The New Mexico Broadband Program

Statewide Final Strategic Plan

Version 2, December 2014

Prepared for:

The New Mexico Broadband Program

New Mexico Department of Information Technology

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Statewide Strategic Plan

Version 2, December 2014

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Executive Summary

The New Mexico Broadband Program (NMBBP) is defining broadband availability and promoting broadband adoption statewide. One significant element of the State's overall effort is the Regional Broadband Implementation Plan (RBIP), which aims to bring affordable broadband services to currently unserved areas.

CTC Technology and Energy, an independent consulting firm, assisted the State in developing this Statewide Strategic Plan to provide actionable and strategic goals based on identified gaps in broadband availability and adoption.

The State's Broadband Program Aligns with Best Practices

The State's four-pronged approach to the NMBBP and RBIP follows best practices established in other statewide and regional efforts, and has been effective in identifying broadband availability and promoting broadband adoption:

- *Mapping:* Collecting accurate data on broadband availability is a critical foundational step for the State's broadband efforts
- *Planning:* The "New Mexico Broadband Adoption Model" positions the State to effectively engage other broadband projects an providers
- *Capacity building:* Collaborating with "use sectors" and creating appropriate information resources and tools will have a multiplier effect on the State's efforts
- *Technical assistance:* Like capacity building, developing a Digital Literacy Resource and similar efforts among use sectors are seeds that will grow over time

The State's Efforts Are Likely to Create Return on Investment

Based on what we have seen in other states, the State's existing broadband program may also lead to significant potential return on investment (ROI). In addition to the intangible benefits of broadband access (e.g., educational achievement), building capacity and technical knowledge within New Mexico is a mechanism for bringing in outside funds from programs tailored to supporting the State's broadband availability and adoption efforts. These programs include:

- *E-Rate:* Federal broadband funding for schools and libraries
- *Healthcare Connect Fund:* Federal broadband funding for rural healthcare
- *Rural Broadband Experiment:* Federal broadband funding for rural communities

The State Should Build on the Broadband Program's Success

New Mexico has taken great strides in recent years to build capacity on broadband in a number of key areas including mapping and data collection, along with providing technical support to communities, institutions, and regions.

It is critical to maintain this work and build additional expertise and capacity to enable officials and other relevant stakeholders to address broadband challenges and work to make the State a leader in broadband access and use.

To that end, this Strategic Plan makes the following policy recommendations:

- Maintain and build additional State capacity on broadband.
- Maintain and build on work done in digital inclusion and digital literacy.
- Develop training and internship programs in information technology and broadband.
- Implement an aggressive dig-once program to build up the State's fiber and conduit resources and make assets available to private partners.
- Maximize federal funding benefits for schools, libraries, and health care facilities through a coordinated approach to the federal E-rate and Healthcare Connect Fund programs.

In support of the State's efforts to act on these policy recommendations and achieve its broadband program goals, this Strategic Plan provides a benchmark analysis to other states, summarizes sector-specific strategic plans, assesses the State's regional implementation plan, analyzes the State's mapping and survey data, and offers a survey of potential outside funding sources. It concludes with case studies of existing initiatives in a range of states.

Chapter 1: Introduction

This introductory chapter includes a brief description of the strategic plan, an overview of the project's goals and stakeholders, and an outline of the process by which the strategic plan was prepared.

Background: Regional Broadband Implementation Plan

The New Mexico Broadband Program (NMBBP) is currently conducting the Regional Broadband Implementation Plan (RBIP), with the goal of bringing affordable broadband services to areas of the State in need of service. The RBIP was launched to assist local communities with strategies for connecting more New Mexicans to the Internet, particularly in rural areas, and where current broadband options are limited by low population density and income.

In the summer of 2013, the NMBBP selected two pilot regions for participation in the RBIP. The regions include the member counties in the Southwest New Mexico Council of Governments (SWNMCOG) and the North East Economic Development Organization, Inc. (NEEDO-NM):

SWNMCOG	NEEDO-NM
Catron County	Colfax County
Grant County	Guadalupe County
Hidalgo County	Harding County
Luna County	Mora County
	Quay County
	San Miguel County
	Union County

Table 1: Member counties in SWNMCOG and NEEDO-NM pilot regions

The NMBBP partnered with the University of New Mexico's Earth Data Analysis Center (EDAC) and Bureau of Business and Economic Research (BBER), as well as some of the broadband industry's leading business consultants, to develop an accurate assessment of the broadband market across the State. The NMBBP oversaw research and analysis of the availability, cost, and adoption of broadband in the pilot regions.

Throughout 2014, the NMBBP has implemented the remainder of the pilot projects, including developing a technical and business plan for increasing broadband connectivity in both regions. The RBIP goals emphasize introducing broadband to new groups of users. The consulting team is developing strategic options for achieving these goals. The pilot projects will focus on selected sites within the two regions where broadband services are unavailable. The NMBBP will oversee the solicitation of any private partners needed to help implement service strategies in this region, as well as the necessary funding mechanisms to achieve the RBIP's goals.

"The statewide plan evaluates the progress and outcomes of the regional pilot efforts to date, the mapping and data collected and analyzed at the local level, and offer lessons learned to be applied statewide."

Statewide Strategic Plan

Once fully implemented, the RBIP will serve as a launchpad for a statewide broadband plan. The NMBBP will continue to partner with EDAC, BBER, and its team of consultants to translate the lessons from the RBIP pilots into actionable goals for the entire state.

The statewide plan outlined here includes an analysis of the State's efforts and progress to date relative to strategic plans in other states and regions, and discusses differentiated strategies among key community sectors, such as healthcare, economic development, and education. (See below for an overview of the New Mexico Broadband Executive Committee and the NMBBP, which leads capacity building efforts in these sectors.)

The statewide plan evaluates the progress and outcomes of the regional pilot efforts to date, the mapping and data collected and analyzed at the local level, and offer lessons learned to be applied statewide. In the chapters that follow, we also present a survey of sector-relevant funding sources that could potentially support the strategies developed.

The NMBBP will look to ways to leverage funding sources such as the federal government's Distance Learning and Telemedicine Program, the Healthcare Connect Fund, and the E-rate program (broadband funding for schools and libraries). All of the findings made throughout the course of the RBIP and statewide analysis will inform the plan's state-level policy recommendations for how to improve access to and use of broadband in New Mexico.

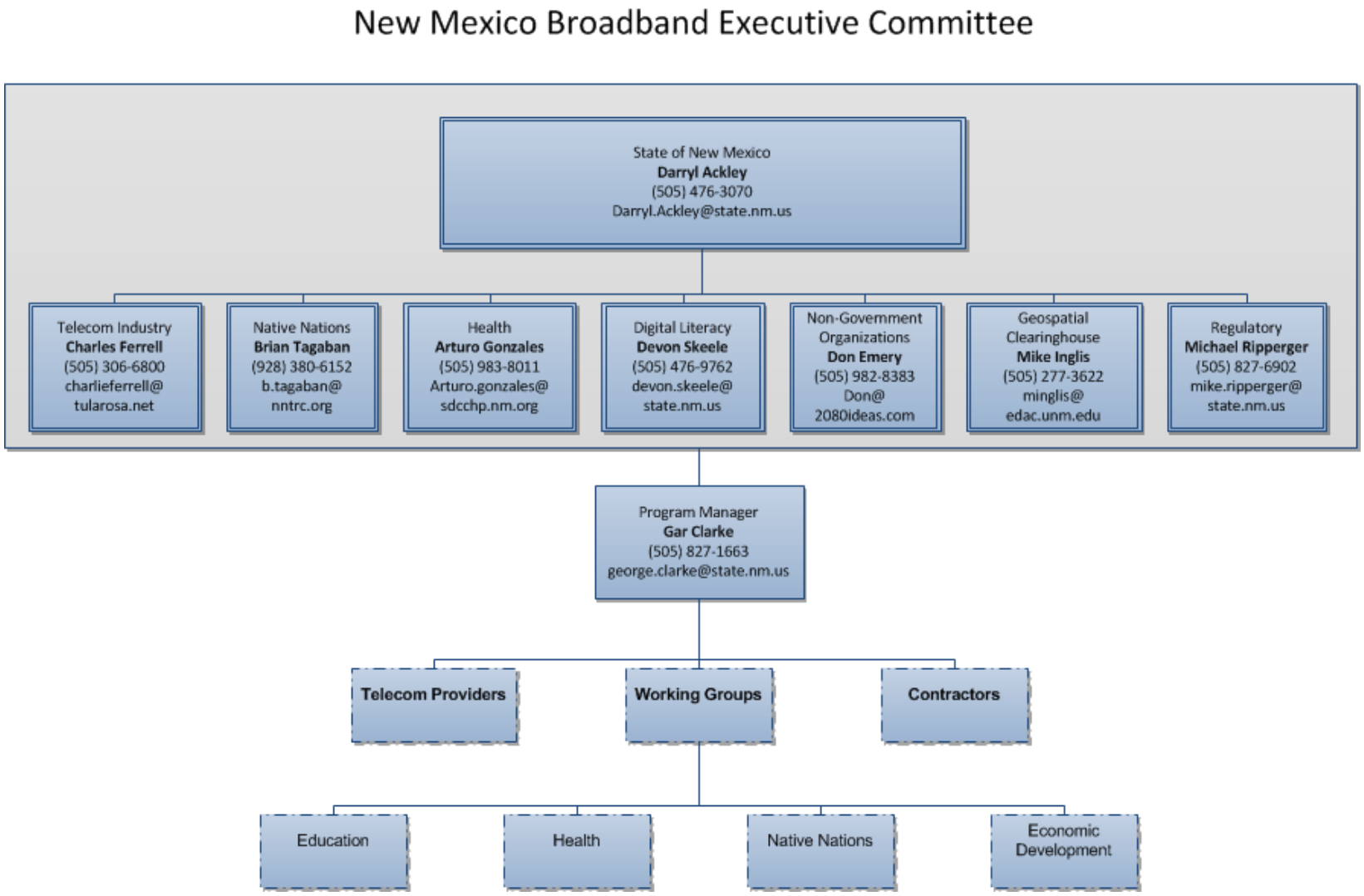


Figure 1: New Mexico Broadband Executive Committee – Communications Structure

Chapter 2: Mapping – Analysis of Data and Process

Overview

The NMBBP has done an impressive job aggregating data about broadband supply:

- Data for the New Mexico Broadband Map (NMBB Map) are collected every six months by the Earth Data Analysis Center (EDAC) at the University of New Mexico, on behalf of the State's Department of Information Technology (DoIT).
- The data, which are based on federal reporting standards, are solicited from broadband service providers across the State
- EDAC validates and processes the service providers' submissions, and updates the NMBB Map to reflect new or revised broadband availability.

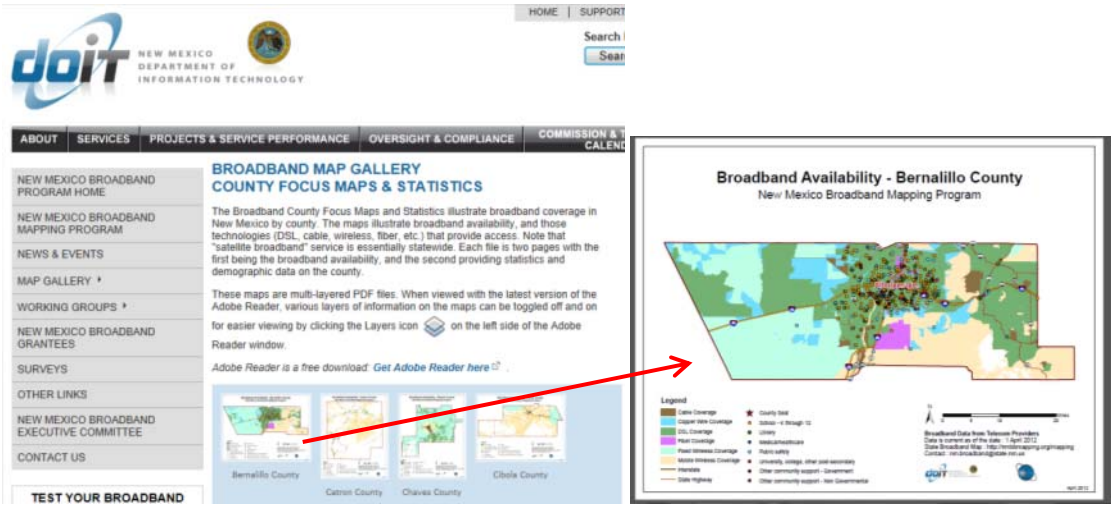


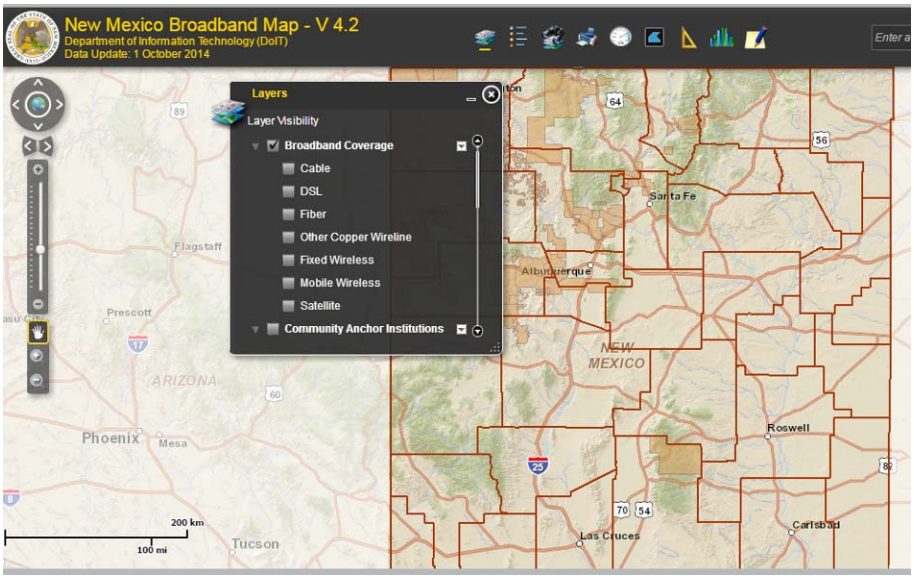
Figure 2: New Mexico Broadband Program County Maps

The goal of this chapter is to provide analysis of and lessons learned from the State's significant data collection efforts concerning broadband supply and demand (i.e. the New Mexico Broadband Program's extensive mapping and surveying processes).

This mapping process is methodical and effective (within the constraints of the federal reporting standards that govern the data collection), and the State should continue its efforts in this regard. The map is the clear starting point for any community that seeks to understand its broadband availability, so the mapping initiative directly supports the State's long-term planning, capacity building, and technical assistance efforts.

New Mexico Broadband Map

The largest project of the New Mexico Broadband Program (NM Broadband Program) was to provide a map of broadband availability for New Mexico and contribute to the development of a National Broadband Map. The New Mexico Broadband Map (NMBB Map), coordinated by the Department of Information Technology (DoIT), illustrates Internet availability by location and provides a critical platform to assess service gaps in the State.[1] Aligned with the mapping task, the NM Broadband Program also sought to analyze socio-economic factors towards broadband "adoption." The New Mexico Department of Information Technology's (DoIT) Broadband Program, along with UNM's Bureau of Business & Economic Research (BBER), conducted an in-depth survey to provide an analysis of patterns and barriers to broadband adoption in New Mexico.[2] The survey and subsequent report provided important data on the broadband adoption for New Mexicans that paralleled the findings of other national surveys.



The chapter provides a summary of each data collection effort in the State and a discussion of the relevant lessons learned.

Broadband Mapping

The New Mexico Broadband Web Map (NMBB Map) was funded by the National Telecommunication and Information Administration (NTIA) and overseen by the Department of Information of Technology (DoIT) and Earth Data Analysis Center (EDAC/UNM) was secured to provide the mapping services.[3] The NMBB map collects

[1] http://nmbbmapping.org/mapping/
[2] http://www.doit.state.nm.us/broadband/reports/NMBBP_Adoption_Report_0613.pdf
[3] Summary of the mapping effort and some components of the lessons learned are based on text from Chapter 1 of the CTC report for the New Mexico Broadband Program, "Community Broadband Master Plan Guidebook," http://www.doit.state.nm.us/broadband/reports/NM_Broadband_Guidebook_v1_1_final.pdf

data from Internet Service Providers (ISPs) every six months. The data, which are based on federal reporting standards, are solicited from broadband service providers across the State. The NMBB Program submits the validated and processed ISP data to the National Telecommunications & Information Administration (NTIA), also every six months, and the NTIA performs additional validation and processing before using New Mexico's data for the National Broadband Map. The NMBB Map is then updated to reflect new or revised broadband availability.

The NMBB Map is publicly accessible at http://nmbbmapping.org/mapping/. The public can use the NMBB Web map to:

- View existing broadband coverage in their area.
- Identify broadband providers and available technologies in their area.
- Report inaccuracies in the mapped coverage.

The maps allows the public to also search by broadband technology or multiple technology types to further discover broadband availability in a community or area of interest. It also provides a link to each listed provider's website to allow the user to find that provider's available broadband plans and pricing information.

Users can further find an address on the map and then explore the surrounding area for broadband providers and Community Anchor Institutions (CAIs), such as libraries and schools, and the broadband services available to them. A user can get further details about that building—including the entity's name and address, as well as its type of broadband technology. Though not all of these information fields are available for every CAI on the NMBB Map, community anchor institutions can easily submit information about their facilities—and, in the process, improve the NMBB Map—through the Community Anchor Site Assessment (CASA) crowdsourcing application (http://nmbbmapping.org/bbcrowd/).

Another way in which members of the public can improve the NMBB Map while doing their own research is through a broadband speed test available on the map webpage. When users run the broadband speed test, the data about their connection speeds are recorded; with enough data points, the State can better validate the speeds reported by Internet Service Providers.

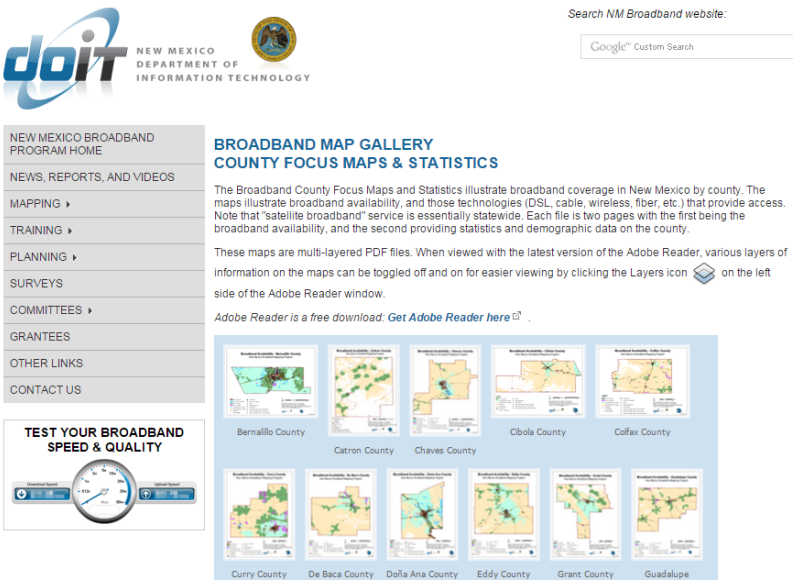


Figure 3: New Mexico Broadband Program Map Gallery

Finally, DoIT develops more targeted maps to illustrate broadband coverage in New Mexico. Following every reporting cycle, the NMBB Program aggregates the map data in state- and county-level reports that are available on the DoIT website. The NM Broadband Map Gallery: County Focus Maps & Statistics page[4] contains documents that illustrate broadband coverage in New Mexico by county. The maps portray broadband availability and those technologies (DSL, cable, wireless, fiber, etc.) that provide access. The NM Broadband Map Gallery: Statewide Maps page[5] contains documents that depict broadband availability, community anchor institutions, and demographic information for the State, in addition to other relevant information.

"The map is the clear starting point for any community that seeks to understand its broadband availability, so the mapping initiative directly supports the State's long-term planning, capacity building, and technical assistance efforts."

Lessons Learned

NMBB Map is an invaluable tool for the public to explore their local broadband supply and for

[4] Available here: http://www.doit.state.nm.us/broadband/map_county_availability.shtml
[5] Available here: http://www.doit.state.nm.us/broadband/map_statewide.shtml

policymakers to address gaps in broadband availability. However, the federal reporting standards required by NTIA that govern its data collection limit the NMBB Map in several key ways.

First, the map tracks availability only down to the Census block level—which, in rural New Mexico, can represent a large area; if any location in that block can be served, the entire block will be shown as served—even though most of the residents do not actually have access. The availability of infrastructure within a Census block does, however, offer a guide to the community in terms of what service provider might be well positioned to expand access to nearby residences or businesses.

Second, the map does not distinguish between residential broadband and connectivity that is adequate for institutions, government, and businesses. Small businesses often need higher capacity broadband than residential users. And, even if broadband is shown on the NMBB Map as available to the residential market, it may not be available to the small business market (and vice versa).

Finally, the map relies heavily on self-reporting by the commercial carriers—all of which use different methodologies to quantify their service levels. The issue was raised by DoIT and mapping team Earth Data Analysis Center (EDAC) in a report, "Broadband Availability Assessment Methodology: December 31, 2013."[6]

NMBB Map is an invaluable tool for the public to explore their local broadband supply and for policymakers to address gaps in broadband availability. However, the federal reporting standards that govern its data collection limit the NMBB Map in several key ways.

EDAC found that following the October 2013 data submittal, identified broadband availability/coverage was over-estimated in the State of New Mexico. As documented in the report, EDAC began an exploratory investigation into the issue of over-estimation to identify areas with over-estimated broadband coverage for the wire-line data: DSL, Fiber, Cable, and Other Copper Wire technologies. They identified the over-estimated broadband service areas and provided the current service area coverage on the ground for a few ISPs, based on the data availability. EDAC then developed procedures for reviewing ISP data and identifying service areas for which broadband availability has been over-estimated that included data-based procedures, increased communication with ISPs, NTIA standards and methods, and NMBB Program processes. As a result, EDAC

[6] Available here: http://www.doit.state.nm.us/broadband/reports/NMBB_Availability_Assessment_Report_Oct2013.pdf

and the NM Broadband Program's data verification standards and processes exceed the vast majority of state broadband mapping efforts throughout the U.S.

Broadband Adoption

Aligned with the mapping task, the NMBBP also sought to analyze socio-economic factors towards broadband "adoption."[7] The New Mexico Department of Information Technology's (DoIT) Broadband Program contracted UNM's Bureau of Business & Economic Research (BBER) to provide an analysis of patterns and barriers to broadband adoption in New Mexico. An extensive survey was completed in 2012 and a subsequent report released in 2013, "Broadband Subscription and Internet Use in New Mexico," (Broadband Subscription Report).

The report was based on a survey of 1,000 households across New Mexico. The survey, conducted in December 2012, was carefully designed survey and based on a comprehensive literature review that evaluated broadband studies completed to date as well as comparable survey products. It asked questions pertaining to home Internet access and Internet technologies; barriers to home access; patterns of Internet use both in the home and outside the home; digital literacy and access to resources to enhance digital literacy. The survey also collected a wide range of socioeconomic and demographic information, including geographical location, from the survey participants.

The survey data also was conducted with the "hard quota" constraints to ensure that the data gathered was relevant to the population at risk for not having broadband at home. In addition, several procedures were carried out to improve the quality of the survey data. Data records were weighted to align the distribution of incomes among survey respondents with the U.S. Census' statewide estimates and household income data was restored for one-third of the records through several statistical methods.

Lessons Learned

The survey provided critical data on the broadband adoption for New Mexicans that in many respects paralleled the findings of other national surveys. There were four principal findings documented in the Broadband Subscription Report based on an analysis of the survey data.

[7] The section is a summary of subject matter covered in the New Mexico Broadband Program report, "Broadband Subscription and Internet Use in New Mexico," http://www.doit.state.nm.us/broadband/reports/NMBBP_Adoption_Report_0613.pdf

First, New Mexico currently lags behind the nation in broadband subscription and Internet adoption. According to the Census Bureau's 2011 Current Population Survey (CPS) of Internet use, 72 percent of US households have access to the Internet at home and 69 percent have high-speed broadband access. By comparison, the New Mexico survey data found that 72 percent of New Mexicans have Internet access of some kind and only 55 percent of New Mexicans have a high-speed broadband connection at home. The results were comparable to a smaller sample of New Mexicans in the 2011 Census Bureau survey, where just 60 percent of households in New Mexico were found to have home access to the Internet, and 57 percent with broadband access. The higher estimate of home Internet access from the New Mexico survey is likely explained by mobile wireless devices that are coupled with data plans. According to the New Mexico survey, 11 percent of New Mexican households use such device exclusively to access the Internet.

Second, the characteristics of the digital divide in New Mexico are similar to those found by numerous surveys and studies, including annual surveys of Internet use and home broadband adoption by the Census Bureau and the Pew Internet & American Life surveys. In New Mexico and throughout the U.S, households with higher incomes, higher levels of education, and individuals either working or studying full time are more likely to have home Internet access, including a broadband connection. Young and early middle age adults are also more likely to have home Internet access than older persons. Similarly households with children are more likely, so long as they have an adequate income. Households in more urbanized areas are also more likely to subscribe to high-speed Internet service than those in rural areas.

New Mexico currently lags behind the nation in broadband subscription and Internet adoption. The digital divide and non-adoption of Internet are not just explained by economic and demographic characteristics

Third, the digital divide and non-adoption of Internet are not just explained by economic and demographic characteristics. More specifically, that Internet adoption requires more than access and an ability to pay. As the New Mexico survey found, about two-thirds of the State's adult population are online and engaged while the other third are almost completely disengaged from the digital world. Though these disparities in online engagement may follow typical socioeconomic and demographic patterns, including digital literacy gaps, for many not online, the Internet currently has little perceived value to their lives.

Households on tribal lands face unique challenges with respect to Internet adoption at home and the burden those limitations place on their lives are greater.

Finally, households on tribal lands face unique challenges with respect to Internet adoption at home and the burden those limitations place on their lives are greater. While there are differences in rates of broadband subscription and Internet adoption in urban and rural areas, these differences are more pronounced for tribal areas. Holding constant socioeconomic characteristics, residents of tribal areas are as interested in Internet adoption as other populations in the State, but are least likely to have adopted home Internet. In addition, residents of tribal areas are more ready than other communities to seek out substitutive solutions to home Internet access, such as libraries and other public access centers.

Chapter 3: Planning – Sector-Specific Strategic Plans

The NMBP is integrating into the broader statewide strategy the sector-specific assessments from the New Mexico Broadband Program report, "Broadband Assessment and Recommendations: Education, Healthcare, and Economic Development," ('Broadband Assessment Report'), published in November 2013.[8] This chapter summarizes the analysis in that report.

Among the objectives of the Broadband Assessment Report was to identify current and emerging broadband and technology requirements and barriers to meeting those requirements in education, healthcare, and economic development. The report was informed by a statewide survey and targeted the following institutions and organizations:

1. **Education**: public schools, colleges, and universities;
2. **Health**: Hospitals, clinics, and other healthcare providers;
3. **Economic development**: chambers of commerce, Main Street programs, economic development organizations, regional governmental councils, and rural electric cooperatives.

The report authors also conducted follow-up interviews with people working in all three sectors including school administrators, teachers, and school board members, healthcare professionals, and economic development representatives. The report was further informed by a statewide working group, comprised of experts in education, healthcare, economic development, tribal needs, and broadband deployment.

Overall the report found significant broadband challenges in New Mexico for the education and healthcare sectors, and for economic development. The predominant challenge for all of these sectors is access to higher capacity broadband to keep up with current technological requirements in education and healthcare and to attract and retain businesses to promote economic development. Though institutions and businesses contend with broadband availability limitations throughout the State, the problem is more pronounced in rural areas, where even minimum levels of broadband service may not be available. The education sector also finds it difficult to find qualified professional to fill technical positions to maintain and run network equipment and services.

[8] http://www.doit.state.nm.us/broadband/reports/NMBBP_Report_Assess_Recommendations.pdf

Below we provide more in-depth summaries of the findings of the Broadband Assessment Report.

Education

According to the Broadband Assessment Report, technological needs for the education sector are rapidly increasing. For example, to help the nation's schools meet the technological and education needs of today's student, a technology plan from the U.S. Office of Educational Technology included the following recommendations:

- Classrooms must create much more personalized, engaging, and interesting learning environments.
- Educational systems must harness the power of technology to effectively use measurement and data, including better assessments.
- Increasingly, teachers must have high levels of technical skills to be successful.
- Broadband must be available universally, with all students having electronic devices at school.

In general, the State's schools are making progress, but are not yet capable of meeting standards such as the above recommendations. Though Internet access among schools is nearly universal, the quality of the Internet connection varies significantly by location. There are also other challenges with respect the quality of connectivity and equipment within facilities as well as sufficient technical expertise among school staff.

The most prevalent gaps throughout the State are:

- Adequate bandwidth, both to the backbone and between school district facilities;
- Wired and wireless delivery within school facilities, especially older buildings;
- Inadequate technical support at the school district level and lack the experience to formulate a sound technology plan.

Most schools districts currently have an adequate level of bandwidth to meet current needs, but not enough to handle future requirements. A significant challenge for many schools is the recently adopted Common Core State Standard that includes an online assessment, known as the Assessment of Readiness for College and Careers (PARCC). As of November 2013, only an estimated 60 percent of districts meet the technical network requirements of the Common Core curriculum and the online assessment.

The biggest challenge is for rural schools, where costs for service can be significantly higher compared to urban ones. This is compounded by the fact that the federal E-rate

program only subsidizes part of the cost of Internet access and related telecommunication services for a number of districts. In some cases, the district also may not have the level of expertise to secure the maximum subsidy from the E-rate program. Furthermore, service providers are often unwilling to invest in many rural areas due to low population and take rates, meaning in some cases Internet services with sufficient bandwidth to meet the PARCC requirements may be unavailable.

There are also significant challenges with outdated end-user equipment in many of the State's schools. Many districts do not have network equipment to handle the higher bandwidths required by PARCC and the emerging digital learning environment. E-rate currently makes it difficult to apply for and receive updated equipment in a timely manner. Schools are also often relying on older end-user equipment (computers, tablets, terminals, etc.), districts, and have only managed to extend the life of these devices through operating system upgrades. However, the NM Public Education Department estimates that for the first year of PARCC testing, approximately 7,000 new computers will be needed in schools. For the second year, once Windows XP machines are no longer allowed, approximately 30,000 machines will be needed.

Finally, there is a shortage of qualified technical support personnel for school districts across the State. Here again, the greatest need is for more qualified personnel is in rural schools.

Actionable Goals for the Statewide Strategic Plan

"Though Internet access among schools is nearly universal, the quality of the Internet connection varies significantly by location"

The above assessment underscores there are significant gaps in broadband availability and access to meet the current and future needs of the State's education sector. As part of the Statewide Strategic Plan, the State should consider the following actionable goals to address these gaps:

- Increase availability of higher-capacity broadband to schools, particularly in rural areas;
- Provide greater technical and other support to school districts to maximize funding from the federal E-rate program;
- Increase the number of qualified personnel to fill technical positions at school districts.

Healthcare

Households on tribal lands face unique challenges with respect to Internet adoption at home and the burden those limitations place on their lives are greater.

Healthcare providers and the public will increasingly need to utilize healthcare services provided online. Many of these services, including telehealth and health information technologies will require robust connectivity. For example, the adoption and expansion of a health information exchange (HIE) to consolidate a patient's health record from a variety of healthcare organizations and facilitate collaboration across those providers, will require all healthcare organizations to be connected. In addition, applications using PCs, tablets, or smartphones, may facilitate greater access to healthcare services by the residents of the State, but still require adequate, affordable, broadband Internet and mobile services to be widely available to the public.

The challenges of healthcare providers are very similar to those faced by educational institutions. There are barriers to reliable, high-speed broadband, and up-to-date wiring and equipment in facilities. In particular, providers need higher bandwidth connectivity for telehealth applications that utilize videoconferencing among doctors, uploading digitized x-rays, or sharing MRI results online. Furthermore, network redundancy is essential for many of these institutions given their role in public health and emergency response. Healthcare providers are also in need of end user equipment capable of complying with telehealth or health information exchange requirements.

According to the Broadband Assessment Report, most healthcare providers appear to be operating with a minimum level of bandwidth needed for their hospitals or clinics. Applications that transfer larger data files among institutions and video conferencing often require up to 100 megabits per second (Mbps) symmetric connections. Though certain locations in the State may have adequate capacity to the Internet backbone; the "last mile" or local connectivity between hospitals and clinics has major gaps. Even if higher bandwidth connectivity is available, financial cost is a large barrier to utilizing telehealth services. Government funding sources exist to help some facilities cover these costs, but most survey respondents were unaware of them. In addition, programs like the Universal Service Fund Rural Healthcare Program or the Healthcare Connect Fund cover only a portion of

There are significant gaps in broadband availability and access to meet the current and future needs of the state's healthcare sector.

costs and many healthcare providers have difficulty paying the rest.

Reimbursement for healthcare services provided via telemedicine could help institutions overcome the financial barriers. In 2013, Senate Bill 69 became law, requiring commercial healthcare to cover telehealth services and that payment rates be consistent with rates paid for in-person consultation. These and other reforms could make telehealth services more cost-effective. In addition, the State could benefit from increasing telehealth coordination to the creation of an organization – perhaps the existing Telehealth Alliance.

Actionable Goals for the Statewide Strategic Plan

The above assessment underscores that there are significant gaps in broadband availability and access to meet the current and future needs of the State's healthcare sector.

As part of the Statewide Strategic Plan, the State should consider the following actionable goals to address these gaps:

- Increase availability of higher-capacity broadband to hospitals; particularly last-mile connections and overall infrastructure in rural areas;
- Increase telehealth coordination to improve clinical and technical coordination, broadband connectivity, health information technology, and administrative services;
- Provide greater assistance to healthcare institutions to maximize funding from federal government sources including the Universal Service Fund's Healthcare Connect Program.

Economic Development

Broadband is essential in promoting New Mexico's economic commerce, potentially creating jobs and new industries, and improving those businesses' access to local, regional, national, and international markets. State businesses use broadband for a number of customer-driven and business-to-business applications. Broadband is also critical to attracting out-of-state employers to New Mexico, and independent contractors, consultants, and other professionals that typically work from home.

According to the Broadband Assessment report, there are a number of barriers to meeting the full broadband needs of New Mexico's current and future economy. Many of the economic development survey respondents reported that Internet service in their

area is inadequate to meet current business needs, with lack of infrastructure being the top-cited cause. Many parts of New Mexico are not meeting even the current minimum definition of broadband of 4 Mbps download and 1 Mbps upload set by the Federal Communications Commission. Some national surveys consider the availability of broadband of at least 100 to 120 Mbps, or as high as 1 Gbps, necessary to attract businesses.

"The State's rural areas are particularly at a disadvantage in sustaining or attracting businesses given their limited broadband access"

Furthermore, there are significant connectivity differences even within urban counties. Respondents in Albuquerque, Farmington, Santa Fe, and Las Cruces emphasized that service was considerably slower in the large rural areas outside the central core of the cities. In addition, when asked about future broadband needs, only a minority of the economic development organizations surveyed, believed broadband service in their community would be adequate in the near future. Over a third of respondents said it would not be adequate.

These broadband service limitations may be affecting job growth. Over a fourth of the survey respondents reported they had missed out on a business relocation or expansion due to inadequate broadband. Another 40 percent were unsure, possibly indicating that the missed opportunities rate could be much higher. One city official interviewed cited the loss of both a call center and a data center because of inadequate service. Another city lost a key employer to a different New Mexico town because it could provide similar broadband at a lower cost.

The State's rural areas are particularly at a disadvantage in sustaining or attracting businesses given their limited broadband access. It is costly for private providers to deploy fiber or other broadband infrastructure given the physically rough and mountainous terrain over long distances. In addition, low population density mean that in some areas it is estimated there may be a single customer per mile of cable laid on average. One service estimate for eastern New Mexico is $300 million for fiber to begin to serve a 25,000 sq. mile area. That leaves wireless as a possible alternative, but such service is

The State's rural areas are particularly at a disadvantage in sustaining or attracting businesses given their limited broadband access.

considered slower and less reliable than fiber or other wired technologies.

Infrastructure investment is also harder to recoup in rural areas, meaning customer fees are often set higher in order to recover the substantial upfront costs. Businesses outside the metropolitan statistical areas are also generally small with the vast majority having less than 10 employees. These smaller companies are less able to pay high fees, further decreasing the revenue to support a significant investment by private providers. Finally, many rural areas do not have the organizations or individuals who can tirelessly pursue the broadband needs of the community or region organizations and often lack the expertise or time to apply for government grants to support the development of broadband infrastructure.

Actionable Goals for the Statewide Strategic Plan

The above assessment underscores there are significant gaps in broadband availability and access to meet the current and future economic development needs of the State.

As part of the Statewide Strategic Plan, the State should consider the following actionable goals to address these gaps:

- Increase the availability of broadband for businesses in rural areas and increase the development of 100 Mbps+ broadband throughout to the State to retain and attract businesses;
- Reduce the cost of deployment of fiber and other broadband infrastructure in rural and other geographically difficult to serve areas;
- Support coordination and planning activities in rural areas to increase the capacity of organizations and community leaders to address their broadband needs.

Chapter 4: Planning – Regional Implementation Plans

Overview

The goal of this chapter is to integrate into the broader statewide strategy the Regional Broadband Implementations Pilots. The chapter will evaluate the efforts, progress, and outcomes and will offer lessons learned and models going forward for future state efforts.

The New Mexico Broadband Program solicited a report to provide a working framework towards the collaborative planning, design, and implementation of Broadband Infrastructure within regional areas of New Mexico. The report, "New Mexico Regional Broadband Implementation Plan Framework,"[9] proposed a model for a Regional Broadband Implementation Plan (RBIP) for New Mexico based on a project of the Colorado Office of Information Technology (OIT), the Colorado Broadband Data and Development Program. The RBIP would be a targeted effort to bring regional stakeholders, providers, and the State together to facilitate the expansion and promotion of broadband use in unserved areas of New Mexico.

The Southwest New Mexico Council of Governments (SWNMCOG) and the Northeast Economic Development Organization (NEEDO-NM) were selected as pilot regions.

The report proposed the following goals for a similar Regional Implementation Plan in New Mexico:

- To enable up to six pilot regions to take multiple steps to develop and implement their connectivity and adoption plans.
- To demonstrate how the regional planning and implementation process can work over time as a model for future programs.
- To inform the development of a state-wide strategic plan for broadband deployment and public- private partnerships throughout New Mexico.

[9] http://www.doit.state.nm.us/broadband/reports/ober_RBIP_rpt_final_v2.pdf. The section summarizes subject matter covered in the report.

Regional Broadband Implementation Pilots

The RBIP was later revised to focus on implementing two regional broadband implementation pilots. The Southwest New Mexico Council of Governments (SWNMCOG) and the Northeast Economic Development Organization (NEEDO-NM) were selected as pilot regions with the goal of providing technical assistance and helping the regions to achieve a solid framework for broadband planning, funding, and technology.

The SWNMCOG comprises Catron, Grant, Hidalgo, and Luna counties in southwestern New Mexico. The region is served by several separate telephone and electric companies and cooperatives that overlap in their coverage areas and own varying amounts of broadband infrastructure. Numerous obstacles to broadband deployment and adoption exist in the SWNMCOG region for both the community anchor institution (CAI) sector and the residential market. NEEDO-NM comprises Colfax, Guadalupe, Harding, Mora, Quay, San Miguel, and Union counties in northeastern New Mexico. The region is served by several separate telephone and electric companies and cooperatives that overlap in their coverage areas and own varying amounts of broadband infrastructure.

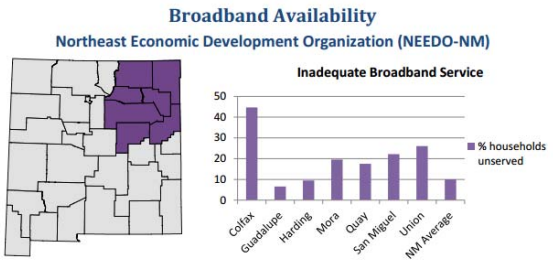


Figure 4: Broadband Availability in NEEDO-NM Region

Both regions are characterized by low population density and difficult economic conditions. There is a complete lack of broadband infrastructure in many of the regions remote areas. However, even where service is available, many families are not making use of broadband—either because they cannot afford service, they do not know how to use it, or they do not understand what broadband can do for them. Lack of demand, therefore, is a major obstacle to further broadband use in the regions.

Activities

In each pilot region, the New Mexico Broadband Program's (NM Broadband Program) solicited CTC Technology & Energy (CTC) region to do the following:

1. Develop a planning model for each region;
2. Analyze pilot area broadband supply and demand;
3. Create suggested pilot area technology, strategic and business plans;
4. Identification of partners, assist with partner negotiations and funding mechanisms.

Key to the above activities was the organization of local Implementation teams and discussion made up of members with experience in telecommunications, community leaders, broadband users and local service providers.

To both raise awareness and engage community members in the region, the CTC conducted outreach in communities including press interviews, presentations to county commissioners and council of government boards. They also facilitated local group interviews focused on key broadband users such as healthcare institutions.

CTC further developed a business plan aimed at promoting broadband service through educational efforts and increased community-based access to digital resources. The focus of the approach was to use educational and recommend training resources to expand the user base for broadband services throughout the region, leading to a greater demand for residential broadband service in the long run.

The plan sought to provide unserved communities with the tools and knowledge they need to become customers of existing carrier networks over the long term, while developing a strategy for increasing the communities' knowledge of broadband and its benefits, as well as their ability to use devices and connectivity during the short term.

In the SWNMCOG and NEEDO-NM regions, along with the additional region of NW Council of Governments (NWCOG), CTC in conjunction with Cirrus Consulting, an expert on digital literacy training and programs, has performed significant outreach to engage communities in the region around digital literacy.

The focus is on facilitating the development of digital literacy programs that broaden training beyond basic use of the Internet to include developing skills that enable users to navigate the digital world in the following sectors:

- Education opportunities
- Government services
- Employment opportunities
- Business skills and economic development
- Access to information – emergency and health
- Security and safety

Thus the goal is to teach practical skills such how to search for employment, complete an online application, and follow-up about the application. Without these types of skills, individuals will lack access to critical services and opportunities that can increasingly translate into a diminishing socioeconomic status and quality of life. These in turn become reasons for people to leave their communities and their state, leading to further decline in the economic development vital to a region.

CTC worked with SWNMCOG and NEEDO-NM to release a request for Information (RFI) to optimize the pilot initiative by incorporating the knowledge, needs, and creative ideas of the local telecommunications industry.

Cirrus Consulting has focused on bringing the digital literacy value proposition to communities in the regions. It has worked with council of governments throughout the regions to increase awareness of digital literacy; evaluate current community resources in digital literacy and local needs, and provide recommendations; and highlight existing training resources. In communities that express additional interest and motivation, Cirrus Consulting also provides an assessment and recommendations for more focused and targeted outreach on digital literacy initiatives and recommendations for program development.

In addition, CTC worked with the SWNMCOG and NEEDO-NM to release a request for Information (RFI). The purpose of the RFI was to optimize the pilot initiative by incorporating the knowledge, needs, and creative ideas of the local telecommunications industry. Information was solicited to assist the regions in defining the locations of the programming, any relevant network strategy, the content of educational and promotional materials, and the relationship between the regions and providers. In addition, the RFI sought providers interested in partnering with the regions and other partners at New Mexico Department of Information Technology to determine what services and locations could be collaboratively developed.

Outcomes

The pilots were successful at significantly increasing engagement on broadband access and use in the regions. The SWNMCOG formed a technology group that included schools, health providers, small businesses, government agencies, and service providers and held bi-monthly meetings. The meetings served as a vehicle to foster engagement at all point in the local broadband system and have already resulted in improving service to several of the regions public school. With the assistance of CTC, NEEDO-NM held five regional meetings that included interested citizens, schools, health providers, small businesses, government agencies to discuss broadband.

The digital literacy activities have also yielded several positive outcomes. In the SWNMCOG region, several local councils of governments have been supportive. In Silver City, work is underway to coordinate and centralize digital literacy information to make resources more accessible to the public, develop assessments for the existing training programs, and increase the capacity of existing literacy trainers through a train-the-trainers model. Columbus is interested in creating a digital literacy training initiative as a way to address economic poverty and bring the community closer together.

The pilots were successful at significantly increasing engagement on broadband access and use in the regions. The digital literacy activities have also yielded several positive outcomes.

NEEDO-NM is working to create a communication team to assess the regions digital literacy needs and develop targeted recommendations. There is interest in developing a pilot training project in Clayton that will leverage existing resources in the community, including the an existing literacy trainer and facility, the public library, and a media service company that can assist with public outreach. Work is also progressing in the NWCOG to develop specific and target recommendations for the region and next steps for digital literacy.

In addition, the RFIs received responses from each of the regions key telecommunication service providers, Western New Mexico Telephone Company, Inc. (WNMT) for SWNMCOG, and Plateau Telecommunications for NEEDO-NM. Both service provides are now engaging and cooperating with the project. Both have expressed interest in working together with local officials and institutions on digital literacy in the pilot areas. Another outcome of the RFI is the interest of Plateau Telecommunication and WNMT in applying for new funding from the Federal Communications Commission to expand broadband service into unserved areas in the SWNMCOG and NEEDO-NM regions. CTC is continuing discussion with both providers on the potential to apply for support from the Federal Communications Commission's (FCC) Rural Broadband Experiments Program.

Lessons Learned

The positive outcomes of the RBIP pilots underscore the importance of facilitating engagement in local communities to develop local capacity to address their broadband needs. As the State considers how to incorporate the RBIP pilots into its long-term broadband strategy, CTC makes the two key recommendations based on its experience working with SWNMCOG and NEEDO-NM regions:

CTC in conjunction with Cirrus Consulting, an expert on digital literacy training and programs, has performed significant outreach to engage communities in the region around digital literacy.

Support coordination and planning in regions to encourage the development of local solutions

The RBIP played a critical role in facilitating coordination and planning among various stakeholders and policymakers around broadband availability and adoption. Such discussions are critical to developing opportunities for collaboration in the communities among government leaders, citizens, institutions, and service providers. Many of regions of New Mexico lack the capacity to more deeply engage on planning and coordination activities. The State should continue to support these discussions and provide both informational support (i.e., mapping data and related information) along with substantial technical support to aid communities in developing local solutions to address their broadband needs.

Support digital literacy efforts to increase demand and foster sustainable infrastructure

Digital literacy efforts have been very well received in the pilot areas, including by the regions telecommunications service providers. These efforts are critical to not only increase digital literacy for citizens, but to also create a stronger market for broadband and related services in underserved and unserved areas that in turn, may give providers more confidence that there will be sufficient demand to match their investment in broadband infrastructure.

There are several digital literacy challenges that are consistent across the communities in the pilot areas. First, there is often a lack of coordination around existing community resources in training (i.e. equipment, facilities, knowledge base). Second, many communities lack dedicated funding to pay training staff or have no dedicated staff positions. Finally, even in communities without the prior two challenges, they may not

have to ability to create enough outreach and awareness to ensure a training program is well utilized by the public.

Thus many communities around the State would benefit from a sustained effort to facilitate engagement among civic leaders and institutions around digital literacy training. In addition, they would benefit from access to expert consultation to provide them with a scaffolding of the process to organize and develop digital literacy, including sharing training resources and best practices. Finally, the State could directly fund or assist with finding other funding (i.e. grants) to support dedicated digital life.

Chapter 5: Capacity Building – Overview and Benchmark Analysis to Other U.S. States

Overview

The State's capacity-building efforts include forming Working Groups that represent various "use sectors" (Business, Education, TeleHealth, Native Nations, etc.). Beyond the benefits of engagement on broadband issues among these key constituencies, the Working Groups help the State to identify gaps, clarify issues, and develop action items that may lead to sustainable solutions for the issues of broadband supply and adoption.

As a benchmark analysis to other states and programs indicates, the State's capacity building efforts align with initiatives that have been proven in other settings.

New Mexico's development of crowdsourcing technology also points to innovation in the NMBBP's approach to gathering and updating its data. For example, where gaps exist in the NMBB Map, community anchor institutions can easily submit information about their facilities—and, in the process, improve the NMBB Map—through the Community Anchor Site Assessment (CASA) crowdsourcing application (see Figure 5).

New Mexico's development of crowdsourcing technology also points to innovation in the NMBBP's approach to gathering and updating its data.

The CASA application,[10] which appears and functions very much like the NMBB Map itself, solicits information about institutions that already appear on the map, as well as about new institutions.

[10] http://nmbbmapping.org/bbcrowd/

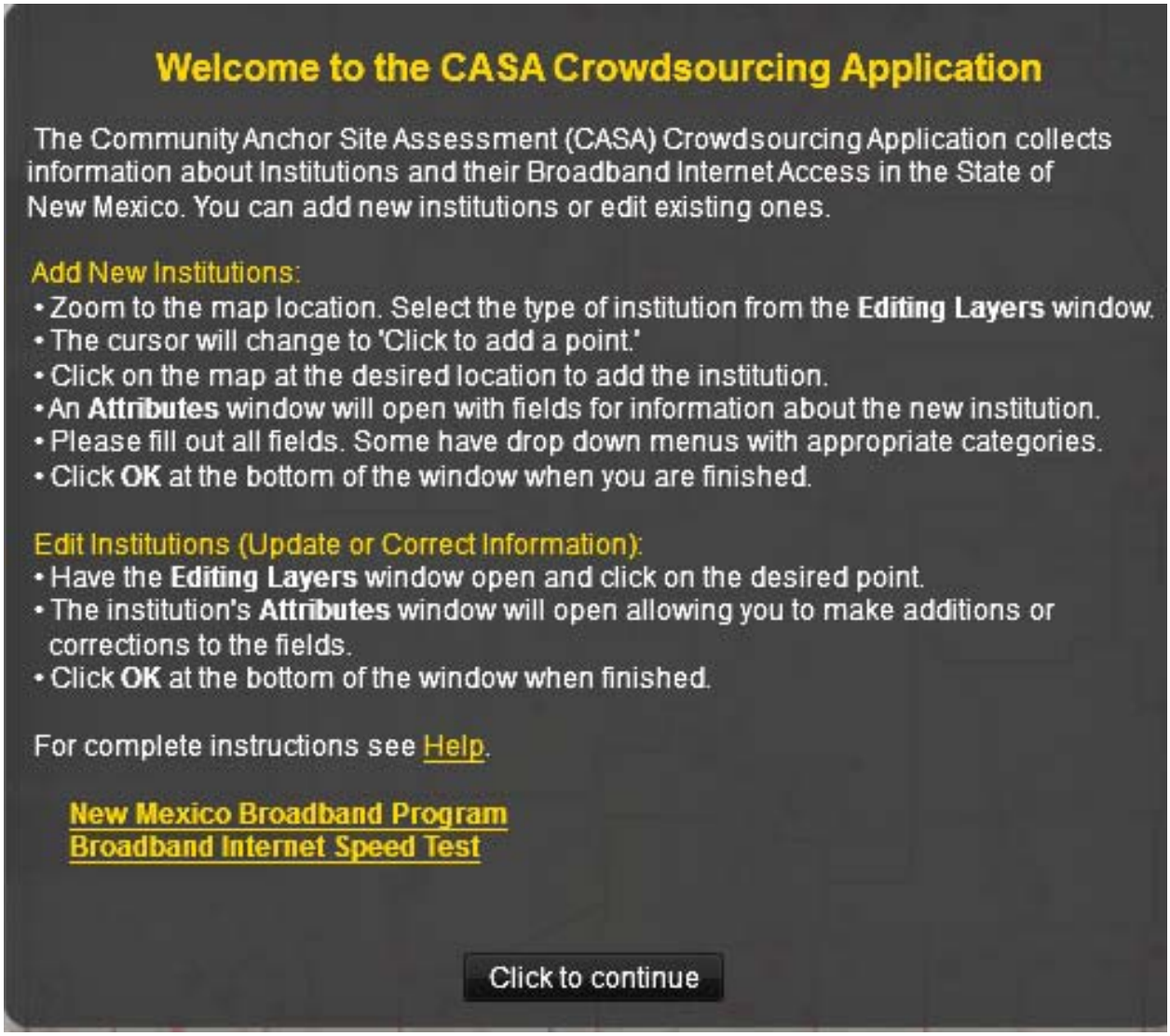


Figure 5: New Mexico Broadband Map – Community Anchor Site Assessment (CASA)

This chapter includes a brief synopsis of relevant programs implemented in three other states—California, New York, and Illinois—as a means to recommending a set of best practices for creation of a competitive grant program to support rural broadband deployment in New Mexico. The analysis in this chapter is based on CTC's experience and observations of capacity-building efforts in other states as innovative broadband programs have been pioneered and reviewed.

Recommendations for Structure of Program

There exist a range of considerations for developing a government initiative to support broadband in unserved or underserved rural areas. What type of support should be offered: grants or loans? What types of funding should be provided: one-time capital

costs or recurring operating costs? How should the funds be awarded: through a competitive process or sole-source? And if the process is competitive, what are the criteria for judging applications?

Below, we suggest – based on our observations of best practices to date – a general structure for a program that utilizes matching grants to support entities deploying broadband into unserved and underserved rural areas. In addition, based on success in other state programs, we further recommend an open competitive process to judge applicants.

Best Practice: Focus the program on matching grants for capital investment

In choosing between loans and grants, we recommend utilizing a grant program. A loan program is considerably more difficult to implement than a grant program. In addition, many existing broadband service providers already have access to loans, whether through the private marketplace or the federal government loan program run by the U.S. Department of Agriculture's Rural Utilities Service (RUS). More importantly, many projects seeking to serve high-cost and currently unserved or underserved rural areas are unlikely to qualify financially for a loan, given both the higher capital constructions costs and the longer break-even point.

In choosing between loans and grants, we recommend utilizing a grant program. A loan program is considerably more difficult to implement than a grant program…many existing broadband service providers already have access to loans…"

We further recommend a matching grant program that focuses on one-time support for capital construction. Though in an ideal world, state government funding could cover all the upfront constructions costs of a project as well as potentially subsidize annual operating costs, state funding for broadband is limited. Matching grants are a way to increase the impact of limited funding by spreading it over more projects and more areas. It also can help to sort out riskier projects and entities by requiring applicants to contribute their own funds or secure additional funding from other sources.

In addition, there are existing federal programs focused on supporting operating costs for rural broadband providers, but no current federal programs that offer grant money for building infrastructure to provide broadband in unserved or underserved areas. Thus, a state grant program could fill in gaps and support innovative projects that might otherwise go unfunded.

Best Practice: Establish a competitive application process

Other successful state initiatives have demonstrated the value of using an open, competitive application process to select awardees. Eligibility to apply for the grants should be as open as possible to encourage a wide spectrum of providers, technologies, and business models – as well as regional collaboration and innovative partnerships (including public-private partnerships). If there is a need to establish certain eligibility or certification requirements for the program (such as Eligible Telecommunication Carrier status), we recommend requiring applicants to comply with such requirements as a condition of a grant award rather than a requirement to apply for the grant funding. Again, this will encourage innovation in partnering and business models.

"Eligibility to apply for the grants should be as open as possible to encourage a wide spectrum of providers, technologies, and business models – as well as regional collaboration and innovative partnerships (including public-private partnerships)."

Best Practice: Establish a series of criteria that encourage partnering, cost-effectiveness, sustainability, and scalability

In addition, we recommend establishing a specific set of criteria for judging applicants in a competitive process. The following is a series of considerations for establishment of those criteria, based on successful efforts in other states.

- **Cost-effectiveness:** This criterion is essential in order to increase the impact of limited funds and ensure that awardees are efficient and capable. There are various ways to determine cost-effectiveness. One method is to rank competing applications based on the lowest cost per location (home or business served). This method is being utilized by the Federal Communications Commission as part of a new initiative, the Rural Broadband Experiment program,[11] which seeks to more competitively award operating support for broadband providers seeking to serve high-cost rural areas. (Note: we do not advise using cost-effectiveness as the only criteria for awarding grants.)
- **Performance Standards:** At minimum, we recommend the program should establish baseline broadband performance requirements for all projects equal to the FCC's current minimum broadband standard (that standard is currently 4

[11] http://www.fcc.gov/document/rural-broadband-experiments-order

Mbps downstream and 1 Mbps upstream, but the FCC is currently considering raising the standard). Projects may also be ranked higher on the basis of exceeding the minimum performance standards or for their potential to scale to higher performance through modest upgrades to the grant funded network.

- **Existing Service Levels:** Funds should be targeted toward areas with limited infrastructure and insufficient broadband service levels. As with performance standards, the FCC's current minimum definition for broadband can serve as a metric for determining sufficiency of existing services. The New Mexico Broadband Program's mapping data will prove an invaluable resource in determining what areas should be targeted and prioritized.
- **Need in the Relevant Service Area:** Given the limited amount of grant funding available currently for broadband deployment in unserved or underserved areas, we recommend establishing some priority for projects that seek to serve areas of highest need. This criterion can be measured by the cost to serve the area and by socio-economic factors such as income.
- **Sustainability:** With a focus on funding upfront capital construction costs, it's important to fund projects that will be sustained beyond the funding period. We recommend that applicants be expected to convincingly demonstrate the ability to sustain the network without additional support from the State.
- **Community Buy-In:** Projects that have more community support are more likely to be successful. We recommend encouraging applicants to develop projects with meaningful "linkages" to community organizations and local and tribal governments in the project area. In particular, projects that address community anchor institutions and small business concerns, in addition to residential service, could receive special consideration.

Case Studies: Relevant State Programs

Below we provide a synopsis of relevant state programs that, in our experience, have been most successful and innovative.

California

California Advanced Services Fund: CASF offers both grants and loans to assist in the building and/or upgrading of broadband infrastructure in areas that are not served or are underserved by existing broadband provider.[12] The grants program subsidizes up to

[12] www.cpuc.ca.gov/PUC/Telco/Information+for+providing+service/CASF/CASFGrantLoan.htm

70 percent of construction costs for projects in unserved areas and up to 60 percent of construction costs for projects in underserved areas. The Revolving Loan Program provides supplemental financing for projects also applying for grant funding. As of the end 2013, the fund has authorized a total of $80 million in grants for projects that will serve up to 278,119 households when completed.

CASF funding is available to entities with a Certificate of Public Convenience and Necessity (CPCN) that qualify as a "telephone corporation" or wireless carriers who are registered with the Commission. CASF funding is also available to non-telephone corporations which are facilities-based broadband service providers as defined by the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce. Non-telephone corporations must provide last-mile broadband access to households that are unserved by an existing facilities-based provider and only receive funding to provide access to households that are unserved or underserved.

New York

Connect NY Broadband Grant Program: "Connect NY" was created in 2012 and has awarded $25 million in grants to 18 broadband projects through the Regional Councils and Empire State Development to promote and expand high-speed Internet access in rural upstate and underserved urban areas.[13]

Eligibility to apply for the grant funding was open to all entities including non-profits, tribal and local governments, and private corporations. The program required matching funds of 20 percent of the total project cost and projects that proposed additional matching funds in excess of 20 percent received additional consideration for grant awards. Applicants were also reviewed and scored on the following set of criteria:

- Intent to build in priority areas with demonstrated need
- Likely impact and adoption
- Leveraging of existing infrastructure and funding sources
- Collaboration and community support
- Endorsement by the relevant Regional Economic Development Council

[13] http://www.governor.ny.gov/press/03052013-25-million-dollar-grant-bridge-digital-divide; www.nysbroadband.ny.gov/ConnectNY2012

Illinois

Illinois Gigabit Communities Challenge: The challenge was launched by Governor Pat Quinn to award up to $4 million in seed funding to the most promising "ultra high-speed" broadband deployment projects in Illinois as part of a comprehensive, multi-year "Illinois Jobs Now!" economic development program.[14] The challenge was open to any private or public organization and required projects to connect at least 1,000 end users to an ultra high-speed broadband network capable of delivering speeds of one gigabit per second. The proposals were additionally judged by their ability to demonstrate the following objectives:

- Improve employment opportunities
- Enhance economic development through the development of "smart communities"
- Bring Illinois closer to the goal of increasing the proportion of residents with high-quality degrees and credentials to 60 percent by the year 2025
- Connect health care professionals with their patients
- Position Illinois' universities to "continue to lead the nation in research, technology and innovation"

[14] http://www2.illinois.gov/gov/gigabit/Pages/default.aspx

Chapter 6: Capacity Building – Potential Funding Sources

The natural extension of a discussion of broadband network partnerships and business models is a discussion of project funding mechanisms. This chapter presents strategies that local governments can take to identify funding sources for utility broadband projects, including federal E-rate subsidies, the U.S. Department of Agriculture's Rural Utilities Service (RUS) loan and grant programs, other federal grant programs, and other current and potential funding sources.

A detailed overview of current federal funding opportunities is included in Appendix A.

Overview

As of this writing in summer 2014, it is not a particularly good time to be looking for broadband grant funding, either public or private. For a range of reasons—including virtual paralysis in Congress and the challenging economic environment—resources are particularly low at the moment.

Programs that existed just a few years ago do not now. The broadband funding in the American Recovery and Reinvestment Act of 2009—the Broadband Technology Opportunities Program (BTOP) and the Broadband Initiatives Program (BIP)—were very much one-time programs, and there appears to be no appetite in Congress right now to reauthorize comparable programs.

In addition, the rather challenging political atmosphere in Washington and the upcoming election mean that very little legislation—particularly on the appropriations side—has been successful. In fact, all federal spending is being met with levels of suspicion that is unprecedented in our experience. In addition, with respect to foundations, grant sources are much lighter than they were just a few years ago, largely because of the deterioration of the economy and foundation endowments.

To help focus your future efforts in identifying funding options, we researched relevant federal funding opportunities; we highlight in this section your most likely near-term funding opportunities.

We recommend that interested entities closely monitor developments with regard to the Farm Bill, which has traditionally been a vehicle by which rural broadband program are funded; it is likely to continue to be so, after the one-time shift to the ARRA. We have reason to hope that future iterations of the Farm Bill will include significant

broadband funding, and that the current lack of such is a temporary sign of the times that will, presumably, change.

To help focus your future efforts in identifying funding options, we researched relevant federal funding opportunities; we highlight in this section your most likely near-term funding opportunities.

First, there are two relatively modest but very attractive grant opportunities: The Community Connect program and the Distance Learning and Telemedicine program. Both are important opportunities, and both are highly competitive—but we feel they are worth dedication of resources because they are weighted on the grant side, rather than focused on loans, which would be much more costly.

Second, we include here details about the Universal Service Fund, which represents an ongoing source of funding for rural telecommunications infrastructure, and which has seen recent changes that could have an effect on broadband availability in many communities.

Finally, we note the availability of rural broadband and electric loans.

Community Connect Program Grants

The Community Connect Grant program[15] is a modest-sized, but significant, grant program for local and tribal government that focuses on targeted deployment to completely unserved, very low income areas.

Priority is given to areas demonstrating "economic necessity." The application process is rigorous and competitive (with awards given to only 10 percent of applicants) and once awarded, program requirements are demanding (e.g., requiring last-mile service for all households in the service area).

Awards can be given to both public and private entities; eligible applicants include local governments and community nonprofits.

The grants carry a 15 percent match requirement that can be met with in-kind contributions; awards range considerably in size from $50,000 to somewhat above $1 million. When the next grant window opens (likely this coming spring), it is likely to close 60 days later.

[15] "About Community Connect Grants," Rural Development, U.S. Department of Agriculture. http://www.rurdev.usda.gov/utp_commconnect.html (accessed July 7, 2014).

Community Connect funds approximately 15 projects annually (from an application pool of 150). Eligible projects must offer basic broadband transmission service to both residential and business customers within the proposed service area. Examples of eligible projects include deploying broadband transmission service to critical community facilities, rural residents, and rural businesses; constructing, acquiring or expanding a community center (but only 5 percent of grant or $100,000 can be used for this purpose); or building broadband infrastructure and establishing a community center with at least 10 computer access points, which offer free public access to broadband for two years.

While Community Connect has a fairly broad mission, funding is usually geographically limited to a single community with a population less than 20,000 that does not currently have Broadband Transmission Service (as determined by the FCC National Broadband Map). Grants cannot duplicate any existing broadband services, nor can applicants charge for services to any critical community facilities for at least two years from the grant award.

To prepare the most competitive Community Connect grant application possible, we would recommend that a utility chart an area within its unserved footprint, then target the lowest income portions of that area.

The Community Connect Grant program is a modest-sized, but significant, grant program for local and tribal government that focuses on targeted deployment to completely unserved, very low income areas.

Distance Learning and Telemedicine Program Grants

The Distance Learning and Telemedicine (DLT)[16] program has historically provided both grants and loans, but appropriations have been limited to grants in recent years. Grants of $50,000 to $500,000 are given for equipment, rather than broadband facilities or service; however, this may provide a good way for entities to leverage a new broadband network (e.g., by helping finance video conferencing systems and medical units). As such, this could be a good supplement to other funding options.

Funds can be awarded to both public and private entities (including corporations or partnerships, tribes, state or local units of government, consortia, and private for-profit or not-for-profit corporations), assuming they provide the requisite services.

[16] "About the DLT Program," Rural Development, U.S. Department of Agriculture. http://www.rurdev.usda.gov/utp_dlt.html (accessed July 7, 2014).

Grantees must provide education or medical care via telecommunications. Eligible entities must either directly operate a rural community facility or deliver distance learning or telemedicine services to entities that operate a rural community facility or to residents of rural areas. Among the grant scoring categories are innovativeness, benefits and needs (including economic need), and availability of matching funds.

Universal Service Fund

The Universal Service Fund, a creation of the Telecommunications Act of 1996, has traditionally been, along with RUS loans, the most significant source of telecommunications funding for rural America. There are four key programs within Universal Service.[17]

Lifeline Program

The Lifeline program for low-income citizens has traditionally included two key programs: Lifeline and Link Up, which subsidize the telephone service and initial connection charges, respectively, for low-income Americans.[18]

In brief summary, Lifeline has provided low-income households with a $9.25 per month subsidy on phone service, so long as they were purchasing service from participating telecommunications carriers. In the past year, Lifeline has been modestly reformed by the FCC. For purposes of broadband, the most significant change has been that the $9.25 subsidy can now be applied to bundled phone and Internet service, and is no longer limited to standalone phone service. While this change seems very modest, it is actually quite significant. The enabling legislation itself appears to be the barrier to allowing the subsidy to be used for standalone Internet service—hence the importance of the ability to bundle phone and Internet and still realize the benefit of the subsidy.

High Cost and Connect America Funds

The Universal Service High-Cost program,[19] which has been the largest part of the Universal Service Fund (well in excess of $4 billion per year on an ongoing basis), has traditionally funded eligible telecommunications carriers (ETCs) to build and operate telecommunications (telephone) facilities in rural unserved areas. This program has been famously complex and inefficient.

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[17] "Universal Service," Federal Communications Commission. http://transition.fcc.gov/wcb/tapd/universal_service/welcome.html (accessed July 7, 2014).

[18] "Lifeline Program for Low-Income Consumers," FCC Encyclopedia, Federal Communications Commission. http://www.fcc.gov/lifeline (accessed July 7, 2014).

[19] "Universal Service Program for High Cost Areas," Federal Communications Commission. http://transition.fcc.gov/wcb/tapd/universal_service/highcost.html (accessed July 7, 2014).

A part of the High Cost fund will be gradually transitioned over time into a new program, the Connect America Fund,[20] which will subsidize the construction of broadband (data) facilities, rather than exclusively telephone services as in the past. Over time, the shift from telephone to data service will accelerate, assuming that the FCC's current strategy is not changed.

Schools and Libraries (E-rate) Program

The Schools and Libraries Universal Service program—typically referred to as the E-rate program—subsidizes the provision of broadband and telecommunications services to eligible K-12 schools and public libraries.[21] It also covers such entities as Head Start programs, which is significant in many communities across the State.

Under this program, a range of providers can compete to provide services to schools and libraries. Through a structured program administered by the Universal Service Administrative Company (USAC), schools and libraries post their requests for proposals (RFP) and select the best bid, then cooperatively with the service provider apply to USAC for the subsidy amount. The funding flows directly from USAC to the provider.

Because of reforms to the E-rate program that were undertaken by the FCC in 2010 and implemented in 2011, entities who are not regulated telecommunications carriers now qualify as eligible providers. Thus, this program is potentially of significant importance to entities who can serve schools and libraries that are eligible for the subsidy. At the very least, entities have the opportunity to compete to provide the best possible, most cost-effective services to subsidy-eligible entities. The program also provides for subsidy of construction of some lateral connections to schools and libraries, which could present an opportunity to expand the reach of utility fiber optics.

[20] "Connect America Fund (CAF)," Federal Communications Commission. http://www.fcc.gov/encyclopedia/connecting-america (accessed July 7, 2014).

[21] "E-Rate – Schools & Libraries USF Program," FCC Encyclopedia, Federal Communications Commission. http://www.fcc.gov/encyclopedia/e-rate-schools-libraries-usf-program (accessed July 7, 2104).

Healthcare Connect Fund Program

Public and non-profit rural health care providers (HCP), which face an increasing need for dedicated high-speed connections to support tele-health applications, have a new source of federal funding: the Healthcare Connect Fund (HCF) Program.[22] The HCF represents the first time the FCC has created a simple funding mechanism for broadband services and equipment. The HCF will provide a 65 percent subsidy for broadband service to health care providers/facilities. While the focus is on serving rural facilities, teaching hospitals and urban/suburban facilities will be eligible if they are part of an in-state consortium that includes rural facilities.

The FCC has capped funding for all Rural Health Care (RHC) programs, including HCF, at $400 million per year on a first-come, first-served basis. A portion, $150 million, will be made available to applicants wishing to utilize funds to build their own networks (with limitations). See Chapter 9 for more details.

RUS Broadband Loan Program

The other most extensive, long-term funding of rural broadband and telecommunications facilities construction has been the Rural Utilities Service (RUS) rural broadband loan program, which is funded through the Farm Bill and administered through the RUS.[23]

The program has financed, at competitive rates, broadband networks in rural areas throughout the United States. It gets a range of different kinds of reviews. The interest rates are generally considered to be extremely competitive, but the programs are quite famously very labor- and paperwork intensive.

As rural utilities know, RUS also operates an electric loan program which will fund construction of communications plant to serve the electric utilities internal operations, AMI, and other functions. This is a very well-funded, well managed program that can be part of a broader strategy of interrelated smart grid and broadband planning.

If utilities undertake strategies requiring extensive financing, the various forms of RUS loans may not be more advantageous than public bonds, especially given that there is no grant component. We recommend that utilities assessing their broadband options take a look at RUS loan opportunities and compare them to alternative loan structures.

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[22] Healthcare Connect Fund Program," Universal Service Administrative Company. http://www.usac.org/rhc/healthcare-connect/default.aspx (accessed July 7, 2014).

[23] "RUS Telecommunications Programs," Utilities, Rural Development, U.S. Department of Agriculture. http://www.rurdev.usda.gov/RUSTelecomPrograms.html (accessed July 7, 2014).

Chapter 7: Technical Assistance – Digital Literacy

Overview

CTC Technology and Energy, an independent consulting firm, is assisting the State of New Mexico in developing a Statewide Strategic Plan to identify gaps in broadband availability and provide actionable and strategic goals.

The goal of this chapter is to identify and describe strategic policy changes on digital literacy that could improve the State's access to and use of broadband. The chapter seeks to identify policy recommendations for a range of relevant stakeholders and policymakers.

To this end, CTC makes the following policy recommendations:

- *Maintain and build additional State capacity on broadband.*
- *Maintain and build on work done in digital inclusion and digital literacy.*
- *Develop training and internship programs in information technology and broadband.*

The goal of any digital literacy program is, in part, to raise awareness of broadband (where it is available, how to use it, what benefits it offers)—which, in turn, leads to increased demand, adoption, and, ultimately, availability. That definition, however, addresses only part of the benefits of raising digital literacy across the State. In a broader sense, successful digital literacy programs will lead to successful, productive utilization of broadband in a variety of critical realms—including economic development, education, healthcare, and civic engagement.

Thus, a focus on digital literacy is a focus on the positive, forward-looking, long-term benefits of broadband adoption, not merely the raising of awareness of broadband.

The current digital literacy model encompasses regional, locally based training programs that:

- Meet unique community needs with delivery systems appropriate for the needs and the region;
- Engage and build on regional and local assets, including anchor institutions, champions, expertise, and existing programs;
- Develop collaborations and partnerships that further optimize the impact of training through combined use of regional resources;

- Develop coordination and communication among partners, to maximize efficiency and to widen and standardize information and promotion of trainings;
- Centralize contact points and leadership for consistent and streamlined information channels and increased responsiveness;
- Explore, develop, and fund use of innovative training models, especially those for rural and decentralized regions, such as mobile computer training labs
- Work with targeted anchor institutions, such as libraries, SBDCs, Adult Basic Education programs, adult literacy projects, senior centers, tribal entities, and schools to integrate digital literacy instruction into their existing framework of service

Recommendation: Maintain and build additional State capacity on broadband

New Mexico has taken great strides in recent years to build capacity on broadband in number of key areas including mapping and data collection, along with providing technical support to communities, institutions, and regions. It is critical to maintain this work and build additional expertise and capacity to enable the State officials and other relevant stakeholders and policymakers to address broadband challenges and work to make the State a leader in broadband access and use.

Key to this policy is continuing the New Mexico Broadband Program (NM Broadband Program), which was established to define broadband availability and enhance its adoption. There are a number of ways to accomplish this goal. The State can continue to maintain the program and its component parts as managed by the Department of Information Technology or it may also, with assistance from legislators, create an independent nonprofit entity as recommended in the New Mexico Broadband Assessment and Recommendations report (Broadband Assessment Report) from November 2013.[24] Regardless of the structure, we recommend continuing, and in some cases, expanding the following aspects of the program:

Mapping and Data Collection

The largest project of the NM Broadband Program was to provide a map of broadband availability for New Mexico and contribute to the development of a National Broadband

[24]The New Mexico Broadband Program, *New Mexico State Broadband Assessment and Recommendations: Education, Healthcare, and Economic Development,* November 2013, http://www.doit.state.nm.us/broadband/reports/NMBBP_Report_Assess_Recommendations.pdf

Map. The public can access the NMBB Map[25] to conduct research and explore broadband coverage and providers. In addition, DoIT collects data on community anchor institutions to support Community Anchor Site Assessments (CASA) and develops more targeted maps to illustrate broadband coverage in New Mexico by county[26] and region.[27]

The NMBB provides a critical tool to inform planning and coordination along with targeted policy interventions. Indeed, as discussed in chapter 5 of this report, New Mexico mapping program has exceeded the data standards of the NTIA and the vast majority of other state broadband mapping efforts. As result, the State should continue to support updating and maintaining the map, while also looking for opportunities to make the data more useful and open to the public. For example, it could further distribute the mapping data through the University of New Mexico Open Data Repository[28] and develop more targeted maps and reports to assist different stakeholders and policymakers. It should also consider expanding broadband speed testing to evaluate educational, healthcare, and other community anchor institutions to more clearly evaluate whether current service offering are meeting the broadband needs of these institutions and to further help inform broadband planning and coordination.

The NMBB provides a critical tool to inform planning and coordination along with targeted policy interventions.

Coordination and Planning

The NM Broadband Program has also played a critical role in facilitating coordination and planning among various stakeholders and policymakers around broadband availability and adoption.[29] For example, it created the "New Mexico Broadband Adoption Model" to engage broadband funded projects and the broadband providers within New Mexico and develop opportunities for integration and collaboration in the areas of construction, education, marketing, and socio-economic analysis, with an emphasis on enhancing adoption.

In addition, it formed a statewide Collaborative Committee, together with Working Groups that represent various "use sectors" (Business, Education, TeleHealth, Native Nations, etc.). The Committee provided an import forum to identify gaps, clarify issues,

[25] http://nmbbmapping.org/mapping/
[26] http://www.doit.state.nm.us/broadband/map_county_availability.shtml
[27] http://www.doit.state.nm.us/broadband/map_regional.shtml
[28] *Broadband Assessment Report,* p. 10.
[29] Discussion is based on subject matter covered by the NM Broadband Program website, http://www.doit.state.nm.us/broadband/index.shtml

and provide "action" items toward policy and other solutions. Related, the program released the "New Mexico State Broadband Assessment and Recommendations: Education, Healthcare, and Economic Development" to identify gaps broadband access and use in each of those sectors.

Finally, the through the RBIB programs the NM Broadband Program was able to catalyze local leaders to develop local capacity to address their regions broadband needs.

The State should continue to look for opportunities to facilitate coordination and planning to address gaps in broadband availability and increase adoption. In particular, as recommended in the Broadband Assessment Report the State should seek to coordinate federal funding opportunities more broadly and assist communities and relevant policymakers with monitoring of various funding opportunities for broadband, including the Universal Service Fund's E-rate and Healthcare Connect programs.[30] Also, it should continue to facilitate regional planning efforts such as RBIB to bring together public and private interests on broadband projects to discuss infrastructure construction, technical assistance, and education.[31]

Technical Assistance

The NM Broadband Program has also served as technical resource for state and local leaders.[32] It developed a Digital Literacy Resource (DLR) to marry the State's facilities, content, and instructors to support the public in identifying educational opportunities within their communities. The work included a "Broadband Train the Trainer Toolkit," a resource for developing trainings in Basic and Business Digital Literacy.[33] The toolkit targeted communities that include librarians, small business incubators, educators, and tribal representatives. DoIT also conducted a Native Lands Data Acquisition Pilot with a selection of tribes to support telecommunication customer locales, and enhance emergency service deployment.

The State should continue these activities and expand efforts to provide technical expertise to communities, institutions, and regions. In particular, it should target educational institutions given the increasing technical demands and requirements for schools as identified in the Broadband Assessment Report. The report recommended

[30] *Broadband Assessment Report,* p. 10. A more in depth recommendation policies to maximize support from E-rate and the Healthcare Connect Fund is discussed later in this chapter.
[31] *Broadband Assessment Report,* p. 10.
[32] Discussion is based on subject matter covered by the NM Broadband Program website, http://www.doit.state.nm.us/broadband/index.shtml
[33] http://www.doit.state.nm.us/broadband/training/t3toolkit.shtml

that the State expand technical support and assistance to schools.[34] In addition, it recommended professional development and training to teachers and other school staff on technology use including training for administering the Partnership for Assessment of Readiness for College and Careers (PARCC) assessments.[35]

Recommendation: Maintain and build on work in digital inclusion and digital literacy

As discussed earlier, New Mexico lags behind other states in the rate of home Internet adoption. The 2011 US Census Bureau's Current Population Survey (CPS) placed New Mexico 50th of the states plus the District of Columbia in home Internet adoption.[36] According to the NM Broadband Program's adoption survey, approximately 28 percent of New Mexicans do not have access to the Internet from home.[37] Of those without home access, approximately 25 percent of respondents to the survey said that they "don't know how to use it," 26 percent said that they "never considered it," and 5 percent indicated that they 'don't know how to get Internet.'[38] Furthermore, half of the respondents without Internet in their home do not know how to use it.[39]

The above results underscore the importance of digital inclusion and digital literacy efforts to close the adoption gap. Such efforts are not only important to increasing Internet adoption and use, but also help create a stronger market for broadband by increasing the overall market of subscribers.

To the extent that the cost of service does preclude residents from adopting broadband—especially in areas with low household income, where such spending is perceived as discretionary rather than vital—a key challenge remains in illustrating the value of broadband, creating demand, and enabling residents to experience the benefits of broadband connections.

In communities of low adoption rates, digital inclusion and digital literacy programs can also help to create a market, where none otherwise exists. Thus inclusion and literacy efforts can also contribute to stimulating demand for broadband services that in turn, may give providers more confidence that there will be sufficient demand to match their investment in broadband infrastructure.

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[34] *Broadband Assessment Report*, p. 11.
[35] *Broadband Assessment Report*, p. 11.
[36] The New Mexico Broadband Program, *Broadband Subscription and Internet Use in New Mexico,* June 2013, p. 8, http://www.doit.state.nm.us/broadband/reports/NMBBP_Adoption_Report_0613.pdf, (accessed Aug. 13. 2014).
[37] *Broadband Subscription and Internet Use in New Mexico,* p. 15.
[38] *Broadband Subscription and Internet Use in New Mexico,* p. 26.
[39] *Broadband Subscription and Internet Use in New Mexico,* p. 36.

Over the past several years, the NM DoIT has made important progress in enhancing the digital literacy of New Mexican's, particularly among low adoption communities.[40] The Digital Literacy Resource (DLR) that included a "Broadband Train the Trainer Toolkit," a resource for developing trainings in Basic and Business Digital Literacy, was utilized by librarians, educators, tribal representatives, and others that work in various communities to spur adoption. NM DoIT also focused specifically on advancing broadband connectivity and education among tribal communities through developing an educational program to teach tribal members how to use the Internet to help with health and wellness, education, and family communications.

These efforts were complemented by other digital literacy programs in the State. Fast Forward New Mexico (FFNM) was a $2.1 million federal grant led by the State Library of New Mexico, in partnership with public and tribal libraries, the University of New Mexico, and Davis Innovations.[41] The program sought to increase statewide broadband adoption and promote computer literacy and Internet use in rural, Hispanic, and Native American populations. It offered free, hands-on training in 16 public libraries around New Mexico beginning in the summer of 2010 and continuing through 2012.

Finally, as discussed in Chapter 4, CTC and Cirrus Consulting have engaged communities in the SWNMCOG, NEEDO-NM, and NWCOG pilot regions on developing a digital literacy strategy to meet their needs and leverage local resources. The efforts have already yielded important outcomes in term of increasing awareness of the importance of digital literacy training and facilitating discussions around organizing digital literacy programs or improving existing local training resources.

It is critical for the State to continue to support digital literacy around. In particular, the literacy programs should focus on low-adoption communities including seniors, low-income, underserved minorities, immigrants and non-English speakers, rural residents, and Native Americans.[42] As part of this effort the State should support opportunities to partner with community anchor institutions to establish hubs in public libraries, community centers, senior centers, and tribal chapter houses to aid in the deployment of digital literacy resources.

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[40]Discussion is based on subject matter covered by the NM Broadband Program website, http://www.doit.state.nm.us/broadband/index.shtml

[41] http://www.fastforwardnm.org/about

[42]*Broadband Subscription and Internet Use in New Mexico,* p. 94 – 95.

The digital literacy model currently utilized in the Regional Broadband Implementation Pilots in SWNMCOG, NEEDO-NM, and NWCOG could be useful for leveraging existing local resources to develop training programs across the State. Through the model, the State should continue to support and facilitate engagement among civic leaders and institutions around digital literacy training. In addition, it should provide access to expert consultation to support communities in organizing and developing digital literacy programs, including sharing training resources and best practices. Finally, the State should consider directly funding or assisting with finding other funding (i.e., grants) to support dedicated digital literacy training staff in communities across the State.

Digital Literacy Model

1. Focus on underserved communities
2. Partnership with anchor institutions for "hubs"
3. Engagement of civic leaders
4. Consulting
5. Direct funding for training
6. Assistance finding additional funding for training

The State should also continue efforts to provide public access to digital literacy resources for more flexible study at home or mobile devices.[43] Related, the State should also create and distribute consumer education materials on broadband, covering topics such as information on what Internet service providers are serving communities, what are the differences between their broadband services including pricing information, and how to understand a monthly bill. Research shows that knowledge of pricing and other service information is important to support vulnerable communities.

Finally, the State should seek to address the relevancy gap for non-adopters who do not currently see the value of using the Internet, and where income or other factors do not create barriers to adoption. Awareness campaigns, promotion programs, and other related activities that demonstrate the value of adopting the Internet could—if deployed in concert with offering training—be useful to increase adoption more broadly.[44] (Outreach on its own, without the opportunity for training, may reinforce the perception

[43]Fast Forward New Mexico, *Statewide Broadband Summit Final Report,* August 2013, p. 7, http://www.doit.state.nm.us/broadband/reports/Broadband_Summit_Report_FINAL.pdf, (accessed Aug. 13, 2014).
[44]*Broadband Subscription and Internet Use in New Mexico,* p. 95 – 96.

of lack of value.) Such programs should focus on specific populations such as low income, elderly, minority, and unemployed groups.

Recommendation: Develop training and internship programs in information technology and broadband

Technological skills have never been in higher demand or potentially more important for stimulating economic development. Furthermore there is a great need for skilled professionals to meet the technological requirements of institutions including schools, libraries, and healthcare facilities. For example, as noted in the Broadband Assessment Report, there is a shortage of qualified network professionals within healthcare facilities to ensure telehealth and other technologies are adequately supported and deployed. Similarly, many schools find it difficult to attract and retain skilled personnel to implement new learning technologies and maintain the schools' digital infrastructure.[45] The same holds true for libraries and some small businesses.

This poses a significant challenge for the State on both sides of the jobs equation—in terms of filling open positions and meeting the technological requirements of its anchor institutions on one side, and developing the talent needed by private employers to spur economic growth and development.

Over the long term, increasing STEM education and related efforts in K-12 schools will pay dividends, but in the near and medium term the State should also invest in training and internship programs to provide opportunities for working adults. Similar to digital literacy and digital inclusion programs, training and internships build skills for individuals and can also increase market demand for broadband services.

NM DoIT currently offers information technology (IT) trainings that include hands-on classroom training, Computer Based Training (CBT) and online/video training.[46] It should seek to expand these offerings to make available instruction not just for existing professionals, but also for more novice individuals.

NM DoIT can also partner with other institutions that currently have internship and training programs. For example, the University of New Mexico is developing a program to train technicians and engineers on the University's statewide network and encourage other entities to collaborate. The State could also look to partner with private providers such as AGC New Mexico, which currently offers a Technology Academy as part of its comprehensive training programs written by contractors for contractors.[47] AGC currently

[45] B*roadband Assessment Report*
[46] http://www.doit.state.nm.us/service_catalog/training.html
[47] http://www.agc-nm.org/training-education/course-offerings-calendar

offers distance learning, workshops, weekly classes and webinars that provide skills building opportunities for every level of experience.

The key barrier to most IT training and internship programs is cost, so the State might also consider developing a source of ongoing funding for scholarships (on the individual level) and program funding (on the institutional level). Alternatively, or in addition to direct funding, the State should evaluate mechanisms by which it could provide low- or no-cost training at anchor institutions.

Chapter 8: Technical Assistance – Case Study Analysis of Existing Initiatives

Overview

The goal of this chapter is to provide in-depth summaries of current and past initiatives as a means of illustrating successful broadband policies and programs in other States. It will include an analysis of three initiatives that could provide helpful insights for policies and programs in New Mexico to spur broadband access and adoption, particularly in unserved and underserved communities.

The Chapter will look at the following cases:

- *Maximizing E-Rate Funding: Planning and Coordination in North Carolina and Utah*
- *Reducing Costs for Broadband Buildout: Dig Once Program in Arizona*
- *Supporting Rural Broadband: State Broadband Grants in California and New York*

Maximizing E-Rate Funding: Planning and Coordination in North Carolina and Utah

North Carolina

In North Carolina, the state funds participation by schools statewide in a program operated by MCNC.[48] MCNC is an independent non-profit that operates the North Carolina Research and Education Network (NCREN). NCREN connects all K-12 school districts, community colleges, universities, and some non-profit health care sites throughout North Carolina "to each other, the Internet, and global research networks at very high speeds."[49]

NCREN has built its own fiber optic network (funded in part with federal grants and in part with local contributions from the public and private sectors) to all Internet Points of Presence in the state and also to many of the school district buildings throughout the state. Where it has not built its own fiber, MCNC has leased dark fiber from the private

[48] Unless otherwise noted, this case study is based on CTC's interview with Mark Johnson, MCNC Chief Technology Officer, in December, 2012. CTC extends its thanks to Mr. Johnson for the information and time.

[49] www.MCNC.org

sector (and in turn makes available to the private sector dark fiber within its owned footprint).

The state funds the participation of K–12 at the level of $20 million per year to fund the portion of the schools' costs that are not covered by the federal E-rate program. Among other benefits, this strategy maximizes the benefit of the E-rate program for North Carolina schools by increasing the level of services delivered to the schools; by eliminating the burdens of navigating the e-rate program by individual schools because it is all centrally managed (by the North Carolina Department of Public Instruction); and by centralizing planning in expert hands to address E-rate. In turn, the schools are obligated to utilize their savings on technology projects (such as providing devices and services to students and faculty) that are not covered by E-rate program.

This program resulted from a study commissioned by the state that sought new strategies for realizing the potential of broadband for North Carolina schools. What the study determined was that (as is the case in Kansas now) each school district was contracting independently for its services. As a result, there was no economy of scale and a very low quality of communications between and among the schools.

The study recommended connecting all the school districts to NCREN so they could communicate among each other, as well as to the outside through the public Internet. The study led to a detailed planning project and eventually to the very successful initiative to connect school district buildings.

The funding includes engineering services by MCNC staff to provide assistance to the school districts; to do network assessments; to support technology migration; and to plan how to realize the benefits of the broadband networks. There is no cost to the school districts, and the program ensures they get centralized, trustworthy third-party support on which they can rely. Among other accomplishments, the program has resulted in:

1. Dramatic increase in the amount of federal E-rate money flowing into North Carolina;
2. A seven-fold increase in utilization of Internet by schools in North Carolina;
3. The impressive milestone reached that 100 percent of school districts have at least 100 megabits per second Internet bandwidth (for an average of four schools per district);
4. 75 of 125 districts have elected to take more than the base offering of 100 Mbps.

The K–12 initiative has been so successful that the community college system (representing 58 colleges) elected also to move to NCREN and specifically asked for the

same engineering support. The state's libraries are eligible to connect, but they are currently not funded by the state to participate, and receive no centralized support.

The system has also created new business and new revenues for local phone companies, who are partners in the program. MCNC's connection is only to the school district location, and then the local company provides the connectivity from the district building to the schools themselves. With the increase in use by the schools, these companies have seen the volume of business they are doing with schools increase dramatically, resulting in an outcome in which all parties benefit.

In the health care area, MCNC also operates the North Carolina telehealth network, which is funded through FCC discounts, and enables high bandwidth services to non-profit health care facilities.

Utah

Utah Education Network[50] is a state agency, funded by the state legislature for 50 percent of total operating costs ($17 million per year). An additional 35 to 40 percent of its operating budget comes from maximizing the E-rate program, and the balance comes from grants.

UEN does not charge its stakeholders for services, which receive services for free and thus avoid having to navigate the E-rate program, which is cumbersome and complex—a great challenge in particular for less-resourced and smaller school districts. Indeed, the centralization of the E-rate process (such that UEN applies for all its stakeholders) has increased the funding level for higher-income areas by enabling application under the statewide average and has maximized E-rate for the state.

Scale also enables them to get better pricing for individual stakeholders. UEN serves public education, higher education, most state agencies, most libraries, and Head Start centers.

UEN operates a main backbone of 10 gigabits, with 1 gigabit spurs off the backbone to some remote areas of the state. The network has 1,400 endpoints and 1,200 miles of fiber optic infrastructure, the great majority of which is owned by the telephone company, CenturyLink. UEN leases circuits from CenturyLink and other providers, and has the benefit of having developed a competitive environment; for example, CenturyLink recently dropped its prices dramatically in response to competition from other carriers.

[50] This case study is based on CTCs interview of Mr. Jim Stewart, Director of the Utah Education Network, January 28, 2013. CTC extends its thanks to Mr. Stewart for his time and consideration.

A decade ago, as it migrated from T-1s to Gigabit Ethernet services (600 times the speed of a T1), UEN paid its private carrier approximately $1,500 to $3,000 per line. On average, UEN now pays CenturyLink $800 to $1,200 per circuit (its most costly circuits, which are outliers, are $2,500—still $300 less per circuit than the cost of a tariffed T-1).

UEN has found that its stakeholders can quickly learn new applications and devise new ways to utilize huge amounts of bandwidth. UEN's Director, Jim Stewart, strongly rejects that idea that schools do not need gigabit services and more. To the contrary, he notes, the big bandwidth gives them the opportunity to learn, experiment, and never ration their use. For major events, such as a presidential inauguration or other key civic event, every student in every classroom in the state can stream the event without risk to the quality or reliability of the service. And as one-to-one computing and bring-your-own-device (BYOD) initiatives expand throughout educational settings, the higher bandwidth will be essential, not optional.

Reducing Costs for Broadband Buildout: Dig-once Program in Arizona

In 2012, the Arizona legislature passed the "Digital Arizona Highways Act of 2012" (SB 1402) on the recommendation of the Digital Arizona Program.[51]1 This law allows the state to install fiber conduit in state rights-of-way whenever other maintenance work is being performed in the same location.[52,53]

According to Arizona officials, the deployment of fiber infrastructure under the old system was a costly endeavor, and in many cases, deployment was stopped as a result. Especially because of the prevalence of land grant areas in Arizona, fiber construction often had to go across a strictly regulated property with requirements that the state seek the best use of the land, thus making it very costly to build there.

At the same time, state planners recognized that across the state, the highways go where the rural populations live, and provide routes to bring fiber conduit to those areas. The new law thus provides that wherever there is open maintenance or construction in a state roadway, it is state policy to install conduit for fiber at the same

[51]The State of Arizona administers a statewide broadband strategic plan through the Arizona Strategic Enterprise Technology (ASET) office, which in turn created the Digital Arizona Program. This program actively advocates for broadband expansion throughout rural Arizona and serves as the Arizona counterpart to the Kansas Statewide Broadband Initiative (KSBI).

[52]This case study is based on the following sources: CTC interview with Mr. Mike Golden and Mr. Jeffrey Crane, Digital Arizona Program, September 2012; CTC interview with Mr. Galen Updike, Digital Arizona Program, May

[53] "The Two Highways Proposition," Digital Arizona Program, http://www.digitalarizona.gov/About/The_Two_Highways_Proposition.html (accessed 24 January 2013). CTC wishes to thank Mr. Golden, Mr. Crane, and Mr. Updike for their time and consideration.

time. The state recognized that this was incredibly cost effective—the cost of installing conduit when other work is underway is about the same as the cost to add paint stripes to the road for the equivalent distance.

Under this model, the state owns the conduit but gives the private sector the opportunity to pull fiber through it. As a result, Arizona has effectively made its physical highways into information highways; the state owns the conduit as it owns the roads, and the private sector owns and operates the fiber placed in the state's conduit. The state hopes to free up long stretches of middle-mile routes through long diverse stretches of the state where it has been difficult and costly to build fiber. By providing the rights-of-way and conduit to investors and service providers who want to expand long-distance network capacity into rural areas, the state believes it will incentivize new projects that would not have happened otherwise.

The private companies will pay for access to the conduit so as to recover the state's costs up front. This law thus reflects a significant policy shift. It recognizes that the cost savings and economic benefits of making broadband available justify the state's up-front investment to build conduit in public rights-of-way. This process streamlines the fiber construction process by making the conduit available to all comers and eliminating many of the requirements for construction permits, environmental and historical studies, and other one-time processes that were previously repeat costs for every provider for every new project in a state right-of-way. Under the new program, the state has addressed all of these in advance while building the conduit. Making fiber conduit readily available through the rights-of-way is a significant step in enabling a new generation of public-private partnerships for broadband expansion throughout the state. The new program reflects that the state recognizes access to high-speed information infrastructure is in the same category as power, water, and transportation—an essential public need.

This law thus reflects a significant policy shift. It recognizes that the cost savings and economic benefits of making broadband available justify the state's up-front investment to build conduit in public rights-of-way.

Supporting Rural Broadband: State Broadband Grants in California and New York

Institutions, businesses, and residents in rural areas across the New Mexico often lack access to even basic levels of broadband service. As documented in earlier parts of this report, this is due in part to the significant challenges of deploying broadband

infrastructure in rural areas. In addition to dig-once programs such as those implemented in Arizona and discussed above, state grant programs can support the deployment of infrastructure in costly to serve areas and fill-in gaps in federal support programs that do not provide upfront funding for construction or fund innovative models such as public-private partnerships.

California Advanced Services Fund

CASF offers both grants and loans to assist in the building and/or upgrading of broadband infrastructure in areas that are not served or are underserved by existing broadband provider.[54] The grants program subsidizes up to 70 percent of construction costs for projects in unserved areas and up to 60 percent of construction costs for projects in underserved areas. The Revolving Loan Program provides supplemental financing for projects also applying for grant funding. As of the end 2013, the fund has authorized a total of $80 million in grants for projects that will serve up to 278,119 households when completed.

CASF funding is available to entities with a Certificate of Public Convenience and Necessity (CPCN) that qualify as a "telephone corporation" or wireless carriers who are registered with the Commission. CASF funding is also available to non-telephone corporations which are facilities-based broadband service providers as defined by the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce. Non-telephone corporations must provide last-mile broadband access to households that are unserved by an existing facilities-based provider and only receive funding to provide access to households that are unserved or underserved.

Some of the projects the CASF has recently funded include:[55]

- A 91.18 mile middle-mile backhaul network from Santa Cruz to Soledad, and extend high-speed Internet service to 430 square miles covering Castroville and the California Highway 156 corridor towards Prunedale, Chualar, Gonzalez, Soledad and Salinas in the Central Coast.
- Extending high-speed Internet service to 3.49 square miles covering the Beasore and Central Camp communities of unincorporated Madera County and provide safety-enhancing landline telephone service in an area where there currently is none.

[54] http://www.cpuc.ca.gov/PUC/Telco/Information+for+providing+service/CASF/CASFGrantLoan.htm
[55] For full list of funded projects see http://www.cpuc.ca.gov/PUC/Telco/Information+for+providing+service/CASF/Default.htm

- Extend high-speed Internet service to 58.35 square miles the Mendocino County towns of Boonville and Westport.

Connect NY Broadband Grant Program

"Connect NY" was created in 2012 and has awarded $25 million in grants to 18 broadband projects through the Regional Councils and Empire State Development to promote and expand high-speed Internet access in rural upstate and underserved urban areas.[56]

Eligibility to apply for the grant funding was open to all entities including non-profits, tribal and local governments, and private corporations. The program required matching funds of 20 percent of the total project cost and projects that proposed additional matching funds in excess of 20 percent received additional consideration for grant awards. Applicants were also reviewed and scored on the following set of criteria:

- Intent to build in priority areas with demonstrated need
- Likely impact and adoption
- Leveraging of existing infrastructure and funding sources
- Collaboration and community support
- Endorsement by the relevant Regional Economic Development Council

Some of the projects Connect NY funded include:[57]

- **Essex County Broadband Service Expansion:** The Essex County Broadband Service Expansion project will provide high-speed broadband service to households that do not have access within the Towns of Jay and Wilmington, passing 1,900 households. The project will also provide digital video services and potentially a competitive telephone service.
- **Connect Thurman White Space Project:** Through a public/private partnership, the Thurman White Space project will provide broadband access to 89 households in the northeast area of the Town of Thurman. The Town of Thurman will also offer economically disadvantaged residents access to public computers and enhanced digital literacy training.

[56] http://www.governor.ny.gov/press/03052013-25-million-dollar-grant-bridge-digital-divide; http://www.nysbroadband.ny.gov/ConnectNY2012

[57] For a full list see http://www.governor.ny.gov/press/03052013-25-million-dollar-grant-bridge-digital-divide

- **Otsego County Wireless Network:** The Otsego County Wireless Network will partner with a last-mile provider to leverage a county-wide, open access fiber backbone to deploy last-mile, wireless broadband to 24 towns, 9 villages and 1 city in Otsego County, serving approximately 28,000 households, 4,500 businesses and 300 community anchor institution locations. The wireless network will also be made available to any viable organization or service provider that wishes to use it.

Chapter 9: Policy Recommendations

The goal of this chapter is to identify and describe strategic policy changes that could improve the State's access to and use of broadband. The chapter seeks to identify policy recommendations for a range of relevant stakeholders and policymakers.

To this end, CTC makes the following policy recommendations—some of which have been discussed at length in earlier chapters:

- *Maintain and build additional State capacity on broadband.*
- *Maintain and build on work done in digital inclusion and digital literacy.*
- *Develop training and internship programs in information technology and broadband.*
- *Implement an aggressive dig once program to build up the State's fiber and conduit resources and make assets available to private partners.*
- *Maximize benefits for schools, libraries, and health care facilities through the federal E-rate and Healthcare Connect Fund programs.*

Recommendation: Maintain and build additional State capacity on broadband

New Mexico has taken great strides in recent years to build capacity on broadband in number of key areas including mapping and data collection, along with providing technical support to communities, institutions, and regions. It is critical to maintain this work and build additional expertise and capacity to enable the State officials and other relevant stakeholders and policymakers to address broadband challenges and work to make the State a leader in broadband access and use.

Key to this policy is continuing the New Mexico Broadband Program (NM Broadband Program), which was established to define broadband availability and enhance its adoption. There are a number of ways to accomplish this goal. The State can continue to maintain the program and its component parts as managed by the Department of Information Technology or it may also, with assistance from legislators, create an independent nonprofit entity as recommended in the New Mexico Broadband Assessment and Recommendations report (Broadband Assessment Report) from

November 2013.[58] Regardless of the structure, we recommend continuing, and in some cases, expanding the following aspects of the program:

Mapping and Data Collection

The largest project of the NM Broadband Program was to provide a map of broadband availability for New Mexico and contribute to the development of a National Broadband Map. The public can access the NMBB Map (http://nmbbmapping.org/mapping/) to conduct research and explore broadband coverage and providers. In addition, DoIT collects data on community anchor institutions to support Community Anchor Site Assessments (CASA) and develops more targeted maps to illustrate broadband coverage in New Mexico by county (http://www.doit.state.nm.us/broadband/map_county_availability.shtml) and region (http://www.doit.state.nm.us/broadband/map_regional.shtml).

The NMBB provides a critical tool to inform planning and coordination along with targeted policy interventions. Indeed, as discussed in chapter 5 of this report, New Mexico mapping program has exceeded the data standards of the NTIA and the vast majority of other state broadband mapping efforts. As result, the State should continue to support updating and maintaining the map, while also looking for opportunities to make the data more useful and open to the public. For example, it could further distribute the mapping data through the University of New Mexico Open Data Repository[59] and develop more targeted maps and reports to assist different stakeholders and policymakers. It should also consider expanding broadband speed testing to evaluate educational, healthcare, and other community anchor institutions to more clearly evaluate whether current service offering are meeting the broadband needs of these institutions and to further help inform broadband planning and coordination.

Coordination and Planning

The NM Broadband Program has also played a critical role in facilitating coordination and planning among various stakeholders and policymakers around broadband availability and adoption.[60] For example, it created the "New Mexico Broadband Adoption Model"

[58]The New Mexico Broadband Program, *New Mexico State Broadband Assessment and Recommendations: Education, Healthcare, and Economic Development,* November 2013, http://www.doit.state.nm.us/broadband/reports/NMBBP_Report_Assess_Recommendations.pdf
[59]*Broadband Assessment Report,* p. 10.
[60]Discussion is based on subject matter covered by the NM Broadband Program website, http://www.doit.state.nm.us/broadband/index.shtml

to engage broadband funded projects and the broadband providers within New Mexico and develop opportunities for integration and collaboration in the areas of construction, education, marketing, and socio-economic analysis, with an emphasis on enhancing adoption.

In addition, it formed a statewide Collaborative Committee, together with Working Groups that represent various "use sectors" (Business, Education, TeleHealth, Native Nations, etc.). The Committee provided an import forum to identify gaps, clarify issues, and provide "action" items toward policy and other solutions. Related, the program released the "New Mexico State Broadband Assessment and Recommendations: Education, Healthcare, and Economic Development" to identify gaps broadband access and use in each of those sectors.

Finally, the through the RBIB programs the NM Broadband Program was able to catalyze local leaders to develop local capacity to address their regions broadband needs.

The State should continue to look for opportunities to facilitate coordination and planning to address gaps in broadband availability and increase adoption. In particular, as recommended in the Broadband Assessment Report the State should seek to coordinate federal funding opportunities more broadly and assist communities and relevant policymakers with monitoring of various funding opportunities for broadband, including the Universal Service Fund's E-rate and Healthcare Connect Programs.[61] Also, it should continue to facilitate regional planning efforts such as RBIB to bring together public and private interests on broadband projects to discuss infrastructure construction, technical assistance, and education.[62]

Technical Assistance

The NM Broadband Program has also served as technical resource for state and local leaders.[63] It developed a Digital Literacy Resource (DLR) to marry the State's facilities, content, and instructors to support the public in identifying educational opportunities within their communities. The work included a "Broadband Train the Trainer Toolkit," a resource for developing trainings in Basic and Business Digital Literacy (http://www.doit.state.nm.us/broadband/training/t3toolkit.shtml). The toolkit targeted communities that include librarians, small business incubators, educators, and tribal

[61] *Broadband Assessment Report,* p. 10. A more in depth recommendation policies to maximize support from E-rate and the Healthcare Connect Fund is discussed later in this chapter.
[62] *Broadband Assessment Report,* p. 10.
[63] Discussion is based on subject matter covered by the NM Broadband Program website, http://www.doit.state.nm.us/broadband/index.shtml

representatives. DoIT also conducted a Native Lands Data Acquisition Pilot with a selection of tribes to support telecommunication customer locales, and enhance emergency service deployment.

The State should continue these activities and expand efforts to provide technical expertise to communities, institutions, and regions. In particular, it should target educational institutions given the increasing technical demands and requirements for schools as identified in the Broadband Assessment Report. The report recommended that the State expand technical support and assistance to schools.[64] In addition, it recommended professional development and training to teachers and other school staff on technology use including training for administering the Partnership for Assessment of Readiness for College and Careers (PARCC) assessments.[65]

Recommendation: Maintain and build on work in digital inclusion and digital literacy

As discussed earlier, New Mexico lags behind other states in the rate of home Internet adoption. The 2011 US Census Bureau's Current Population Survey (CPS) placed New Mexico 50th of the states plus the District of Columbia in home Internet adoption.[66] According to the NM Broadband Program's adoption survey, approximately 28 percent of New Mexicans do not have access to the Internet from home.[67] Of those without home access, approximately 25 percent of respondents to the survey said that they "don't know how to use it," 26 percent said that they "never considered it," and 5 percent indicated that they 'don't know how to get Internet.'[68] Furthermore, half of the respondents without Internet in their home do not know how to use it.[69]

New Mexico lags behind other states in the rate of home Internet adoption… half of the respondents without Internet in their home do not know how to use it.

The above results underscore the importance of digital inclusion and digital literacy efforts to close the adoption gap. Such efforts are not only important to increasing

[64] *Broadband Assessment Report*, p. 11.
[65] *Broadband Assessment Report*, p. 11.
[66] The New Mexico Broadband Program, *Broadband Subscription and Internet Use in New Mexico,* June 2013, p. 8, http://www.doit.state.nm.us/broadband/reports/NMBBP_Adoption_Report_0613.pdf, (accessed Aug. 13. 2014).
[67] *Broadband Subscription and Internet Use in New Mexico,* p. 15.
[68] *Broadband Subscription and Internet Use in New Mexico,* p. 26.
[69] *Broadband Subscription and Internet Use in New Mexico,* p. 36.

Internet adoption and use, but also help create a stronger market for broadband by increasing the overall market of subscribers.

To the extent that the cost of service does preclude residents from adopting broadband—especially in areas with low household income, where such spending is perceived as discretionary rather than vital—a key challenge remains in illustrating the value of broadband, creating demand, and enabling residents to experience the benefits of broadband connections.

In communities of low adoption rates, digital inclusion and digital literacy programs can also help to create a market, where none otherwise exists. Thus inclusion and literacy efforts can also contribute to stimulating demand for broadband services, which in turn may give providers more confidence that there will be sufficient demand to match their investment in broadband infrastructure.

Over the past several years, the NM DoIT has made important progress in enhancing the digital literacy of New Mexican's, particularly among low adoption communities.[70] The Digital Literacy Resource (DLR) that included a "Broadband Train the Trainer Toolkit," a resource for developing trainings in Basic and Business Digital Literacy, was utilized by librarians, educators, tribal representatives, and others that work in various communities to spur adoption. NM DoIT also focused specifically on advancing broadband connectivity and education among tribal communities through developing an educational program to teach tribal members how to use the Internet to help with health and wellness, education, and family communications.

These efforts were complemented by other digital literacy programs in the State. Fast Forward New Mexico (FFNM) was a $2.1 million federal grant led by the State Library of New Mexico, in partnership with public and tribal libraries, the University of New Mexico, and Davis Innovations.[71] The program sought to increase statewide broadband adoption and promote computer literacy and Internet use in rural, Hispanic, and Native American populations. It offered free, hands-on training in 16 public libraries around New Mexico beginning in the summer of 2010 and continuing through 2012.

Finally, as discussed in Chapter 4, CTC and Cirrus Consulting have engaged communities in the SWNMCOG, NEEDO, and NWCOG pilot regions on developing a digital literacy strategy to meet their needs and leverage local resources. The efforts has already yield important outcomes in term of increasing awareness of the importance of digital literacy

[70]Discussion is based on subject matter covered by the NM Broadband Program website, http://www.doit.state.nm.us/broadband/index.shtml
[71] http://www.fastforwardnm.org/about

training and facilitating discussions around organizing digital literacy programs or improving existing local training resources.

It is critical to for the State to continue to support digital literacy. In particular, literacy programs should focus on low-adoption communities including seniors; low-income, underserved minorities, immigrants and non-English speakers, rural residents, and Native Americans.[72] As part of this effort the State should look for more opportunities to partner with community anchor institutions to establish hubs in public libraries, community centers, senior centers, and tribal chapter houses to aid in the deployment of digital literacy resources.

The digital literacy model currently utilized in the Regional Broadband Implementation Pilots in SWNMCOG, NEEDO-NM, and NWCOG could be useful for leveraging existing local resources to develop training programs across the State. Through the model, the State should continue to support and facilitate engagement among civic leaders and institutions around digital literacy training. In addition, it should provide access to expert consultation to offer communities a scaffolding of the process to organize and develop digital literacy, including sharing training resources and best practices.

The State should consider directly funding or assisting with finding other funding (i.e., grants) to support dedicated digital literacy training staff in communities across the State.

The State should also continue efforts to provide public access to digital literacy resources for more flexible study at home or mobile devices.[73] Related to this, the State should also create and distribute consumer education materials on broadband, covering topics such as information on what Internet service providers are serving communities, what are the differences between their broadband services including pricing information, and how to understand a monthly bill. Research shows that knowledge of pricing and other service information is important to support vulnerable communities.

Finally, the State should seek to address the relevancy gap for non-adopters who do not currently see the value of using the Internet, and where income or other factors do not create barriers to adoption. Awareness campaigns, promotion programs, and other related activities that demonstrate the value of adopting the Internet could be useful to

[72] *Broadband Subscription and Internet Use in New Mexico,* p. 94 – 95.
[73] Fast Forward New Mexico, *Statewide Broadband Summit Final Report,* August 2013, p. 7, http://www.doit.state.nm.us/broadband/reports/Broadband_Summit_Report_FINAL.pdf, (accessed Aug. 13, 2014).

increase adoption more broadly.[74] Such programs should focus on specific populations such as low income, elderly, minority, and unemployed groups.

Recommendation: Develop training and internship programs in information technology and broadband

Technological skills have never been in higher demand or potentially more important for stimulating economic development. Furthermore there is a great need for skilled professionals to meet the technological requirements of institutions including schools, libraries, and healthcare facilities. As noted in the Broadband Assessment Report, there is a shortage of qualified network professionals within healthcare facilities to ensure telehealth and other technologies are adequately supported and deployed. Similarly, many schools find it difficult to attract and retain skilled personnel to implement new learning technologies and maintain the schools digital infrastructure.[75]

This poses a significant challenge for the State to both meet the technological requirements of its anchor institutions, while also developing talent to spur economic growth and development. Over the long term, increasing STEM education and related efforts in K-12 schools will pay dividends, but in the near and medium term the State should also invest in training and internship programs to provide opportunities for working adults. Similar to digital literacy and digital inclusion programs, training and internship benefit both build skills for individuals but also can increase market demand for broadband services. New tech start-ups will increase demand for broadband and in particular more advanced broadband, which in turn, should provide broadband providers greater incentive to build and upgrade broadband infrastructure.

NM DoIT currently offers information technology (IT) trainings that include hands-on classroom training, Computer Based Training (CBT) and online/video training.[76] It should seek to expand these offerings to make available instruction not just for existing professionals, but more novice individuals.

It can also partner with other institutions that currently have internship and training programs. For example, the University of New Mexico is developing a program to train technicians and engineers on the University's state network and encourage other entities to collaborate. The state could also look to partner with private providers such as AGC of New Mexico that currently offers a Technology Academy as part of its

[74] *Broadband Subscription and Internet Use in New Mexico,* p. 95 – 96.
[75] B*roadband Assessment Report*.
[76] http://www.doit.state.nm.us/service_catalog/training.html

comprehensive training programs written by contractors for contractors.[77] AGC currently offers distance learning, workshops, weekly classes and webinars that provide skills building opportunities for every level of experience.

The key barrier to most IT training and internship programs is cost, so the State might also consider developing a source of ongoing funding for scholarships (on the individual level) and program funding (on the institutional level). Alternatively, or in addition to direct funding, the State should evaluate mechanisms by which it could provide low- or no-cost training at anchor institutions.

Recommendation: Implement an aggressive dig once program to build up the State's fiber and conduit resources and make assets available to private partners

This recommendation focuses on the State developing infrastructure and other policies that lower the cost of new broadband deployment, particularly the deployment of new infrastructure. As discussed in Chapter 3, it is costly for private providers to deploy fiber or other broadband infrastructure in many areas of New Mexico given the physically rough and mountainous terrain over long distances. In addition, low population density in rural areas further raise the cost per subscriber or connections compared to urban areas. We recommend the State can support the availability of broadband by implementing an aggressive dig once program to build up the State's fiber and conduit resources and make assets available to private partners.

The construction of fiber optic communications cables is a costly, complex, and time-consuming process. Simultaneous construction and co-location of facilities reduces the long-term cost of building communications facilities. This is because there are significant economies of scale through:

1. Coordination of broadband infrastructure construction with road construction and other disruptive activities in the public right-of-way.
2. Construction of spare conduit capacity where multiple service providers or entities may require infrastructure.

The reason that these economies are available is primarily because fiber optic cables and installation materials are relatively inexpensive, often contributing a fraction of the total cost of new construction.[78] While material costs typically fall well below $40,000 per

[77] http://www.agc-nm.org/training-education/course-offerings-calendar

[78]The discussion is based on Columbia Telecommunications Corporation, *Brief Engineering Assessment: Efficiencies Available through simultaneous construction and co-location of communications conduit and fiber*, Prepared for the National Association of Telecommunications Officers and Advisors and the City and

mile (even for large cables containing hundreds of fiber strands), labor, permitting, and engineering costs commonly drive the total price toward $200,000 per mile. Moreover, as the right-of-way (ROW) becomes more crowded with communications infrastructure and other utilities, the cost of new construction can grow exponentially.

Such infrastructure is particularly important for helping private carriers and entrepreneurs to cost-effectively bridge the gap between the Internet backbone (the equivalent of the federal interstate highway system) and the "last mile" (the equivalent of neighborhood streets and driveways). That gap is known as the "middle mile" and, in the apt analogy of the highway system, it is the equivalent of state highways that reach from federal interstates into communities, where localities build local streets and roads. Where the State can assist with building these middle-mile facilities, the private carriers can reduce their costs and concentrate their investment in last-mile deployment— thus increasing last-mile investment in broadband service to homes and businesses.

One means of accomplishing this, is for the State to develop its own fiber assets in the ROW to create a middle-mile infrastructure that could then be leased out to private providers. Alternatively, the State could place banks of conduits in the ROW to accommodate multiple providers' infrastructure. Underground construction using protective conduits generally provides the most scalable, flexible, and durable method for developing long-term communications infrastructure, but is also typically more expensive than aerial construction methods requiring attachments to utility poles. This is because of the limit in the quantity of cables and attachments that can be placed on existing utility poles in more crowded areas, and because aerial construction is more exposed and vulnerable to outside conditions.

The State of Arizona, which has a pioneering program to place conduits for private sector use in the state's rights-of-way, estimates that the incremental cost of placing the conduits is comparable to the cost of painting stripes on the highway.[79] The key is place the conduit where other types of construction are occurring within or along the ROW, such as highway construction or resurfacing, roadway widening, sidewalk repairs, bridge construction, and water or gas main installation, there is an opportunity to place

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County of San Francisco, August 2009, http://ctcnet.us/CoordinatedConduitConstruction.pdf (accessed August 13, 2014); see also, Columbia Telecommunications Corporation, *Brief Engineering Assessment: Cost estimate for building fiber optics to key anchor institutions*, Prepared for the National Association of Telecommunications Officers and Advisors and the Schools, Health, and Libraries Coalition, September 2009, http://ctcnet.us/CTCCostsForAnchorInstitutions.pdf (accessed August 13, 2014).

[79] "The Two Highways Proposition: Combined infrastructure projects save both time and money," *Digital Arizona Program*, Arizona Strategic Enterprise Technology. http://www.digitalarizona.gov/About/The_Two_Highways_Proposition.html. A more in-depth case study of Arizona's dig one policies is provided in Chapter 8.

telecommunications infrastructure at an overall reduced cost and with reduced disruption to public ROW.

Alternative, local and state policies could support a more modest "dig once," policy that encourage the private sector providers to install lines, conduits or other infrastructure when roads or right of ways are impacted. It is in the best interests of both public and private entities for the public sector to identify construction collaboration opportunities that share the burden of expensive and duplicative labor-related costs and efficiently utilize physical space in the ROW. If fiber construction is coordinated with a major road or utility project that is already disrupting the ROW in a rural area, the cost of constructing the fiber, communications conduit, and other materials can range from $30,000 per mile up. However, if fiber construction is completed as part of a separate standalone project, the cost of constructing fiber and communications conduit can range from $95,000 to $200,000 per mile.

Recommendation: Maximize benefits for schools, libraries, and health care facilities through the federal E-rate and Healthcare Connect Fund programs

This recommendation focuses on taking similar strategic approaches to two significant federal funding opportunities—one for schools and libraries, and one for hospitals and healthcare facilities. There is an enormous need in New Mexico—and now a huge opportunity to build a strategy that leverages the buying power of the entire State; reduces the administrative burden on school districts, library districts, and hospitals; and delivers functional benefits. In these scenarios, the State's role will enable greater benefits than would the efforts of individual communities.

Maximizing Potential Funds Received

As described in Chapter 6, the E-rate and Healthcare Connect Fund programs represent the most significant potential funding opportunities available to the State's schools, libraries, and hospitals. While each of these programs are accessible by individuals communities, the State will derive the greatest benefits by coordinating the effort of these sectors on a regional or statewide basis. This is especially true given recent announcements from the FCC.

The FCC voted in early December 2014 to expand the E-rate program by $1.5 billion annually for 10 years. The goal for that new funding, the Commissioners stated in announcing the Order, is to get fiber to every school in the country, to enable gigabit service to every school over that fiber, and to enable Wi-Fi to every classroom. The

actual Order will not be released until January 2015, so the final language is not yet available—but based on the Commission's announcement, this new funding represents a huge opportunity for New Mexico.

Another E-rate change announced by the Commission also points to new benefits for New Mexico—and to the value of statewide E-rate coordination in the future. The previous E-rate process prioritized smaller individual applications form schools and libraries, and deprioritized big consortium applications—because USAC's work was evaluated based on the number of applications it processed. USAC was highly incentivized to process small, simple applications.

The Commission has said that the new Order will turn that model on its head. Rather than encouraging as many individual E-rate applications as possible, the FCC is taking a page from its Healthcare Connect Fund playbook and promoting large consortium applications—which, in turn, will promote the kind of leveraged buying power that is possible from such coordinated efforts among regional or statewide groups. (See Chapter 6 for details on the Healthcare Connect Fund consortium approach.)

Thus, the State will get the most value from the E-rate and Healthcare Connect Fund programs if it takes a strategic approach to coordinating a statewide effort. With statewide bidding and planning, New Mexico may be able to better leverage the buying power of all of its schools, libraries, and hospitals.

The State will get the most value from the E-rate and Healthcare Connect Fund programs if it takes a strategic approach to coordinating a statewide effort.

This type of coordinated approach is a strategy that is absolutely a best practice. (Chapter 8 includes case studies on maximizing E-rate funding through statewide coordination and planning in North Carolina and Utah.) The State is already engaged in planning like this at some level; it should redouble its efforts in light of the FCC's new Order. The New Mexico Broadband Program is uniquely positioned to support this effort in collaboration with State agencies that represent the sectors.

Reducing Administrative Costs and Creating Functional Benefits

What's more, statewide coordination will reduce the aggregate administrative costs incurred by the State and the individual entities receiving service. And the hospitals, schools, and libraries will gain important functional benefits.

That is important to note, because the service cost—on an individual basis—may not be the greatest benefit. While the 65 percent federal Healthcare Connect funding for broadband services purchased by a statewide consortium represents a significant subsidy, the reality is that the subsidized cost of the enhanced services and the consortium's administrative costs are likely to exceed the cost of the basic connectivity options currently available to these entities. In other words, from a purely dollar-driven perspective, some hospitals might be better off buying basic connectivity on their own.

However, this would be a short-sighted decision. The business case for creating a consortium is not solely based on the cost of broadband—it is based on the resulting network's wide-ranging benefits to the hospitals. These benefits include the network's ability to lower costs in other aspects of the hospitals' operations, create new revenue streams, and enable intangible benefits such as supporting enhanced and new applications, increasing data security, delivering more reliable connectivity, and bringing new capabilities to rural facilities.

As a starting point for understanding the intangible benefits of the consortium, consider that a combined network would create broadband service parity (in terms of capacity and price) across all member locations—which would have important ripple effects.

In terms of service costs, this statewide price normalization would benefit rural hospitals (which currently pay higher prices), but would likely increase costs for urban hospitals (which currently pay lower prices). However, as we describe below, the urban hospitals will gain other benefits, as well as access to potential new revenue streams.

With improved transport capabilities to the rural hospitals (and, likely, enhanced connectivity to some of the urban and suburban consortium members, as well), a single healthcare network would be able to support new applications to all members. The network would also be scalable as the hospitals' needs grow—unlike leased circuits, which scale only with cost-prohibitive monthly fees.

The network capacity would also scale to meet the long-term needs of the hospitals, rather than at the whim of a service provider that is trying to maximize its net revenue.

One of the Healthcare Connect Fund's key drivers is the notion that a consortium network will enable cost-effective delivery of new services to rural areas. The new services delivered to rural hospitals will allow those members to avoid some current costs, while creating a revenue stream for the larger healthcare providers that are delivering the services. (Being able to offer services to an expanded rural customer base would also mean that the larger hospitals will more fully use their available resources, such as equipment and expertise.)

The consortium network would support “best-practices” for increased reliability (e.g., through standby power requirements at each member facility) and enhanced data encryption to meet HIPAA requirements. In a similar vein, the network would separate the healthcare routing environment(s) from the global routing environment until traffic reaches specific “handoff” points where the virtual private network (VPN) would interact with the larger, global network.

Other benefits in terms of pricing and operations include:

- Reduced equipment costs as interaction and collaboration among members increase. For example, the network would enable the hospitals to connect two datacenters in different areas of the state without special, customer-side data center interconnect (DCI) equipment.
- Aggregation of demand and purchasing power to reduce commodity bandwidth costs, create a larger voice for customer support and service restoration, enhance monitoring of connectivity services, and ensure coordinated scheduled maintenance of carrier circuits.

Appendix A: Funding Opportunities

This document summarizes a number of ongoing federal broadband funding programs that could help fund broadband deployment. The nature of support varies widely, with some programs providing low-interest loans and others providing grants or tax credits. In some instances, support has declined significantly in recent years as the federal budget has tightened. Some programs are narrowly tailored to specific types of investments (e.g., educational or health care), while other programs have broad mandates that can be used to support virtually any broadband improvements.

This compendium provides background on some of the most promising broadband funding opportunities. (We recommend subscribing for alerts of upcoming funding deadlines through www.grants.gov.) The programs include the following—each of which is described in further detail below:

- Department of Agriculture – Expansion of 911 Access; Telecommunications Loan Program
- Department of Agriculture – RUS – Rural Broadband Loan Program (through Farm Bill)
- Department of Agriculture – RUS – Community-Oriented Connectivity Broadband Grant Program ("Community Connect")
- Department of Agriculture – RUS – Public Television Digital Transition Grants
- Department of Agriculture – RUS – Telecommunications Infrastructure Loans
- FEMA – Homeland Security Grant Program (HSGP)
    - *State Homeland Security Program (SHSP)*
- FCC- Rural Health Care Pilot Program (now transitioning to Health Infrastructure Program)
- FCC – Universal Service Administrative Company (USAC) (through Universal Service Fund)
    - *FCC – Universal Service Fund, Connect America Fund*
    - *Rural Health Care Fund*
    - *Rural Health Care Pilot Program*
    - *E-Rate Program – USF Schools and Libraries Program*
- New Markets Tax Credits

Department of Agriculture, Rural Utilities Service (RUS)

Telecommunications Loan Program – Expansion of 911 Access

USDA cautions that this program is limited to loans to provide 911 service. Areas with existing 911 capability will not be prioritized.

Entities Funded: Adopted in March 2012, the program can provide loans to any entity eligible to borrow from the Rural Utility Service (RUS), including state or local governments, tribes and emergency communications equipment providers (if the state is prohibited from acquiring debt).

Nature of Award: Loan

FY 2014 Resources: This is a loan program and thus not subject to appropriations.

Typical Award Size: Loan (either cost of money – roughly 3.15 percent for 20 years beginning June 2014 – or 4 percent loan). "Typical" award size is unknown, though RUS will not consider applications for *less than* $50,000.

Cost-Share Requirement: N/A (loan)

Applicable Deadlines: The rule was finalized in March 2012. Applications are accepted through the RUS Telecommunications Infrastructure Loan Program and can be submitted throughout the year (and will be reviewed and processed on a first-come, first-served basis).

Program Mission: The program is intended to "provide[ ] rural first responders with the tools they need to maintain mission-critical voice and broadband service during times of emergency or during natural disasters." The new rule explicitly codifies the Secretary of Agriculture's authority to make loans in five areas of eligibility to expand or improve 911 access and integrated emergency-communications systems in rural areas for the Telecommunications Loan Program.

Projects Funded: The program appears to have broad application to emergency-communication improvements. For instance, it could provide support for projects that help responders precisely locate rural wireless 911 calls, contact 911 via text message, or send emergency responders photos or videos of crime scenes or accidents. The new regulation would also give the Rural Utility Service the ability to finance wireless upgrades for public safety and security. USDA staff, however, report that the program is fairly narrowly tailored to 911 and could not extend to construction of a broadband system, despite arguable benefits for emergency communications.

Restrictions: The loan program is limited to "rural areas" (defined as an area that is not located within a city with a population greater than 20,000 or an urban area contiguous to city with a population greater than 50,000) (7 CFR 1735(2)). Awards are made based on existing emergency communications capability (7 CFR 1735.12). Awards are also limited to providing 911 service (though could extend to upgrading 911 to digital service).

Key Links:

- Federal Register Notice: http://www.ofr.gov/OFRUpload/OFRData/2011-23152_PI.pdf
- Affirmation of Interim Notice as Final Notice: http://www.rurdev.usda.gov/supportdocuments/e911reg.pdf
- Infrastructure Loan Application Guide: http://www.rurdev.usda.gov/UTP_ProForma.html

Program Contact:

- David Villano (202-720-9554 or david.villano@wdc.usda.gov)

Department of Agriculture, Rural Utilities Service (RUS)

Rural Broadband Loan Program (through the Farm Bill)

The Rural Broadband Loan Program has historically been the RUS program with the greatest promise for competitive broadband. The application process is not onerous and there is some flexibility in what loans can cover. Unfortunately, with the recent enactment of the Agricultural Act of 2014 *(Farm Bill), changes to the Rural Broadband Loan Program will have to be implemented. RUS is not accepting loan applications for federal assistance under the Broadband Program pending these changes.*

Entities Funded: Entities eligible to receive loans include corporations, limited liability companies, cooperative or mutual organizations, Indian tribes, and state or local government. Individuals or partnerships are not eligible.

Nature of Award: Awards are in the form of Treasury-rate loans, four-percent loans, and loan guarantees. Loans are for the term of the life of the facility (thus, 18-20 years for standard-wire broadband). Money is dispersed as construction is completed, with monthly advances against the following month's contract. Once awarded, funding covers capitol costs and can retroactively cover pre-application expenses (e.g., project design); however, applicants must take a "leap of faith" in preparing these details during the application process.

FY 2014 Resources: $34.5 million has been allocated for the program in FY 2014, though loans cannot be made until a rulemaking is complete (anticipated near the close of FY2014). RUS staff would seek to have the FY2014 allocations "roll forward" at that time.

Typical Grant Award: Congress approves an annual appropriation (loan subsidy) and a specific loan level (lending authority) for the program. As of 2011, the Rural Broadband Loan Program had provided $1.8 billion in awards across 2,800 communities. Awards range from $100,000 (minimum) to $100 million (maximum), with an average award of $640,000. (S*ee* 76 Fed. Reg. 13771 for details on previous awards.)

Cost-Share Requirement: N/A (loan)

Applicable Deadlines: With the recent enactment of the *Agricultural Act of 2014* (Farm Bill), changes to the Rural Broadband Loan Program will have to be implemented. RUS is not accepting loan applications for federal assistance under the Broadband Program pending these changes, which staff suggests should be complete by the end of the year (though may be extended pending the "close out" of ARRA projects).

Program Mission: The Rural Broadband Loan Program has a broad mission. It is designed "[t]o provide loans for funding, on a technology neutral basis, for the costs of construction, improvement, and acquisition of facilities and equipment to provide broadband service to eligible rural communities."

Projects Funded: The program funds costs of construction, improvement, and acquisition of facilities and equipment to provide broadband service to eligible rural areas. Thus, loans are not limited by anticipated end uses.

Restrictions: Loans are limited to eligible rural communities (i.e., an area with less than 20,000 inhabitants and not adjacent to an urbanized area with more than 50,000 inhabitants). An eligible service area must be completely contained within a rural area, at least 25 percent of the households in the area must be underserved, no part of the service area can have more than three incumbent service providers (note that an area may have two competing broadband service providers), and no part of the funded service area can overlap with the service area of current RUS borrowers and grantees or be included in a pending application before RUS. It is likely that portions of a service territory would qualify, although the service territory may not qualify in its entirety. Incumbent service providers are broadband providers that RUS identifies as directly providing broadband service to at least five percent of the households within a service area.

Other Requirements: Applicants must complete build-out within three years, demonstrate ability to provide the service at the Agency's "broadband lending speed" (5Mbps up and down), and demonstrate an equity position of at least 10 percent of the loan amount. (76 Fed Reg 13779) Note that awards are only partially based on project design, but pay particular attention to the business plan and *pro forma.* Thus, applicants must invest resources preparing these supporting documents. Loans are given to those projects that demonstrate the greatest likelihood of repayment (as demonstrated by the business plan). RUS will give greatest priority to applicants that propose to offer broadband to the greatest proportion of households that have no incumbent service provider.

Key Links:

- General background: www.rurdev.usda.gov/utp_farmbill.html (including application materials) and http://edocket.access.gpo.gov/2011/pdf/2011-5615.pdf
- Application guide: http://www.rurdev.usda.gov/UTP_FarmBillAppGuide.html
- Farm Bill loan program brochure: http://www.rurdev.usda.gov/supportdocuments/BBLoanProgramBrochure_8-11.pdf
- Presentation on the Broadband Loan Program: http://www.rurdev.usda.gov/supportdocuments/FarmBillRegulationPresentation.pdf

Agency Contact:

- Ken Kuchno (202-690-4673); Kenneth.kuchno@wdc.usda.gov

Department of Agriculture, Rural Utilities Service (RUS)

Community-Oriented Connectivity Broadband Grant Program ("Community Connect")

Priority for Community Connect grants is given to areas demonstrating "economic necessity" (which tends to favor the south). The application process is rigorous and competitive (with awards given to only 10 percent of applicants) and once awarded, program requirements are demanding (e.g., requiring last-mile service for all households in the service area). Awards are fairly modest.

Entities Funded: Awards can be given to both public and private entities. Eligible applicants for broadband grants include incorporated organizations, Indian tribes or tribal organizations, state or local units of government, or cooperatives, private corporations, and limited-liability companies organized on a for profit or not-for-profit basis. Individuals or partnerships are not eligible.

Nature of Award: Grant with modest (15 percent) match requirement.

FY 2014 Resources: For FY2014, $13 million was available for Community Connect Grants. Funding is provided through annual appropriations in the Distance Learning and Telemedicine account within the Department of Agriculture appropriations bill. The program is funded at about $15 million annually.

Typical Grant Award: Awards range considerably in size, ranging from $100,000 to $3 million.

Cost-Share Requirement: Applicants must make a matching contribution of at least 15 percent of the total award. This match can be made with "in kind" contributions, but cannot be made with federal funds.

Applicable Deadlines: Applications for the 2014 Fiscal Year Community Connect program were due July 7, 2014. Applications submitted after this date will not be considered. Conversations with program staff confirm that there is a 45 to 60-day application window (typically in the spring) with awards given in September. FY 2014 NOFA was published in May and will likely be released at the same time in 2015. Updates on application deadlines are available through www.grants.gov.

Program Mission: Community Connect has a broad program mission of helping "rural residents tap into the enormous potential of the Internet."

Projects Funded: Community Connect funds approximately 15 projects annually (from an application pool of 150). Eligible projects must offer basic broadband transmission

service to both residential and business customers within the proposed service area. Examples of eligible projects include deploying broadband transmission service to critical community facilities, rural residents, and rural businesses; constructing, acquiring or expanding a community center (but only five percent of grant or $100,000 can be used for this purpose); or building broadband infrastructure and establishing a community center with at least 10 computer access points, which offer free public access to broadband for two years.

Restrictions: While Community Connect has a fairly broad mission, funding is geographically limited to a contiguous area with a population less than 20,000 that does not currently have Broadband Transmission Service (defined as 3 Mbps up and down, as reflected in the FCC National Broadband Map). Grants cannot duplicate any existing broadband services, nor can applicants charge for services to any critical community facilities for at least two years from the grant award. Priority is given to areas that demonstrate "economic necessity." The grant process is very selective, with awards given to only 10 percent of applicants.

Other Requirements: Grant requirements are fairly onerous, as recipients must agree to provide last-mile services throughout the entire service area (i.e., "basic transmission service to residential and business customers").

Key Links:

- Basic background: http://www.rurdev.usda.gov/utp_commconnect.html
- Application Guide: http://www.rurdev.usda.gov/SupportDocuments/utp2014CommConnectAppGuide.pdf
- 2014 Notice of Funds Availability: http://www.gpo.gov/fdsys/pkg/FR-2014-05-22/pdf/2014-11704.pdf

Agency Contact:

- Long Chen and Janet Malaki (202-690-4673) (community.connect@wdc.usda.gov)
- Kenneth Kuchno (202-690-4673)

Department of Agriculture, Rural Utilities Service (RUS)

Delta Health Care Services Grants

This program is limited to the Mississippi Delta region. The Delta Health Care Services and Delta Regional Authority Grant Program is designed to provide financial assistance to address the continued unmet health needs in the Delta Region through cooperation among health care professionals, institutions of higher education, research institutions, and other entities.

Entities Funded: Delta Health Care Service Grants are intended to benefit the most critically underserved populations in the Mississippi Delta Region. The Delta Region includes portions of eight states (Alabama, Arkansas, Illinois, Kentucky, Louisiana, Mississippi, Missouri and Tennessee) (as depicted on the RUS website). Within the Delta Region, grants are limited to a consortium of regional institutions of higher education, academic health and research institute, and/or economic development entities. Health care cooperatives located in the Delta Region that have experience in addressing the health care issues in the region are also eligible. Individuals are not eligible for this program.

Nature of Award: Grant.

FY 2014 Resources: Estimated FY2014 program funding is $5.8 million.

Typical Grant Award: Grant awards range from $50,000 (minimum) to $1,000,000 (maximum).

Cost-Share Requirement: There is no matching requirement.

Applicable Deadlines: The 2014 Notice of Funds Availability was published on April 14, 2014. The FY 2014 application deadline was June 13, 2014. Updates on application deadlines are available through www.grants.gov.

Program Mission: The Delta Health Care Services & Delta Regional Authority Grant Programs are designed to provide financial assistance to address the continued unmet health needs in the Delta Region. The purpose of this partnership is to ensure a streamlined process for eligible applicants to leverage business development with the launch of new or expansion of existing projects.

Projects Funded: Grants may be used to develop health care services; develop health education programs; develop health care job training programs, or to develop and expand public health-related facilities in the Delta Region through increased resources,

increased service area coverage or major health system reorganization, to address the longstanding and unmet health needs of the region. The latter appears to include broadband.

Restrictions: Grants are limited to eligible entities within the eight-state Delta Region serving communities of no more than 50,000 inhabitants. The total amount for salaries and wages, administrative expenses, and recurring operating costs may not exceed 10 percent of the grant funds. Facilities constructed or acquired before the completed application is approved by RBS are not eligible for grant funds.

Key Links:

- Basic background: http://www.rurdev.usda.gov/BCP_DeltaHealthCare.html
- Application Guide: http://www.rurdev.usda.gov/SupportDocuments/rdDelta_Health_CareApplicationGuide2014.pdf
- Map depicting Delta Region: http://www.dra.gov/about-us/eight-state-map.aspx
- Notice of Funds Availability (2014): http://www.rurdev.usda.gov/BCP_DeltaHealthCare.html

Agency Contact:

- Natalie Melton, Cooperative Programs, RUS (rd.deltahealth@wdc.usda.gov or 202-690-1374)

Department of Agriculture, Rural Utilities Service (RUS)

Distance Learning and Telemedicine (DLT)

While the program has historically provided both grants and loans, appropriations have been limited to grants in recent years. Grants are given for equipment, rather than broadband service; however, this may provide a good way for a utility to leverage a new broadband network (e.g., by helping finance video conferencing systems and home medical units). As such, this could be a good supplement to other funding options. Applicants have a fairly high likelihood (50 percent) of receiving an award.

Entities Funded: Funds can be awarded to both public and private entities (including corporations or partnerships, tribes, state or local units of government, consortia, and private for-profit or not-for-profit corporations), assuming they provide the requisite services. Individuals are not eligible. Grantees must provide education and medical care via telecommunications. Eligible entities must either directly operate a rural community facility or deliver distance learning or telemedicine services to entities that operate a rural community facility or to residents of rural areas.

Nature of Award: While DLT historically provided both grants and loans, recent appropriations have been limited to grants (no loan applications were accepted in FY2014).

FY 2014 Resources: Funding has declined in recent years (and has been eliminated for DLT loans). The program provided $30 million in FY2010, $25 million in FY2011, and $15 million in FY2013. Current funding is up slightly, with $19.3 million appropriated in FY2014.

Typical Grant Award: Grant awards range from $50,000 (minimum) to $500,000 (maximum). Roughly 50 percent of applicants are awarded grants.

Cost-Share Requirement: The grant program requires a 15 percent match. Such matches may be made through “in kind” contributions, but cannot be made with federal funds. Applications that provide a greater contribution may be scored more favorably.

Applicable Deadlines: The grant period typically opens between February and June. FY2014 applications were due July 7, 2014.

Program Mission: Grants are available for projects that “meet the educational and health care needs of rural America.”

Projects Funded: Grants can be used for equipment, but not broadband service. Eligible projects vary and can include capital assets (e.g., interactive video equipment, data terminal equipment, inside wiring, etc.), instructional programming that is a capital asset, technical assistance and instruction. Loans have historically been awarded for projects that establish links between teachers and students or medical professionals in the same facility, site development of buildings, construction or purchase of land, acquisition of telecommunications transmission facilities, or distance learning broadcasting. Grants can provide operating costs for the first two years of a program. Note that although there is nominally a loan program "on the books," Congress has not provided appropriations in recent years. Grants are made for projects where the benefit is primarily delivered to end users that are not at the same location as the source of the education or health-care service.

Restrictions: RUS borrowers are not eligible for DLT loans. Demonstration projects are not eligible for DLT funds. Projects must be in a rural area as defined by 7 CFR 1703.126(a)(2) (available online at http://cfr.vlex.com/vid/1703-126-criteria-scoring-grant-applications-19918213). Eligible projects must receive at least 20 (of 45) points using these criteria.

Key Links:

- Basic background: http://www.rurdev.usda.gov/UTP_DLT.html
- Notice of Funds Availability (2014) http://www.gpo.gov/fdsys/pkg/FR-2014-05-22/pdf/2014-11700.pdf
- Application Guide: http://www.rurdev.usda.gov/SupportDocuments/2014-DLT-App-Guide.pdf

Agency Contact:

- General information (202-720-1051 or dltinfo@wdc.usda.gov).
- Sam Morgan (202-205-3733 or sam.morgan@wdc.usda.gov)

Department of Agriculture, Rural Utilities Service (RUS)

Public Television Digital Transition Grants

The Public Television Digital Transition program is fairly limited, as the award does not provide ongoing operational expenses and is restricted to rural areas without public television.

Entities Funded: USDA provides grants to public television stations which serve rural areas. A public television station is a non-commercial, educational television broadcast station. Individuals are not eligible.

Nature of Award: Awards are given as a 100 percent grant.

FY 2014 Resources: Approximately $2 million was available for public television grants in 2014; this is substantially lower than prior appropriations.

Typical Grant Award: Awards can be as high as $750,000. There is not a set minimum level.

Cost-Share Requirement: There is no matching requirement.

Applicable Deadlines: Applications are due annually in July. In 2014, the Notice of Funding Availability was published on May 22. Grant deadlines can be tracked via www.grants.gov. RUS staff believe that the program may be terminated in the near future.

Program Mission: Public Television Digital Transition Grants are intended to "[a]ssist Public Television Stations serving substantial rural populations in transitioning to digital broadcast television transmission."

Projects Funded: Funds can be used to acquire, lease, and/ or install facilities and software needed for the digital transition, including digital transmitters and power upgrades of existing Digital Television ("DTV") equipment.

Restrictions: Grants are limited to stations serving rural areas (i.e., any area of the US not included within the boundaries of any incorporated or unincorporated city, village, or borough having a population in excess of 20,000). Grants are nonrenewable and cannot cover a station's ongoing operational expenses.

Key Links:

- General Resources: http://www.rurdev.usda.gov/UTP_DTVResources.html
- Notice of Funds Availability (2014): http://www.gpo.gov/fdsys/pkg/FR-2014-05-22/pdf/2014-11703.pdf

Agency Contacts:

- Gary Allan, Chief, Advanced Services Division (202-690-4493)

Department of Agriculture, Rural Utilities Service (RUS)

Telecommunications Infrastructure Loans

USDA provides loans to support broadband in rural communities. Loans are limited to telephone companies serving rural areas within cities of fewer than 5,000 inhabitants. Other, more generous grants and subsidies may be available.

Entities Funded: The Department of Agriculture provides Telecommunications Infrastructure Loans to entities providing telephone service in rural areas; public bodies providing telephone service in rural areas as of 1949; cooperative, nonprofit, limited dividend or mutual associations. All borrowers must be incorporated or a limited liability company.

Nature of Award: All awards are in the form of low-interest loans and include: cost-of-money loans (3.15 percent for a 20-year term beginning June 2014), guaranteed loans (interest rates are Treasury rate plus 1/8 percent; historically between .15 and 4.2 percent), and hardship loans (5 percent interest).

FY 2014 Resources: Upwards of $13 billion has been lent since the program's inception and $690 million is budgeted for FY 2014.

Typical Award: $50,000 is the minimum loan award. The maximum is unclear, though as of June 2011, Triangle Telecom has received $136 million over the course of a decade.

Cost-Share Requirement: N/A (loan)

Applicable Deadlines: Applications can be submitted year-round.

Program Mission: The Telecommunications Infrastructure program makes "long-term direct and guaranteed loans to … finance[e] the improvement, expansion, construction, acquisition, and operation of telephone lines, facilities, or systems to furnish and improve Telecommunications service in rural areas." The loans are intended to provide advanced telecommunications networks for rural areas, especially broadband networks designed to accommodate distance learning, telework and telemedicine.

Projects Funded: Loans can be used to finance telecommunications in rural areas for improvements, expansions, construction, acquisitions and refinancing.

Restrictions: Loans are limited to rural areas, narrowly defined as areas within a city of fewer than 5,000 inhabitants.

Key Links:

- General information: http://www.rurdev.usda.gov/utp_infrastructure.html
- Brochure: http://www.rurdev.usda.gov/supportdocuments/telecomloansflyerfactsheet.pdf
- Regulations: http://www.rurdev.usda.gov/supportdocuments/7_cfr_part_1735.pdf

FEMA – Homeland Security Grant Program (HSGP)

The Homeland Security Grant Program supports three interconnected grants (totaling $1.04 billion in FY2014) that are intended to enhance national preparedness capabilities.[80] *Of these, the State Homeland Security Program ("SHSP") holds the greatest promise, though it is not likely to be a substantial funding source (as grants are allocated to counties based on population and appropriations have declined dramatically in recent years).*

State Homeland Security Program (SHSP)

Entities Funded: The SHSP provides funding to all 50 states.

Nature of Award: Grant.

FY 2014 Resources: While funding remains substantial, it has declined considerably in recent years. Funding in fiscal year 2011 ($526,874,100) was 50 percent of funding the previous year – and has been reduced still further. In 2014, $401,346,000 was available (note that this represents an *increase* in funding from 2013).

Typical Grant Award: Each State and territory receive a minimum allocation under SHSP using legislative thresholds established in the *Homeland Security Act of 2002.* These legislative minimums *account for* 35 percent of total resources. Grants are allocated to individual counties using a population-driven formula.

Cost-Share Requirement: None

Applicable Deadlines: In FY 2014, applications were due in May and grants announced in July.

Program Mission: SHSP is intended to support the implementation of State Homeland Security Strategies to address the identified planning, organization, equipment, training and exercise needs at the state and local levels to prevent, protect against, respond to, and recover from acts of terrorism and other catastrophic events.

Projects Funded: Grantees are expected to consider National areas for improvement identified in the 2013 National Preparedness Report, which include cybersecurity,

[80] The three grant programs include: the State Homeland Security Program (SHSP), Urban Areas Security Initiative (UASI) and Operation Stonegarden (OPSG). Only the first two are described herein.

recovery-focused core capabilities, the integration of individuals with access and functional needs, enhancing the resilience of infrastructure systems, and maturing the role of public-private partnerships. Broadband deployment is consistent with several of these priorities.

Restrictions: States must spend at least 25 percent of SHSP funds toward law-enforcement, terrorism-prevention-oriented planning, organization, training, exercise, and equipment. Broadband deployment could satisfy these requirements. The period of performance is two years.

Key Links:

- Summary of all HSGP programs: http://www.fema.gov/fy-2014-homeland-security-grant-program-hsgp
- Frequently Asked Questions addressing all HSGP programs: http://www.fema.gov/media-library-data/1395150571234-0b433243a3e4c6cd0a5346e807a591c0/FY_2014_HSGP_FAQs_Final.pdf
- HSGP fact sheet: http://www.fema.gov/media-library-data/1395150379152-78b9ca072f888d611d122ec8ea9fd079/FY_2014_HSGP_Fact_Sheet_Final.pdf
- FY 2014 Funding Opportunity Announcement: http://www.fema.gov/media-library-data/1395161200285-5b07ed0456056217175fbdee28d2b06e/FY_2014_HSGP_FOA_Final.pdf

Agency Contact:

- Additional guidance and information can be obtained by contacting the FEMA Call Center at

(866) 927-5646 or via e-mail to ASK-GMD@dhs.gov

FEMA – Emergency Management Performance Grants (EMPG)

Emergency Management Performance Grants appear to extend to broadband deployment. Because allocations are population-based, this is unlikely to be a substantial funding source for some counties. Nonetheless, this may be an option worth exploring with the state Emergency Management Agency.

Entities Funded: FEMA awards Emergency Management Performance Grants (EMPG) directly to all 50 states. A single state application is accepted from the State Administrative Agency (SAA) or the State's Emergency Management Agency (EMA) on behalf of state and local emergency management agencies.

Nature of Award: Grant.

FY 2014 Resources: $350.1 million was awarded nationwide in FY2014, with distribution based on population.

Typical Grant Award: Grants are distributed based on population.

Cost-Share Requirement: The EMPG Program has a 50-percent federal and 50-percent state cost-match requirement. The state match can be made with in-kind contributions, but cannot be met with other federal funds.

Applicable Deadlines: FY2014 applications were due April 9, 2014.

Program Mission: Emergency Management Performance Grants are given to intra- and inter-state emergency management systems that encourage partnerships across all levels of government and with non-governmental organizations. Grants are given "for the purpose of providing a system of emergency preparedness for the protection of life and property in the United States from all hazards and to vest responsibility for emergency preparedness jointly in the federal government and the states and their political subdivisions."

Projects Funded: Broadband is identified as an eligible project: "Emergency communications activities include the purchase of interoperable communications equipment and technologies such as voice-over-Internet protocol bridging or gateway devices or equipment to support the build out of wireless broadband networks."

Restrictions: Grants must be expended during a 24-month period of performance.

Key Links:

- Fact sheet: http://www.fema.gov/pdf/government/grant/empg.pdf
- Guidance and application kit: http://www.fema.gov/pdf/government/grant/2011/fy11_empg_kit.pdf

Agency Contact:

- Gary Harrity (gharrity@mema.state.md.us)

Federal Communications Commission – Universal Service Administrative Company (USAC)

Universal Service Fund, Connect America Fund

The Connect America Fund (CAF) may provide a funding opportunity to support broadband; however, FCC staff note that funds are likely to be directed to price-cap carriers. Recipients must be designated an Eligible Telecommunications Carrier. To qualify, a proposed service area would have to be deemed unserved (i.e., no providers offer broadband at speeds of 3 Mbps down/ 768 Kbps up).

Entities Funded: Funding is limited to "Eligible Telecommunications Carriers" (ETCs), which can include price-cap carriers and rate-of-return companies. However, a utility could theoretically qualify as an ETC and provision its own network. In most states, designation of the ETC would be made by the state PUC. A map depicting currently designated underserved census blocks is available online (http://www.fcc.gov/maps/connect-america-fund-phase-i-round-two).

ETCs can include both price-cap companies and rate-of-return companies. Price-cap carriers include about 20 larger companies (e.g., AT&T, Frontier, Verizon). Rate-of-return companies are reimbursed based on actual cost, rather than a cost model. A list of price-cap carriers who currently receive support is also available online. (http://www.usac.org/about/tools/fcc/filings/2014/q3.aspx; see HC01 for listing by state)

Nature of Award: The CAF provides subsidies in unserved (likely – but not necessarily – rural) areas. These subsidies are based on the cost of providing service.

FY 2014 Resources: The CAF is funded at $24.5-billion over five years (and will have an average annual budget of $4.5-billion), with recipients of first-round funding announced in April 2012. This budget includes a $300 million nationwide award as one-time support for mobile voice and broadband services in unserved areas and $100 million nationwide for "alternative technology" (e.g., satellite) in remote areas. Note that these funds are *in addition to* other FCC Universal Service Fund programs. Thus, CAF does not impact funding for other USF programs (e.g., E-rate and Rural Health Care). The CAF is the program formerly known as the "high-cost" program.

Currently, wireless carriers (e.g., US Cellular) in high-cost areas are reimbursed (through the USF) based on the amount of money provided to wireline incumbents to serve the same area. This approach is inappropriate, however, because wireline and wireless providers use different network architecture (and thus have different costs). The CAF phases out this approach, and replaces it with a reverse auction for the cost of providing

ongoing wireless support through the CAF. The CAF was challenged in court, but upheld by the Tenth Circuit in May 2014.

Typical Grant Award: Awards are determined using "incentive-based, market-driven policies, including competitive bidding." Actual award amounts are location-specific, but cannot exceed $3,000 per line in a single area. The maximum award value is based on the actual cost ("cost model") of serving a particular area (taking into account terrain, population density, and other factors). The FCC would then offer that money to Eligible Telecommunications Carriers (generally designated by the state PUC) to serve these areas. If the incumbent carrier declines to extend coverage, the FCC would hold a reverse auction to determine who could serve the area at the lowest cost. Eligible Telecommunications Carriers would thus compete to provide service.

Cost-Share Requirement: There is no cost-share requirement.
Applicable Deadlines: Recipients and support amounts of the first round of Phase I funding were announced in April 2012. The Phase II funding process is underway and funds are expected to be released in 2014 (though FCC staff report that timing is delayed). Price-cap carriers that receive support must complete a state or self-use certification letter and FCC Form 481 annually on July 1 to qualify. Additional deadlines for carriers receiving support are enumerated on the USAC website (http://www.usac.org/_res/documents/hc/pdf/handouts/hc-filing-deadlines.pdf).

Program Mission: The Connect America Fund is intended "to extend broadband infrastructure to the millions of Americans who currently have no access to broadband." The FCC has announced a goal of expanding high-speed Internet access to over 7 million Americans living in rural areas over six years.

Projects Funded: Grants are awarded to projects that "(1) preserve and advance universal availability of voice service; (2) ensure universal availability of modern networks capable of providing voice and broadband service to homes, businesses, and community anchor institutions [within the threshold of support]; (3) ensure universal availability of modern networks capable of providing advanced mobile voice and broadband service; (4) ensure that rates for broadband services and rates for voice services are reasonably comparable in all regions of the nation; and (5) minimize the universal service contribution burden on consumers and businesses." There is also at least $100 million set aside annually for a "remote areas fund" to support alternative technology platforms (e.g., satellite and unlicensed wireless services). Funding under the CAF extends to any technology, as long as it meets minimum-service requirements (i.e., *4 Mbps* downstream and 1 Mbps upstream). Nonetheless, fiber is generally most cost-effective. ETCs must provide to every entity that falls within the established threshold level of support in the unserved area.

Restrictions: The CAF is limited to unserved areas where there would not be deployment absent federal support. Thus, CAF areas are high-cost areas to serve. Funding is not

necessarily limited to rural areas; however, unserved areas are likely to be rural. An area is considered served if at least one provider offers broadband at speeds of 3 Mbps down/ 768 Kbps up.

Funding is limited to price-cap carriers that deploy broadband to their customers. Broadband is defined to include services with speeds of at least 4 Mbps downstream and 1 Mbps upstream (although FCC is taking comment on increasing requisite speeds to at least 10 Mbps downstream and 1 Mbps upstream). Such speeds are deemed necessary to support "robust, scalable broadband" that is needed to enable the use of "common applications such as distance learning, remote health monitoring, VoIP, two-way high-quality video conferencing, Web browsing, and email." Grants are not available in areas where unsubsidized competitors are already providing broadband that satisfies this definition.

To qualify, an ETC must deliver broadband at the requisite speed (*4 Mbps* downstream and 1 Mbps upstream), impose no limitations on access, charge reasonable rates, and satisfy build-out obligations.

Other Requirements: Eligible carriers must commit to interim build-out requirements in three years and final requirements in five years.

Key Links:

- FCC website with links to various documents: http://www.fcc.gov/encyclopedia/connecting-america
- Map depicting census blocks eligible for CAF Round II (because underserved): http://www.fcc.gov/maps/connect-america-fund-phase-i-round-two
- Original FCC Order on Connect America Fund (Nov. 18, 2011): http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0206/FCC-11-161A1.pdf
- Further Notice of Proposed Rulemaking on Connect America Fund (June 10, 2014): https://apps.fcc.gov/edocs_public/index.do?document=327911

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Universal Service Fund, Rural Health Care Program

The Rural Health Care Program (RHC) provides funding to eligible health care providers (HCPs) for telecommunications and broadband services necessary for the provision of

health care. RHC is comprised of three programs: the Healthcare Connect Fund, the Telecommunications Program, and the Rural Health Care Pilot Program. Of these, the Healthcare Connect Fund (HCF) seems most promising. While none of these programs support comprehensive broadband deployment, they may provide useful resources to support eligible health care providers. Although the Rural Health Care Program has an annual cap for funding, the program has never reached the cap, and often has millions of dollars that go uncommitted. Applicants who submit their funding requests early have a high likelihood of obtaining the maximum financial benefit. In the Telecommunications Program, funding is calculated based on the urban-rural differential for the cost of service. In the Healthcare Connect Fund Program, funding is provided at a flat 65 percent rate for all eligible services.
Healthcare Connect Fund

The Healthcare Connect Fund (HCF) provides support for high-capacity broadband connectivity to eligible health care providers (HCPs) and encourages the formation of state and regional broadband HCP networks. Through the HCF Program, eligible HCPs can obtain a discount on eligible expenses, including broadband connectivity and equipment necessary to make the broadband functional. For HCPs that apply as consortia, the HCF Program will also provide support for upfront charges associated with service provider deployment of new or upgraded facilities to provide requested services, dark or lit fiber leases or IRUs, and self-construction where demonstrated to be the most cost-effective option.

Entities Funded: HCF applies to eligible rural healthcare providers, and those non-rural providers that are members of a consortium consisting of majority rural (more than 50 percent) HCP sites. To receive discounts in any of the rural health care programs, health care providers must be public and not-for-profit. “Health care provider” is defined by statute as hospitals, rural health clinics, local health departments, community health centers or health centers providing health care to migrant workers and post-secondary educational institutions offering heath care instruction, teaching hospitals, and medical schools. Ineligible HCP sites (i.e., those that are not public and not-for-profit) may still participate in a consortium and take advantage of bulk-buying, but must pay their fair share (they will not get a discount from USAC). Individual providers can determine whether they are located in a rural area through a look-up tool on USAC’s website (http://www.usac.org/rhc/telecommunications/tools/Rural/search/search.asp).

Nature of Award: There are two principal sub-programs in the Rural Health Care Program, and the award amount depends on which program the applicant chooses to participate in. The HCF program provides a subsidy (65 percent) to eligible institutions for telecommunications and Internet services. For HCF consortia applicants, this subsidy extends to fiber and expenses related to network design, engineering, operations, installation, and construction of the network. In the Telecommunications program, the subsidy is based on the urban-rural differential cost of services.

FY 2014 Resources: Funding is stable as resources are not subject to appropriations. The Rural Health Care Program was authorized in the 1996 Telecommunications Act and FCC and is funded through the Universal Service Fund. Up to $400 million is available annually for all component programs (although only a fraction of this is dispersed); there is a $150 million annual cap on upfront payments for HCF. Note that this program is distinct from and unaffected by the Connected Areas Fund (CAF).

Typical Grant Award: In the HCF Program, all eligible HCP facilities receive a discount of 65 percent on eligible expenses. The Telecommunications Program funds the urban rural rate differential for telecommunications services.

Cost-Share Requirement: In the Healthcare Connect Fund Program, eligible providers can receive a 65 percent discount from the fund on all eligible expenses and are required to contribute the remaining 35 percent to participate. In the Telecommunications Program, eligible providers are required to pay the remaining costs after the subsidy (calculated by the urban-rural differential) has been credited.

Applicable Deadlines: The Rural Health Care Program funding year runs from July 1 through June 30 of the following year. Although funding requests may be submitted through the last day of the funding year, applicants are encouraged to submit funding requests during the initial funding request filing period, which runs from March 1 through May 30. All funding requests filed within the initial "filing period" will be treated as though simultaneously filed. Funding requests filed after the initial filing period will be treated on a rolling, first-come, first-served basis, and may be filed until the end of the funding year. Prior to submitting a funding request, applicants are required to allow 28 days for competitive bidding before selecting a service provider.

Program Mission: The Rural Health Care Program is intended to reduce the disparity in cost between rural and urban telecommunications and Internet services used for the provision of health care at eligible facilities. The Healthcare Connect Fund expands provider access to broadband services, particularly in rural areas, and encourages the formation of state and regional broadband networks linking health care providers.

Projects Funded: HCF supports any advanced telecommunications or information service that enables HCPs to post their own data, interact with stored data, generate new data, or communicate, by providing connectivity over private dedicated networks or the public Internet for the provision of health information technology. Coverage extends to cloud-based connectivity services; last-mile, middle-mile and backbone services; fiber (and maintenance costs); Internet2 and connections to research and education networks; network equipment; and network design, engineering, operations, installation, and construction of the network.

Restrictions: To receive funding through the Telecommunications Program, facilities must be located in a rural area. Non-rural HCP facilities may receive funding through the

Healthcare Connect Fund Program if they participate in a majority rural consortium. To determine if the HCP facility is located in a rural area, see the Eligible Rural Areas search tool on the Rural Health Care Program website: http://www.usac.org/rhc/telecommunications/tools/Rural/search/search.asp

Key Links:

- General background: http://www.usac.org/rhc/
- Fact Sheet Comparing the Telecommunications Program and the Healthcare Connect Fund Program: http://www.usac.org/_res/documents/rhc/pdf/handouts/RHC-Program-Comparison.pdf
- Fact Sheet for the Healthcare Connect Fund Program: https://apps.fcc.gov/edocs_public/attachmatch/DOC-319092A1.pdf
- Fact Sheet: https://apps.fcc.gov/edocs_public/attachmatch/DOC-319092A1.pdf
- Frequently Asked Questions about HCF: http://www.usac.org/_res/documents/rhc/pdf/fcc/FCC-HCF-FAQs.pdf
- FCC Order on HCF: http://usac.org/_res/documents/rhc/pdf/fcc/13.02.25_Linked_Order.pdf#page=3

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Rural Health Care Pilot Program (now transitioning to Healthcare Connect Fund)

The Rural Health Care Pilot program was funded by the FCC at a not-to-exceed cap of $417 million. This program provided 85 percent of the costs for eligible construction, equipment, leased services, etc. of new regional or statewide networks to serve public and non-profit health care providers in areas of the country where broadband is unavailable or insufficient. As of June 2014, the Pilot Program has successfully distributed over $238 million dollars to 50 projects with an affiliated 3,800 health care providers. The Pilot Program is limited to consortia that were selected in the Rural Health Care Pilot Program Selection Order, so opportunities to participate may be limited.

Entities Funded: The Rural Health Care Pilot Program has funded 50 projects around the country with an affiliated 3,800 health care providers. This includes construction, leased services, IRUs and equipment. The Pilot Program is limited to consortia that were selected in the *Rural Health Care Pilot Program Selection Order*. However, eligible health care providers not represented in the selected consortia applications may pursue ways to be included in their networks which are eligible for Pilot Program funding, if funding in a project is still available. Potential recipients under the Healthcare Connect Fund include acute-care facilities that provide services traditionally provided at hospitals, and renal dialysis centers and facilities and administrative offices and data centers that do not share the same building as the clinical offices of a health care provider but that perform support functions critical for the provision of health care.

Nature of Award: Subsidy to reduce the cost of service in rural areas.

FY 2014 Resources: Funding is through the Universal Service Fund (i.e., surcharges on telephone bills), rather than Congressional appropriations. As such, funding is stable and capped at $400 million/year.

Typical Grant Award: The Healthcare Connect fund provides a flat 65 percent subsidy for all eligible services. This includes monthly recurring costs for access to broadband services, construction, equipment etc. These funds are distinct from – and unaffected by – the new Connect America Fund.

Cost-Share Requirement: The Healthcare Connect fund provides a flat 65 percent subsidy for all eligible services. Health care providers are responsible for the additional 35 percent.

Applicable Deadlines: Applications for Funding Year 2014 for the HCF Program are being accepted. The funding year began July 1, 2014. Important dates can be found here.

Projects Funded: The Pilot Program covered both traditional telecommunications and broadband. The Rural Healthcare Program provides for ATM, Centrex, DSL, e-mail,

Ethernet, fiber, fractional T1, frame relay, Internet access charges, ISDN, mileage-related charges, monthly Internet access charges, MPLS, NRS, OC-1 or OC-3, redundant circuit, satellite service, telephone service, T1, T3 or DS3. The program would provide support for the construction of state or regional broadband health care networks that can, for example, connect rural and urban health-care providers; facilitate the transmission of real-time video, pictures, and graphics; bridge the silos that presently isolate relevant patient data; and make communications resources more robust and resilient. Broadband infrastructure projects could include either new facilities or upgrades to existing facilities. In addition, funding could be used to support up to 85 percent of the cost of connecting health-care networks to Internet2 or National LambdaRail (NLR), both of which are non-profit, nationwide backbone providers.

Restrictions: Providers receiving resources from the current Telecommunications Program (to subsidize rates paid by rural health care providers for telecommunications services to eliminate the rural/urban price difference for such services within each state) would not be eligible to receive support under this program for the same service. Health care providers that did not receive funding under the current Rural Health Care Pilot Program could apply, assuming that they met the general eligibility criteria for the program. Funding is limited to rural areas for individual applicants. Consortia can have non-rural participants as part of their network.

Key Links:

- General background: www.usac.org/rhc

Agency Contact:

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E-Rate Program – USF Schools and Libraries Program ("E-Rate")

The E-rate program provides support to schools and libraries by partially funding the cost of broadband services (and, in some cases, the cost of construction of fiber laterals), representing an important revenue source for communications providers such as utilities.

Entities Funded: Funding is provided to eligible schools, school districts and libraries (either individually or as part of a consortium). Funds are distributed to both public and private schools, as long as they provide primary or secondary education, operate as a non-profit business, and do not have an endowment exceeding $50 million. Eligible libraries must be eligible for assistance from a state library administrative agency under the 1996 Library Services and Technology Act. Generally, libraries are eligible if their budget is separate from a school and they do not operate as a for-profit business. Applicants can determine whether a school or library has filed a Form 470 to initiate the

application process by searching the website (submitted forms can be searched by year and zip code at: http://www.slforms.universalservice.org/Form470Expert/Search_FundYear_Select.aspx) .

Nature of Award: Funding is provided through the Universal Service Fund in the form of a subsidy on the eligible facility's telecommunications expenses. The size of the subsidy varies, as elaborated below and may cover both Internet service and infrastructure.

FY 2014 Resources: Funding is stable as resources are not subject to appropriations. E-rate program funding is based on demand up to an annual cap of about $2.4 billion (modified annually to account for inflation). Note that the E-rate program is a distinct program from the Connect America Fund; as such, resources are unaffected by the CAF. Resources for any given school or library are determined based on levels of rurality and poverty in the relevant district.

Typical Grant Award: E-Rate provides a discount on eligible services, with the size of the discount (ranging from 20 to 90 percent) dependent on the level of poverty and the urban/rural status of the population served. The funding level can be determined from the matrix available on the E-rate website (http://www.usac.org/_res/documents/sl/pdf/samples/Discount-Matrix.pdf). The primary measure for determining Schools and Libraries support discounts is the percentage of students eligible for free and reduced lunches under the National School Lunch Program (NSLP), calculated by individual school. For instance, if 70 percent of the students at the relevant school are eligible for NSLP, E-rate will reimburse 80 percent of the costs for eligible services.

Cost-Share Requirement: E-rate discounts range from 20 to 90 percent, with higher discounts for higher poverty and more rural schools and libraries. Schools and libraries are always responsible for paying at least some part of the cost of service.

Applicable Deadlines: The application process typically begins in July (Form 470) and continues throughout the year. The second stage (Form 471 application) filing window opened January 9, 2014 (and closed March 26, 2014) for FY 2014. A flowchart depicting the general process (without dates) is available online (http://www.usac.org/_res/documents/sl/pdf/handouts/Applicant-Process.pdf).

Program Mission: The program is intended to reduce the disparity between rural and urban broadband services. The program is intended to ensure that schools and libraries have access to affordable telecommunications and information services.

Projects Funded: The Schools and Libraries Program is designed to support connectivity - the conduit or pipeline for communications using telecommunications services and/or the Internet. Funding is requested from providers under four categories of service:

telecommunications services, Internet access, internal connections, and basic maintenance of internal connections. Eligible services include both equipment (fiber) and access. (USAC maintains a complete description of eligible services (available online: http://www.usac.org/_res/documents/sl/pdf/ESL_archive/EligibleServicesList-2014.pdf). The E-rate helpline notes that eligible applicants are virtually assured funding to assist with Priority 1 projects (i.e., telecommunications, telecommunications services and Internet access services).

Restrictions: Facilities need not be located in rural areas, though funding levels will increase based on poverty and rural status.

Key Links:

- To submit questions about the program: http://www.usac.org/about/tools/contact-us.aspx
- General background: http://www.usac.org/sl/
- Eligible service list (a comprehensive – 48 page – document with descriptions of all qualifying services): http://www.usac.org/_res/documents/sl/pdf/ESL_archive/EligibleServicesList-2014.pdf
- Training sessions are provided to potential applications in the fall (http://www.usac.org/sl/about/outreach/default.aspx for schedule and links).

Agency Contact:

- The E-rate helpline is extremely helpful. Contact 1-888-203-8100 with questions.

U.S. Treasury– New Markets Tax Credit

The New Markets Tax Credit (NMTC) may provide a source of revenue for broadband investments; however, to qualify, the applicant must identify a Community Development Entity that has an available NMTC allocation and is willing to invest in the project. Moreover, projects must be located in low-income communities (defined below). Even if the applicant can identify a qualifying CDE and a low-income community, the credits are very competitive. Recipients of NMTC financing typically receive favorable terms and conditions on a loan from a CDE (e.g., allowing them to offset up to 39 percent of the cost of the project investment over seven years). Notably, while broadband is consistent with the program mission, only one broadband project appears to have received NMTC funding. The government has expressed an interest in shifting the focus away from real estate, however, which may make broadband projects more desirable going forward.

Entities Funded: The NMTC program permits individual and corporate taxpayers to receive a credit against federal income taxes for making Qualified Equity Investments (QEIs) in Community Development Entities (CDEs), which serve as investment intermediaries. CDEs then use the proceeds that they raise from QEIs to make Qualified Low-Income Community Investments into businesses in qualified communities. CDEs are typically nonprofits, government entities, and others who provide subsidized financing, whose primary mission is to benefit low-income households. Thus, a utility could receive the credit as a CDE, raise cash representing the value of the credit from investors, and then pass the investment to a developer who would receive a loan with below-market terms and conditions to deploy broadband in a low-income community. The CDE must first apply to the Community Development Financial Institutions Fund within the Department of Treasury for allocation awards. Efforts are made to support rural communities, with nearly 20 percent of NMTC investments going to rural communities through the course of the program.

Nature of Award: The program provides an NMTC allocation to qualifying CDEs. Once a CDE receives an allocation, it can secure investors to make Qualified Equity Investments (QEIs) in exchange for the credit. The investors claim a 39 percent tax credit over seven years, 5 percent annually for the first three years and 6 percent in years four to seven. Having secured this investment, CDEs can then offer preferential rates and terms to developers in low-income communities.

FY 2014 Resources: Since the program's inception (in 2000), there have been more than 800 awards providing roughly $40 billion in tax credit allocation authority. $3.5 billion was available in 2013, though authorization expired at the end of the year. Allocations vary annually (and are currently suspended pending reauthorization).

Typical Grant Award: Under IRC §45D(a)(2), NMTC investors claim a 39 percent tax credit over seven years, five percent annually for the first three years and six percent in

years four to seven. Thus, if a CDE receives a $2 million NMTC allocation, an investor can claim a NMTC equal to 39 percent of $2 million (or $780,000). In essence, an investor in the NMTC program gets 39 cents in tax credits during the seven-year credit period for every dollar invested and designated as a QEI. These benefits, in turn, are transferred to developers who receive loans with below market-rate terms and conditions for their activities. Through 2013, there have been 11 NMTC allocation rounds. In 2011 (the most recent year for which such data is available), the average award was $51.8 million (with awards ranging from $20 to 100 million). CDE demand for NMTC allocations far outstrips the availability of credits. Between 2003 and 2013, CDEs requested nearly $282 billion in allocation authority, while the CDFI Fund only awarded $36.6 billion in NMTC allocation. Allocation demand has averaged more than seven times the availability of the credits. In 2013, 70 CDEs out of a pool of 314 applicants were awarded $3.6 billion in allocations (thus $1.41-billion in tax credits – $3.6b*.39). Annual allocations have ranged from $2 to $5-billion since the program's inception.

Cost-Share Requirement: There is not technically a cost-share, though the tax credit merely offsets expenses (so recipients are still responsible for 61 percent of project costs).

Applicable Deadlines: The NMTC is not a permanent part of the Internal Revenue Code. The NMTC program has been extended four times (2007, 2009, 2011, and 2013), with the most recent NMTC extension expiring on December 31, 2013. Extension legislation has been introduced in the House (H.R. 4365) and Senate (S. 1133) and applications are currently being accepted with the assumption that the program will be reauthorized.

The funding window for new applicants is initiated with a Notice of Allocation Authority in the Federal Register (published last in July 2013) and collected for several months.[81] The credit then applies for a 7-year cycle, which begins on the date the Qualifying Equity Investment is initially made. Although the Fund has not yet received Congressional allocation authority for calendar year 2014 or 2015, applications are nonetheless being accepted for 2014 allocations with the expectation that Congress will extend the program.

Program Mission: The NMTC provides tax incentives to induce private sector, market-driven investments in businesses and real-estate developments in economically distressed communities.

Projects Funded: While "substantially all" (85 percent or more) of a CDE's investments

[81] Note that, due to the lack of congressional authorization, the NOAA was amended and republished in March 2014.

must be targeted to the low-income service area identified by the CDE, there is significant flexibility in the types of businesses and development activities that NMTC investments support – including community facilities such as child care or health care facilities and charter schools, manufacturing facilities, for-profit and nonprofit businesses, and home-ownership projects. In 2011, an NMTC award was used to support a broadband project in rural Alaska.

Restrictions: The NMTC is only given to projects that benefit "a low-income community" (LIC), defined as any population census tract where the poverty rate for such tract is at least 20 percent or in the case of a tract not located within a metropolitan area, median family income for such tract does not exceed 80 percent of statewide median family income, or in the case of a tract located within a metropolitan area, the median family income for such tract does not exceed 80 percent of the greater of statewide median family income or the metropolitan area median family income. At least 85 percent of the investment must be made in a low-income community.

Key Links:

- Fact Sheet: http://www.cdfifund.gov/docs/factsheets/CDFI_NMTC.pdf
- Background information (from IRS): http://www.irs.gov/pub/irs-utl/atgnmtc.pdf
- New Markets Tax Credit Progress Report (2014): http://nmtccoalition.org/wp-content/uploads/NMTC-Progress-Report-2014.pdf
- Annual recipient profiles: http://www.cdfifund.gov/impact_we_make/category.asp?categoryID=7

Contact:

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