeavor: Building effective next-generation networks requires cooperation across communities. It is critical to involve and include multiple stakeholders and perspectives to succeed, including businesses, community organizations, residents, anchor institutions and others. Everyone in a community should be able to access the internet on reasonable terms.
- Meaningful Competition Drives Progress: A vibrant, diverse marketplace with transparency in offerings, pricings and policies will spur innovation, increase investment and lower prices. Communities, residents and businesses should have a meaningful choice in providers.
- Collaboration Benefits All: Innovative approaches to broadband deployment present diverse challenges and opportunities to communities and regions. Working together, cities can learn from the experiences of others, lower costs and make the best use of next-generation networks.
- Elevating the Conversation: Cities that have or would like to develop truly next-generation networks are visionary cities, and their leaders recognize what it takes to be competitive in the 21st century. NCC will work with these leaders and their cities to make the case nationally and within communities that next-generation internet is essential infrastructure that can deliver transformative benefits to communities today.
- Supporting Cities: Communities stepping into the 21st century through next-generation networks face myriad challenges. It is essential to provide crucial support to facilitate these innovative projects. NCC and its partners will work to assist each other in overcoming obstacles to success.
- Providing Tools for Success: Developing a next-generation network is a daunting task for a city of any size. It is important that communities have access to resources, advice and tools to develop effective broadband internet networks. NCC is committed to developing and aggregating resources to guide incipient projects, as well as tools to help those already equipped with this infrastructure better leverage their networks to yield community benefits.

Fiber to the Home Council Americas (FTTH Council)

toolkit.ftthcouncil.org

Founded in 2001, the FTTH Council is a nonprofit association consisting of companies and organizations that deliver video, internet and/or voice services over high-bandwidth, next-generation, direct fiber-optic connections, as well as companies that manufacture FTTH products and others involved in planning and building FTTH networks. The FTTH Council works to create a cohesive group to share knowledge and build industry consensus on key issues surrounding fiber to the home. Its mission is to accelerate deployment of all-fiber access networks by demonstrating how fiber-enabled applications and solutions create value for service providers and their customers, promote economic development and enhance quality of life.

United States Department of Agriculture Rural Development (USDA RD), Community Connect Grants

www.rd.usda.gov/programs-services/community-connect-grants

The Community Connect Grant program helps fund broadband deployment into rural communities where it is not yet economically viable for private-sector providers to deliver service.

Mission and history of USDA RD:

- Offers loans, grants and loan guarantees to support essential services such as housing, economic development, health care, first responder services and equipment, and water, electric and communications infrastructure to rural communities.
- Promotes economic development by supporting loans to businesses through banks, credit unions and community-managed lending pools. USDA RD offers technical assistance and information to help agricultural producers and cooperatives get started and improve the effectiveness of their operations.
- Provides technical assistance to help communities undertake community empowerment programs.
- Helps rural residents buy or rent safe, affordable housing and make health and safety repairs to their homes.
- Has a $212 billion portfolio of loans. It will administer $38 billion in loans, loan guarantees and grants through its programs in the current fiscal year.

Appendix D: Additional Resources

Census Bureau

www.census.gov

American Community Survey data on computer and internet use is available for all regions of the U.S. In addition, a collection of visualizations presents data from the Current Population Survey and American Community Survey. The infographic illustrates high-speed internet use by age, race, income and educational attainment by household. In addition, maps are provided for household high-speed internet use by state and metro area. See complete infographic here: www.census.gov/library/visualizations/2016/comm/digital_nation.html

Pew Research Center

www.pewinternet.org

Pew Research Center is a nonpartisan fact tank that informs the public about the issues, attitudes and trends shaping America and the world. It conducts public opinion polling, demographic research, content analysis and other data-driven social science research. The center does not take policy positions.

Pew Research Center generates a foundation of facts that enriches the public dialogue and supports sound decision-making. The center is nonprofit, nonpartisan and nonadvocacy, and it values independence, objectivity, accuracy, rigor, humility, transparency and innovation.

Pew Research Center studies U.S. politics and policy; journalism and media; internet, science and technology; religion and public life; Hispanic trends; global attitudes and trends; and U.S. social and demographic trends.

The center is committed to meeting the highest methodological standards and exploring the newest frontiers of research.

Universal Service Administrative Corporation

www.usac.org/default.aspx

The Universal Service Administrative Corp. (USAC) is an independent, not-for-profit corporation designated by the FCC as the administrator of universal service. The FCC established USAC in 1997 to oversee the four programs created by the 1996 Telecom Act, which includes the universal service Schools and Libraries (E-rate) program.

The E-rate program helps ensure that schools and libraries can obtain high-speed internet access and telecommunications at affordable rates. The corporation's website has a detailed E-rate section, which explains the E-rate application process in detail and provides all the necessary forms to apply. Additionally, USAC regularly hosts conferences that teach potential applicants how to apply for the program.

Notes

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