National Telecommunications and Information Administration

Broadband Technology Opportunities Program Evaluation Study

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Progress towards BTOP Goals:

Interim Report on PCC and SBA Case Studies

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Executive Summary

The American Recovery and Reinvestment Act of 2009 appropriated $4.7 billion to the National Telecommunications and Information Administration (NTIA) to implement the Broadband Technology Opportunities Program (BTOP) in order to spur job creation and stimulate economic growth and opportunity. BTOP supports increased broadband access and adoption, provides broadband training and support through community organizations, and stimulates the demand for broadband. NTIA distributed grant funding to 233 projects, benefiting all fifty states, five territories, and the District of Columbia. The original project portfolio allocated $3.5 billion in grant funds to 123 Comprehensive Community Infrastructure (CCI) projects, $201 million to 66 Public Computer Center (PCC) projects, and $251 million to 44 Sustainable Broadband Adoption (SBA) projects.

The Digital Divide

In 2000, NTIA published, "Falling through the Net: Toward Digital Inclusion." This report outlined the growing disparity in Internet access, especially broadband access, among different demographic groups, and identified the "digital divide" as an issue with strong social and economic implications.[1] A 2011 NTIA study reinforced the idea that home computer use and Internet adoption are strongly associated with income, location, and race or ethnicity.[2]

This report presents the results of fifteen case studies performed by ASR Analytics on a sample of eight PCC and seven SBA grants between July and November 2011. The results presented in this report represent an initial analysis of select PCC and SBA programs and some of the common program activities undertaken as a result of BTOP implementation. The results presented in this report reflect the case study site visit teams' observations at that time.

These case studies identify

- how select grantees maximized the impact of the BTOP investment;
- successful techniques, tools, materials, and strategies used to implement the project;
- evidence from grantees, project partners, and publicly available data regarding the initial impacts of the project on the communities in which they are operating, the individuals they are serving, and the organizations involved in their implementation.

The activities and outcomes presented here are not a complete catalog of the activities and outcomes of the BTOP program as a whole or of those program activities and outcomes achieved by the grantees included in the sample. Rather, specific and representative program activities were selected for inclusion in this report based on the focus of the grantee, the relationship between the program activity and program goals, and the prospective availability of data for future analysis of the overall impact of BTOP.

Based on the BTOP program's policy goals presented in the Notice of Funds Availability (NOFA) and the American Recovery and Reinvestment Act of 2009, we find that BTOP investments had already begun to demonstrate progress by December 2011, as described below:

- The areas served by the grants in the study sample included populations with historically low levels of broadband adoption. All but one of the selected PCC grants targeted locations with historically high poverty rates. Nearly all of the grants targeted minority populations.[3,4]
- Grantees had provided more than 5.9 million hours of training in workforce development, education, digital literacy, healthcare, and other topics, in addition to almost 900,000 hours of open lab access for those who might otherwise not have access to broadband.[5,6]

- Through the continuing efforts of all 65 BTOP PCC projects, new or upgraded PCCs were established at 2,635 locations. In addition, 20 of 43 total BTOP SBA grants had offered subsidized broadband equipment or connections to participants in 2,265 locations.[7,8]
- The grants in our sample had employed more than 200 full-time equivalent (FTE) employees.[9] The eight PCC grants in our sample accounted for more than 90 FTEs, and the seven SBA grants for more than 110.[10]

Our four-year study will analyze the social and economic benefits of BTOP projects in terms of five focus areas that have been linked to broadband adoption and use. The focus area categories include the following:

- **Workforce and Economic Development.** We observed grantees providing training that helped users to improve employment outcomes; to perform work for pay or as part of career development; to engage in entrepreneurial activities; and to operate online businesses. These activities had resulted in users finding jobs; improving their interview and résumé-writing skills; improving knowledge of career possibilities or starting a business; and increasing their ability to use broadband resources to operate existing businesses. These activities are expected to result in decreased unemployment, better job matches, and fewer geographic boundaries on employment.
- **Education and Training.** We observed grantees providing services that helped users to research a degree or certificate program; to take a class or online training leading to a professional certification, degree, or GED; to engage in activities complementing classroom instruction; to become aware of financial aid resources; and to learn English or another language using online tools. These activities had resulted in users obtaining increased awareness of online degree or certificate programs; obtaining a GED; developing awareness of financial aid resources; increasing learning activities; and becoming aware of online tools for English instruction. These activities are expected to result in improved student performance, increased levels of education, improved school enrollment rates, and improved interaction among students, parents, teachers, and school administrators.
- **Healthcare.** We observed grantees providing services that helped users to develop awareness of health resources made possible by broadband; to obtain health information via broadband; and to communicate with a healthcare provider online. Grantees had also taught healthcare providers about broadband-enabled technologies and practices that could be used by their patients. These activities had resulted in users becoming aware of telehealth best practices; obtaining information on how better to manage a medical condition; consulting with medical practitioners online; and developing increased understanding of how to implement telehealth best practices. These activities are expected to result in improved medical care, reduced healthcare costs, and improved treatment outcomes.
- **Quality of Life/Civic Engagement.** We observed grantees providing services that helped users to visit a federal, state, or local government or community website; to communicate with a government agency, elected official, or community group online or through email; to research or apply for government benefits; to obtain government forms online; and to use email, social networking, or blogs to discuss community issues. These activities had resulted in users obtaining government benefits online; engaging in online banking; and obtaining government information such as crime rates, foreclosure rates, and property tax assessments. These activities are expected to result in reducing the cost of government participation, increasing volunteerism, and increasing political engagement and civic participation.
- **Digital Literacy.** We observed grantees providing services that helped users to develop awareness of the benefits of broadband technology; to use a computer and a web browser; to obtain an affordable computer; to obtain an affordable broadband connection with reasonable contract terms; and to understand how to perform basic online activities. These activities had resulted in potential users becoming aware of the value of broadband adoption. Users had also sought free or low-cost training; obtained free or low-cost computer equipment; and developed the skills required to use email, locate information on the Internet, use spreadsheets, take classes online, download forms and documents, upload photographs, create a website, use

social networking sites, and download music. These activities are expected to result in improved participation in everyday economic, social, and community life.

The social and economic benefits attributed to broadband technology by recent academic research are numerous and varied, as are the project activities undertaken by the PCC and SBA grantees in our case study sample. We did not observe all grantees in the population, nor did we observe all program activities for the grantees we visited, due to the sheer volume of program activities undertaken by the grantees in our study sample. Different grantees focus on different areas based on the goals of their grants, but Digital Literacy activities were common to all of the grantees in the case study site visit sample.

In early 2013, the evaluation study team will return to each of these grant locations to observe how the grant has evolved. By the time of this visit, the PCC and SBA projects will be complete or nearly complete. The visits will further investigate the initial impacts uncovered during the first round of visits and identify any additional impacts that may have occurred in the time between the site visits. Interviews with grantees, project partners, and individual users will be used to determine the impacts the grants have made on these entities and the communities in which they operate. This effort will result in a second set of case study reports.

In early 2014, *Interim Report 2* will be delivered. This report will include a summary of the second round of case study visits to the fifteen PCC and SBA grants, allowing for a longitudinal analysis of the impacts of the grants over time. *Interim Report 2* will also summarize the findings from case study visits to twelve CCI grants. The CCI case study visits will take place in the fall of 2013 and result in a set of twelve case study reports delivered to NTIA over several months.

In September 2014, a *Final Report* will be delivered that quantitatively and qualitatively measures the economic and social impact of BTOP grants (including CCI, PCC, and SBA). The centerpiece of the *Final Report* will be an assessment of how and to what extent the BTOP grant awards have helped achieve economic and social benefits in areas served by the grantees.

Section 1. Introduction

1.1 BTOP Overview

The American Recovery and Reinvestment Act of 2009 (ARRA) appropriated $4.7 billion to the National Telecommunications and Information Administration (NTIA) to implement the Broadband Technology Opportunities Program (BTOP) in order to spur job creation and stimulate economic growth and opportunity.[11] BTOP supports increased broadband access and adoption, provides broadband training and support through community organizations, and stimulates the demand for broadband. BTOP works to achieve these goals by funding three types of projects:[12]

- Public Computer Center (PCC) projects establish new public computer facilities or upgrade existing facilities in order to provide broadband access to the general public or to specific vulnerable populations, such as low-income individuals, the unemployed, seniors, children, minorities, and people with disabilities.
- Sustainable Broadband Adoption (SBA) projects focus on increasing broadband Internet use and adoption, especially in vulnerable populations where broadband technology has traditionally been underutilized.
- Comprehensive Community Infrastructure (CCI) projects deploy new or improved broadband Internet facilities to connect households, businesses, and community anchor institutions (CAIs) such as schools, libraries, hospitals, and public safety facilities. CCI projects funded by BTOP are predominantly Middle Mile projects, although a small number of Last Mile projects were awarded.

NTIA distributed grant funding to 233 projects, benefiting all fifty states, five territories, and the District of Columbia.[13] The original project portfolio allocated $3.5 billion in grant funds to 123 CCI projects, $201 million to 66 PCC projects, and $251 million to 44 SBA projects.[14] As of March 31, 2012, 225 grants were funded after excluding awards that have been voluntarily or materially terminated.[15]

1.2 Economic and Social Impacts of Broadband

Broadband has transformed work in most sectors of the economy. Gillett et al. (2006) examine data from 1998 to 2002 for communities in which broadband was available by 1999. They find that communities in which broadband was available experienced more rapid growth in (1) employment, (2) the number of businesses overall, and (3) businesses in IT-intensive sectors.[16] Communities in which broadband is available may experience employment growth rates that are 1 percent higher than communities without broadband. The introduction of broadband also increases the possibility of new forms of economic activity. Katz and Suter (2009) calculate that for every job created as a result of broadband projects, a total of 3.42 direct, indirect, and induced jobs are created.[17] This estimate is in line with that of Atkinson, Castro, and Ezell (2009), who find that each new broadband job results in a total of 3.60 additional jobs.[18]

Burton and Hicks (2005) examine year 2000 data on almost 8,000 firms in West Virginia and Kentucky. They find that firms located in ZIP Codes with broadband availability are between 14 and 17 percent more productive than similarly-aged firms located in ZIP Codes without broadband.[19] LECG (2009) finds that the increase to U.S. productivity resulting from broadband access was about 0.25 percentage points per year between 1999 and 2007. During this period, average annual productivity growth in the U.S. was about 2.1 percent per year, implying that the "broadband effect" is one-eighth of all productivity growth.[20]

The benefits of broadband at the individual level have accrued more quickly to some than to others. In 2000, NTIA published, "Falling through the Net: Toward Digital Inclusion." This report outlined the growing disparity in Internet access, especially broadband access, among different demographic groups, and identified the "digital divide" as an issue with strong social and economic implications.[21] A 2011 NTIA study reinforced the idea that home computer use and Internet adoption are strongly associated with income, location, and race or ethnicity.[22] Results from the FCC "Broadband Adoption & Use in America" survey indicate that the main dividing factors for broadband adoption are education, income, age, and disability status.[23] Vulnerable populations are targeted by BTOP, which is especially intended to serve those with low incomes, the unemployed, seniors, children, minorities, and people with disabilities.[24]

1.3 Purpose and Objectives of the Evaluation Study

NTIA selected ASR Analytics, LLC (ASR), and its subcontractor, Grant Thornton, LLP, to conduct an evaluation of the economic and social impacts of its BTOP grants. A complete description of the methodology planned for the evaluation study is found in the *BTOP Evaluation Study Design.* The major components of the study include a longitudinal case study analysis of a sample of fifteen selected PCC and SBA grants. Twelve CCI grants will be the subjects of a single round of case studies. The study will also include a statistical analysis of public-use data sources and data related to broadband availability, including data from the National Broadband Map (NBM), to ascertain potential social and economic impacts that might be observed.

Collectively, the case study site visits and statistical analysis will provide information on changes to the economic and social conditions of the communities in which grant activities are occurring and will provide insight into potential changes in digital literacy, healthcare, educational opportunities, quality of life, and other social goods resulting from BTOP investments. This methodology allows for both a cross-sectional analysis to measure impacts at a point in time and the development of a basis for the longitudinal analysis of the impacts of the PCC and SBA grants, which will be provided as part of the *Final Report*, due in September 2014.

This report presents an analysis of activities and initial outcomes observed for 15 PCC and SBA case study participants during site visits undertaken between July and November 2011. Key statistics and observations have been drawn from the individual case study reports for each selected grant.

The results presented in this report are an initial analysis of a representative selection of PCC and SBA programs; they reflect observations made during site visits performed between July and November 2011. The social and economic benefits of broadband cited in the research are numerous and varied, as are the project activities undertaken by the grantees in our case study sample. Representative program activities were selected for inclusion in this report based on the focus of the grantee, the relationship between the program activity and program goals, and the prospective availability of data for the future analysis of the overall impact of BTOP. The activities and outcomes presented here are not a complete catalog of the activities and outcomes of the BTOP program as a whole, or of the grantees included in the sample. The expected social and economic benefits of project activities have been classified according to five focus areas linked to broadband adoption and use. We define the five focus area categories as the following:

- **Workforce and Economic Development:** activities intended to increase overall employment of the target population, or to assist employed members of that population in finding jobs that offer increased salaries, better benefits, or a more attractive career path, including self-employment.
- **Education and Training:** activities that lead to a certificate or diploma that would typically be awarded by an educational institution, or that indicate that the recipient has received training that is recognized as valuable for career advancement.

- **Healthcare:** activities undertaken by participants in PCC and SBA programs to improve their own health or that of someone else.
- **Quality of Life/Civic Engagement:** activities that create stronger and more integrated communities, and those that promote interaction between citizens and their governments
- **Digital Literacy:** activities that build the skills and abilities that enable an individual to interact with the digital aspects of culture and to maintain a digital identity.

In early 2013, we will revisit the 15 selected PCC and SBA grants in order to obtain additional information on the evolution of the grants. At that time, we will solicit information from the grantees regarding indicators of grant outcomes that may be used to assess the social and economic impacts of the PCC and SBA grants. These indicators are provided for each focus area discussed later in this document. These indicators may then be used to assess the overall impact of the PCC and SBA grants for the population as a whole. The results of these site visits will result in case study reports for each visit and a summary document, *Interim Report 2*.

1.4 Selected Grantees

The following PCC grants were selected for inclusion in the sample:

- Cambridge Housing Authority (CHA)
- Delaware Division of Libraries (DDL)
- Florida Agricultural and Mechanical University (FAMU)
- Las Vegas-Clark County Urban League (LVUL)
- Michigan State University (MSU)
- South Carolina Technical College System (SCTCS)
- Technology for All (TFA)
- WorkForce West Virginia (WFWV)

The following SBA grants were selected for inclusion in the sample:

- C.K. Blandin Foundation (C.K. Blandin)
- California Emerging Technology Fund (CETF)
- City of Chicago
- Connect Arkansas
- Foundation for California Community Colleges (FCCC)
- Future Generations Graduate School (Future Generations)
- Urban Affairs Coalition (UAC)

Appendix B presents a discussion of the evaluation study grantee selection process and a brief overview of grantee attributes.

Section 2. Key Findings and Progress toward BTOP's Statutory Objectives

2.1 Introduction and Key Findings

This section presents an analysis of the sample of PCC and SBA case studies in order to examine whether these grants are serving their purposes as outlined in the Notice of Funds Availability (NOFA), whether they are addressing the needs of demographic groups identified as vulnerable populations in the NOFA, and other relevant observations we made during our case study site visits. It also includes a discussion of the progress of the BTOP program toward job creation goals of ARRA, which provided funding for the program.

After providing a description of the NOFA purposes, we present quantitative observations of early achievements by BTOP grantees that address the expectations of the NOFA. We expected to find observational evidence of most of the outputs and outcomes of BTOP grants during the second round of case study site visits. However, we found evidence of results for each BTOP goal as described in the NOFA during our initial visits. The evidence reported in this section supports the conclusion that the grantees are focusing on areas that are consistent with statutory requirements for the BTOP program and expectations for PCC and SBA grants as outlined in the NOFA. We also find that the BTOP grants in the sample had generated jobs, as required by ARRA.

2.2 Statutory Requirements

2.2.1 ARRA Requirements

As described in the NOFA governing the general policy and application procedures for the BTOP program, ARRA provided NTIA with $4.7 billion to support the deployment of broadband infrastructure, to enhance and expand public computer centers, to encourage sustainable adoption of broadband service, and to develop and maintain a nationwide public map of broadband service capability and availability.[25] ARRA instructed NTIA to implement BTOP to promote five core purposes:[26]

1. Provide access to broadband service to consumers residing in unserved areas of the country.
2. Provide improved access to broadband service to consumers residing in underserved areas of the country.
3. Provide broadband education, awareness, training, access, equipment, and support to
   a. schools, libraries, medical and healthcare providers, community colleges and other institutions of higher learning, and other community support organizations;
   b. organizations and agencies that provide outreach, access, equipment, and support services to facilitate greater use of broadband services by vulnerable populations (e.g., low-income, unemployed, seniors);
   c. job-creating strategic facilities located in state- or federally designated economic development zones.
4. Improve access to, and use of, broadband service by public safety agencies.
5. Stimulate the demand for broadband, economic growth, and job creation.

According to the NOFA, all projects funded under BTOP must advance one or more of these five statutory purposes. PCC and SBA grants are generally focused on statutory purposes 3 and 5, and these will be the focus of our analysis in this report.

2.2.2 Vulnerable Populations

Under the NOFA, PCC and SBA grants were directed toward serving "vulnerable populations." This group includes low-income individuals, the unemployed, seniors, children, minorities, and people with disabilities.[27]

The literature on broadband adoption provides support for the demographic characteristics identified by NTIA as being associated with lower levels of broadband adoption, or of populations that would benefit from broadband, but might not have it:

- **Poverty.** A 2011 NTIA study reinforced the idea that home computer use and Internet adoption are strongly associated with income. This study reported that affordability significantly influenced a household's decision not to subscribe to broadband services.[28] Low-income individuals in particular identify cost as the most significant barrier to broadband adoption.[29]
- **Age.** Older individuals, particularly those age sixty-five and older, are significantly less likely than their younger counterparts to have broadband Internet access at home.[30]
- **Minority Status.** Asian households exhibit the highest subscription rates of home broadband service, followed by White households.[31] Hispanic and African American households have historically had lower subscription rates than these groups. Households headed by American Indian or Alaska Native householders also have computer use and broadband adoption rates lower than the national average.[32]
- **Language Spoken at Home.** Broadband adoption is correlated with the preferred language of potential users. Spanish-speaking households are far less likely to subscribe to home broadband than English-speaking households.[33]

To begin our measurement of the extent to which the PCC and SBA grants in our sample serve vulnerable groups, the evaluation study team identified a "service area" for each of the grants included in the study, based on the geographic area described by the grantee in its grant application. This service area was then mapped at the census tract level and provided to NTIA and the grantee for confirmation. The service area includes regions in geographic proximity to grant activity that could reasonably be expected to include the vulnerable populations that the grant is intended to serve. We then turn to the populations served by the selected PCC and SBA grants, and present an analysis of the economic and demographic characteristics of the areas served by these grants. Our demographic analysis demonstrates that all of the grants are serving populations that have characteristics associated with lower rates of broadband adoption.

As part of our case study methodology, we obtained statistics for the service areas of each of the case study grants on demographic and economic categories that have been linked to lower levels of broadband adoption. These figures are reported in detail in the case study reports and summarized in Table 1, below.

The service area for each grant is the geographic area determined to be affected by the BTOP grant through consultation with the grantee and our understanding of the services and programs being provided under the grant. For PCC grants, the service area was typically defined as the census tracts where the grant's PCCs are located. There are instances, however, where an entire county surrounding a PCC is included in the service area based on the services being offered under the grant, the geography of the surrounding area, and the area the PCC can reasonably be expected to serve. For SBA grants, the types of services being provided by each grant program were an even more significant factor in determining the grant's service area. The target population and intended audience of each SBA grant program or partner were considered in defining the grant's service area. Individuals within overlapping program geographies were not counted more than once.

Combined, the selected grantees serve almost 18 percent of the nation's population, nearly 55 million people.[34] Of these, more than 8 million are in poverty, representing 14.7 percent of the collective service area populations.[35] This is nearly one percentage point higher than the rate of

impoverished individuals across the nation. Collectively, the service area population for all selected grants is 38.9 percent non-White individuals.[36] Across the nation, non-White individuals represent just 25.5 percent of the population, more than 13 percentage points less than the collective service area.[37] Slightly more than one-fifth of the nation speaks a language other than English in the home, compared to close to 35 percent of the collective service area population.[38]

Table 1. Vulnerable Populations Served by BTOP Grantees

Grant Type	Grantee[39]		Total Population	Poverty		Age 65+		Non-White		Hispanic or Latino		Non-English Speakers	
				Total	%	Total	%	Total	%	Total	%	Total	%
PCC	Cambridge Housing Authority		13,916	3,085	22%	783	6%	6,392	46%	1,012	7%	6,099	44%
	Delaware Division of Libraries		863,832	91,048	11%	118,863	14%	237,554	28%	57,790	7%	99,945	12%
	Florida Agricultural and Mechanical University		321,681	70,416	22%	30,721	10%	129,766	40%	16,277	5%	27,150	8%
	Las Vegas-Clark County Urban League		94,051	24,886	26%	10,054	11%	33,821	36%	40,367	43%	38,213	41%
	Michigan State University		766,204	128,799	17%	109,107	14%	122,746	16%	34,019	4%	52,485	7%
	South Carolina Technical College System		4,416,867	698,748	16%	579,493	13%	1,439,457	33%	178,441	4%	273,404	6%
	Technology for All		6,935,001	1,164,387	17%	590,862	9%	2,404,365	35%	2,838,496	41%	2,672,749	39%
	WorkForce West Virginia		843,482	167,108	20%	133,621	16%	42,361	5%	6,029	1%	15,477	2%
SBA	C.K. Blandin Foundation		371,489	49,445	13%	59,475	16%	31,317	8%	12,631	3%	20,246	5%
	California Emerging Technology Fund		36,308,527	4,796,356	13%	3,972,153	11%	14,051,400	39%	13,103,747	36%	15,340,353	42%
	City of Chicago		410,439	117,139	29%	36,734	9%	326,217	79%	170,332	42%	162,821	40%
	Connect Arkansas		1,209,049	260,308	22%	183,896	15%	309,758	26%	49,813	4%	54,891	5%
	FCCC	Great Valley Center	4,737,447	806,787	17%	498,379	11%	1,422,182	30%	1,866,080	39%	1,692,216	36%
		Mesa Community Colleges	28,540,344	3,687,412	13%	3,130,876	11%	11,433,262	40%	10,488,576	37%	12,660,497	44%
	Future Generations Graduate School		834,181	165,835	20%	131,801	16%	41,792	5%	6,090	1%	15,599	2%
	Urban Affairs Coalition		1,531,112	369,917	24%	194,298	13%	864,313	56%	168,882	11%	308,213	20%
Selected Grants Total (non-overlapping*)			**54,617,728**	**8,025,810**	**15%**	**6,109,793**	**11%**	**21,258,464**	**39%**	**16,683,092**	**31%**	**19,083,751**	**35%**
Nation			**305,423,646**	**42,392,802**	**14%**	**38,513,922**	**13%**	**77,974,657**	**26%**	**49,356,461**	**16%**	**62,764,559**	**21%**

*The non-overlapping total of the selected grants takes into account overlapping service areas in order to count included populations only once.

The shading in Table 1, above, highlights instances where the grantee's service includes a higher percentage of vulnerable individuals than in the nation as a whole.[40] All but one of the selected PCC grants target locations where high poverty rates are present. Nearly all of the grants target minority populations. Every grant has a service area with at least three demographic or economic indicators associated with lower broadband adoption, and some, such as Technology for All, Las Vegas-Clark County Urban League, and the City of Chicago, are affected by nearly all of them. A detailed discussion of the characteristics of each service area may be found in the case study report for each of the projects in the sample.

Based on the evidence presented in Table 1, we conclude that the selected BTOP grants appropriately target vulnerable populations as defined in the NOFA.

2.2.3 Education, Awareness, and Training

BTOP grantees are required to report their project progress to NTIA through the submission of five Performance Progress Reports (PPRs) each year: one per calendar quarter plus one annual report (APR). The training figures reported in Table 2, below, are derived from a combination of APR and PPR data as of December 2011. ASR Analytics reviewed the training hours submitted by grantees and assigned the hours to the focus areas described in this report. Among the 65 PCC projects funded by BTOP, Digital Literacy training is most often delivered.[41] There are significantly fewer hours allocated to Healthcare and Quality of Life/Civic Engagement training compared to all other focus areas.

As of December 2011, the 43 BTOP-funded SBA projects had provided more than two million hours of Digital Literacy training.[42] Among SBA grants, the fewest training hours were allocated to Workforce and Economic Development and Healthcare. In total, the grantees had provided more than 5.9 million hours of training and almost 900,000 hours of open lab access.[43]

Table 2. PCC and SBA Training Hours as of December 2011

Focus Area[44]	PCC	SBA	Total
Workforce and Economic Development	487,305	98,688	585,993
Education and Training[45]	372,835	489,675	862,510
Healthcare	4,657	159,957	164,614
Quality of Life/Civic Engagement	21,349	481,566	502,915
Digital Literacy	1,399,895	2,058,235	3,458,130
Other	366,564	7,534	374,098
Total Training Hours	**2,652,605**	**3,295,655**	**5,948,260**
Lab Access	851,645	42,480	894,125

2.2.4 Access, Equipment, and Support

BTOP grants provide access, equipment, and support either through the establishment of computer centers or through the distribution of equipment or service subsidies to households that would otherwise lack the means to use a broadband connection. The BTOP PCC and SBA project data discussed below were collected and published by BTOP's Connecting America's Communities (CAC) map as of December 2011.[46] The content provided in the CAC map includes data provided by grant recipients submitted during the annual and quarterly reporting processes. The CAC map is updated annually.

Through the efforts of all 65 BTOP PCC projects, 2,635 locations had received new or upgraded PCCs.[47] These PCCs support a range of activities related to Workforce and Economic Development, Education and Training, Healthcare, Quality of Life/Civic Engagement, and Digital Literacy. The eight PCC projects included in the *Evaluation Study* had established 368 new or upgraded PCCs.[48] These activities and their potential benefits are described in Section 3. As illustrated in Table 3, below, the majority of PCCs are located in libraries.

Table 3: New and Upgraded PCCs as of December 2011

Institution Type[49]	Sample	Total
Community-Based Organization	17	91
Community College	67	115
For-Profit Organization	0	2
Government Facility	22	294
Institution of Higher Education	1	12
Library	193	1,745
Medical or Healthcare Provider	1	32
N/A	0	3
Nonprofit Organization	42	180
Public Housing	24	71
Public Safety	0	6
School (K-12)	1	83
Tribal	0	1
Total	**368**	**2,635**

A total of 42,017 workstations are available through the 65 BTOP PCC grants.[50] Across the eight PCC grants included in the *Evaluation Study*, a combined 8,785 workstations had been made available.[51] Across all PCC grants, 9,627 additional hours per week had been provided.[52] The provision of additional hours of operation had allowed PCC projects to increase the activities offered through various programs and to allow for increased participation among target populations.

Through the efforts of all 65 BTOP PCC projects, 1,124 PCCs had received upgraded broadband connectivity as of December 2011.[53] Five of the eight PCC projects included in the *Evaluation Study* had upgraded broadband connectivity at 123 PCC locations. Upgraded broadband connectivity allows for participation in activities and applications that previously might have been inaccessible because of bandwidth constraints.[54] According to data provided in the CAC map, 762 PCCs had received new broadband wireless connectivity.[55] Five of the eight PCC projects included in the *Evaluation Study* had provided new broadband wireless connectivity to a total of 90 PCC locations.[56]

Through the efforts of all 43 BTOP SBA projects, 29,113,841 people had participated in an activity designed to promote sustainable broadband adoption.[57] SBA projects offer a range of activities related to Workforce and Economic Development, Education and Training, Healthcare, Quality of Life/Civic Engagement, and Digital Literacy. The seven SBA projects included in the *Evaluation Study* had provided various activities to 12,332,952 participants.[58] These activities and their potential benefits are described in Section 3. According to data provided in the CAC map, the majority of SBA programs take place in nonprofit organizations, as shown in Table 4, below.

Table 4. SBA Institutions as of December 2011

Institution Type[59]	Sample	Total
CAI	0	83
Community-Based Organization	0	10
Community College	45	73
For-Profit Organization or Entity	13	23
Government Facility	72	111
Institution of Higher Education	12	52
Library	10	227
Medical or Healthcare Provider	4	236
N/A	0	44
Nonprofit Organization or Entity	247	764
Public Housing	5	110
Public Safety	50	52
School (K-12)	43	450
Tribal	0	30
Total	**501**	**2,265**

Four of the eight SBA projects selected for the *Evaluation Study* and 20 of 43 total BTOP SBA grants had provided direct or indirect financial support for broadband connections.[60] The Urban Affairs Coalition grant had offered low-cost broadband subscriptions to participants in one of the project's programs. Six of the seven SBA grants selected for the *Evaluation Study* and 21 of 43 total SBA grants had offered affordable equipment as a project component. The Connect Arkansas and Urban Affairs Coalition projects are examples of this undertaking. Both projects distributed laptop computers at no cost to low-income participants who completed a computer and Internet basics course. Section 3 describes these examples and their potential benefits in further detail.

2.2.5 Jobs Created

In addition to fulfilling the purposes outlined in the NOFA, BTOP PCC and SBA grants also support the purposes stated in the ARRA. One of those is "to preserve and create jobs and promote economic recovery."[61] Table 5 and Table 6, below, summarize data as provided in ARRA reports, which include fractional jobs created by recipients. The data source does not state whether, for instance, one FTE means one full-time job or two part-time jobs. Additionally, not all grants began at the same time. "N/A" indicates that no job data were reported in that quarter for that grant.

Table 5: Jobs Created by PCC Grants as of December 2011

Calendar Quarter	Jobs Reported[62]								
	CHA	DDL	FAMU	LVUL	MSU	SCTCS	TFA	WFWV	Total
2010 Q1	0.00	N/A	N/A	0.00	N/A	0.00	N/A	0.00	**0.00**
2010 Q2	2.33	N/A	N/A	6.55	N/A	0.67	N/A	0.00	**9.55**
2010 Q3	2.60	0.00	0.00	21.60	0.00	3.56	0.00	1.00	**28.76**
2010 Q4	3.61	0.00	0.00	28.40	0.23	6.70	16.04	0.65	**55.63**
2011 Q1	3.41	2.61	0.00	28.30	0.23	6.53	23.47	1.13	**65.68**
2011 Q2	3.41	4.70	0.57	23.40	0.63	10.10	32.11	1.82	**76.74**
2011 Q3	3.41	5.23	0.92	42.60	0.14	7.47	39.88	0.50	**100.15**
2011 Q4	4.48	4.69	1.09	35.75	0.29	8.86	40.36	1.81	**97.33**

Table 6: Jobs Created by SBA Grants as of December 2011

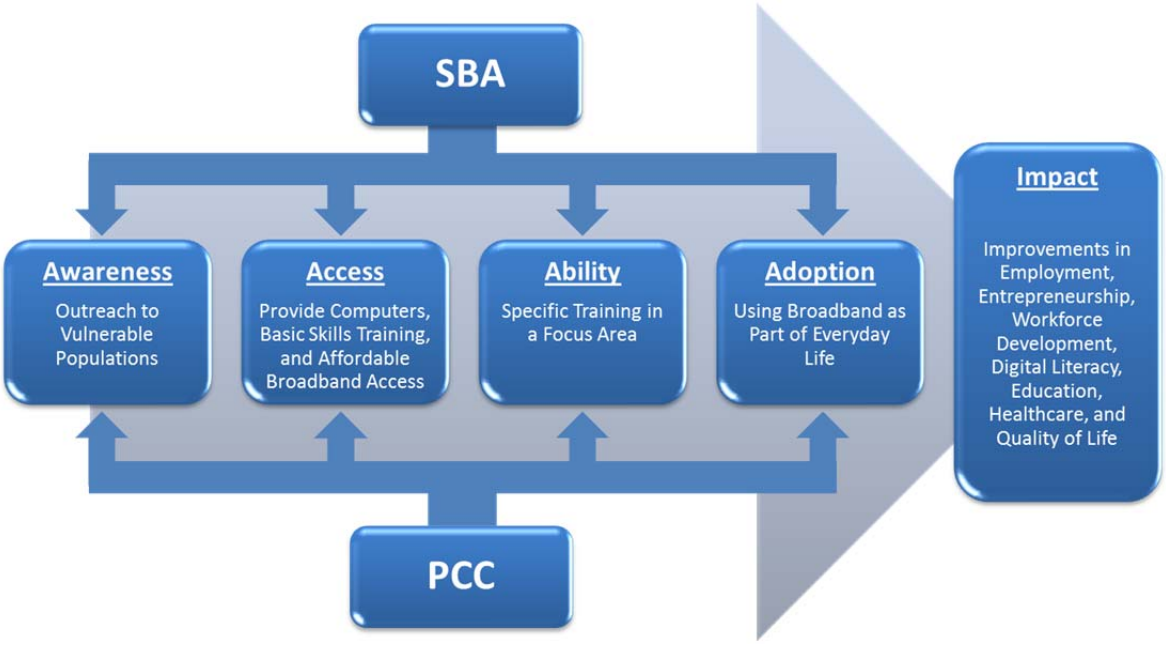
Calendar Quarter	Jobs Reported[63]							
	C.K. Blandin	Connect Arkansas	FCCC	CETF	City of Chicago	Future Generations	UAC	Total
2010 Q1	0.00	N/A	N/A	0.00	0.00	0.00	N/A	**0.00**
2010 Q2	0.22	N/A	N/A	14.11	0.00	3.63	N/A	**17.96**
2010 Q3	1.09	0.00	0.34	19.27	6.38	4.80	0.00	**31.88**
2010 Q4	2.02	1.49	1.21	21.85	15.80	4.80	2.55	**49.72**
2011 Q1	0.78	3.41	3.44	17.82	23.41	5.30	10.20	**64.36**
2011 Q2	0.64	7.79	11.00	16.39	22.19	6.30	19.75	**84.06**
2011 Q3	0.20	6.74	16.91	15.42	23.89	6.64	37.83	**107.63**
2011 Q4	0.66	6.95	14.01	14.96	30.38	6.84	40.48	**114.28**

Section 3. Social and Economic Benefits of BTOP Grants

3.1 Introduction

This section provides a brief description of the activities and outcomes associated with PCC and SBA programs. We relate the activities of the grants to a high-level description of the BTOP program and the expected outcomes of the grants. The wide variety of approaches to these grants on the part of the grantees precludes a one-size-fits-all description. However, the following presents a schematic view of the activities and outcomes expected for the program, which will be used throughout this document as a guide for the presentation of results in five specific focus areas.

Figure 1: High-Level Description of the BTOP PCC and SBA Programs



The goal of BTOP is to promote beneficial social and economic outcomes as a result of the adoption of broadband by individuals, households, businesses, and community anchor institutions that have not yet taken up use of broadband. Three program components address different aspects of broadband adoption:

- **Comprehensive Community Infrastructure** projects deploy new or improved broadband Internet technologies and connect community anchor institutions.
- **Public Computer Center** projects establish new public computer facilities or upgrade existing ones in order to provide broadband access to the general public or to specific vulnerable populations, such as low-income individuals, the unemployed, seniors, children, minorities, and people with disabilities.
- **Sustainable Broadband Adoption** projects focus on increasing broadband Internet use and adoption over time, especially in vulnerable populations where broadband technology has traditionally been underutilized.

Although CCI is an integral part of BTOP, this report discusses only activities related to PCC and SBA grants. CCI grants will be included in *Interim Report 2*. Figure 1, above, presents the major activities of each type of grant and assigns them to categories that describe the intended action of the BTOP program. Our use of these terms is based on guidance NTIA has provided to grantees. We summarize this guidance below, and use it to frame our discussion of the NTIA grants included in these case studies, except in the following cases:

1. The term is used in a sentence with a footnote reference to another study or source of information. In these cases, the referenced author's use of the term should be understood as applying to the footnoted sentence as a whole. We do not attempt to adjust results provided by other authors to conform to NTIA guidance.
2. Grantees or other informants have used the term in question in their discussions with us, based on their definitions. These cases are identified with footnotes that, where possible, include the definition used by the grantee or other informant.

These categories are as follows:

- **Awareness.** Broadband awareness includes an understanding of the potential benefits broadband may have for an individual, family, business, or community and how a broadband connection might be obtained, regardless of the household's intent to purchase the service.
- **Access.** A household has access to broadband service if it can readily subscribe to that service upon request or it can access broadband service through a center available to the public such as a PCC.[64] For the purposes of PCC and SBA grants, we take this to mean also that the household has the tools and knowledge required to take advantage of the broadband connections that are available to it. Digital literacy training is intended to provide the basic level of knowledge needed to obtain broadband access. SBA grants promote access to broadband services by providing free or subsidized equipment or subscriptions, and by working to remove other barriers vulnerable populations face.
- **Ability.** A household has the ability to make use of broadband access if it has the skills and training to go beyond basic digital literacy skills and to apply them to activities related to education, workforce and economic development, quality of life/civic engagement, healthcare, or other activities facilitated by broadband. These activities are differentiated from access in this description because specific grants have identified particular areas of focus that will be explored in more detail, below.
- **Adoption.** Adoption indicates the integration of broadband technology into daily life. For the purposes of PCC and SBA grants, adoption may include both broadband subscribers and regular users of broadband services.

Figure 1 illustrates that PCC and SBA grants may have influence on each of the categories. As a theoretical distinction between these two types of projects, PCCs would be expected to contribute to social and economic benefits more through providing access to broadband, while SBAs would contribute to these benefits through adoption of broadband. As shown above, access and adoption go hand-in-hand and the activities of PCC and SBA programs reflect this. Activities associated with each type of project are discussed in more detail in the subsections below.

The following subsections also rely on the terms defined below:

- **Broadband:** "…two-way data transmission with advertised speeds of at least 768 kilobits per second (kbps) downstream and at least 200 kbps upstream…"[65]
- **Rural:** "…any area, as confirmed by the latest decennial census of the Bureau of the Census, which is not located within: 1. A city, town, or incorporated area that has a population of greater than 20,000 inhabitants; or 2. an urbanized area contiguous and adjacent to a city or town that has a population of greater than 50,000 inhabitants. For purposes of the definition of rural area, an urbanized area means a densely populated territory as defined in the latest decennial census of the U.S. Census Bureau."[66]

- **Subscriber:** may include households, businesses, or community anchor institutions. Households are considered to be subscribers if they have a broadband Internet connection, whether they pay for the service in whole, in part, or not at all. One or more members of a household could have a broadband Internet subscription, but each household counts only once toward measuring broadband subscribership. New subscriptions are reported on PPRs under Question 4a.
- **User**: defined to be "regular users" of broadband services. A regular user is anyone who uses any means to obtain a broadband Internet connection, including household subscriptions, public computer centers, publicly available Wi-Fi connections, broadband-enabled smartphones, broadband subscriptions at the homes of friends or family, workplace broadband connections, or any other broadband connection. Grantees are asked to describe how they obtain statistics on the number of regular users they know of, and the methodology they use to identify regular users. This information is reported on PPRs in the free response to Question 1, "Significant project accomplishments."
- **Vulnerable Population**: groups that have historically lower rates of broadband adoption. These groups include low-income individuals, the unemployed, seniors, children, minorities; and people with disabilities.[67]
- **Indicator**: provides evidence that a certain condition exists or certain results have or have not been achieved.[68]
- **Inputs:** resources invested that promote achievement of the desired outputs, including staff, volunteers, time, money, research base, materials, equipment, technology, and partners.[69]
- **Outputs:** activities conducted or products created that reach targeted participants or populations. Outputs lead to outcomes. Examples include workshops, meetings, development of products, training, counseling, assessments, and media outreach.[70] The subsections below present representative **activities** as outputs of grantee efforts.
- **Outcomes:** changes or benefits for individuals, families, groups, businesses, organizations, and communities. Outcomes can be classified as short-term results, medium-term results, or long-term results.[71]
    - **Short-Term Results** are changes in awareness, knowledge, attitudes, skills, opinions, aspirations, or motivations.[72]
    - **Medium-Term Results** are changes in behavior, practice, decision making, policies, or social action.[73]
    - **Long-Term Results**, also known as **impacts**, are changes in a condition, including social, economic, civic, or environmental.[74]

3.1.1 Public Computer Centers

PCC projects are expected to generate social and economic benefits primarily by providing access to patrons who would be unable to obtain a broadband Internet connection, or who would have access to such a connection on a limited or restricted basis. PCC projects also include components, such as digital literacy training, that go beyond simple access to technology and support increased use of broadband Internet connections in daily life. Activities commonly undertaken by PCCs include

- open lab hours, in which patrons use broadband connections for their own purposes;
- supervised lab hours, in which patrons receive one-on-one assistance with their particular needs;
- training in digital literacy in order to enable patrons to use broadband Internet at the PCC or in other settings;
- training in the use of broadband for purposes specific to the goals of the PCC, such as training in online résumé development or job search at a workforce development center;
- other complementary services, such as printing or copying, that allow patrons to create documents for use outside the PCC.

In order to undertake these activities, PCCs require a location within the community that is accessible and safe, a high-quality broadband Internet connection, computers and equipment suitable for broadband Internet use, staff that are able to assist patrons with PCC activities, furnishings and other equipment, and utilities. The social and economic benefits of PCCs are expected to be seen as a result of broadband Internet usage at the center, which leads to helpful online behaviors at the center and potentially elsewhere.

3.1.2 Sustainable Broadband Adoption

SBA programs present a more adoption-based, rather than access-based, approach to achieving social and economic benefits of broadband. SBA projects commonly include activities such as

- outreach to vulnerable populations to raise awareness of the benefits of broadband;
- provision of broadband Internet access within a lab setting, often achieved in cooperation with a community organization serving vulnerable populations;
- provision of low- or no-cost computers, other equipment, or subsidized broadband subscriptions to low-income participants in order to facilitate broadband Internet access at home;
- training in digital literacy, often focused on a particular community and tailored to the needs of participants;
- integration of broadband Internet into community activities, such as the development of community websites or training in the use of digital tools for community activities;
- one-on-one training for participants in the use of broadband Internet to meet their particular needs.

In order to undertake these activities, SBA programs require locations from which to work, often with broadband computer labs, access to vulnerable communities, participation from representatives of those communities, staff with specific skills in outreach to the communities targeted, equipment, and utilities. The social and economic benefits of SBA programs are expected to be seen through a change in individual behavior that reflects an increased awareness of the benefits of broadband, leading to adoption, skill building, and the integration of broadband into everyday life, which in turn lead to life-enhancing online behaviors and the promotion of broadband adoption in the community.

3.2 Focus Areas

This section describes the expected social and economic benefits of BTOP projects in terms of five focus areas that have been linked to broadband adoption and use. The social and economic benefits that have been claimed for broadband technology are numerous and varied, as are the project activities undertaken by the PCC and SBA grantees in our case study sample. Moreover, we did not observe all grantees in the population, nor did we observe all program activities for the grantees we did visit, because of the sheer volume of program activities undertaken by the grantees in our study sample. As described above, different grantees focus on different areas based on the goals of the grant, but Digital Literacy is common to the activities of all of the grantees in the case study site visit sample. We define the five focus area categories as the following:

- Workforce and Economic Development
- Education and Training
- Healthcare
- Quality of Life/Civic Engagement
- Digital Literacy

The following subsections present the activities and outcomes we observed during our case study site visits related to each focus area. We have selected specific program activities as examples in this report if that activity meets the following criteria:

1. The activity is intended to fulfill the NOFA goals of the BTOP program.
2. The activity is related to the focus of the grantee as expressed in the grantee's application for BTOP funds and other documentation that we have reviewed.
3. The activity is supported by BTOP funds.
4. The grantee has indicated intent to gather data on the activities, outcomes, and impacts associated with the activity.
5. The activity is representative of the program activities of other PCC or SBA grantees not included in the sample.

The goal of this analysis is to produce a set of indicators, based on results documented by grantees, which will measure the outcomes of the activities, either qualitatively or quantitatively. We will seek to obtain these indicators from case study participants at the time of our second round of case study site visits. The information we receive from grantees will then be analyzed to determine if the evidence supports the conclusion that the program activities achieved their goals, and whether BTOP supported economic or social benefits as described in the five categories listed above.

In the following subsections we provide more detail on each focus area, identify the grantees and activities we have selected for inclusion in our analysis, summarize the activities and outcomes we have seen, and discuss the material provided to us from the grantees to complete a longitudinal analysis at a later date.

The evaluation study team reviewed studies and program evaluations that were planned or underway for each of the PCC and SBA grants in the sample, and the extent to which those studies might provide relevant information for the *Final Report*. It is important to note that the term "evaluation study" is broadly interpreted, and individual projects might in fact be conducting formative or summative program evaluation studies, and not necessarily social and economic impact analysis. For each of the focus areas, we characterize these studies and discuss how they might provide additional estimates of the social or economic benefits of the projects included in the sample. The form and content of many of these efforts are still being developed, and these assessments are subject to change based on the results achieved by the researchers responsible for the particular studies.

3.3 Workforce and Economic Development

3.3.1 Introduction and Typical Benefits

This category includes activities intended to increase overall employment of the target population, or to assist employed members of that population in finding jobs that offer increased salaries, better benefits, or a more attractive career path, including self-employment. Workforce Development activities can be performed for one's own benefit, or they may be done on behalf of another person to assist with their employment situation. In order for project activities to be included in the Workforce Development category, it must be the intention of the grantee to assist members of the workforce in improving their employment outcomes, and project resources must be devoted to this purpose.

Broadband and Daily Work

Broadband has been integrated into the daily activities of most employed American adults. Just over half of American adults (53 percent) say that they are currently employed with full- or part-time work.[75] Among those who are employed, 62 percent could be considered "networked workers" who

use the Internet or email at their workplace.[76] Americans are also significantly more likely to use the Internet "constantly" at work than at home. At work, 27 percent of employed online Americans use the Internet "constantly."[77]

Business Resource Networks and Digital Youth Jobs

The City of Chicago's Smart Chicago project incorporates several workforce development-related efforts, including the development of Business Resource Networks (BRNs) and the Digital Youth Summer Jobs program. The BRN project provided technology assessments for small businesses and assisted them in drafting technology action plans.[78] For example, as a result of participating in the BRN, a local restaurant owner was able to increase his customer base by developing a marketing plan to promote the restaurant's newly installed wireless Internet network.[79] The Digital Youth Summer Jobs program allowed students to intern at more than thirty different organizations in 2010, including website design firms, local community development organizations, and Columbia College.[80] As a result, students are gaining on-the-job training in the IT industry and broadening their technology career options.

Broadband and Telecommuting

Use of broadband for telecommuting has become a feature of the jobs held by a large number of American workers. A recent study found that 45 percent of employed respondents reported at least some amount of at-home work.[81] Thirty-seven percent of employees report working from home at least a few times a month, and 18 percent of job-holding Americans work at home every day or almost every day. Benefits of telecommuting affect both the business and the employee. Telecommuting reduces firms' need for equipment, office space, parking spaces, office equipment, supplies, and other amenities.[82] Telecommuting frees employees from, on average, an hour of commuting each day.[83] Crandall and Jackson (2003) note that benefits are difficult to quantify, but do extend employment opportunities to candidates with disabilities.[84] This has the potential to reduce unemployment among disabled individuals. Telecommuting also allows employers to search in a larger geographic area to find employees with rare skill sets.

Broadband technology used by telecommuters could also discourage some of the migration to offshore jobs and encourage what is called "homeshoring."[85] Katz and Suter (2009) clarify that the displacement of employment ("offshoring" or "homeshoring") from one targeted area to another should not be viewed as incremental employment, but rather viewed as mutually beneficial employment, matching the right candidate/employee with the right position unencumbered by geographic boundaries.[86]

Broadband and Job Search

Internet access is a potential resource in finding employment as it enables more effective job hunting by increasing the amount of information available to both employers and employees.[87] The development of improved broadband infrastructure might also improve job matching. In 2010, 53 percent of African Americans and 39 percent of White Americans believed that a lack of broadband access is a major disadvantage in obtaining job information.[88] Atkinson et al. (2010) state that Internet-based job sites enable superior matching between employers and employees, making the process cheaper and faster and providing both employers and employees with more information on which to base their decisions.[89] Improved job matches are beneficial to the employee and to the employer. The lower cost associated with Internet-based applicant searches as a result of broadband means that higher-quality matches are possible, which also raises labor productivity.[90]

Table 7, below, presents a summary of the potential social and economic benefits of broadband for Workforce and Economic Development. These benefits accrue as a result of improved job matches, expanded labor markets, increased career opportunities, and integration of local businesses into the global marketplace for both inputs and outputs.

Table 7. Workforce and Economic Development Taxonomy and Potential Benefits

Taxonomy	Potential Social and Economic Benefits
1. Taking training to improve employment outcomes 2. Performing work for pay or as part of career development 3. Entrepreneurial activities 4. Operating one's business online 5. Performing work-related research[91]	**Benefits to Job Seekers** • Reduced unemployment[92] • Improved job matches, resulting in increased productivity[93,94,95,96] • Fewer geographic boundaries on job search[97] • Independent contracting feasible as a career alternative in remote locations[98] **Benefits to Rural Areas** • Broadband allows rural areas to compete for low- and high-end service jobs, the area of highest economic growth[99] • Improved access to inputs and markets, especially in rural areas[100,101] • Increased telework opportunities, especially for rural areas[102] • Increased job and population growth[103,104] **Benefits to Businesses** • Improved recognition of local business through websites and social networking[105] • Increased productivity of commercial subscribers[106,107]

3.3.2 Activities

Based on the results of the first round of case studies, the following are provided as examples of activities related to Workforce and Economic Development:

- **WorkForce West Virginia**, a PCC grantee that updated nineteen existing One-Stop resource centers across West Virginia with new computers and high-speed Internet access, completed a 50,000-piece direct mailing to targeted populations to promote the project and participating WorkForce locations around the state. The mailing was aimed at the unemployed, senior citizens, veterans, and youth with barriers to employment who lived within a thirty-mile radius of a PCC site.
- **Delaware Department of State, Division of Libraries (DDL)**, a PCC project, provides instructor-led and online workforce development training to patrons at its four PCCs, known as Job Centers. Workforce development training at the Job Centers is intended to improve patrons' employment outcomes. Specific training includes, but is not limited to, résumé writing, interview and career acceleration workshops, and Microsoft Word. Lab coordinators, project partners, and volunteers can facilitate workforce development training at the Job Centers. **Delaware Economic Development Office (DEDO),** a project partner, conducts entrepreneurship workshops providing interested patrons with a range of information to pursue entrepreneurial efforts and to develop small businesses.
- **Texas Connects Coalition (TXC2)** public computer sites, operated by **Technology for All** under its PCC grant, offer a wide range of training programs with curriculum development led by **Austin Free-Net (AFN)**. AFN has created fifteen training modules focusing on basic computer skills and workforce readiness. The workforce training module is focused on résumés, job applications, and interview etiquette. For those seeking employment, TXC2's PCC sites provide computer access to search for jobs, complete online applications, and improve job skills through online workforce training programs.

- **Michigan State University (MSU),** a PCC grantee, expanded or created PCCs in colleges, public libraries, public housing developments, tribal community centers, and other community support organizations across the state of Michigan, providing online educational and workforce development training. MSU also runs internship programs for MSU students and students of the PCC project's community college partners. Through the program, students learn to configure, troubleshoot, and install computers in PCCs and to train PCC attendants to use the computers.
- The **City of Chicago** created two summer sessions of a **Digital Youth Summer Jobs (DYSJ)** program as part of its Smart Chicago SBA grant. DYSJ provides teens in the project's Smart Communities with technology employment opportunities. DYSJ allows users to enhance their résumés and skill sets. The eight-week program provides twelve high school students, ages fourteen to seventeen years old, in five neighborhoods with a paid internship at a business, government agency, or nonprofit organization. Every Friday, participants attend a training session designed by **Common Sense Media** that teaches topics including résumé building, interviewing, job readiness, conflict resolution, and digital citizenship.
- **Connect Arkansas**, an SBA grantee, delivers an **Entrepreneurship Curriculum** to students in eighth to twelfth grade that provides training on the development, establishment, and operation of an online business with a focus on e-commerce. Connect Arkansas also purchased a program license and three years of hosting for **Arkansas SourceLink**, a web-based community referral network that promotes entrepreneurial growth by linking small and start-up business owners with the necessary federal, state, and local resources to start, operate, and grow a business.
- **Minnesota Renewable Energy Marketplace (MNREM),** a partner under **C.K. Blandin's**, Minnesota Intelligent Rural Communities (MIRC) SBA grant, provides training and assistance to small businesses in the renewable energy sector. This includes topics such as getting found on the web, using social media, broadband for businesses, using Quick Response codes and smart grids, and how to hire a web developer.

Table 8, below, presents a selection of activities observed during the first round of case study site visits. These activities were selected as representative of the activities of the BTOP program overall, and are not a complete listing of every Workforce and Economic Development activity undertaken by the grants in the sample or the program as a whole. Activities are organized by the taxonomy presented in the previous table, Table 7. As shown in the table below, several activities had already resulted in users finding jobs.

Table 8. Workforce and Economic Development Activities and Outcomes

Grant	Observations from First-Round Site Visit	
	Activity	Outputs/Outcomes
1. Taking training to improve employment outcomes		
DDL	Provide employment-related training, including résumé writing, interview workshops, career acceleration workshops, and Microsoft Word.	Between July and September 2011, 56 people had become aware of how to improve their résumé-writing and interview skills, how to accelerate their careers, and how to use Microsoft Word through their participation in DDL's Resume/Interview Workshop, Word Basics course, and Career Acceleration workshops. The Georgetown Job Center lab coordinator reported twenty-one patrons of the Georgetown Job Center found a job.

Grant	Observations from First-Round Site Visit	
	Activity	Outputs/Outcomes
TFA	Provide access to training focused on basic computer skills and workforce readiness.	PCC staff members report patron successes in obtaining gainful employment, creating a résumé, and completing a job application.
2. Performing work for pay or as part of career development		
MSU	Provide internship programs for MSU students and students of community college partners. Students learn to configure, troubleshoot, and install computers in PCCs and train PCC attendants to use the computers.	The internship program had trained interns to be effective instructors for the computer center staff. Many of the interns from the 2010-2011 academic year had found full- or part-time jobs in fields related to computer technology or training.
City of Chicago	Provide students with a paid technology internship at a business, government agency, or nonprofit organization.	Students had increased their knowledge of technology career options and identified how to pursue digital media interests for a career. Students had secured jobs using digital technology skills obtained in the training courses.
3. Entrepreneurial activities		
DDL	Conduct entrepreneurship workshops.	As of Q4 2011, 168 participants had become aware of how to pursue entrepreneurial efforts. Areas include resources and funding available to support entrepreneurs, innovative ways to start a business with no money or credit, strategies for managing money and credit, keys to entrepreneurial success, and job placement strategies for individuals with a past criminal background.
Connect Arkansas	Provide entrepreneurship training, including the development, establishment, and operation of online businesses.	In Eureka Springs, Connect Arkansas staff members estimated nearly 50 percent of the students' parents own a small business. The majority of these businesses did not have a website. Connect Arkansas reported students creating websites to support local businesses.
4. Operating one's business online		
C.K. Blandin	Provide training and assistance to small businesses in the renewable energy sector with the use of broadband-based technologies including topics such as getting found on the web, using social media, broadband for businesses, using Quick Response codes and smart grids, and how to hire a web developer.	According to project leaders, businesses had connected to the Internet and developed an online presence.

Grant	Observations from First-Round Site Visit	
	Activity	Outputs/Outcomes
Connect Arkansas	Create a web-based community referral network to promote entrepreneurial growth by linking small and start-up business owners with federal, state, and local resources. Provide complete access to the website free of charge to support as many businesses and new ventures as possible.	SourceLink had not launched at the time of the evaluation study team's visit.

3.3.3 Roadmap

Table 9, below, presents a roadmap for the next round of case study site visits that will occur in 2013. The grantees shown in the roadmap table are gathering data related to Workforce and Economic Development, and they are expected to have indicators that measure the Workforce and Economic Development impacts of their projects. These data sources are shown in the second column of the table. The rightmost column describes the method by which quantitative or qualitative indicators may be included in *Interim Report 2*. Activities are organized by the taxonomy previously presented in Table 7.

Table 9. Workforce and Economic Development Roadmap

Grant	Roadmap for Second-Round Site Visit	
	Data	Method
1. Taking training to improve employment outcomes		
DDL	DDL tracks the number of training participants. The number of patrons who have received job offers is not formally tracked. Success stories are collected weekly from lab coordinators and include reports of patrons who have received job offers.	Report DDL workforce development training statistics as collected, tabulated, and analyzed by DDL. Report success stories collected by DDL.
TFA	The number of participants in employment/job search training, office skills training, GED training, and certified training programs is recorded by program staff.	Report training participation data as collected, tabulated, and analyzed by TFA. Report anecdotes from interviews with lab coordinators.
2. Performing work for pay or as part of career development		
MSU	MSU collects anecdotes and success stories.	Report anecdotes from interviews with MSU internship program staff, lab coordinators, or participants.

Grant	Roadmap for Second-Round Site Visit	
	Data	Method
City of Chicago	The Digital Excellence Study includes a citywide survey of technology use for Chicago in 2008, 2011, and 2013 that assesses community-level outcomes and compares them to those in similar areas and Chicago as a whole. The study will include a random sample telephone survey of 3,453 Chicago residents over the age of eighteen, gathering data on indicators of digital excellence.	Report results presented in the Digital Excellence Study. Report anecdotes from interviews with program participants or sponsors.
3. Entrepreneurial activities		
DDL	DEDO collects information on Grassroots Plus program participants. DEDO intends to survey participants in January 2012 to measure accomplishments of participants of the Grassroots Plus program workshops.	Report training statistics as collected, tabulated, and analyzed by DEDO. Report DEDO survey results as collected, tabulated, and analyzed by DEDO.
Connect Arkansas	The website service used by the program collects traffic data for each school and class. Connect Arkansas provides the option to host the websites for two years for students interested in operating a commercial site.	Report student website traffic data as collected and tabulated by Connect Arkansas. Report data collected on the number of students opting to receive hosting services for their website as collected, tabulated, and analyzed by Connect Arkansas. Report anecdotes from interviews with Connect Arkansas staff or teachers.
4. Operating one's business online		
C.K. Blandin	MNREM has conducted a survey of business participants to obtain information on technologies of interest and reasons for using broadband.	Report results of the survey as identified by C.K. Blandin. Report anecdotes from interviews with participating businesses or Demonstration Community leaders.
Connect Arkansas	SourceLink will provide data on Arkansas companies once it has launched. The BizTracker system measures site users training, counseling, and success.	Report statistics available in SourceLink and BizTracker as collected, tabulated, and analyzed by Connect Arkansas. Report anecdotes from interviews with Connect Arkansas staff or users.

3.3.4 Grantee-Sponsored Research

ASR is conducting primary data collection and research to measure the economic and social impacts of BTOP through the case study site visits. These data will be analyzed as we have described above. Several grantees are also embarking on primary data collection and research. To the extent these grantee-sponsored studies are complete and provide information relevant to the

measurement of the economic and social impacts of BTOP, ASR may incorporate the results of those studies into our *Final Report*.

Three of the grants included in Table 9, above, have third-party evaluation studies underway that might provide relevant information for the *Final Report*:

- MSU conducted a research study to examine Internet use in Michigan library public computer centers. MSU also submitted a paper in March 2011 to the Association for Education in Journalism and Mass Communication 2011 entitled "Theory of Planned Behavior and Internet use in Public Libraries," examining the current use of Internet in public libraries in Michigan that receive BTOP funds.[108] MSU does not plan to administer a formal evaluation of the project, although it is implementing a voluntary hardcopy user survey at library PCC locations to collect data and use them to improve or augment the project. The data are to include computer use, wait times, and the software and programs used by respondents.[109]
- The University of Illinois at Chicago (UIC) Department of Public Administration, led by Dr. Karen Mossberger, is conducting an evaluation of the Smart Communities program that includes a formative analysis and two waves of the Digital Excellence Study, which continues work begun in 2009.[110] The evaluation is planned to include a business survey to assess changes in broadband adoption and relevant business practices (such as website use and e-commerce) for those who have completed the small business programs in the Business Resource Networks. Initial data are to be collected for all participants through a business assessment. Follow-up surveys are planned to be conducted at least six months after recipients have completed participation in Business Resource Center Activities. The results of this evaluation may inform the evaluation of the effects of BTOP on entrepreneurial activities.[111,112]
    - The UIC study is also planned to include information on FamilyNet participants. Staff will obtain initial data from participants, including demographics, income and job status, previous Internet use, and contact information. A history of activities respondents engage in at the centers will also be tracked, including classes, drop-in use, and receipt of free netbooks, if applicable. Follow-up surveys are planned to be conducted at least six months after recipients have completed participation in FamilyNet activities. The FamilyNet surveys are planned to ask questions about broadband adoption, knowledge, self-reported skills, and uses for job search, work, health, education, e-government services, and community information. These survey results may inform the evaluation of the effects of BTOP on job search and employment-related activities.[113,114]
- C.K. Blandin has provided funding to the EDA Center at the University of Minnesota Crookston, led by Dr. Jack Gellar. This study will evaluate the entirety of the grant's activities, identify grant-wide impact indicators, develop reporting procedures, collect data, and measure the impacts of the grant activities. The evaluation includes the development of quarterly reports on partner activities, including design, data collection, and analysis. These quarterly reports include data on the use of distributed computers for job-related activities, outreach and training provided to businesses, and the extent of broadband and Internet use by small businesses. These survey results may inform evaluation of the effects of BTOP on workforce development and economic activity.[115,116]
    - The University of Minnesota Extension (UME), a C.K. Blandin partner, published a report entitled, "Assessing the Digital Presence of Rural Minnesota Businesses: Basic Methods & Findings" in March of 2012 based on research concluded in August 2011. The study involved looking at the digital presence of businesses in the 18 MIRC communities versus a set of control group communities. Digital presence was measured by use of a website, use of social media, and use of Google maps and is intended as a baseline study against which a similar assessment will be compared in three years.[117]
    - The EDA Center published a report entitled, "Rural Businesses and the Internet: The Integration Continues (July 2009)," also authored by Dr. Geller. The purpose of this study was to assess both the adoption and utilization of Internet technologies by 689 rural businesses across all industry sectors, located in nine rural Minnesota regions. It is not known whether this study will be repeated.[118]

The evaluation study team will examine these studies to determine if there are results that may be applied to the estimation of Workforce and Economic Development benefits for the sample.

3.4 Education and Training

3.4.1 Introduction and Typical Benefits

This focus area includes activities that lead to a certificate or diploma that would typically be awarded by an educational institution, or that indicates the recipient has received training that is recognized as valuable for career advancement. Examples of certificates or diplomas include the following: community college degrees, four-year college degrees, advanced degrees, general equivalency degrees, certifications in advanced software technologies such as network engineering, and other licenses or certifications that reflect knowledge of a particular subject at a level that would typically be taught at an educational institution.

Broadband and K-12 Education

Internet and information and communications technology (ICT) applications are prevalent in elementary and secondary schools across the country. Survey findings indicate that "online learning has been growing in K–12 schools and that this growth will continue for the foreseeable future."[120] By 2005, 97 percent of all public schools with Internet access used broadband.[121] In 2007, a survey sponsored by the Sloan Consortium found that three-quarters of public school districts offered online or blended courses to 1,030,000 students during the 2007-2008 academic year.[122] This represented a year-over-year increase of approximately 10 percent and a two-year increase of 47 percent. Another survey released by the U.S. Department of Education found one million K–12 students took online courses during the 2007-2008 school year.[123] By fall 2008, there was an average of three instructional computers per classroom in schools across the United States. Approximately 58 percent of schools supplemented these computers with laptops on carts that can be wheeled from classroom to classroom as needed. Only 6 percent of schools made computers available to students to take home.[124]

Home use of computers and broadband technologies for learning can be a significant factor in motivating students, increasing the relevance of content presented during school hours, and ultimately improving student achievement.[125,126,127,128,129] This positive impact is found across demographic and socioeconomic groups. For example, a study by the American Psychological Association found that "low-income children who used the Internet on a regular basis performed better on standardized tests of reading achievement and had higher grade point averages than children who used it less."[130] Additionally, "a study of the Computers for Youth model, which provides low-income families with discounted laptops and Internet connections, found a positive correlation between increased computer and Internet use and improved test scores."[131] Broadband also provides

The Work Force

In Cambridge, Massachusetts, BTOP-funded PCCs provide computer access with broadband connections for the Cambridge Housing Authority's Work Force Program. The Work Force is a nationally recognized youth development program that provides educational support, comprehensive life skills, and vocational training for low-income teens living in Cambridge public housing. BTOP computers are an integral component of the Work Force curriculum, especially for high school seniors. BTOP computers are used to apply for financial aid for college, prepare cover letters, complete college and job applications, and research colleges. A recent third-party study of program alumni reported nearly 95 percent of participants enrolled in college or a technical program upon completing the program, and over 90 percent are currently pursuing higher education or working.[119]

opportunities for distance learning. In a recent survey of more than 10,000 school districts, 70 percent of respondents viewed distance learning as important for expanding access to courses not currently offered in their schools. Sixty percent of respondents noted the importance of distance learning for access to Advanced Placement (AP) courses.[132]

Access to broadband technology is a predictor of future educational achievement. LaRose et al. (2008) find that home broadband users are more likely than nonusers to plan further education.[133] Other studies suggest that online high school graduates are twice as likely to go to college as those who are not online.[134] Teenagers have the highest Internet usage rates of any age group. Of the 93 percent of teenagers that are online, 63 percent go online daily.[135,136] Ninety-four percent of teens use the Internet for school-related research, and 48 percent do so at least once a week.[137]

Broadband and Higher Education

The landscape of higher education in the United States has been transformed by broadband technology. Ninety-eight percent of undergraduate students currently own a computer. About 95 percent of undergraduate students use the Internet to access university library websites.[138] The spread of online learning as a complement to or substitute for classroom teaching has fundamentally changed the manner in which higher education is provided and received. It has been estimated that 12.2 million students have enrolled in college-level credit-granting distance education courses, and of these enrollments, 77 percent were reported in online courses, 12 percent in hybrid/blended enrollments, and 10 percent in other types of distance education courses.[139] More than 75 percent of college presidents report that their institutions offer online courses.[140] Distance learning is offered more frequently at public colleges and universities. Eighty-nine percent of four-year public colleges and universities compared to 60 percent of four-year private schools offer online classes.[141] While 23 percent of college graduates report that they have taken a class online, this figure doubles to 46 percent among those who have graduated in the past ten years.[142] Fifteen percent of college graduates who have taken a class online have earned a degree entirely online.[143]

Despite the prevalence of online instruction, there remain barriers to its adoption. First, access to broadband technology in a format conducive to instruction is a barrier to some. Interviews with library patrons revealed that, in a library, "public access is not suitable for online courses owing to limited hours of operation, short duration appointments for library computers, and overcrowding. Improved broadband access for educational purposes is thus in need of further attention."[144] This points directly to the applicability of BTOP PCC grants in furthering online educational success. Second, there is a difference in the perception of the quality of online instruction between producers and consumers of distance learning. Slightly more than half of the college presidents surveyed report that online courses provide the same value as a traditional course.[145] Thirty-nine percent of all adults who have taken a class online indicate that the educational value of the online course is equivalent to that of a course taken in a classroom. Only 29 percent of the public says online courses offer an equal value compared with courses taken in a classroom.[146]

Table 10, below, presents a summary of the potential social and economic benefits of broadband for Education and Training. These benefits accrue as a result of increased student performance, higher levels of educational aspirations and achievement, and an increase in the ability to provide educational resources to nontraditional or underserved students. Broadband is also expected to improve teacher productivity, lower cost of instruction, and increase student-teacher interaction.

Table 10. Education and Training Taxonomy and Potential Benefits

Taxonomy	Potential Social and Economic Benefits
1. Researching a degree or certificate program 2. Taking a class or online training that leads to a professional certification, degree, or GED 3. Administrative activities associated with course instruction 4. Activities complementing classroom instruction 5. Learning English or another language using online tools	**Benefits to Students** • Improved student performance[147,148,149,150,151,152,153,154,155,156] • Improved educational resources for nontraditional or disabled students, and students in geographically remote areas or poor districts[157,158,159,160,161] • Increased levels of education[162,163] • More personalized educational activities[164] • Increased student-teacher engagement through social networking[165] **Benefits to Teachers** • Increased teacher productivity[166] **Benefits to School Districts** • Improved school enrollment rates[167] • Improved interaction among students, parents, teachers, and school administrators[168] • Lower-cost, more effective training of workers[169,170]

3.4.2 Activities

Based on the results of the first round of case studies, the following are provided as examples of activities related to Education and Training:

- **South Carolina Technical College System (SCTCS),** a PCC grantee, provides PCCs with one-on-one course or degree assistance to qualified individuals seeking to begin or continue a college education. SCTCS provides training to students receiving financial aid and other educational, digital literacy, and workforce development workshops. SCTCS also offers notebook computer and iPod Touch rentals for students to aid in their completion of course assignments and to enhance classroom instruction.
- **Delaware Center for Distance Adult Learning (DCDAL)** and **Christina Adult Education (CAE)** are project partners under the **Delaware Department of State, Division of Libraries (DDL)** Jobs/Learning Labs PCC grant. These organizations provide adult education courses for students to earn GEDs and high school diplomas. DDL also provides free educational resources through online courses from LearningExpress.
- **The Work Force**, a program implemented by **Cambridge Housing Authority (CHA)**, trains middle and high school students to perform successfully in college, to research colleges, and to apply to colleges online. Students enroll in the program in the eighth grade and continue through high school graduation. The **Gateways Adult Basic Education Program** offers English for Speakers of Other Languages (ESOL) classes to adults, including training in computer skills.
- **The Foundation for California Community Colleges (FCCC)**, an SBA grantee, provides **Mathematics, Engineering, Science Achievement (MESA)** students access to the **Microsoft IT Academy**. These students are majoring in calculus-based disciplines and have been confirmed by the Board of Governors to have the highest level of economic need. FCCC also provides funding for up to 500 certification exams at each MESA college each year. MESA students are provided laptops on the condition that they provide digital literacy training in the community. The **Great Valley Center (GVC)** provides digital literacy training and GED courses to users in the Central Valley of California.
- **The Texas Connects Coalition (TXC2)** PCC grant, operated by **Technology for All**, provides language-based training, such as English as a Second Language (ESL) and literacy

improvement programs. **Austin Free-Net (AFN)** partnered with **IBM** to support Reading Companion, a web-based literacy program that uses speech-recognition technology to help adults and children increase reading comprehension.

Table 11, below, presents a selection of Education and Training activities observed during the first round of case study site visits. These activities were selected as representative of the activities of the BTOP program overall, and are not a complete listing of every Education and Training activity undertaken by the grants in the sample or the program as a whole. Activities are organized by the taxonomy presented in the previous table, Table 10. As shown in the table below, Education and Training activities include all levels of educational achievement, from obtaining a GED or receiving ESOL instruction, to community college and higher education pursuits.

Table 11. Education and Training Activities and Outcomes

Grant	Observations from First-Round Site Visit	
	Activity	Outputs/Outcomes
1. Researching a degree or certificate program		
SCTCS	Provide one-on-one assistance at campus libraries and Academic Success Centers (ASCs) to qualified individuals looking to begin or continue a college education.	Individuals who are qualified to attend higher education courses had become aware of how to research degree or certificate program options online.
2. Taking a class or online training that leads to a professional certification, degree, or GED		
DDL	Provide access to online courses through LearningExpress.	Job Center patrons had become aware of educational resources available through use of LearningExpress.
DDL	Provide adult education courses for students to earn GEDs and high school diplomas.	Lab monitors reported referring patrons to the Christina Adult Education-GED partner where they completed the Tests of Adult Basic Education (TABE).
CHA	Provide middle and high school students access to computers and training geared toward improving skills for successful performance in college; and assistance in using the computers to research colleges and to apply to colleges online.	As of June 2011, 87 percent of program seniors had matriculated at two- or four-year colleges. Nearly 95 percent of Work Force program alumni from the past ten years had enrolled in college or technical school upon completing the program. Over 90 percent of Work Force program alumni from the past ten years were pursuing higher education or were employed.
3. Administrative activities associated with course instruction		
SCTCS	Provide training in student financial aid.	Seventy-seven students, as of June 2011, had become aware of either federal or college-specific financial aid resources
4. Activities complementing classroom instruction		
FCCC	Provide Microsoft Suite software training through the Microsoft IT Academy.	MESA students reported improved ability to stay current with assignments and participate in group projects, fostering student retention.

Grant	Observations from First-Round Site Visit	
	Activity	Outputs/Outcomes
FCCC	Provide basic digital literacy, Internet basics, and broadband service selection training through the Great Valley Center.	Parents could access and monitor their children's educational activities, including checking grades and schedules online, homework assignments, and research educational resources.
FCCC	Provide free laptops to community college students and require them to provide computer training on topics of importance to their community.	Students reported improved access to assignments and group projects, promoting higher levels of academic performance. MESA students reported improvements in relationships with their community, family members, and professors.
SCTCS	Provide students with notebooks and iPod Touch rentals.	Students had used laptops daily for classes, homework assignments, and online exams.
5. Learning English or another language using online tools		
TFA	Provide access to language-based training, such as ESOL, literacy improvement programs, and IBM's Reading Companion.	Students of ESOL classes had become aware of how to use online tools to learn English and are learning conversational English for daily circumstances.
CHA	Provide ESOL training for working-age adult low-income residents of public housing.	Students of ESOL classes had become aware of how to use online tools to learn English.

3.4.3 Roadmap

Table 12, below, presents a roadmap for the next round of case study site visits that will occur in 2013. The grantees shown in the roadmap table are gathering data related to Education and Training, and they are expected to have indicators that measure the Education and Training impacts of their projects. These data sources are shown in the second column of the table. The rightmost column describes the method by which quantitative or qualitative indicators may be included in *Interim Report 2*. Activities are organized by the taxonomy previously presented in Table 10.

Table 12. Education and Training Roadmap

Grant	Roadmap for Second-Round Site Visit	
	Data	Methods
1. Researching a degree or certificate program		
SCTCS	No quantitative data were available during the site visit.	Report data collected, tabulated, and analyzed by SCTCS, if available. Report anecdotes through interviews with lab coordinators or users.

Grant	Roadmap for Second-Round Site Visit	
	Data	Methods
2. Taking a class or online training that leads to a professional certification, degree, or GED		
DDL	LearningExpress can provide a report of the number of new registrants and a count of registered courses. DDL maintains New Job Center intake form information in Service Point and tracks patron information, visit statistics, and training hours on spreadsheets.	Report LearningExpress data as collected, tabulated, and analyzed by DDL. Report Service Point data as collected, tabulated, and analyzed by DDL. Report anecdotes from interviews with users or PCC staff.
DDL	DDL tracks patron information, visit statistics, and training hours on spreadsheets. Sign-in sheets are collected and aggregated from each Job Center. DCDAL maintains information on GED and adult education course participants who are enrolled in DCDAL's distance learning program.	Report Service Point data as collected, tabulated, and analyzed by DDL. Report project partner data as collected, tabulated, and analyzed by DCDAL and CAE.
CHA	CHA tracks each Work Force participant through his or her five years in the program, collecting data on academic achievement, high school graduation rate, participation in postsecondary education, and employment success among those with "try-out" jobs. These data are reported in CHA's Monthly Tenant Services Report. An evaluation study of the Work Force program was completed, including a survey of students who graduated from Work Force from 1999 through 2004.	Report Tenant Service Report statistics as collected, tabulated, and analyzed by CHA. Report anecdotes through interviews with Work Force staff, Work Force program instructors, or parents. Report findings from Edgemere Consulting's evaluation report of the Work Force program.
3. Administrative activities associated with course instruction		
SCTCS	SCTCS collects the number of training participants.	Report training participant data as collected, tabulated, and analyzed by SCTCS. Report anecdotes through interviews with SCTCS staff.
4. Activities complementing classroom instruction		
FCCC	Each MESA student is required to take Microsoft training. FCCC tracks the counts of MESA students. New MESA students are required to complete a survey identifying their experience with the Internet and how they used technology prior to the start of California Connects.	Report training statistics as collected, tabulated, and analyzed by FCCC. Report anecdotes based on interviews with MESA trainers or lab users.

Grant	Roadmap for Second-Round Site Visit	
	Data	Methods
FCCC	GVC tracks the number of people trained and training locations.	Report findings from GVC's weekly reports. Report anecdotes from interviews with GVC trainers or users.
FCCC	FCCC tracks the number of laptops distributed to MESA students. Qualitative impacts of uses of laptops are not currently tracked. MESA trainers count the number of students and community members trained through the program.	Report program statistics as collected, tabulated, and analyzed by FCCC. Report anecdotes based on interviews with MESA trainers or lab users.
SCTCS	No quantitative data known to be collected.	Report program statistics as collected, tabulated, and analyzed by SCTCS, if available. Report anecdotes through interviews with lab monitors or users.
5. Learning English or another language using online tools		
TFA	Technology for All tracks the number of participants enrolled in ESL classes.	Report data related to training sessions as collected, tabulated, and analyzed by TFA. Report anecdotes from interviews with PCC staff or ESL training participants.
CHA	CHA develops a monthly tenant services report that summarizes each of CHA's residential services, including the Gateways Adult Education ESL classes.	Report anecdotes from interviews with Gateways staff or Gateways program participants.

3.4.4 Grantee-Sponsored Research

ASR is conducting primary data collection and research to measure the economic and social impacts of BTOP through the case study site visits. These data will be analyzed as we have described above. Several grantees are also embarking on primary data collection and research. To the extent these grantee-sponsored studies are complete and provide information relevant to the measurement of the economic and social impacts of BTOP, ASR may incorporate the results of those studies into our *Final Report*.

Two of the grants included in Table 12, above, have third-party evaluation studies underway that might provide relevant information for the *Final Report*:

- CHA is not conducting a formal, grant-wide evaluation, and no evaluation is funded under the grant. CHA does, however, conduct an annual Resident Satisfaction Survey of its senior and family developments. Since PCC users are primarily CHA residents, and the survey includes questions on awareness and usage of the BTOP-funded PCCs, computer ownership, and home Internet access, its results speak somewhat to the impacts of the CHA BTOP program's activities.[171] It is not known whether BTOP-funded activities will be included in future surveys. CHA also published an evaluation of The Work Force in 2008 based on surveys conducted from December 2007 through February 2008. It evaluated the impacts of the program on the lives of participants five and 10 years after their participation in the program. It is unknown if

another evaluation will be completed, or if it would include questions related to BTOP-funded activities.[172]

- FCCC is undertaking an independent evaluation effort, and also uses the Public Policy Institute of California's (PPIC) annual Statewide Survey: Californians and Information Technology to identify baseline broadband use in its target populations. While the PPIC survey does not formally evaluate the grant, it is used by FCCC as a data point to show changes in broadband adoption among certain demographics and geographic regions targeted by the FCCC grant, specifically underserved populations, especially in the Central Valley.[173] FCCC is partnering with experts at the International Computer Science Institute (ICSI) of the University of California, Berkeley (UCB) to measure the success of the grant, evaluating the program's structure and effectiveness in the context of its target population, and making recommendations for its future.[174] The evaluator worked with FCCC on developing a measurement methodology for desired outcomes, including increasing awareness, digital literacy, continued use, and home subscription. It is not known whether measures related to education will be gathered as part of this evaluation.[175]

The evaluation study team will examine these studies to determine if there are results that may be applied to the estimation of education benefits for the sample.

3.5 Healthcare

3.5.1 Introduction and Typical Benefits

This category includes broadband-enabled activities undertaken by participants in PCC and SBA programs to improve their own health or that of someone else. This definition includes not only sophisticated tasks, such as viewing one's medical records online, but also more common activities that might not involve a medical provider at all. In order for a program activity to be considered a Healthcare component of the grant, it must be the grantee's intention that the activity in question result in improved participation in self-care or care of others as a result of an individual's participation.

Currently, an estimated 80 percent of Internet users search for health information online, making it the third most popular online activity among all those tracked by Pew.[176] Additionally, Fox and Brenner (2012) report that 44 percent of caregivers surveyed say they or someone they know has been helped by following medical advice or health information found on the Internet. By comparison, 30 percent of all adults say they or someone they know has been helped by following medical advice or health information found on the Internet.[177] Broadband service increases the likelihood someone will go online for health information, with 82 percent of home broadband users doing so compared to 67 percent of Internet users with dial-up access.[178] Broadband service enables the population to combat and prevent health issues with easy access to such information.

Though notable adoption progress has been

The "Jennifer's Story" Video

UAMS's video, "Jennifer's Story," presents a real-world example of a woman with a high-risk pregnancy residing in the rural South. "Jennifer" is able to consult with specialists in the state capital via videoconference from her local regional health clinic under the care of her local primary care physician. This video has been featured on the American Telemedicine Association's (ATA) homepage and had been viewed online more than 3,900 times as of December 2011. The video had been used in multiple presentations to large audiences, including the opening of the American Pediatric Association yearly meeting in 2011. Building on the success "Jennifer's Story" has had in communicating the purpose and benefits of telehealth, Learntelehealth.org produced other videos. "Darryl's Story" presents the story of a man who has had a stroke and is treated by specialists via telehealth technology at a local hospital.

made, there exists division in terms of Internet use for healthcare services. The Pew study reports that 81 percent of adults with college degrees compared with only 24 percent of adults without high school diplomas gather health information online; and 83 percent of adults with household incomes greater than $75,000 use the Internet for health information, compared with 41 percent of those with household income lower than $30,000.[179]

Though the United States spends more annually on healthcare than any other nation (nearly $2 trillion), its healthcare delivery system has not overcome some issues of quality, access, and affordability.[180] Some individuals do not receive the proper amount of care.[181] Castro notes that those who receive too much care or the wrong kind of care waste resources, while those who receive insufficient care may develop additional health problems. In many instances, the healthcare that people receive is not based on the best available scientific evidence."[182] It is this disparate level of healthcare access that has slowed the improvement of healthcare quality.[183]

The FCC has noted that broadband access to the Internet could "meaningfully improve [the Nation's]… healthcare services."[184] Broadband enhances healthcare efficiency by strengthening connectivity, driving innovation, and creating cutting-edge approaches to healthcare that are expected to lead to "vast individual and national cost savings and to an increase in the availability of quality health solutions."[185]

Broadband and Telehealth

The creation of a national electronic health records (EHR) system, allowing patient information to follow individuals from one provider to the next, is dependent on healthcare providers having access to broadband Internet services.[186] Recent studies estimate that, overall, societal cost savings from implementing and using healthcare IT in the United States is approximately $80 billion per year.[187] [188] In addition to lowering costs, enhanced healthcare IT allows consumers access to better-quality information. Individuals are able to access not only higher-quality information regarding conditions and treatments, but also information pertaining to the quality of services available through different providers.[189] Internet health resources enhance information available to patients and consumers by establishing online communities and social networks as knowledge exchange forums.

Broadband and Healthcare in Rural Areas and Areas with Low-Income Populations

Broadband can also serve to reduce geographic disparities in healthcare provision. The services available and the care received are influenced in part by geographic location. Those in densely populated metropolitan areas have access to a wider variety of services, providers, and specialists. Today, because of the availability of broadband Internet, rural healthcare providers can more easily link with urban providers through the use of health IT.[190] Many rural communities lack sufficient numbers of primary care clinicians.[191] Non-physician primary care clinicians, family physicians, nurse practitioners, and physician assistants are especially likely to practice in rural communities and to care for patients in underserved areas.[192,193,194,195,196] Only 3 percent of medical students expressed interest in working in a rural area.[197] Telemedicine addresses the issue of doctor or specialist shortages in rural communities with low population densities.[198]

Broadband and Healthcare for Seniors

It has been estimated that broadband-based health resources could save around $927 billion in healthcare costs for seniors and people with disabilities between 2005 and 2030.[199] In addition to providing access to health websites, broadband "facilitates efforts by seniors and people with disabilities to stay in touch with family, friends, and community, and to participate in an array of activities, all of which may decrease debilitating symptoms of depression and sustain mental acuity."[200]

Table 13, below, presents a summary of the potential social and economic benefits of broadband for Healthcare. The list of these benefits is extensive, as broadband has the potential to affect

nearly every aspect of medical care. Some benefits are the result of increased patient-provider communication, others are the result of improved medical recordkeeping and sharing enabled by broadband, and others are a result of providing access to markets for and information about prescription and non-prescription drugs. Patient-to-patient networking and support is also an area in which broadband may result in social or economic benefits, as patients may be made aware of a larger variety of treatment outcomes, provider options, and advice for day-to-day living with longer-term health conditions.

Table 13. Healthcare Taxonomy and Potential Benefits

Taxonomy	Potential Social and Economic Benefits
1. Developing awareness of health resources made available by broadband Internet, including websites, videos, support groups, and connections to medical providers 2. Using broadband to obtain health information 3. Communicating with a healthcare provider online 4. Obtaining information on health insurance, applying for insurance, researching benefits, and accessing insurance claims information online 5. Providing self-care or care for another based on information obtained from the Internet 6. Purchasing prescription drugs, over-the-counter drugs, or vitamins online 7. Teaching healthcare providers about broadband-enabled technologies and practices that can be used by their patients	**Benefits to Patients** • Improved patient information resulting from ease of accessibility, interactive features, and anonymity[201] • Improved patient choice of provider and treatment options[202] • Improved treatment outcomes for physical and mental illness[203,204] • Lower patient cost in time and transportation vs. telephone calls or face-to-face visits[205] • Improved patient care seeking[206] • More effective health promotion and disease prevention programs[207] • Faster, more accurate prescriptions[208] • Improved patient access to healthcare records and test results[209] • Reduction in duplicative paperwork and tests[210,211] • Improved ongoing care[212] • Improved patient outcomes by providing daily monitoring[213] • Reduced home care costs by reducing the number of unnecessary in-home visits[214] • Reduced hospital length of stay (LOS)[215] • Improved privacy and convenience in obtaining prescription medication or ordering medications[216] • Greater availability of drugs for shut-in people, those who live far from a pharmacy, or those in rural areas with limited pharmacy options[217] • Improved access to written product information[218] • Reduced cost of online prescription drugs[219] • Reduced drug interactions resulting from multiple prescriptions from different providers[220] • Improved patient to patient networking and support[221] **Benefits to Healthcare Providers** • Cost savings from reduced unnecessary face-to-face time between health

Taxonomy	Potential Social and Economic Benefits
	professionals and the "worried well"[222,223] • More convenient access to medical care because of asynchronous communications[224] • More complete medical records at lower cost[225] • Improved patient-provider relationship building[226,227] • Rapid information sharing among all health care providers for the same patient[228] • Improved appointment and treatment scheduling[229] • Improved range of health services[230]

3.5.2 Activities

Based on the results of the first round of case studies, the following are provided as examples of activities related to Healthcare:

- **Philadelphia FIGHT** (Field Initiating Group for HIV Trials), a project partner under the **Urban Affairs Coalition** Freedom Rings SBA project, is a comprehensive AIDS service organization providing primary care, consumer education, advocacy, and research on potential AIDS/HIV treatments and vaccines. Philadelphia FIGHT provides digital literacy and healthcare-related training at sites throughout Philadelphia, including PCCs operated by FIGHT in its main office and HIV library locations, and in shelters and recovery houses around the city.
- **Future Generations Graduate School**, an SBA grantee, uses a train-the-trainer model with existing healthcare curricula to train computer lab mentors in chronic disease self-management and substance abuse prevention and recovery. The lab mentors can then teach these courses to users in their computer labs along with the other digital literacy training they provide.
- The **Center for Accessible Technology (CforAT)**, a partner under the **California Emerging Technology Fund (CETF)** SBA grant, maintains the Accessible Technology Coalition website. The website is an online community, partly funded under BTOP, assisting people with disabilities. Through the website, CforAT delivers and archives webinars via a fully accessible virtual classroom, on accessibility-related topics, a search engine, and access to experts in the field that answer users' online questions regarding particular disabilities.
- The **Kandiyohi County/City of Willmar Demonstration Community** is implementing the **Willmar Community Senior Network Project** as part of **C.K. Blandin**'s Minnesota Intelligent Rural Communities (MIRC) SBA grant. This project provides touchscreen computers to seniors, and laptops to their relatives, loaded with HomeStream software so seniors can participate with their relatives in telemedicine and telehealth activities.
- The **Connect Arkansas' Expanding Broadband Use in Arkansas Through Education (EBAE)** SBA grant contains a distance health component managed by the **University of Arkansas for Medical Sciences (UAMS)**. The activities carried out by UAMS are designed to enhance the adoption of telehealth. Through the Arkansas Center for Telehealth (ACT) and South Central Telehealth Resource Center (SCTRC) programs, UAMS provides training and resources for providers interested in telehealth; promotes the benefits of practicing telehealth; and works to increase broadband adoption as it relates to telehealth.

Table 14, below, presents a selection of Healthcare activities observed during the first round of case study site visits. These activities were selected as representative of the activities of the BTOP program overall, and are not a complete listing of every Healthcare activity undertaken by the grants in the sample or the program as a whole. Activities are organized by the taxonomy presented in the previous table, Table 13. As shown in the table below, grantees undertook

activities that resulted in increased awareness of the healthcare benefits of broadband on the part of both providers and recipients of care.

Table 14. Healthcare Activities and Outcomes

Grant	Observations from First-Round Site Visit	
	Activity	Outputs/Outcomes
1. Developing awareness of health resources made available by broadband Internet, including websites, videos, support groups, and connections to medical providers		
CETF	Create, deliver, and archive webinars via a fully accessible virtual classroom on accessibility-related topics and accessing healthcare information online.	865 total attendees (700 unique users) had become aware of accessibility-related topics. The grantee reported parents learning about alternatives to expensive augmentative and alternative communication (AAC) devices.
Connect Arkansas	Broadcast a video developed by UAMS ("Jennifer's Story") to explain telehealth to viewers. Provide users access to Quarterly Thought Symposium webinars on various telehealth topics.	"Jennifer's Story" had been featured on the American Telemedicine Association's (ATA) homepage. The video had increased awareness of telehealth for over 1,300 viewers.
Connect Arkansas	UAMS developed Learntelehealth.org to provide users online access to telehealth information, resources, and training modules.	2,337 individuals (unique website users) had become aware of telehealth information, resources, and training modules on the Learntelehealth.org site. 296 individuals had increased their level of awareness of telehealth by becoming active members of the site.
2. Using broadband to obtain health information		
Connect Arkansas	Offer online training on the following topics: Overview of Telehealth, Telehealth Equipment, TelePresenting Best Practices, Building Your Telehealth Team, Creating Your Telehealth Project Plan, and Telemedicine Credentialing and Privileging.	Approximately 100 healthcare facilities had become aware of telehealth best practices, telehealth equipment, creating a telehealth project plan, creating a telehealth team, or telemedicine credentialing and privileging.
Future Generations	"Living a Life with Chronic Conditions" provides content on chronic disease and self-health management course.	Mentors had become aware of chronic disease self-management and how to teach lab patrons about chronic disease self-management.
UAC	Provide training in using the Internet to access reliable HIV/AIDS information, including understanding the importance of authority and currency with HIV/AIDS information.	As of August of 2012, 1,658 individuals had become aware of how to access reliable HIV/AIDS information online through participation in the 135 "Finding Reliable Health and HIV/AIDS Info Online" workshops.

Grant	Observations from First-Round Site Visit	
	Activity	Outputs/Outcomes
3. Communicating with a healthcare provider online		
CETF	Provide "ask the expert" opinions where experts in the field answer user questions regarding a particular disability.	Users had their individual questions regarding specific disability-related issues addressed by experts.
5. Providing self-care or care for another based on information obtained from the Internet		
C.K. Blandin	Provide touchscreen computers to 10 seniors and laptops to their relatives (15 total) loaded with HomeStream software so seniors can engage in telemedicine and telehealth activities with support from their families.	Seniors had used the computers and Internet access they had received through the Willmar Community Senior Network project to engage in telemedicine and telehealth activities.
7. Teaching healthcare providers about broadband-enabled technologies and practices that can be used by their patients		
Connect Arkansas	Visit individual healthcare facilities to teach staff how to use the Internet for distance health learning. Training options include "Telehealth 101" and hands-on workshops for a wide range of equipment.	Healthcare facilities had become aware of how to use the Internet for distance health learning.
Connect Arkansas	"Telehealth 101" provides an overview of telehealth, relevant technologies, strategy development, and sustainability. It is available as a live webinar and onsite training.	Survey results had indicated that 10/17 respondents "Strongly Agree" that they will be able to apply the knowledge learned and 7/17 "Agree" that they will be able to apply the knowledge learned.

3.5.3 Roadmap

Table 15, below, presents a roadmap for the next round of case study site visits that will occur in 2013. The grantees shown in the roadmap table are gathering data related to Healthcare, and they are expected to have indicators that measure the Healthcare impacts of their projects. These data sources are shown in the second column of the table. The rightmost column describes the method by which quantitative or qualitative indicators may be included in *Interim Report 2*. Activities are organized by the taxonomy previously presented in Table 13.

Table 15. Healthcare Roadmap

Grant	Roadmap for Second-Round Site Visit	
	Data	Methods
1. Developing awareness of health resources made available by broadband Internet, including websites, videos, support groups, and connections to medical providers		
CETF	CforAT tracks the number of webinar attendees and the number of unique users. CforAT conducts a feedback survey after each webinar. Trainers call users and collect feedback on the training program and any suggestions for improvement. Trainers may collect some anecdotes through this process.	Report the number of webinar attendees and the number of unique users as collected, tabulated, and analyzed by CETF. Report anecdotes collected through interviews with CforAT trainers or webinar participants.

Grant	Roadmap for Second-Round Site Visit	
	Data	Methods
Connect Arkansas	A tracking tool allows UAMS to monitor the number of times the videos are viewed. UAMS is tracking the number of symposiums delivered and the number of participants per symposium.	Report counts of partial and complete views of "Jennifer's Story" as collected, tabulated, and analyzed by Connect Arkansas. Report the number of symposiums delivered and the number of participants as collected, tabulated, and analyzed by Connect Arkansas.
Connect Arkansas	UAMS uses Google Analytics to monitor web traffic, collect statistics on site visits, page views, viewer locations, time spent on the site, and traffic sources.	Report Learntelehealth.org web traffic statistics as collected, tabulated, and analyzed by UAMS.
2. Using broadband to obtain health information		
Connect Arkansas	UAMS tracks the number of training participants. Training assessments are tracked and scored.	Report training participation and assessment data as collected, tabulated, and analyzed by UAMS.
Future Generations	Future Generations maintains data on the number of mentors that receive the Partnership of African American Churches (PAAC) Chronic Disease Self-Management course training and the number of users that complete the course at the labs.	Report the number of mentors and participants completing the course as collected, tabulated, and analyzed by Future Generations. Report anecdotes through interviews with lab mentors or course participants.
UAC	Philadelphia FIGHT collects and reports the number of training hours and number of attendees for each course. Philadelphia FIGHT collects contact and demographic information, computer skills (self-assessment), computer ownership, and home access to the Internet from participants.	Report the number of training courses provided and the number of training course attendees as collected, tabulated, and analyzed by UAC. Report participant data as collected, tabulated, and analyzed by Philadelphia FIGHT. Report anecdotes from interviews with Philadelphia FIGHT staff or program participants.
3. Communicating with a healthcare provider online		
CETF	No quantitative data were reported as collected.	Report the number of questions submitted and answers provided as collected, tabulated, and analyzed by CETF, if available. Report anecdotes from answers that have been provided to participants about specific disabilities.

Grant	Roadmap for Second-Round Site Visit	
	Data	Methods
5. Providing self-care or care for another based on information obtained from the Internet		
C.K. Blandin	Demonstration Communities submit monthly and final narrative reports.	Report findings from Kandiyohi County/City of Willmar Demonstration Community narratives. Report the number of people served by the Willmar Community Senior Network project as collected, tabulated, and analyzed by C.K. Blandin. Report anecdotes from interviews with Kandiyohi County/City of Willmar Demonstration Community Willmar project leaders.
7. Teaching healthcare providers about broadband-enabled technologies and practices that can be used by their patients		
Connect Arkansas	UAMS is tracking the number of onsite trainings delivered and the number of participants in attendance.	Report the number of onsite trainings delivered and the number of participants in attendance at sessions as collected, tabulated, and analyzed by UAMS. Report anecdotes through interviews with UAMS staff or training participants.
Connect Arkansas	Telehealth 101 prompts users to respond to a survey regarding their perception of the training received and knowledge of telehealth.	Report data and survey responses from Telehealth 101 participants as collected, tabulated, and analyzed by UAMS. Report anecdotes through interviews with UAMS staff or training participants.

3.5.4 Grantee-Sponsored Research

ASR is conducting primary data collection and research to measure the economic and social impacts of BTOP through the case study site visits. These data will be analyzed as we have described above. Several grantees are also embarking on primary data collection and research. To the extent these grantee-sponsored studies are complete and provide information relevant to the measurement of the economic and social impacts of BTOP, ASR may incorporate the results of those studies into our *Final Report*.

Two of the grants included in Table 15, above, have third-party evaluation studies underway that might provide relevant information for the *Final Report*:

- C.K. Blandin has undertaken two evaluation efforts, one by Dr. Jack Gellar of the EDA Center at the University of Minnesota Crookston, and a Readiness Analysis of the MIRC Demonstration Communities undertaken by Robert Bell of the Intelligent Community Forum (ICF). Neither of these evaluations directly addresses broadband and healthcare, although narrative reports might do so.[231]

- UAC contracted the New America Foundation Open Technologies Initiative (OTI) to assist in the reporting and evaluation of the Freedom Rings Partnership, which includes the Freedom Rings: SBA and PCC grants. The New American Foundation is also teaming with academics at Rutgers University who will conduct various impact assessments of the project, the specific topics of which had not been determined at the time of the case study visit. The Rutgers website reports on one study to evaluate several of the Freedom Rings SBA programs designed to train residents of urban Philadelphia in the use of laptops with high-speed Internet. OTI has released evaluation instruments for public use that include questions on educational, workforce development, and community engagement outcomes, as well as broadband adoption questions.[232] Presumably healthcare data will be gathered as part of this survey, given the focus of the grant. Data will be gathered using a combination of electronic user surveys and focus groups. The Rutgers study will examine how people participating in several of the programs designed to train residents of urban Philadelphia in the use of laptops with high-speed Internet become technology users and how that use affects graduation rates, employment, civic engagement, and other measures.[233] It is not known whether healthcare outcomes will be included in the Rutgers study.

Other grant evaluation activities include the following:

- Future Generations is evaluating program impacts on individuals using the computer labs, individuals in communities with labs, and small businesses in communities with computer labs, including changes in broadband subscription rates in these communities. This includes surveys of users of the PCCs. To date there have been no survey questions related to healthcare and broadband use.[234]
- CETF relies primarily on the Public Policy Institute of California's (PPIC) annual *Statewide Survey: Californians and Information Technology*, which they analyze along with data from the Federal Communications Commission (FCC) *Broadband Adoption and Use Survey* and the Pew Research *Center's Internet & American Life* survey for national comparison, to monitor trends in California's broadband use over time, and demonstrate the longer-term impacts of both their BAA and ACT grants.[235] CETF required a pre- and post-Club Digital survey of impreMedia readers to determine broadband adoption and training numbers. The research was conducted on behalf of impreMedia and Dewey Square Group (DSG) by an independent research firm, Simmons Research, in September and October 2011. It measured the impact the Club Digital pilot program that ran in California from August 1 to August 31, 2011. These surveys focus on broadband adoption. To date there have been no survey questions related to healthcare and broadband use.[236]
- Connect Arkansas is conducting biannual statewide telephone surveys (one in January and a follow-up in December of each year) of broadband access and use and of attitudes toward broadband in Arkansas.[237] The purpose of the surveys is to gather data to determine the impact of the Connect Arkansas awareness campaign.[238] Healthcare is not included as a topic in this survey.

The evaluation study team will examine these studies to determine if there are results that may be applied to the estimation of Healthcare benefits for the sample.

3.6 Quality of Life/Civic Engagement

3.6.1 Introduction and Typical Benefits

The Quality of Life/Civic Engagement category includes those activities that create stronger and more integrated communities, and those that promote interaction between citizens and their governments. Measuring the impact of broadband on quality of life has been difficult to achieve in some cases. The Pew Internet and American Life Project and the Monitor Institute noted that several of the indicators for measuring citizens' sense of how their community information system

is performing and their overall satisfaction with their community are difficult to measure and assess independently without complicated and expensive methodologies.[239] Specific areas noted as difficult to measure, among others, are the availability of "quality of life" information from community organizations, and "effective opportunities" for citizens to have their voices heard.[240]

Civic 2.0

The City of Chicago's Civic 2.0 program provides digital leadership training for communities and demonstrates how to use technology to enhance civic participation. The Auburn Gresham Neighborhood Civic Association was active in the community, but inactive online. The association participated in the Civic 2.0 classes and developed its website leveraging resources provided through BTOP. Several individuals that have participated in Civic 2.0 now go online to file for property tax exemptions and have volunteered to help seniors determine if they qualified for tax exemptions.

Internet use has been found to be related to active contributions to community vitality, such as various forms of civic engagement and community participation.[241,242] Internet users are more likely than nonusers to be involved in local groups, organizations, and events, and as Internet use increased, so too did local participation.[243] Eighty percent of Internet users participate in voluntary groups, compared with 56 percent of non-Internet users.[244] A meta-data analysis of 38 studies found strong evidence against negative effect of Internet use on civic engagement.[245] The use of social networks, and Facebook in particular, has been linked to greater interest and engagement in political discussions and action.[246,247,248] Some research suggests that broadband users are less satisfied than others with community life. This raises the possibility that improvements to local information systems may result in more critical, activist citizens.[249] Rainie et al. (2011) suggest that "social media like Facebook and Twitter are emerging as key parts of the civic landscape, and mobile connectivity is beginning to affect people's interactions with civic life."[250]

Despite the strong connection between quality of life and Internet use, the number of Internet users participating in these activities is lower than that for other online activities described above.[251] For instance, only 15 percent of users have gone online to add to an online political discussion by posting comments on a website or blog about a political or social issue, by posting pictures or video content online related to a political or social issue, or by using their blog to explore political or social issues.[252] Fourteen percent of Internet users read a blog dealing with community issues at least once yearly, about the same percentage of online citizens who use email communications as a way to keep up with neighborhood events.[253]

Broadband and Rural Quality of Life

Several studies have attempted to develop quality of life or standard of living indicators to measure broadband's social impacts. In their survey and case study research, LaRose et al. (2008) look at community attachment, perceived social support, relocations intentions, number of voluntary members, and Internet self-efficacy as measures of broadband's social impacts in rural communities. They find that the precursors of broadband adoption were the perceived benefits of high-speed Internet connections, the ability to experience those benefits for oneself, and a sense of efficacy when using the Internet, noting that, "These are factors amenable to community-based, self-development interventions that can close the broadband gap despite the challenging demographics of rural communities." The authors conclude that the development of local web content and a focus on local social networks, "…is important to sustain rural populations."[254]

Table 16, below, presents a summary of the potential social and economic benefits of broadband for Quality of Life/Civic Engagement. These benefits accrue from improved communications between citizens and their local, state, and federal government, and from improved communications among citizens.

Table 16. Quality of Life/Civic Engagement Taxonomy and Potential Benefits

Taxonomy	Potential Social and Economic Benefits
1. Visiting a federal, state, or local government or community website 2. Communicating with a government agency, elected official, or community group online or through email 3. Researching or applying for government benefits online 4. Obtaining government forms online 5. Using email, social networking, or blogs to discuss political issues or organize political action 6. Using email, social networking, or blogs to discuss issues of interest with one's fellow community members	• Improved communication between citizens and government entities[255] • Lowering the effective cost of civic engagement and community participation[256] • Increased political engagement and civic participation[257,258,259,260,261,262,263,264,265] • Increased volunteerism[266] • Improved social connections, especially in rural communities[267]

3.6.2 Activities

Based on the results of the first round of case studies, the following are provided as examples of activities related to Quality of Life/Civic Engagement:

- Demonstration Communities operating under **C.K. Blandin's** Minnesota Intelligent Rural Communities (MIRC) SBA grant are each implementing four to six small, community-based projects designed to create and support knowledge workers, spur innovation, address digital inclusion, and advocate for rural broadband adoption.
- The **Las Vegas-Clark County Urban League (LVUL)**, a PCC grantee, provides one-on-one assistance to lab users to look up social services and to perform other tasks online. The **Department of Employment, Training and Rehabilitation** project, a LVUL project partner, trained Nevada Public Computer Centers (NVPCC) lab mentors to sign up users for unemployment benefits online.
- The **City of Chicago** operates **Business Resource Networks (BRNs)** as part of its Smart Chicago SBA grant, which offer free technology needs assessments, action plans, and trainings to small and mid-size companies. BRNs also offer businesses broadband access, free hardware and software, referrals to technical resources, and training on broadband-related technology. **Blue Ocean Logic,** a Smart Chicago project partner, developed **Civic 2.0**, which is delivered by Tech Organizers to community leaders. Civic 2.0 teaches communities digital leadership, how to embrace technology, and how to use it to enhance civic participation.

Table 17, below, presents a selection of Quality of Life/Civic Engagement activities observed during the first round of case study site visits. These activities were selected as representative of the activities of the BTOP program overall, and are not a complete listing of every Quality of Life/Civic Engagement activity undertaken by the grants in the sample or the program as a whole. As shown in the table below, grantees performed activities that resulted in improved communication between citizens and their government and increased community participation.

Table 17. Quality of Life/Civic Engagement Activities and Outcomes

Grant	Observations from First-Round Site Visit	
	Activity	Outputs/Outcomes
1. Visiting a federal, state, or local government or community website		
C.K. Blandin	Create a website listing community information related to employment, housing, healthcare, education, business, and recreation and links to local government sites.	No examples of community involvement resulting from the creation of the Stevens Forward website had been collected.
C.K. Blandin	Provide public access to government information including Geographic Information Systems (GIS), highway project information, and county government forms.	The grantee reported the public had visited the Big Stone County Public Internet Government Access Project website.
C.K. Blandin	Provide assistance to two rural cities, Bellingham and Echo, to create their own city websites.	No outcomes were observed by the evaluation study team.
2. Communicating with a government agency, elected official, or community group online or through email		
City of Chicago	Establish community networks that connect firms with the right broadband services and applications, software, hardware, databases, and other computer resources, workshops, and training opportunities for their needs.	The Business Development Manager reported helping civic associations increase their web presence.
3. Researching or applying for government benefits online		
LVUL	Department of Employment, Training, and Rehabilitation trained NVPCC trainers to teach NVPCC users how to sign up for unemployment benefits online using the department's new online process.	Users had become aware of how to use a State Department online system to apply for unemployment benefits.
LVUL	Provide one-on-one assistance looking up social services online.	The Martin Luther King Senior Center PCC trainer reported applying for social services online as one of three primary uses of the open lab time. The Espinoza Terrace PCC trainer had helped users with online banking, setting up email accounts, and looking up social services.
4. Obtaining government forms online		
C.K. Blandin	Develop an interactive website for the City of Morris's Rental Housing Licensing Program to provide inspection results, guidance, and educational information to past, current, and prospective tenants, landlords, and other interested parties.	Prospective buyers and renters could make more informed decisions because they had been able to download housing reports from the website.
City of Chicago	Provide training on how to access and research government websites and other vital information online.	Users reported using the computers at the site to research tax information on neighborhood properties.

Grant	Observations from First-Round Site Visit	
	Activity	Outputs/Outcomes
6. Using email, social networking, or blogs to discuss issues of interest with one's fellow community members		
City of Chicago	Provide digital leadership training on how to use technology to enhance civic engagement and community organizing activities, including accessing government websites, using online resources for vital information, using social media for community organizing, advocating for the community, and performing outreach.	Users had requested web-based government and city information, including crime rates, foreclosure rates, and tax refunds. Some users had identified and received tax refunds by learning how to search for and file for property tax exemptions online.

3.6.3 Roadmap

Table 18, below, presents a roadmap for the next round of case study site visits that will occur in 2013. The grantees shown in the roadmap table are gathering data related to Quality of Life/Civic Engagement and are expected to have indicators that measure the impacts of their projects. These data sources are shown in the second column of the table. The rightmost column describes the method by which quantitative or qualitative indicators may be included in *Interim Report 2*. Activities are organized by the taxonomy previously presented in Table 16.

Table 18. Quality of Life/Civic Engagement Roadmap

Grant	Roadmap for Second-Round Site Visit	
	Data	Methods
1. Visiting a federal, state, or local government or community website		
C.K. Blandin	Demonstration Communities submit monthly and final narrative reports.	Report findings from the narrative reports. Report the number of people served by the Stevens Forward website as collected, tabulated, and analyzed by C.K. Blandin. Report anecdotes from interviews with Stevens County/City of Morris Demonstration Community project leaders.
C.K. Blandin	Demonstration Communities submit monthly and final narrative reports.	Report findings from the narrative reports. Report the number of people served by the Big Stone County Public Internet Government Access Project as collected, tabulated, and analyzed by C.K. Blandin. Report anecdotes from interviews with Upper Minnesota Valley Regional Development Commission (UMVRDC) Demonstration Community project leaders.

Grant	Roadmap for Second-Round Site Visit	
	Data	Methods
C.K. Blandin	Demonstration Communities submit monthly and final narrative reports.	Report findings from the narrative reports. Report the number of people served by the Bellingham and Echo city websites as collected, tabulated, and analyzed by C.K. Blandin. Report anecdotes from interviews with UMVRDC Demonstration Community project leaders.
2. Communicating with a government agency, elected official, or community group online or through email		
City of Chicago	Efforts-to-Outcomes (ETO) database, a web-based case management software system, tracks training counts and program start dates.	Report statistics from ETO database as collected, tabulated, and analyzed by the City of Chicago. Report anecdotes from interviews with trainers or users.
3. Researching or applying for government benefits online		
LVUL	LVUL collects automated user logins from each PCC to determine the number of users per week. Trainers use sign-in sheets to track training courses offered.	Report anecdotes from interviews with lab coordinators or individual users.
LVUL	LVUL collects automated user logins from each PCC to determine the number of users per week. Trainers use sign-in sheets to track training courses offered.	Report anecdotes from interviews with lab coordinators or individual users.
4. Obtaining government forms online		
C.K. Blandin	Demonstration Communities submit monthly and final narrative reports.	Report findings from the narrative reports. Report anecdotes from interviews with Stevens County/City of Morris Demonstration Community project leaders.
City of Chicago	Training counts have been consolidated for the Everyday Digital and Civic 2.0 courses. ETO database tracks training counts and program start dates.	Report Civic 2.0 participation data as collected, tabulated, and analyzed by the City of Chicago. Report anecdotes based on interviews with trainers and users.
6. Using email, social networking, or blogs to discuss issues of interest with one's fellow community members		
City of Chicago	Training counts have been consolidated for the Everyday Digital and Civic 2.0 courses. ETO database tracks training counts and program start dates.	Report Civic 2.0 participation data as collected, tabulated, and analyzed by the City of Chicago. Report anecdotes based on interviews with trainers and users.

3.6.4 Grantee-Sponsored Research

ASR is conducting primary data collection and research to measure the economic and social impacts of BTOP through the case study site visits. These data will be analyzed as we have described above. Several grantees are also embarking on primary data collection and research. To the extent these grantee-sponsored studies are complete and provide information relevant to the measurement of the economic and social impacts of BTOP, ASR may incorporate the results of those studies into our *Final Report*.

Three of the grants included in Table 18, above, have third-party evaluation studies underway that might provide relevant information for the *Final Report*:

- C.K. Blandin has undertaken two evaluation efforts, one by Dr. Jack Gellar of the EDA Center at the University of Minnesota Crookston, and a Readiness Analysis of the MIRC Demonstration Communities by Robert Bell of the Intelligent Community Forum (ICF). Neither of these evaluations directly addresses Quality of Life/Civic Engagement, although narrative reports might do so.
- During the case study visit, LVUL indicated that there are no formal evaluation efforts planned for the Nevada PCC (NVPCC) project.[268] Subsequent PPRs, however, indicate there are some evaluation efforts underway. This includes development of a logic model and learning tracks.[269] It is not know at this time whether this will include an evaluation of Quality of Life/Civic Engagement as a result of the BTOP PCC grant.
- For the City of Chicago project, FamilyNet centers are preparing a training program for community organizations: Civic 2.0. All organizations participating in this training will be contacted with an online survey (available in English and Spanish). In addition to feedback about the training, respondents will be asked whether they used this for training others in their communities. The program is intended for community leaders, who will then share their knowledge about online resources with others.[270]

The evaluation study team will examine these studies to determine if there are results that may be applied to the estimation of Quality of Life/Civic Engagement benefits for the sample.

3.7 Digital Literacy

3.7.1 Introduction and Typical Benefits

This focus area is fundamental to all the others. “Digital literacy” defines a set of skills and abilities that enable an individual to interact with the digital aspects of culture, and to maintain a digital identity. In the National Broadband Plan, the FCC defines digital literacy as “the skills needed to use information and communications technology to find, evaluate, create, and communicate information.”[271] Digital literacy has become increasingly important in obtaining an education, searching for employment, learning job-related skills, accessing government information, and more.[272,273,274,275,276] The ways in which people connect to and use the Internet are much more varied today than in 2000. While email and search remain the most common uses for the Internet (approximately six in 10 online adults use the Internet for search and email on a typical day), other activities are becoming increasingly common. Adults regularly use the Internet for social networking, online banking, and purchasing products. On a typical day, 21 percent of adults search for product information online.[277] This is an increase from 15 percent in 2007 and 9 percent in 2004.[278]

The importance of digital literacy cannot be overstated. According to the U.S. Census, domestic online transactions in 2010 were estimated to total $4.13 trillion.[279] A 2009 study by Hamilton Consultants estimated that American jobs related to the Internet contributed an estimated $300

billion of economic activity to the U.S. gross domestic product.[280] Furthermore, digital literacy is a requirement for many of today's jobs. Sixty-two percent of working Americans use the Internet as a component of their jobs.[281] Zickuhr and Smith (2012) report that, while Internet adoption has increased over the past decade, digital disparities remain among some groups.[282] As a result of the significant growth in the types of activities that Internet users engage in online, there is an increasing gap in technical experience and general understanding of the Internet between online adults and offline adults.[283]

In 1995, approximately one of every 10 adults in the U.S. went online. According to Zickuhr and Smith, as of August 2011, 78 percent of U.S. adults and 95 percent of teenagers are active online.[284] Yet at present, approximately one of every five American adults does not use the Internet at all.[285] Zickuhr and Smith concluded as a result of their surveys that, "Senior citizens, those who prefer to take [their] interviews in Spanish rather than English, adults with less than a high school education, and those living in households earning less than $30,000 per year" were the least likely adults to have Internet access.[286]

In 2009, four-fifths of the Internet users at home were broadband users.[287] Basic digital literacy activities like email and searching are ubiquitous, with 80 to 90 percent saying they engage in these activities and over 50 percent indicating they did so yesterday.[288] Other common activities include buying a product, looking for a job, or banking online, with majorities saying they engage in these activities. Social websites, video-sharing sites, and activities demonstrating creative use or production by individuals are also becoming increasingly common. Almost two-thirds of adult Internet users (61 percent) engage in online banking.[289] Sixty-five percent of all Internet users use social networking sites.[290] A study by Lenhart (2009) determined that Latinos and African Americans are more likely than Whites to have a profile on an online social networking site.[291] Seventy-one percent of all online adults use the Internet to purchase products.[292]

Digital Literacy and Access

By far one of the most significant predictors of Internet use is access to a broadband connection. Households with broadband average seventeen times as much Internet activity per day as households without the Internet at home.[294] Stern, Adams, and Boase (2011) explain that many websites offering financial, political, and health information require connections that operate at speeds faster than dial-up modems can provide.[295] Mossberger, Tolbert, and McNeal (2007) found evidence to suggest that Internet users who have access to broadband technology are not only more likely to overcome issues with proficiency, but are more likely to use their connections to engage in more advanced applications.[296] Similarly, Stern, Adams, and Elsasser (2009) and Mossberger, Tolbert, and McNeal (2007) found that access (or lack of access) to Internet and broadband technologies affects the various ways individuals can or will use their Internet connections.[297,298] More specifically, lack of access to the Internet and broadband technologies increases proficiency divides. Cooper (2010) finds that households that subscribe to broadband make more intensive use of the technology.[299]

Table 19, below, presents a summary of the potential social and economic benefits of improved Digital Literacy. These benefits accrue across all of the focus areas, as digital literacy is foundational to the use of broadband.

MESA

The California Connects project is distributing laptops and broadband access via aircards to 1,400 community college Mathematics, Engineering, Science Achievement (MESA) students at 33 community colleges throughout California. Students receiving the laptops are also provided with intensive outreach and hands-on training, enabling them to teach others how to use the Internet for essential tasks such as securing gainful employment, exploring higher education opportunities, and engaging with social networks. Participants explained how they developed a community group whereby previously "unconnected" parents now receive emails from their children's schools and are connected to social networking sites.[293]

Table 19. Digital Literacy Taxonomy and Potential Benefits

Taxonomy	Potential Social and Economic Benefits
1. Be aware of the benefits of broadband technology 2. Be able to use a computer with a modern operating system, including understanding how to use a keyboard, a mouse, and a visual interface incorporating icons and folders and a web browser, such as Internet Explorer, Google Chrome, or Firefox 3. Shop for and obtain an affordable computer with adequate capabilities, including locating organizations/services that distribute free or low-cost computers 4. Shop for and obtain an affordable broadband connection with reasonable contract terms, including finding organizations/services that provide discounted or free access to participants 5. Understand how to perform basic online activities 6. Be able to use software and applications to present and manipulate documents and data, including word processing, creating spreadsheets, creating presentations, and creating or manipulating simple databases	**Benefits to Individuals** • Increased job opportunities[300] • Increased employment opportunities due to telework[301] • Higher pay[302] • Increased economic security[303] • Recruitment of job seekers, especially in rural areas[304] • Increased access to and quality of healthcare[305] • Availability of a wide variety of entertainment[306] • Increased participation in everyday economic, social, and community life[307] • Improved social connections to existing friends and acquaintances, and creation of new relationships based on common interests[308] • Improved social integration of minority populations[309] • More positive attitudes toward aging, and higher levels of perceived social support and connectivity among seniors[310] • Lower prices for online purchases[311] • Improved variety of items available for purchase[312] • Better purchasing decisions based on online information[313] • Savings in time and money for online vs. paper-based activities[314] • Improved connectivity for social or political action[315] • Increased transparency of public agencies[316] • Access to improved government services[317,318] • Lifelong learning opportunities[319] • Improved family connections[320] **Benefits to Communities** • Attracts business to a community[321] • Attracts tourists to an area and increases length of stay[322] **Benefits to Businesses** • Offers businesses an advertising and awareness platform[323] • Businesses have access to world markets[324]

3.7.2 Activities

Based on the results of the first round of case studies, the following are provided as examples of activities related to Digital Literacy:

- As project partners under **C.K. Blandin's** Minnesota Intelligent Rural Communities (MIRC) SBA grant, Minnesota's nine **Regional Development Commissions (RDCs)** promote broadband access and use to foster community growth at the regional level by providing outreach and coordinating the use of other MIRC statewide partner resources. The RDCs work closely with the MIRC Demonstration Communities to connect community leaders and organizations within their regions and to make them aware of the resources available through the MIRC project.
- The **California Emerging Technology Fund**, an SBA grantee, provides the 2-1-1 call center with funding to expand its database of resources to include a broadband technology component. The grant also provides funding for the expansion of twenty-seven 2-1-1 telephone line centers in California to allow providers to respond to calls and web inquiries about broadband education and adoption assistance, and refer people to Internet services and training needs.
- The **Cambridge Housing Authority**, a PCC grantee, provides access to computers with broadband Internet in or near its residential public housing complexes and provides training through project partners in basic computer and Internet skills.
- The **Foundation for California Community Colleges**, an SBA grantee, partners with the **Great Valley Center**, which delivers basic digital literacy training and teaches informed broadband selection. Learning objectives for GVC trainees include computer and Internet basics; email and email safety; search engines; California Connects resources; broadband subscription; and mobile Internet options.
- In partnership with the **University of Arkansas at Monticello, Connect Arkansas**, an SBA grantee, has developed and delivered a series of technology workshops focused on digital literacy skills, the benefits of broadband, and how to use the Internet independently at home. Computers were provided to 150 student and parent pairs that attended the technology workshops.
- The **Urban Affairs Coalition,** an SBA grantee**,** in partnership with Drexel University, the Philadelphia Housing Authority (PHA), and the Community College of Philadelphia (CCP), is distributing 5,000 laptops to PHA residents who complete an eight-hour computer and Internet basics course. Low-cost broadband subscriptions will also be offered to program participants receiving laptops.
- **The City of Chicago**, an SBA grantee, provides an **Everyday Digital** computer training course that introduces users to the Internet and teaches entry-level computing with an emphasis on the usage of broadband technology for daily activities. Training topics include Internet Basics, Internet Safety and Security, Understanding the Basics of Broadband, Using Online Banking and Commerce, and Email Basics.
- The **Las Vegas-Clark County Urban League**, a BTOP PCC grantee, trains users on computer basics, Internet searching, computer software programs, Microsoft programs, social media, email, and résumé writing. Course materials are available online.
- **Technology for All,** a PCC grantee, works with its partners to deliver advanced training on Excel, Word, PowerPoint, and other Microsoft Office applications. Each program specialist has access to digital copies of the entire training catalog online, on CDs, and in hard copy.

Table 20, below, presents a selection of Digital Literacy activities observed during the first round of case study site visits. These activities were selected as representative of the activities of the BTOP program overall, and are not a complete listing of every Digital Literacy activity undertaken by the grants in the sample or the program as a whole. Activities are organized by the taxonomy presented in the previous table, Table 19. As shown in the table below, Digital Literacy activities had resulted in increased broadband awareness, greater access to hardware and broadband connections, and training in the skills necessary to use broadband technology.

Table 20. Digital Literacy Activities and Outcomes

Grant	Observations from First-Round Site Visit	
	Activity	Outputs/Outcomes
1. Be aware of the benefits of broadband technology		
C.K. Blandin	Regional Development Commissions (RDCs) provide outreach, coordinate and promote statewide partner resources.	As of the second quarter of 2011, 240,835 individuals had become aware of the value of broadband adoption through media campaigns and live events.
CETF	Expand twenty-seven 2-1-1 telephone line centers and databases in California to include broadband services in the 2-1-1 umbrella of resources.	2-1-1 had found that 32 percent of callers sought free or low-cost computer-related training. Calls to 2-1-1 of Fresno had increased calls by over 200 percent.
2. Be able to use a computer with a modern operating system, including understanding how to use a keyboard, a mouse, and a visual interface incorporating icons and folders and a web browser, such as Internet Explorer, Google Chrome, or Firefox		
CHA	Provide access to computers with broadband Internet in or near public housing complexes and provide training in basic computing and Internet skills.	Students had become aware of basic computing and Internet skills by completing the classes.
FCCC	Training in basic digital literacy.	Users had connected with friends and family through Facebook and Skype. The grantee reported users communicated with family members across the globe via Skype.
3. Shop for and obtain an affordable computer with adequate capabilities, including locating organizations/services that distribute free or low-cost computers		
Connect Arkansas	Offers a series of technology workshops to develop basic digital literacy and Internet skills targeting low-income K-12 graders that qualify for free or reduced-price lunch and do not have a computer at home. A parent or family member is required to attend the class with each student. Students who complete the three-day training program receive a free computer.	Connect Arkansas had provided free computers to 150 student and parent pairs.
UAC	Distribute 5,000 laptops to public housing residents participating in an eight-hour computer and Internet basics course.	Laptop computers had been distributed to participants completing the course.
4. Shop for and obtain an affordable broadband connection with reasonable contract term, including finding organizations/services that provide discounted or free access to participants		
FCCC	Training to create informed broadband consumers and support plan selection.	Class participants indicated the intention to subscribe to a plan.

Grant	Observations from First-Round Site Visit	
	Activity	Outputs/Outcomes
UAC	Offer low-cost broadband subscriptions to program participants.	This service had not been implemented at the time of the evaluation study team visit.
5. Understand how to perform basic online activities		
City of Chicago	Provide training in basic computer skills, email, locating information on the Internet, using spreadsheets, taking classes online, downloading forms, uploading photographs, creating a website, social networking sites, or downloading music.	Participants had demonstrated skills in stated training areas.
FCCC	Training in email and Internet safety.	Parents had become aware of how to make the computer secure for children, including how to block inappropriate websites.
FCCC	Training in the use of search engines.	Participants had become aware of how to access the Internet in order to research information online.
6. Be able to use software and applications to present and manipulate documents and data, including word processing, creating spreadsheets, creating presentations, and creating or manipulating simple databases		
LVUL	Provide training in Microsoft Office applications and other basic computing.	Participants had demonstrated skills in Microsoft Office applications.
TFA	Provide advanced training in Microsoft Office applications.	Participants had expressed increased proficiency in Microsoft Office applications.

3.7.3 Roadmap

Table 21, below, presents a roadmap for the next round of case study site visits that will occur in 2013. The grantees shown in the roadmap table are gathering data related to Digital Literacy, and they are expected to have indicators that measure the impacts of their projects. These data sources are shown in the second column of the table. The rightmost column describes the method by which quantitative or qualitative indicators may be included in *Interim Report 2*. Activities are organized by the taxonomy previously presented in Table 19.

Table 21. Digital Literacy Roadmap

Grant	Roadmap for Second-Round Site Visit	
	Data	Methods
1. Be aware of the benefits of broadband technology		
C.K. Blandin	The Economic Development Administration (EDA) Center conducts quarterly partner activity evaluations. The partner activity evaluations primarily track and report outputs. Outcome reporting includes people contacted through outreach and public awareness efforts, new broadband subscriptions, and subscription rates.	Report activity from the EDA Center's quarterly partner activity evaluations as collected, tabulated, and analyzed by C.K. Blandin.
CETF	2-1-1 screens callers with questions regarding Internet service subscribership. 2-1-1 tracks information on all of the callers screened in a database populated with each caller's response to each of the screening questions. Each 2-1-1 center produces monthly reports with this information.	Report 2-1-1 data as collected, tabulated, and analyzed by CETF.
2. Be able to use a computer with a modern operating system, including understanding how to use a keyboard, a mouse, and a visual interface incorporating icons and folders and a web browser, such as Internet Explorer, Google Chrome, or Firefox		
CHA	CHA develops a monthly tenant services report that summarizes each of CHA's residential services.	Report statistics from the monthly tenant services reports as collected, tabulated, and analyzed by CHA. Report anecdotes from interviews with instructors or students.
FCCC	Trainers follow up with trainees with phone calls, email, and Facebook and report this information in a weekly report. FCCC is working to measure the success of the grant using qualitative and quantitative methods. The foundation is conducting case study site visits. The evaluator is working to develop a measurement methodology for desired outcomes including increasing awareness, digital literacy, continued use, and home subscription.	Report anecdotes based on interviews with trainers or lab users. Report evaluator and site visit data, as collected, tabulated, and analyzed by FCCC.
3. Shop for and obtain an affordable computer with adequate capabilities, including locating organizations/services that distribute free or low-cost computers		
Connect Arkansas	Connect Arkansas tracks the number of scholarship computers distributed and the number of students and parents attending the Technology Training program. Connect Arkansas records interviews with participants via flip camera.	Report the number of scholarship computers distributed as collected and tabulated by Connect Arkansas. Report anecdotes through interviews with Technology Training staff or participants.

Grant	Roadmap for Second-Round Site Visit	
	Data	Methods
UAC	Drexel reports the number of Philadelphia Housing Authority residents participating in the Internet basics course. Drexel manages and tracks the distribution of laptops.	Report statistics as collected, tabulated, and analyzed by Drexel. Report anecdotes of participants in the Internet basics course through interviews with trainers or program participants.
4. Shop for and obtain an affordable broadband connection with reasonable contract terms, including finding organizations/services that provide discounted or free access to participants		
FCCC	Trainers follow up with trainees via phone calls, email, and Facebook and report this information in a weekly report.	Report statistics from reports as collected, tabulated, and analyzed by FCCC. Report anecdotes from interviews with trainers.
UAC	The low-cost, high-speed Internet service program had not yet been implemented, and therefore there is no data available.	Report subscribership data as collected, tabulated, and analyzed by UAC. Report anecdotes from interviews with program staff.
5. Understand how to perform basic online activities		
City of Chicago	ETO database tracks pre- and post-training technical assessments of course participants. The self-reported information is entered into ETO by Tech Organizers and FamilyNet Managers at each site after each class, with a report generated quarterly.	Report ETO statistics as collected, tabulated, and analyzed by the City of Chicago. Report anecdotes through interviews with trainers or users.
FCCC	GVC trainers collect data on training locations, partners, and counts and submit them in weekly reports. Trainers follow up with trainees through phone calls, email, and Facebook and report this information in a weekly report.	Report results collected by GVC trainers.
6. Be able to use software and applications to present and manipulate documents and data, including word processing, creating spreadsheets, creating presentations, and creating or manipulating simple databases		
LVUL	Trainers complete a daily log of training at each PCC.	Report statistics from training logs as collected, tabulated, and analyzed by LVUL. Report anecdotes from interviews with instructors.
TFA	TFA plans to implement a site-tracking tool and analysis dashboard that will count the number of users served and summarize training hours provided at each PCC. Users complete pre- and post-course evaluations for every training class regarding their knowledge before the course and their capabilities after training. These results are submitted to Austin Free-Net (AFN) for consolidation and results analysis.	Report TFA tracking tool and analysis dashboard data as collected, tabulated, and analyzed by TFA. Report pre- and post-course evaluation data as collected, tabulated, and analyzed by TFA.

3.7.4 Grantee-Sponsored Research

ASR is conducting primary data collection and research to measure the economic and social impacts of BTOP through the case study site visits. These data will be analyzed as we have described above. Several grantees are also embarking on primary data collection and research. To the extent these grantee-sponsored studies are complete and provide information relevant to the measurement of the economic and social impacts of BTOP, ASR may incorporate the results of those studies into our *Final Report*.

Eight of the grants included in Table 21, above, have third-party evaluation studies underway that might provide relevant information for the *Final Report*:

C.K. Blandin

C.K. Blandin has provided funding to the EDA Center at the University of Minnesota Crookston, led by Dr. Jack Gellar. The purpose of the EDA Center evaluation is to evaluate the entirety of the grant activities. It will identify grant-wide impact indicators, develop reporting procedures, collect data, and measure the impacts of the grants activities. The evaluation includes three components:

1. A large-scale statewide broadband adoption study at the start and end of the MIRC project period
2. Pre- and post-broadband utilization surveys in the eleven Demonstration Communities
3. Quarterly reports on partner activities, including design and data collection and analysis

The statewide broadband adoption study and the Demonstration Community utilization surveys measure the following indicators:[325]

- Home ownership of a working computer
- Internet connectivity in the household
- Purchase of a broadband subscription

These three key measures have been regularly assessed since 2001 by the Center for Rural Policy and Development as well. Accordingly, the 2010 data collected not only help establish a baseline for the MIRC project, but also help identify statewide trends for these key measures across all of rural Minnesota.[326]

The partner activity quarterly reports measure

- the number of PCs distributed, the characteristics of the recipients, and recipients' planned uses for the computers;
- training events, including the number and type of participants (individuals and businesses);
- people reached through outreach and public awareness, including media campaigns and the number of business events;
- new broadband subscriptions and rate of new broadband subscriptions in Demonstration Communities.[327,328]

California Emerging Technology Fund

Evaluation of the CETF BAA project includes a survey of the impacts of one of the BAA project's programs, Club Digital, which is run by a project partner, Dewey Square Group (DSG). The research was conducted on behalf of impreMedia and DSG by an independent research firm, Simmons Research, in September and October 2011. It measured the impact of the Club Digital pilot program that ran in California from August 1 to August 31, 2011.[329] CETF approved a survey of impreMedia readers before the launch of Club Digital to establish baseline data on broadband adoption, computer use, and household income. The baseline data were used to compare responses to a follow-up survey in late September to assess the impact on both adoption of

broadband and people trained through Club Digital.[330] The survey asked how many hours were spent reading the lessons and how much was learned as well as how many people subscribed to broadband in the seven weeks ending the first week of October when the survey was completed. It is not known whether this survey will be repeated.[331]

Cambridge Housing Authority

CHA is not conducting a formal, grant-wide evaluation, and no evaluation is funded under the grant. CHA does, however, conduct an annual Resident Satisfaction Survey of residents in its senior and family developments. PCC users are primarily CHA residents and the survey includes questions on awareness and usage of the BTOP-funded PCCs, computer ownership, and home Internet access.[332] It is unknown if future evaluations will include questions on digital literacy and broadband adoption.

Foundation for California Community Colleges

FCCC is undertaking an independent evaluation effort, and also uses the Public Policy Institute of California's (PPIC) annual Statewide Survey: Californians and Information Technology to identify baseline broadband use in its target populations. While the PPIC survey does not formally evaluate the grant, it is used by FCCC as a data point to show changes in broadband adoption among certain demographics and geographic regions targeted by the FCCC grant, specifically underserved populations, especially in the Central Valley.[333]

FCCC is partnering with experts at the International Computer Science Institute (ICSI) of the University of California, Berkeley (UCB) to measure the success of the grant, evaluating the program's structure and effectiveness in the context of its target population, and making recommendations for its future. The evaluator worked with FCCC on developing a measurement methodology for desired outcomes, including increasing awareness, digital literacy, continued use, and home subscription.[334]

Connect Arkansas

Connect Arkansas is conducting biannual statewide telephone surveys (one in January and a follow-up in December of each year) of broadband access and use of attitudes toward broadband in Arkansas.[335] The purpose of the surveys is to gather data to determine the impact of the Connect Arkansas awareness campaign. The plan is to implement the statewide survey several times within the grant period in order to understand better the impact of the program over time and to provide a more comprehensive look at underlying barriers for connectivity.[336]

The evaluation study team will examine these studies to determine if there are results that may be applied to the estimation of Digital Literacy benefits for the sample.

The survey gathers observations about broadband use and subscribership, including location and frequency of Internet use, access to high-speed Internet, access in the home or workplace, computer ownership, whether the broadband price is reasonable, whether broadband is viewed as a necessity, why users do not have or use Internet, and if they would subscribe to high-speed Internet if an affordable option were available.

Urban Affairs Coalition

UAC contracted the New America Foundation Open Technologies Initiative (OTI) to assist in the reporting and evaluation of the Freedom Rings Partnership, which includes the Freedom Rings: SBA and PCC grants. The New American Foundation is also teaming with academics at Rutgers University who will conduct various impact assessments of the project; the specific topics had not been determined at the time of the case study visit. It is the intention of OTI and UAC that evaluation metrics be shared externally and used to determine the level of success for all partners and for the grant as a whole. OTI is interested in using this evaluation effort to contribute to the

existing body of research on how broadband-related training and awareness efforts can be scaled up to the community and national levels. Evaluation metrics are expected to include educational outcomes, workforce development outcomes, community engagement outcomes, and broadband adoption rates.[337]

City of Chicago

Under Dr. Karen Mossberger's direction, the University of Illinois at Chicago (UIC) Department of Public Administration is conducting an evaluation of the Smart Communities program that includes a Digital Excellence Study. The Digital Excellence Study will include city-wide surveys conducted in early 2011 and early 2013 in order to track changes at the community level versus those shown in an earlier survey conducted in 2008. As in 2008, a random sample telephone survey of approximately 3,000 respondents will be conducted in both English and Spanish. Cell phone sampling will be included in 2011 and 2013. Survey responses will be geocoded for residence, merged with census data, and analyzed using multilevel models to generate point estimates of technology use for census tracts, and for the 77 official community areas in the City of Chicago. Point estimates will include broadband adoption, Internet use anywhere, public access use, barriers to technology use, and activities online including use for work, job search, education, health information, mass transit, e-government, community information, and business. Respondents are also asked whether they attended any of the Smart Communities classes, and whether they recalled seeing ads from the Smart Communities campaign.[338] The city-wide survey will allow for comparison of changes in the Smart Communities with other low-income community areas and with city averages.[339]

Las Vegas-Clark County Urban League

During the case study visit, LVUL indicated that there are no formal evaluation efforts planned for the NVPCC project.[340] Subsequent PPRs, however, indicate there are some evaluation efforts underway. Although the extent of planned evaluation efforts is not known, PPR data indicate that a participant survey was conducted with more than 550 responses.[341] This survey presumably measures Digital Literacy as one of the components evaluated.

Section 4. Next Steps

This report is a summary of quantitative and qualitative data collected during the individual case study site visits that were delivered to NTIA by the evaluation study team between March and May 2012. These case study reports identify for each of the eight PCC and seven SBA grants visited: how the grantee maximized the impact of the BTOP investment; successful techniques, tools, materials and strategies used to implement the project; best practices; and evidence from grantees, project partners, and publicly available data regarding the initial impacts of the project on the communities in which they are operating, the individuals they are serving, and the organizations involved in their implementation.

In early 2013, the evaluation study team will return to each of these grant locations to observe how the grant has evolved. By the time of this visit, the PCC and SBA projects will be complete or nearly complete. The visits will further investigate the initial impacts uncovered during the first round of visits and identify any additional impacts that may have occurred in the time between the site visits. Interviews with grantees, project partners, and individual users will be used to determine the impacts the grant has made on these entities and the communities in which they operate.

The starting point for the second round of case study site visits will be the topics described in the roadmap for each project. The indicators described in each of the focus areas will be explored with the grantees to gather qualitative and quantitative information on the social and economic impacts of program activities. Grantees will also be asked to describe other activities that might not have been planned or started during the first round of case study site visits, and to describe the economic and social impacts of these activities. This effort will result in a second set of case study reports.

In early 2014, *Interim Report 2* will be delivered. This report will include a summary of the second round of case study visits to the fifteen PCC and SBA grants, allowing for a longitudinal analysis of the impacts of the grants over time. *Interim Report 2* will also summarize the findings from case study visits to twelve CCI grants. These visits will take place in the fall of 2013 and result in a set of twelve case study reports delivered to NTIA over several months.

For the PCC and SBA projects, *Interim Report 2* will provide an update to and refinement of the analysis presented in *Interim Report 1*. For the CCI projects, *Interim Report 2* will summarize the activities underway by twelve CCI grantees and the impacts these projects intend to have on broadband availability and adoption for community anchor institutions, communities, and individuals.

Finally, in September 2014, a *Final Report* will be delivered that quantitatively and qualitatively measures the economic and social impact of BTOP grants (including CCI, PCC, and SBA). The centerpiece of the *Final Report* will be an assessment of how and to what extent BTOP grant awards have achieved economic and social benefits in areas served by the grantees. To the extent that such information is available, results from studies performed by the grantees will be used to round out the conclusions presented.

Appendix A. Glossary

Acronym	Definition
AAC	Augmentative and alternative communication
ACS	American Community Survey
ACT	Arkansas Center for Telehealth
ACTION	Access to Computer Technology and Instruction in Online Networking
AFN	Austin Free-Net
AP	Advanced Placement
APR	Annual Performance Progress Report
ARRA	American Recovery and Reinvestment Act of 2009
ASC	Academic Success Centers
ATA	American Telemedicine Association
BAA	Broadband Awareness and Adoption
BRN	Business Resource Network
BTOP	Broadband Technology Opportunities Program
CAC	Connecting America's Communities
CAE	Christina Adult Education
CAI	Community anchor institution
CCC	California Community College
CCI	Comprehensive Community Infrastructure
CCP	Community College of Philadelphia
CETF	California Emerging Technology Fund
CHA	Cambridge Housing Authority
CPCWD	Center for Public Computing and Workforce Development
CPUC	California Public Utilities Commission
CWF	Centers for Working Families
DCDAL	Delaware Center for Distance Adult Learning
DDL	Delaware Division of Libraries
DEDO	Delaware Economic Development Office
DEED	Minnesota Department of Employment and Economic Development
DSG	Dewey Square Group
DSL	Digital subscriber line
DYN	Digital Youth Network
DYSJ	Digital Youth Summer Jobs

Acronym	Definition
EBAE	Expanding Broadband Use in Arkansas Through Education
EDA	Economic Development Administration
EHR	Electronic health record
EMS	Emergency medical services
EMT	Emergency medical technician
ESL	English as a Second Language
ESOL	English for Speakers of Other Languages
ETO	Efforts-to-Outcomes
FAMU	Florida Agricultural and Mechanical University
FCC	Federal Communications Commission
FCCC	Foundation for California Community Colleges
FIGHT	Field Initiating Group for HIV Trials
FPO	Federal Program Officer
FTE	Full-time equivalent
GAO	United States General Accounting Office
GDP	Gross domestic product
GED	General Educational Development
GIS	Geographic Information Systems
GVC	Great Valley Center
HIT	Health Information Technology
ICF	Intelligent Community Forum
ICSI	International Computer Science Institute
ICT	Information and communications technology
ITIF	Information Technology & Innovation Foundation
LECG	LECG Corporation
LOS	Length of stay
LVUL	Las Vegas-Clark County Urban League
MESA	Mathematics, Engineering, Science Achievement
MIRC	Minnesota Intelligent Rural Communities
MNREM	University of Minnesota Extension and Minnesota Renewable Energy Marketplace
MSU	Michigan State University
MTC	Midlands Technical College
NBM	National Broadband Map
NOFA	Notice of Funds Availability

Acronym	Definition
NTIA	National Telecommunications and Information Administration
NVPCC	Nevada Public Computer Centers
OECD	Organisation for Economic Co-operation and Development
OTI	New America Foundation Open Technologies Initiative
PAAC	Partnership of African American Churches
PCC	Public Computer Center
PHA	Philadelphia Housing Authority
PPIC	Public Policy Institute of California
PPR	Performance Progress Reports
RDC	Regional Development Commissions
RDD	Random Digit Dial
RUS	Rural Utilities Service
SBA	Sustainable Broadband Adoption
SCTCS	South Carolina Technical College System
SCTRC	South Central Telehealth Resource Center
SMS	Short Message Service
SNRHA	Southern Nevada Regional Housing Authority
SOW	Statement of work
TABE	Tests of Adult Basic Education
TFA	Technology for All
TXC2	Texas Connects Coalition
UAC	Urban Affairs Coalition
UAMS	University of Arkansas for Medical Sciences
UCB	University of California, Berkeley
UIC	University of Illinois at Chicago
UME	University of Minnesota Extension
UMVRDC	Upper Minnesota Valley Regional Development Commission
WFWV	WorkForce West Virginia

Appendix B. Grant Selection

The focus of the *Final Report* is to investigate and measure the economic and social impacts of BTOP grants at the community, individual, and anchor institution levels. Therefore, from a grant selection perspective, grants that have more focused outcome goals, a more targeted impact area, and identified anchor institutions lend themselves better to this analysis.

The diversity in types of grants, their objectives, target audiences, types of technology, timing of project milestones and completion schedules, and geographic scope are just some of the many factors that require a customized and specific approach for each of the selected grants. In addition, given that the number of PCC and SBA selections is limited to fifteen, and the number of CCI selections is limited to twelve, generalizations of findings across the grants requires careful interpretation. A further consideration is that many of these projects will be "in flight" at the same time we are conducting the case studies; therefore, we suggested that NTIA consider grants that are likely to be closer to completion, especially since we will be conducting site visits at some anchor institutions. We discussed with NTIA several other considerations in the selection process, listed below:

- Impact area or project focus with respect to the areas of analysis defined for the study
- Urban versus rural location
- Grant size as measured by federal funding level
- Applicant type (e.g., state government, nonprofit, for-profit, small business, tribal)
- Provision of service differentiators, including:
  - Types or style of training, outreach, or media engagement (in the case of PCC and SBA)
  - Technology deployed, business model of applicant and/or subrecipients, and Middle Mile versus Last Mile (in the case of CCI)
- Type of population served

Finally, logistical considerations, including budgetary and travel considerations, were applied in making the final selection of grants. A list of the fifteen selected PCC and SBA (eight PCC and seven SBA) grants, along with a brief description of each project, is provided below.

The following PCC grants were selected for inclusion in the sample:

- The **Cambridge Housing Authority (CHA)** received $698,924 in BTOP funds and $541,144 in matching funds to rehabilitate and improve CHA's broadband training by reopening and expanding three public computer centers, replacing twenty-four workstations, adding sixteen new workstations, and reinstating the CHA's educational programs.
- The **Delaware Division of Libraries (DDL)** received $1,899,929 in BTOP funding and $1,008,094 in matching funds for the Delaware Library Job/Learning Labs project. This project will address the online access needs of economically vulnerable communities in Delaware with a focus on the unemployed and underemployed who seek job-searching assistance from public libraries.
- **Florida Agricultural and Mechanical University (FAMU)** received $1,477,722 in BTOP funding and $410,399 of matching funding for the Center for Public Computing and Workforce Development (CPCWD). The CPCWD project will provide workforce development opportunities focused on industry certifications, education, customized training, and virtual learning services.
- The **Las Vegas-Clark County Urban League (LVUL)** received $4,680,963 in BTOP funding and $2,236,060 in matching funding for the Nevada Public Computer Centers (NVPCC) project. The goal of NVPCC is to provide access to computers and training to low-income and high-unemployment communities in Clark County, Nevada.
- **Michigan State University (MSU)** received $6,056,819 in BTOP funding and $1,540,541 in matching funding for the Evidence Based Computer Center II project. The goal of this project is to expand or create about 207 PCCs in colleges, public libraries, public housing developments,

tribal community centers, and other community support organizations across the state of Michigan and to equip them with about 2,400 computers.

- The **South Carolina Technical College System (SCTCS)** received $5,903,040 in BTOP funding and $1,551,183 in matching funding for the Reach for Success project. The goal of Reach for Success is to provide PCCs to SCTCS students and members of the communities surrounding the technical colleges in order to increase their employability and to prepare them fully for successful careers.
- **Technology for All (TFA)** is a 501(c)(3) nonprofit organization that uses technology to create opportunities in low-income communities. TFA received $9,588,279 in BTOP funding and $2,671,099 in matching funding for the Texas Connects Coalition (TXC2). The goal of TXC2 is to create PCCs and networks that provide access to broadband technology, promote computer literacy, and permit digital inclusion for all Texans.
- **WorkForce West Virginia (WFWV)** is a state agency that seeks to increase employment, improve the quality of the workforce, and enhance job retention and earnings. WFWV received $1,901,600 in BTOP funds and $568,000 in matching funds to for the One Stop Public Computer Center Modernization project. This project will update nineteen employment resource centers across the state.

The following SBA grants were selected for inclusion in the sample:

- The **C.K. Blandin Foundation (C.K. Blandin)** seeks to strengthen communities in rural Minnesota, especially the Grand Rapids area. C.K. Blandin received $4,858,219 in BTOP funding and $1,525,777 of matching funding for the Minnesota Intelligent Rural Communities (MIRC) project. The goal of MIRC is to create technologically and economically vital rural communities, sustainable broadband adoption, job growth, and wealth creation.
- The **California Emerging Technology Fund (CETF)** was established in 2005 as a nonprofit corporation by the California Public Utilities Commission (CPUC). CETF received $7,251,295 in BTOP funds and $2,109,377 in matching funds for the Broadband Awareness and Adoption (BAA) project. The goal of this project is to facilitate broadband adoption in vulnerable communities.
- The **City of Chicago** received $7,074,369 in BTOP funds and $1,769,066 in matching funds for the Smart Chicago project. The Smart Chicago project increases the programmatic depth of existing broadband awareness and adoption efforts. The goal of this project is to improve the quality of life of residents in target communities through digital technology and the Internet.
- **Connect Arkansas** is a private, nonprofit organization promoting economic growth within Arkansas. Connect Arkansas promotes broadband education, use, and access throughout the State of Arkansas. Connect Arkansas received $3,702,738 in BTOP funding and $1,037,247 in matching funds for the Expanding Broadband Use in Arkansas Through Education project. The goals of this project are to improve economic competitiveness, to improve healthcare provision, and to increase technology use among Arkansans.
- The **Foundation for California Community Colleges (FCCC)** provides funding and learning opportunities for students in the California Community College (CCC) system. FCCC received $10,944,843 in BTOP funding and $3,179,057 of matching funding for the California Connects SBA grant. The goal of this grant is to provide access to broadband, and training for digital literacy, workforce development, and lifelong learning.
- **Future Generations Graduate School (Future Generations)** employs community-based approaches to addressing major social challenges. It has a track record of successfully managing complex international and educational programs that rely on broadband. Future Generations received $4,461,874 in BTOP funding and $1,160,092 in matching funding for the Equipping West Virginia's Fire and Rescue Squads project. The goal of this project is to provide broadband access to West Virginians in low-income and rural communities.
- The **Urban Affairs Coalition (UAC)** operates and manages a wide range of programs, services, and public policy initiatives that focus on community issues within the Greater Philadelphia, Pennsylvania area. UAC received $11,804,015 in BTOP funding and $5,623,966 in matching funds for the Freedom Rings project. The goal of the Freedom Rings project is to

reduce barriers to broadband adoption through programs for increased access, awareness, and digital literacy training.

Table 22 and Table 23, below, present the organizational and program delivery attributes of the grants, including the following:

- Percent Complete: completion of the project as a function of grant dollars spent as reported by grantees in the PPRs available publicly at the time of the site visit
- Award Amount: dollar figure of BTOP grant award
- Match Amount: dollar figure of match amount committed to by grantee
- Percent Match: match funding as a percent of total funding. Per NOFA guidelines, match funding must be at least 20 percent of total funding.[342]
- Total Funding: award funding plus match funding

Table 22: Attributes of Selected PCC Grants as of September 2011

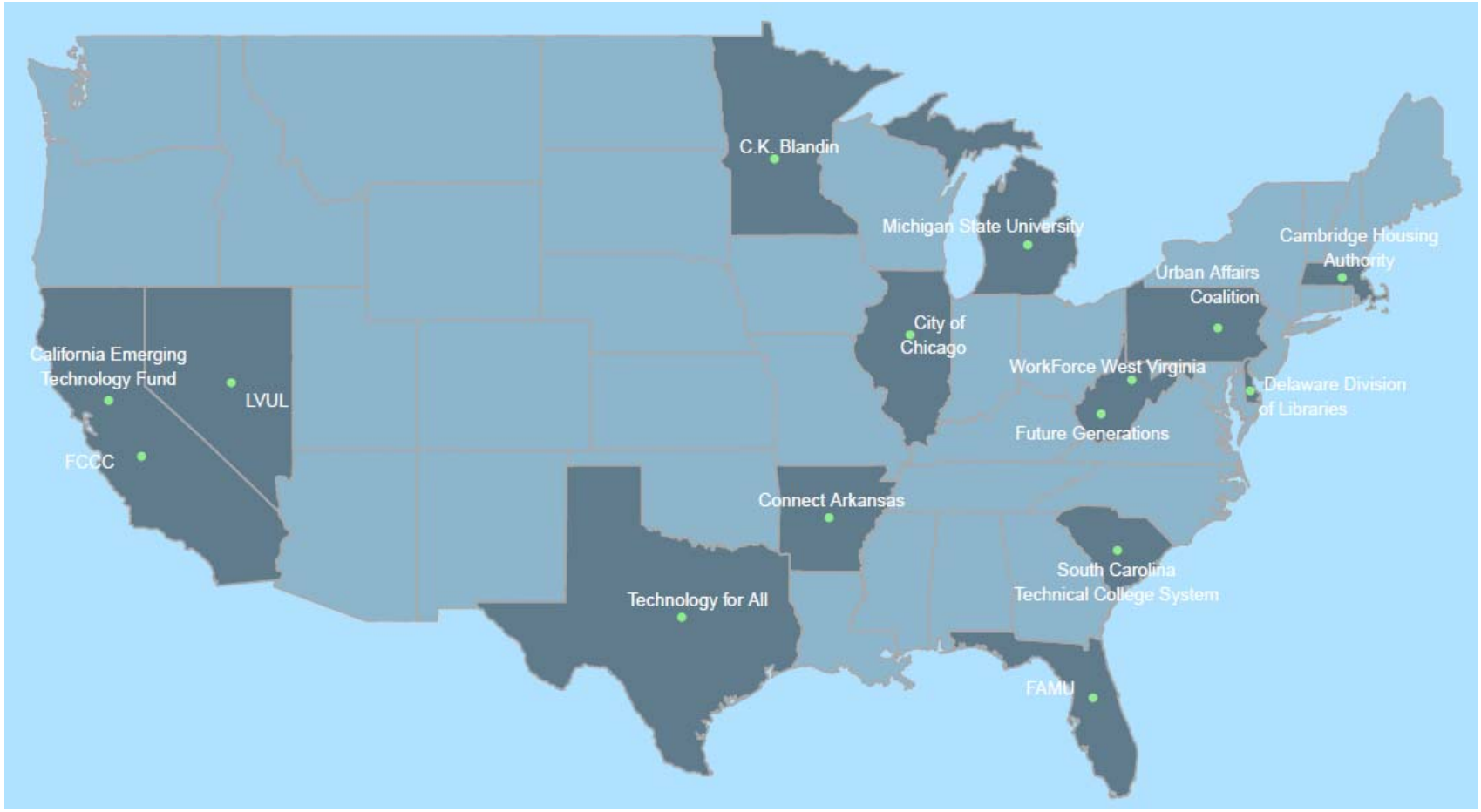
Grantee[343]	% Complete	Award Amount	Match Amount	% Match	$ Total
CHA	51%	$698,924	$541,144	77%	$1,240,068
DDL	23%	$1,899,929	$1,008,094	53%	$2,908,023
FAMU	7%	$1,477,722	$410,399	28%	$1,888,121
LVUL	50%	$4,680,963	$2,236,060	48%	$6,917,023
MSU	57%	$6,056,819	$1,540,541	25%	$7,597,360
SCTCS	66%	$5,903,040	$1,551,183	26%	$7,454,223
TFA	42%	$9,588,279	$2,671,099	28%	$12,259,378
WFWV	33%	$1,901,600	$568,000	30%	$2,469,600

Table 23: Attributes of Selected SBA Grants as of September 2011

Grantee[344]	% Complete	Award Amount	Match Amount	% Match	$ Total
C.K. Blandin	58%	$4,858,219	$1,525,777	31%	$6,383,996
CETF	87%	$7,251,295	$2,109,377	29%	$9,360,672
City of Chicago	25%	$7,074,369	$1,769,066	25%	$8,843,435
Connect Arkansas	20%	$3,702,738	$1,037,247	28%	$4,739,985
FCCC	46%	$10,944,843	$3,179,057	29%	$14,123,900
Future Generations	48%	$4,461,874	$1,160,092	26%	$5,621,966
UAC	15%	$11,804,015	$5,623,966	48%	$17,427,981

Figure 2, below, illustrates the service locations for the selected PCC and SBA grants. The states in which the grantees are located have been shaded darker on the map. Dots represent a grantee within a state and are labeled with their respective names.

Figure 2. Locations of Selected Grants



The evaluation study team identified a service area for each of the grants included in the study. This service area includes regions in geographic proximity to grant activity that could reasonably be expected to include the vulnerable populations that the grant is intended to serve. Table 24 and Table 25, below, present a description of each service area defined shortly after the site visit.

Table 24: Service Area Descriptions of Selected PCC Grants

Grantee	Service Area Description
CHA	The Cambridge Housing Authority service area is composed of the census tracts surrounding the nearby public housing complexes. Most of the users of the computer centers we observed were residents of these nearby complexes. Residents of the census tracts surrounding the public computer centers generally have lower incomes, are more likely to speak a language other than English, and are more likely to be non-White than the residents of the City of Cambridge or the nation as a whole.
DDL	The DDL service area is composed of the three counties that make up the entire state of Delaware. Lab coordinators report that patrons are primarily unemployed, blue-collar workers between the ages of 20 and 50 with limited computer skills. Most patrons are actively seeking employment or to further their education to enhance future employment opportunities by seeking a degree or certification. The open lab and training course users do not trend toward a specific gender or ethnicity.
FAMU	The Center for Public Computing and Workforce Development grant serves three counties in northwestern Florida: Leon, Gadsden, and Jefferson. Nearly 35 percent of the population in the service area identifies as African American, a rate more than double the state and almost three times the national average. The unemployment rate in the service area is higher than in both the state of Florida and the nation. Nearly 20 percent of households have incomes of less than $25,000. The poverty rate in the service area is also higher than those of the state and nation.
LVUL	The Nevada Public Computer Centers (NVPCC) project serves low-income residents of Clark County, Nevada, including Southern Nevada Regional Housing Authority (SNRHA) residents. PCCs are located in public housing developments and community and senior centers in the most economically disadvantaged communities in the cities of Las Vegas, North Las Vegas, and Henderson and unincorporated areas of Clark County. The service area includes about 4 percent of the population of the state of Nevada, and contains a significantly greater percentage of African Americans and Hispanic or Latino individuals when compared to both the state and nation. The unemployment rate in the service area is 4 percentage points higher than the state and the nation, and nearly a third of service area households have annual incomes lower than $25,000.
MSU	Michigan State University focuses the Evidence Based Computer Centers II project on urban centers most affected by the economic decline, targeting communities with the greatest need for broadband services, and one tribal area. As a result, the targeted populations are generally low-income, unemployed, disabled, minorities, elderly, or youth. Members of these targeted populations have been found to have lower levels of broadband adoption. The census tracts in which the public computer centers funded by the grant are located are less ethnically diverse than either the State of Michigan or the nation.
SCTCS	The entire state of South Carolina is served by South Carolina Technical College System (SCTCS), a network of 16 technical colleges. College campuses and satellite locations reach all 46 counties in the state. SCTCS has a population of about 4.4 million people. South Carolina has a significantly greater percentage of self-reported African Americans than the nation, but a significantly lower percentage of Hispanic or Latino residents.

Grantee	Service Area Description
TFA	The Texas Connects Coalition (TXC2) service area comprises fourteen rural and urban counties across southwest Texas with locations in Houston, Austin, San Antonio, Duval County, and small communities in the Brazos Valley. TFA and Austin Free-Net (AFN) worked together to identify 70 sites that capture Texas's diversity and meet the needs of low-income and under-resourced Texas residents. The selected centers serve diverse populations including Hispanic, African American, White, and Asian patrons. About 39 percent of service area residents speak a language other than English in their homes, almost twice the national rate.
WFWV	The One Stop Public Computer Center Modernization project activities encompass 20 of West Virginia's 55 counties. The grant's priority is to serve the unemployed, disabled, veteran, and low-income members of the state's population. The service area has a higher composition of individuals over the age of 59 and a smaller percentage of individuals under the age of 20 than the nation. More than half of service area households have an income below $50,000, compared to 40 percent of households nationwide.

Table 25: Service Area Descriptions of Selected SBA Grants

Grantee	Service Area Description
C.K. Blandin	The Minnesota Intelligent Rural Communities (MIRC) initiative targets eleven Demonstration Communities. The projects implemented by the Demonstration Communities take place at libraries, schools, healthcare facilities, support agencies, or businesses. The region surrounding the Demonstration Communities is, in general, older and less ethnically diverse than the state population, with lower levels of income and education. Broadband service is generally of poorer quality than that found in the rest of the state. About 54 percent of the service area population subscribes to broadband, which is lower than the state (62 percent) and the national subscription rate (59 percent).
CETF	CETF serves all of California, including the Bay Area, Central Valley, Los Angeles, Inland Empire, and Orange/San Diego service regions. CETF targets service to households with an income under $40,000. The Central Valley has the largest percentage of households with an income of less than $40,000, at 35 percent. All service regions have more than twice the national percentage of individuals who are Hispanic or Latino, with the exception of the Bay Area, which is eight percentage points higher than the nation. The service area also includes a large percentage of persons speaking languages other than English in the home.
City of Chicago	The Smart Chicago grant's service area reaches five moderate- and low-income Smart Communities located throughout Chicago—Auburn Gresham, Chicago Lawn, Englewood, Humboldt Park, and Pilsen. The service area has a total population of 410,439, about 15 percent of Chicago's population. The population in the service area is 49 percent African American, 15 percentage points higher than in Chicago and far above Illinois and the nation. The service area also has a higher percentage of Hispanics or Latinos than the city of Chicago and almost three times the percentage of Hispanics or Latinos in the state and nation.
Connect Arkansas	Connect Arkansas's service area covers 57 of Arkansas's 75 counties. The average poverty rate in the counties served by the grant is 21.5 percent, nearly 65 percent greater than the national average. The service area has a larger relative African American population (21 percent) compared to the state and the nation (16 and 12 percent, respectively). Thirty-two percent of the service area population subscribes to broadband. That figure is lower than both the 43 percent state adoption rate and 59 percent national adoption rate.

Grantee	Service Area Description
FCCC	The FCCC service area is composed of the 37 counties in the state that are associated with the project's two primary programs. Each of these programs has a distinct service area, overlapping in only four counties. FCCC's service area includes 33.2 million of the 36.3 million residents of California.
Future Generations	The Future Generations Graduate School BTOP grant focuses on rural, low-income, and geographically isolated communities throughout West Virginia. No particular demographic is targeted in the selection of fire stations beyond the prioritization of the most economically distressed counties. Individual computer labs, however, may serve seniors, the unemployed, or students based on the demographic characteristics of the community they serve. Slightly less than half of West Virginia's population resides within the grant's service area. The population of both the service area (95 percent) and the State of West Virginia (94 percent) is almost entirely White, as compared to 75 percent of the population nationwide. The service area has a poverty rate of nearly 20 percent, 6 percentage points higher than the national average and more than 2 percentage points greater than the State of West Virginia.
UAC	The Freedom Rings: SBA project targets at-risk youth, those living with HIV/AIDS, the homeless and formerly homeless, those in public housing, recovering addicts, and ex-offenders throughout the City of Philadelphia. Geographically, the grant serves the entire City of Philadelphia. Many residents of the city belong to groups with historically lower levels of broadband adoption. For example, the unemployment rate in Philadelphia is more than five percentage points greater than in the state as a whole.

Table 26 and Table 27, below, summarize the selected grant's progress through Calendar Quarter 4, 2011. The evaluation study team completed site visits in Calendar Quarter 3, 2011. Quarterly statistics during the visits are highlighted in the table below. At the time of the site visits, grantees had collectively spent $46.6 million dollars of their combined budget of $109.2 million (42.7 percent). Through Calendar Quarter 4, 2011, the selected grantees have spent approximately 50 percent of their total funds (including both federal award and match dollars).[345] "N/A" indicates that no data were reported in that quarter for that grant.

Table 26. Progress of Selected PCC and SBA Grants (Percent Completion) as of December 2011

Grantee[346]	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4
C.K. Blandin	1%	20%	34%	44%	51%	58%	72%
Connect Arkansas	N/A	N/A	3%	8%	13%	20%	30%
CHA	12%	14%	26%	35%	47%	51%	60%
CETF	15%	32%	51%	64%	77%	87%	87%
City of Chicago	22%	3%	10%	8%	10%	25%	30%
DDL	N/A	N/A	0%	0%	18%	23%	30%
FAMU	N/A	N/A	0%	5%	2%	7%	18%
FCCC	N/A	N/A	18%	41%	42%	46%	59%
Future Generations	7%	18%	24%	29%	39%	48%	57%
LVUL	7%	22%	29%	40%	50%	50%	61%
MSU	N/A	N/A	1%	11%	43%	57%	62%
SCTCS	14%	39%	51%	50%	60%	66%	68%
TFA	N/A	N/A	4%	26%	36%	42%	49%
UAC	N/A	N/A	1%	4%	11%	15%	20%
WFWV	1%	5%	15%	21%	28%	33%	40%

Table 27. Expenditures of Selected PCC and SBA Grants as of December 2011

Grantee[347]	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	Total Funds
C.K. Blandin	$74,336	$1,011,165	$1,738,615	$2,479,517	$2,836,789	$3,678,354	$4,566,619	**$6,383,996**
Connect Arkansas	N/A	N/A	$46,739	$260,733	$512,372	$789,708	$1,144,616	**$4,739,985**
CHA	$64,233	$172,416	$320,491	$438,341	$573,602	$631,767	$740,660	**$1,240,068**
CETF	$1,544,832	$2,838,056	$4,724,961	$6,017,163	$7,167,212	$8,111,493	$8,157,608	**$9,360,672**
City of Chicago	$151,044	$2,160,121	$888,506	$731,612	$918,606	$2,222,444	$2,671,793	**$8,843,435**
DDL	N/A	N/A	$0	$0	$524,594	$671,877	$838,265	**$2,908,023**
FAMU	N/A	N/A	$31,826	$91,870	$61,747	$131,522	$341,661	**$1,888,121**
FCCC	N/A	N/A	$2,518,487	$5,771,661	$5,880,903	$6,509,803	$8,327,991	**$14,123,900**
Future Generations	$408,589	$1,006,151	$1,342,162	$1,641,731	$2,175,877	$2,689,556	$3,219,743	**$5,621,966**
LVUL	$564,486	$1,247,065	$1,525,499	$2,143,548	$2,872,934	$3,544,687	$4,241,524	**$6,917,023**
MSU	N/A	N/A	$79,580	$889,001	$3,139,372	$4,319,866	$4,689,555	**$7,597,360**
SCTCS	$243,229	$1,762,650	$2,657,337	$3,428,470	$3,988,874	$4,694,388	$5,092,421	**$7,454,223**
TFA	N/A	N/A	$499,303	$3,210,791	$4,393,760	$5,242,693	$6,022,349	**$12,259,378**
UAC	N/A	N/A	$146,443	$427,246	$1,405,492	$2,583,196	$3,464,471	**$17,427,981**
WFWV	$10,956	$123,616	$282,491	$509,851	$691,963	$809,768	$988,340	**$2,469,600**
Total	**$3,061,705**	**$10,321,240**	**$16,802,440**	**$28,041,535**	**$37,144,097**	**$46,631,122**	**$54,507,616**	**$109,235,731**

Appendix C. Focus Area Taxonomy

C.1 Workforce and Economic Development

Workforce and Economic Development is intended to increase overall employment of the target population, or to assist employed members of that population in finding jobs that are more highly paid, offer better benefits, or present a more attractive career path, including self-employment. In order for project activities to be included in the Workforce and Economic Development category, it must be the intention of the grantee to assist members of the workforce in improving their employment outcomes, and project resources must be devoted to this purpose.

Below are some examples of project activities that could be considered Workforce and Economic Development.

Taxonomy	Potential Social and Economic Benefits
1. Taking training to improve employment outcomes: a. Obtaining information on an employer or position b. Searching for a job c. Filling out a job application d. Submitting a résumé e. Scheduling or performing a job interview f. Taking job-related training[348] g. Digital literacy training intended to improve workforce readiness 2. Performing work for pay or as part of career development 3. Entrepreneurial activities: a. Obtaining information on starting a business b. Obtaining or renewing a business license online c. Obtaining information on business taxes, fees, and license requirements online d. Writing a business plan[349] 4. Operating one's business online: a. Developing an online presence for one's business, including creating a website, working with search engine sites, and working with review sites b. Selling products or services through the web c. Communicating with customers using email or social networking tools d. Purchasing inputs to one's business online 5. Performing work-related research[350]	**Benefits to Job Seekers** • Reduced unemployment[351] • Improved job matches, resulting in increased productivity[352,353,354,355] • Fewer geographic boundaries on job search[356] • Independent contracting feasible as a career alternative in remote locations[357] **Benefits to Rural Areas** • Broadband allows rural areas to compete for low- and high-end service jobs, the area of highest economic growth[358] • Improved access to inputs and markets, especially in rural areas[359,360] • Increased telework opportunities, especially for rural areas[361] • Increased job and population growth[362,363] **Benefits to Businesses** • Improved recognition of local business through websites and social networking[364] • Increased productivity of commercial subscribers[365,366]

Below are examples of activities that would not be considered related to Workforce and Economic Development:

1. Undertaking any of the activities listed above, but not as part of a program intended by the grantee to promote improved employment outcomes. For instance, while users of a public computer center could perform these activities, they might be undertaken without assistance of the grantee. In general, the grantee must provide more than lab time and the oversight of a lab coordinator.
2. Digital Literacy training, or other training, if this training is not intended by the grantee to improve employment outcomes. Training on software such as Microsoft Office is considered to be workforce development if it is taken as part of an overall workforce development effort. Otherwise it is Digital Literacy training.
3. Discussing one's employment situation with others, using email, social networking sites or other means, if the discussion is not part of an effort to improve employment outcomes.
4. Researching health insurance, unless this research is connected to a job offer or the collection of information about a job or career.

Buying or selling items online, if these transactions are not one's employment or not part of a business plan. For instance, selling one's used household items on eBay is not Workforce and Economic Development.

C.2 Education and Training

The Education and Training category is intended to include activities that lead to a certificate or diploma that would typically be awarded by an educational institution, or that indicates that the recipient has received training that is recognized as valuable for career advancement. Examples of certificates or diplomas include the following: community college, four-year college, advanced degrees, general equivalency degrees, certifications in advanced software technologies such as network engineering, and other licenses or certifications that reflect knowledge of a particular subject at a level that would typically be taught at an educational institution. Below are examples of activities that would be considered educational.

Taxonomy	Potential Social and Economic Benefits
1. Researching a degree or certificate program 2. Taking a class or online training that leads to a professional certification, degree, or GED 3. Administrative activities associated with course instruction: a. Applying for a degree or certificate program online b. Applying for financial aid online c. Registering for a course online 4. Activities complementing classroom instruction: a. Completing schoolwork, including writing papers or using digital media for class activities b. Researching information to complete educational assignments c. Taking an exam online d. Communicating with teachers or professors using email or social networking tools	**Benefits to Students** • Improved student performance[367,368,369,370,371,372,373,374,375,376] • Improved educational resources for nontraditional or disabled students, and students in geographically remote areas or poor districts[377,378,379,380,381] • Increased levels of education[382,383] • More personalized educational activities[384] • Increased student-teacher engagement through social networking[385] **Benefits to Teachers** • Increased teacher productivity[386] **Benefits to School Districts** • Improved school enrollment rates[387] • Improved interaction among students,

Taxonomy	Potential Social and Economic Benefits
e. Purchasing textbooks or required texts online, or obtaining texts through Kindle or other services for e-readers f. Conducting a study group online g. Using online resources in one's role as a teacher, professor or instructor 5. Learning English or another language using online tools	parents, teachers, and school administrators[388] • Lower-cost, more effective training of workers[389,390]

Below are some activities that would not be considered Education-related:

1. Undertaking any of the activities listed above, but not as part of a program intended by the grantee to promote educational outcomes. For instance, while users of a public computer center could perform these activities, they might be undertaken without assistance of the grantee. In general, the grantee must provide more than lab time and the oversight of a lab coordinator.
2. Activities that would be considered basic digital literacy. This includes activities describe under Digital Literacy, below. Online training in tools such as Microsoft Office would not be considered Education, unless they were part of a larger degree or certificate program.
3. Obtaining information from the Internet, if the intent of the search is not to complete an assignment or requirement for a course or other activity leading to a degree or professional certification.
4. Discussing educational activities with others using email or social networking tools, if the intent of the discussions is not to complete work toward a degree or certificate requirements.
5. Using online resources to pursue coursework that is not intended to lead to a degree or certification.

C.3 Healthcare

The Healthcare category includes broadband-enabled activities undertaken by participants in PCC/SBA programs to improve their own health or that of someone else. This definition includes not only sophisticated tasks, such as viewing one's medical records online, but also more common activities that might not involve a medical provider at all. In order for a program activity to be considered a Healthcare component of the grant, it must be the grantee's intention that the activity in question result in improved participation in self-care or care of others as a result of an individual's participation.

Below are some examples of activities that would be considered Healthcare activities.

Taxonomy	Potential Social and Economic Benefits
1. Developing awareness of health resources made available by broadband Internet, including websites, videos, support groups, and connections to medical providers 2. Using broadband to obtain health information: a. Obtaining information on the risks of a certain medical condition or problem occurring, including information on lifestyle choices or preventive medicine that might reduce those risks	**Benefits to Patients** • Improved patient information resulting from ease of accessibility, interactive features, and anonymity[391] • Improved patient choice of provider and treatment options[392] • Improved treatment outcomes for physical and mental illness[393,394] • Lower patient cost in time and transportation vs. telephone calls or face-to-face visits[395] • Improved patient care seeking[396]

Taxonomy	Potential Social and Economic Benefits
b. Obtaining information on diet, exercise, fitness, and weight control, including learning to use websites that provide individual plan tracking on these subjects c. Obtaining information on a specific disease, medical problem, medical treatment, or procedure d. Researching prescription and over-the-counter drugs, their proper uses, and potential side effects e. Obtaining information on alternative or experimental treatments or medicines f. Obtaining information on mental health issues and issues of addiction g. Obtaining information on home or workplace health and safety, or health and safety issues in a new environment, including healthy travel 3. Communicating with a healthcare provider online: a. Locating doctors, health professionals, hospitals, or other healthcare providers b. Accessing medical records online c. Making an appointment with a healthcare professional online 4. Obtaining information on health insurance, applying for insurance, researching benefits, and accessing insurance claims information online 5. Providing self-care or care for another based on information obtained from the Internet 6. Purchasing prescription drugs, over-the-counter drugs, or vitamins online 7. Teaching healthcare providers about broadband-enabled technologies and practices that can be used by their patients	• More effective health promotion and disease prevention programs[397] • Faster, more accurate prescriptions[398] • Improved patient access to healthcare records and test results[399] • Reduction in duplicative paperwork and tests[400,401] • Improved ongoing care[402] • Improved patient outcomes by providing daily monitoring[403] • Reduced home care costs by reducing the number of unnecessary in-home visits[404] • Reduced hospital length of stay (LOS)[405] • Improved privacy and convenience in obtaining prescription medication or ordering medications[406] • Greater availability of drugs for shut-in people, those who live far from a pharmacy, or those in rural areas with limited pharmacy options[407] • Improved access to written product information[408] • Reduced cost of online prescription drugs[409] • Reduced drug interactions resulting from multiple prescriptions from different providers[410] • Improved patient to patient networking and support[411] **Benefits to Healthcare Providers** • Cost savings from reduced unnecessary face-to-face time between health professionals and the "worried well"[412,413] • More convenient access to medical care because of asynchronous communications[414] • More complete medical records at lower cost[415] • Improved patient-provider relationship building[416,417] • Rapid information sharing among all health care providers for the same patient[418] • Improved appointment and treatment scheduling[419] • Improved range of health services[420]

Below are examples of some activities that would not be considered Healthcare activities:

1. Undertaking any of the activities listed above, but not as part of a program intended by the grantee to promote healthcare outcomes. For instance, while users of a public computer center could perform these activities, they might be undertaken without assistance of the grantee.
2. Using social media, email, or other means to discuss medical conditions with friends, family members, or others, if the grantee does not provide access to or training for the modalities with

the intention of improving healthcare outcomes. Learning to use these tools would be part of Digital Literacy, but not Healthcare.

3. Taking online courses or using online resources to complete a course of study in a healthcare discipline that leads to a certificate or degree. These activities would be included under Education and Training.
4. Obtaining information on healthcare careers, applying for a job in a healthcare field, learning about healthcare employment options, or developing knowledge of a healthcare-related field for the purpose of obtaining a job. For instance, researching healthcare providers to find open positions for nurses, applying for a position as a personal trainer, or increasing one's knowledge of nutrition with the intent of applying for a job as a trainer. These activities would be considered Workforce and Economic Development.

C.4 Quality of Life/Civic Engagement

The Quality of Life/Civic Engagement category encompasses the most common activities undertaken by individuals who use broadband Internet, and many of these activities are extensions of or elaborations to digital literacy fundamentals. Drawing on Horrigan (2010), we identify the following activities as pertaining to Quality of Life or Civic Engagement:[421]

Taxonomy	Potential Social and Economic Benefits
1. Visiting a federal, state, or local government or community website 2. Communicating with a government agency, elected official, or community group online or through email 3. Researching or applying for government benefits online 4. Obtaining government forms online 5. Using email, social networking, or blogs to discuss political issues or organize political action 6. Using email, social networking, or blogs to discuss issues of interest with one's fellow community members	• Improved communication between citizens and government entities[422] • Lowering the effective cost of civic engagement and community participation[423] • Increased political engagement and civic participation[424,425,426,427,428,429,430,431,432] • Increased volunteerism[433] • Improved social connections, especially in rural communities[434]

As shown above, many activities undertaken by broadband users fit into this category. Below are some examples of activities that would not be considered to belong to the Quality of Life/Civic Engagement category.

1. Activities related to employment or job search, if the grantee has the intention of promoting workforce development. For instance, posting a résumé or searching for career information as a result of a class provided by a grantee would be considered Workforce and Economic Development.
2. Seeking information on a healthcare or medical topic would be considered Healthcare-related, if the intent of the grantee is to promote positive health outcomes.
3. Obtaining training on how to perform quality of life or civic engagement activities in general is considered to belong to the Digital Literacy category unless information is provided on how to use specific Internet resources focused on a quality of life or civic engagement activity. For instance, learning how to register at a website is a Digital Literacy activity. Learning how to register for online banking and balance one's checkbook online is a Quality of Life/Civic Engagement activity.
4. School activities or learning English are considered Education and Training activities, if the intent of the grantee is to promote the attainment of a certificate or degree typically awarded by

an educational institution. Otherwise, these activities are considered Digital Literacy, if the grantee has the intention of promoting digital literacy, or Quality of Life/Civic Engagement, if the grantee does not have the intention of promoting digital literacy.

C.5 Digital Literacy

This category is fundamental to all the others. Most training provided by PCCs and SBAs will fall into this category, with some exceptions, as noted below. "Digital literacy" defines a set of skills and abilities that enable an individual to interact with the digital aspects of culture, and to maintain a digital identity. Much like conventional literacy, digital literacy includes both fundamental skills and additional capacities developed over time. The definition of digital literacy is not fixed, and depends on the purposes of the researcher and the questions addressed. For the purposes of this analysis, Digital Literacy activities are those designed to help a user develop the capacity to do the following:

Taxonomy	Potential Social and Economic Benefits
1. Be aware of the benefits of broadband technology 2. Be able to use a computer with a modern operating system, including understanding how to use a keyboard, a mouse, and a visual interface incorporating icons and folders and a web browser, such as Internet Explorer, Google Chrome, or Firefox 3. Shop for and obtain an affordable computer with adequate capabilities, including locating organizations/services that distribute free or low-cost computers 4. Shop for and obtain an affordable broadband connection with reasonable contract terms, including finding organizations/services that provide discounted or free access to participants 5. Understand how to perform basic online activities: a. Obtain and use email b. Use the Internet to obtain information using search tools such as Google or Bing c. Use social media such as Facebook or LinkedIn d. Use the web to share files, photos, or videos, including creating this content using photo or video editing tools and software e. Register at a website in order to pursue one's personal affairs, such as shopping, banking, or research online 6. Be able to use software and applications to present and manipulate documents and data, including word processing, creating	**Benefits to Individuals** • Increased job opportunities[435] • Increased employment opportunities due to telework[436] • Higher pay[437] • Increased economic security[438] • Recruitment of job seekers, especially in rural areas[439] • Increased access to and quality of healthcare[440] • Availability of a wide variety of entertainment[441] • Increased participation in everyday economic, social, and community life[442] • Improved social connections to existing friends and acquaintances, and creation of new relationships based on common interests[443] • Improved social integration of minority populations[444] • More positive attitudes toward aging, and higher levels of perceived social support and connectivity among seniors[445] • Lower prices for online purchases[446] • Improved variety of items available for purchase[447] • Better purchasing decisions based on online information[448] • Savings in time and money for online vs. paper-based activities[449] • Improved connectivity for social or political action[450] • Increased transparency of public agencies[451] • Access to improved government services[452,453] • Lifelong learning opportunities[454] • Improved family connections[455]

Taxonomy	Potential Social and Economic Benefits
spreadsheets, creating presentations, and creating or manipulating simple databases	**Benefits to Communities** • Attracts business to a community[456] • Attracts tourists to an area and increases length of stay[457] **Benefits to Businesses** • Offers businesses an advertising and awareness platform[458] • Businesses have access to world markets[459]

Below are examples of activities that would not be included in Digital Literacy.

1. Activities that are intended by the grantee to focus on another activity category. For instance, training in how to search the Internet for health information should be noted under the Healthcare category, although a substantial portion of that activity might be digital literacy training.
2. Activities that are intended by the grantee to result in a degree or certification that would typically be awarded by an educational institution. This includes two- and four-year degrees along with technological certifications such as Microsoft certifications for network technologies or software applications.
3. Activities that are intended by the grantee to promote workforce development through the development of marketable computer skills. Examples include Microsoft Office courses that are intended to promote employment, training in the use of online résumé development tools, and training in job search skills. This also includes digital literacy courses for small businesses.

Appendix D. Overview of Case Study Report and Interim Report Methodology

D.1 Introduction

The case studies of selected PCC and SBA grants are intended to provide a basis for the qualitative analysis of the social and economic impacts of the PCC and SBA grants, and in some cases, a basis for further quantitative analysis of these projects. The case studies provide a window into the initial impacts of PCC and SBA grants and a view into the development of economic and social impacts over time, as the same projects are visited in approximately their first and third years post-award. This methodology allows for both a cross-sectional analysis to measure impacts at a point in time and development of a basis for the longitudinal analysis of the impacts of the PCC and SBA grants, which will be provided as part of the *Final Report*, due in September 2014.

The evaluation study team's data collection methodology is described in detail in the *BTOP Evaluation Study Design*. In brief, the data collection efforts included the following steps:

1. Review NTIA program information
2. Tabulate data from public data sources
3. Review grantee reported data
4. Tabulate grantee reported data
5. Conduct initial telephone calls with grantees
6. Perform case study site visits
7. Follow up with grantees for additional information, as necessary
8. Incorporate comments from grantees and NTIA on case study report drafts

Collectively, this information provides context on the economic and social conditions of the communities in which grant activities are occurring and insight into potential changes in the identified focus areas resulting from BTOP investments.

D.2 Review NTIA Program Information

NTIA's BTOP website includes a page for each grant funded. This site provides a brief project description, a one-page project fact sheet, the grant application, links to grantee project websites, where applicable, periodic "BTOP in Action" project updates, and other programmatic information, including required quarterly and annual reports. The evaluation study team reviewed the project factsheets and grant applications in order to gain an understanding of the grantee organization, the demographic and broadband service conditions in the area to be served by the proposed project, the intended goals of the project, the services the grantee intended to provide under the grant, the intended service locations, and the project partners and their roles.

The evaluation study team supplemented understanding of the case study grants through conversations with NTIA's Federal Program Officers (FPOs) responsible for the fifteen selected grants and the site visit reports prepared by the FPOs, when available. The evaluation study team conferred with the FPOs before contacting the grantees directly to confirm our understanding of the grant's activities and progress, to identify key aspects of each project, and to make a short list of potential service location visits to discuss with the grantee. The FPOs were also consulted to gain insight into the specific circumstances faced by each grantee that could influence the timing of the case study visit.

Site visit reports, when available, were reviewed with particular attention to the sections reviewing program management, project and resource management, observations and tours, best practices, lessons learned, and project progress.

D.3 Tabulate Data from Public Data Sources

As part of our case study methodology we obtained statistics on demographic and economic categories that have been linked to lower levels of broadband adoption. These figures are reported in detail in the case study reports and summarized in Section 2. The demographic and economic characteristics presented, such as race, age, and income level, have been linked in recent research to the "digital divide."

The evaluation study team identified a "service area" for each of the grants included in the study. This service area includes regions in geographic proximity to grant activity that could reasonably be expected to include the vulnerable populations that the grant is intended to serve. These service area definitions are included in the case study report for each selected grant and summarized in Appendix B.

D.4 Review Grantee Reported Data

Grantees are required to submit quarterly Performance Progress Reports (PPRs) to NTIA describing their grant-funded activities: one per calendar quarter plus one annual report. These reports provide quantitative and qualitative descriptions of project status and specific grant-funded activities. The portion of the PPRs that includes detailed information on activities specific to each grant type was used to identify potential project impacts specific to a particular location and was also used to identify project specific areas of inquiry to pursue further with individual service location contacts during the case study visits. In addition, information from the PPRs is summarized and presented in an appendix in the case study reports.

D.5 Tabulate Grantee Reported Data

A website was created under ARRA to show the American public how ARRA funds are spent by recipients of contracts, grants, and loans and the distribution of Recovery entitlements and tax benefits. As a part of these spending and distribution data, recipients of ARRA contracts, grants, and loans are required to report quarterly on the number of jobs paid for with ARRA funds. Jobs included in the ARRA reports reflect only jobs that are funded directly by federal funds. Indirect jobs and jobs funded by matching funds are not included. Jobs are calculated on a quarterly basis using 520 hours as the number of hours a full-time employee works over a quarter of a year:

40 hours per week X 52 weeks per year = 2,080 hours per year

2,080 hours per year ÷ 4 quarters per year = 520 hours per quarter

D.6 Conduct Initial Telephone Calls with Grantees

Following our discussions with the FPOs, the evaluation study team scheduled initial telephone interviews with each of the selected grantees. These telephone interviews were intended to confirm our understanding of the grant and to obtain information as outlined in the first section of our interview guide. This initial telephone interview also allowed us to obtain information necessary to complete the customization of each interview guide for each grant and to remove extraneous matter from the generic interview guide template while adding additional material as appropriate for particular grantees

D.7 Perform Case Study Site Visits

Each PCC and SBA case study included a face-to-face visit with the grantee and visits to targeted service locations, communities, and project partners. These visits took place over a two- to four-day period, depending on participant availability. Case study visit logistics were arranged based on communications between the evaluation study team and the grantees after their participation had been confirmed by NTIA. The evaluation study team relied on the grantee to provide any background materials on the grant that might not have been available from NTIA and to help identify the specific service locations to visit and project partners with whom to meet.[460] This communication was used to plan and conduct service location case study visits and to collect any available data specific to those service locations.

Semi-structured interviews were conducted with grantee-level representatives, service location representatives, and, when appropriate, project partners and individual users.[461,462] An interview guide and data collection checklist were developed to provide the structure for each interview conducted during the case study visit. The documents were customized based on the knowledge gained through each of the previously described data collection efforts for the particular goals, intended outputs/outcomes, types of services provided, community conditions, and service location types of each grant. Separate guides were developed for PCC and SBA grants.

The questions in the interview guides were developed in close coordination with NTIA and considered information collected from the initial contact with the grantees; review of all available grant award and post-award documents; and the economic, demographic, and broadband-specific statistics compiled for each grant location and discussions with NTIA's FPOs. The guides were broken out into sections to identify appropriate areas of inquiry specific to grantees, service location contacts, project partner contacts, local economic development professionals (if applicable), and individual users.

The case study visit interview guides and data collection checklist were designed to gather the following types of information:

- Validation of background information on grant purpose, scope, goals, services, and partners
- Description of grantee type, business model, and staffing issues
- Description of service locations, services provided, and service providers
- Validation and clarification of reported project activity outputs and outcomes, including a description of the data being collected and its intended use
- Observed changes resulting from BTOP-funded activities to date (if any) at targeted service locations
- Observed economic and social outcomes at the service location, community, or individual level (if any)
- An assessment of the sustainability of project activities beyond the term of the BTOP grant and discussion of other issues around the topic of sustainability
- Discussion of grantee-identified lessons learned with respect to project activities that influence the ability of a grant to achieve intended outcomes
- Any data available on impacts or outcomes related to the grant, e.g., user surveys or other quantitative or qualitative data that might have been collected by the grantee or project partners separately or as a part of any formal evaluation efforts being undertaken of the grant

Interviews were typically conducted with each grant participant separately, although some grantees chose to travel with the evaluation study team to the service locations visited and to be present at the interviews with service location representatives or project partners. Interviews with individual users were site-specific and depended largely on the nature of the BTOP services being provided at the time of the visit (e.g., formal class versus open lab time), the type of users present (e.g., interaction was limited to adult users), and the availability of willing participants. The site visits were restricted to a short interval of time at a particular place, which might be one of many associated

with the grant. This limits the population that can be observed. In contrast, grantee-collected data on individuals is a richer data source because it captures the activities over a longer duration for a larger population engaged in more diverse activities.

Case study visits were conducted between July and November of 2011. Table 28, below, presents the timeline in which the visits were completed.

Table 28. PCC and SBA Site Visit Schedule

Grantee	Case Study Visits (All Dates 2011)																		
	Jul 24 - Jul 30	Jul 31 - Aug 6	Aug 7 - Aug 13	Aug 14 - Aug 20	Aug 21 - Aug 27	Aug 28 - Sep 3	Sep 4 - Sep 10	Sep 11 - Sep 17	Sep 18 - Sep 24	Sep 25 - Oct 1	Oct 2 - Oct 8	Oct 9 - Oct 15	Oct 16 - Oct 22	Oct 23 - Oct 29	Oct 30 - Nov 5	Nov 6 - Nov 12	Nov 13 - Nov 19	Nov 20 - Nov 26	Nov 27 - Dec 3
CHA	✓																		
City of Chicago				✓															
LVUL					✓														
TFA						✓													
UAC								✓											
MSU									✓										
Future Generations									✓										
C.K. Blandin										✓									
Connect Arkansas										✓									
SCTCS													✓						
WFWV													✓						
CETF													✓						
FCCC														✓					
FAMU															✓				
DDL																			✓

D.8 Follow Up with Grantees for Additional Information

The material obtained from the case study interviews with grantees, together with the other information obtained prior to those interviews, was combined into a draft case study report. As we assembled this information, there were occasionally areas in which additional clarification of aspects of the report required either email exchanges or telephone conversations with the grantee. This information was incorporated in the case study report.

D.9 Incorporate Comments from Grantees and NTIA in Case Study Report Drafts

Drafts of the case study reports were provided to NTIA in a phased schedule intended to facilitate review of the case studies, while drafts of other case study reports were being written. This allowed NTIA to review each of the documents and make comments and suggestions to correct errors or contextualize programs. NTIA also provided the case study reports to each of the grantees.

Grantees were advised to provide corrections to any factual errors. Comments were received from all grantees on the drafts of the case study reports. These comments led in some cases to minor revisions, and, in other cases, to continued conversation about the grants and the social and economic impacts of BTOP. We incorporated the outcome of these conversations in a revised set of case study reports delivered to NTIA as part of this deliverable.

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460 The grantee helped the evaluation study team determine service locations to visit. However, some grants serve a wide geographic area and many locations. In such instances the evaluation study team’s visit was limited to a representative selection of service locations. For example, over a two-day period, the evaluation study team was able to visit five of the 30 fully operational Future Generations locations in West Virginia.

461 The case study visit effort did not include a survey of individuals or the collection or disclosure of names or any other identifying information. Interaction with participants was limited to adults and included informing individuals of the nature and purpose of the study. Participants were asked if they would like to share their impressions or opinions of the BTOP facilities and services they use, what they typically use them for, how often they typically use them, how if at all use of these facilities and/or services has impacted their lives, and how far they travel to use the facilities. Based on these interactions, NTIA determined that the involvement of human subjects in this project fits in the category described in 15 C.F.R. 27.101(b)(2), which is exempt from the policy of Part 27 of Title 15 of the Code of Federal Regulations, the Common Rule for Protection of Human Subjects.

462 A semi-structured interview is a commonly used qualitative research term that is used to describe an interview in which the interviewer has general themes to follow, but is allowed flexibility to alter questioning (add or remove questions) based on the responses of the interviewee. This is opposed to a structured interview, where the interviewer has a limited set of more formalized and standardized questions.

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