



National Telecommunications and Information Administration

Broadband Technology Opportunities Program
Evaluation Study

Order Number D10PD18645



Case Study Report Round 2

Technology For All, Inc.

Public Computer Center

Submitted September 16, 2013

ASR Analytics, LLC
1389 Canterbury Way
Potomac, MD 20854

Federal TIN: 20-1204680
DUNS: 15-108-3305
GSA Schedule #: GS-10F-0062R

Submitted to:

Shelita Saint-Louis, Contracting Officer
Cassandra Sterba, Contract Specialist
Acquisition Services Directorate
National Business Center
Department of the Interior

Table of Contents

- Executive Summary 1
- Section 1. Introduction 4
 - 1.1 What the Interviewees Told Us 4
- Section 2. Impacts..... 6
 - 2.1 Focus Areas 6
 - 2.2 Digital Literacy..... 8
 - 2.3 Workforce and Economic Development..... 9
 - 2.4 Education and Training 11
 - 2.5 Quality of Life/Civic Engagement 12
- Section 3. Recovery Act Goals 13
 - 3.1 Provision of Equipment and Services 13
 - 3.2 Broadband and Economic Growth 16
- Section 4. Grant Implementation 18
 - 4.1 Facilitating Conditions 19
 - 4.2 Performance Expectancy 20
 - 4.3 Social Influence 21
 - 4.4 Effort Expectancy 21
- Section 5. Techniques, Tools, and Strategies 23
 - 5.1 Techniques, Tools, and Strategies..... 23
 - 5.2 Challenges 24
- Section 6. Conclusions..... 25
- Section 7. Next Steps for the BTOP Evaluation Study 26
- Notes..... 27
- Glossary..... 30
- Bibliography 31

List of Figures

Figure 1. Words Interviewees Used Frequently	5
Figure 2. Grantee Training Hours Categorized by Focus Area	7
Figure 3. Focus Area Statements Made by Interviewees.....	7
Figure 4. Quarterly Digital Literacy Training	8
Figure 5. Recovery Act Goals Statements Made by Interviewees	13
Figure 6. Cumulative Workstation Installations	14
Figure 7. PCC Service Capacity Before and After Upgrades.....	15
Figure 8. Distribution of PCC Locations	16
Figure 9. Direct Jobs Created by Grantee	17
Figure 10. Distribution of Grant Implementation Topics by UTAUT Dimension	19

Executive Summary

“Our students arrive in our labs at many different levels and we help them solve their own problems using technology. We help clients understand the benefits and power of technology to achieve personal goals, from getting an e-mail address to getting a job. By teaching people technology skills, we also get them jobs, access to services, and connect them to family and friends.” – TXC2 Director from Austin Free-Net

Technology For All, Inc. (TFA) is a nonprofit organization headquartered in Houston, Texas that uses technology to create opportunities for low-income and other vulnerable populations. TFA collaborates with local community organizations, corporations, foundations, and technology providers in the public and private sector to provide training, online content, consulting, and social enterprises.¹

On September 1, 2010, the National Telecommunications and Information Administration (NTIA) awarded TFA a Broadband Technology Opportunities Program (BTOP) Public Computer Center (PCC) grant for \$9,588,279 to implement the Texas Connects Coalition (TXC2) project. TFA collaborated with Austin Free-Net (AFN) to develop a network of high-capacity PCCs in urban and rural communities throughout Texas. TFA operated PCCs in a service area that included seventeen rural and urban counties across Texas with locations in Houston, Austin, San Antonio, Duval County, and small communities in the Brazos Valley.

TFA worked with its partners to create a service model for PCCs designed to facilitate a user experience to make everyone, particularly those who had not adopted broadband, comfortable with using computers and the Internet. The project focused on providing the technological, organizational, and human resources to support upgrading existing PCCs, build PCCs in new locations, and provide mobile labs. TFA implemented strategies to maximize the average number of users through additional partnerships, outreach, staff training, and a flexible and scalable IT infrastructure at each site. TFA proposed the following, with the results shown:

- Establish 70 new or upgraded PCCs and deploy 500 new and 780 upgraded computers.² The TXC2 project had upgraded seventy-one PCCs, established twenty-one new PCCs, and deployed 1,432 workstations by the end of 2012.³
- Increase public access to computer centers by up to 530 hours per week and accommodate an estimated 17,000 additional weekly users.⁴ As of December 2012, TFA reported providing an additional 591 hours of PCC time each week.⁵
- Train 6,000 individuals and provide 73,000 teacher-led hours of training.⁶ TFA exceeded its goal, providing more than 1.9 million hours of training to nearly 1.3 million participants through December 2012.⁷ An individual user could be counted multiple times.

TFA developed partnerships with networks of community-based human and social service organizations, and community anchor institutions to provide access to up-to-date computer facilities that promote digital literacy and digital inclusion activities across underserved areas. This enabled TFA to make the PCCs available to a large population living in the grant’s service area who are among the least likely to adopt broadband and use computers. TFA provided PCCs to meet the digital literacy and access needs of vulnerable populations, including veterans, senior citizens, and people with limited English proficiency.

TFA and AFN worked together to identify sites that captured the state’s diversity and that met the needs of low-income and under-resourced residents. The selected centers served 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.⁸

Each site used high-quality personal computers with a standard computer software image administered remotely and consistently across sites. The standard software imaged allowed TFA to ensure that all PCCs had the same software versions available to patrons. TFA also purchased laptops and tablet computers so TXC2 staff could establish remote PCCs on demand.

This case study is one of fifteen performed by ASR Analytics, LLC (ASR) on a sample of eight PCC and seven Sustainable Broadband Adoption (SBA) grants. It is part of a larger mixed-methods evaluation of the social and economic impacts of BTOP.

The purpose of this case study is to:⁹

- Identify how the grantee maximized the impact of the BTOP investment.
- Identify successful techniques, tools, materials, and strategies used to implement the project.
- Identify any best practices, and gather evidence from third parties, such as consumers and anchor institutions, as to the impact of the project in the community.

This report further investigates the initial impacts reported by the grantee during the first round of visits and identifies additional impacts that occurred in the time between the site visits. The results presented in this report reflect the evaluation study team's observations at the time of the second site visit. It will serve as a basis for *Interim Report 2*, which will analyze data from fifteen case studies.

This case study is primarily qualitative as there was no mechanism in place to collect data across project partners beyond what was required for the grant. However, interviewees provided accounts of positive impacts of the grant. The evaluation study team originally met with representatives of TXC2 over a two-day period in August 2011. The team conducted a second site visit from April 22-27, 2013. During the second visit, the evaluation study team met with the grantee, program staff, and PCC users. The team visited TFA's administrative offices in Houston and conducted site visits at PCCs, including Mission Milby and Denver Harbor Community Center in Houston, the Smithville office, Navasota Library in rural Texas, DeWitty Center, Austin Resource Center for the Homeless (ARCH), the Rosewood PCC in Austin, and Victor Ferrari Family Learning Center in San Antonio.

In total, the evaluation study team performed a total of nine interviews and focus groups. ASR transcribed these discussions and used this information, and other information and reports provided by the grantee, to supplement Quarterly Performance Progress Reports (PPR), Annual Performance Progress Reports (APR), and other publicly available information.

The evaluation study team observed the following major outcomes and impacts of the grant:

- TFA's outreach campaign encouraged the public to use PCCs and enhanced awareness of broadband's relevance. By the end of 2012, the project had provided training and open lab access to more than 1.28 million users.¹⁰ This statistic includes repeat visitors, as privacy concerns prevented the collection of identifiable user data.
- Digital literacy training was the most prevalent activity performed in the PCCs. The project devoted more than 849,000 training hours to Basic Internet and Computer Use training.¹¹ Staff members provided digital literacy training using a human-centered approach, which emphasizes designing training to fit the needs, skills, and goals of individual users. This approach was helpful for supporting the homeless and other vulnerable populations.
- The grant-funded computers allowed staff members to provide support beyond basic digital training, including personal financial management and how to search for housing. TFA staff reported that since 2010, more than 1,000 people had found permanent housing using grant-funded equipment and services.

- The grant provided mobile technologies to extend services to locations without computer facilities. TFA used laptops, iPads, and tablets that could be used anywhere in the service area. Staff members reported that a PCC Program Specialist in rural Texas visited approximately forty-four seniors at their local church and provided computer training using laptops. AFN provided twenty iPads and Android tablets to a community program to improve literacy and math skills for children performing below grade level.¹²

Two unexpected benefits resulted from the grant:

- The grant facilitated greater communication and shared knowledge across sites. The grant enabled TFA to centralize data collection and storage; create and use virtual platforms, such as SharePoint, to collaborate and share information and ideas across sites; and establish regular meetings. This resulted in the translation of common goals across the locations and partners.
- TFA staff members expanded their digital literacy and technology skills because of the grant. Some staff members participated in grant-sponsored courses and certificate training that had resulted in broadened roles in the PCCs and new jobs in the technology industry. These skills are transferable to other technology and training-focused positions at the end of the grant period.

Without the BTOP grant, human services organizations would not have had the resources necessary to include digital technologies in their services. As many organizations now require individuals to have computer and Internet access in order to apply for and receive benefits, apply for jobs, and obtain educational certifications, the absence of technological resources would have limited TFA's ability to assist individuals in performing these activities. The grant enabled TFA to provide access to digital literacy training, effective English language-learning resources, and computers and the Internet for job seeking. The grant also facilitated the provision of access to free, local computers, broadband, and training.

AFN reported that without the grant, it would not have been able to expand its services to support additional computers labs. They would not have been able to provide computer access or training to areas served through the grant. Existing AFN computer labs would not have received upgraded equipment, and would likely still operate with existing machines, some of which were nearly ten years old. AFN does not believe that they could have offered comparable resources or services at existing PCCs without the grant.

Section 1. Introduction

Technology For All, Inc. (TFA) is a nonprofit organization headquartered in Houston, Texas that uses technology to create opportunities for low-income and other vulnerable populations. TFA collaborates with local community organizations, corporations, foundations, and technology providers in the public and private sector to provide training, online content, consulting, and social enterprises.¹³

On September 1, 2010, the National Telecommunications and Information Administration (NTIA) awarded TFA a Broadband Technology Opportunities Program (BTOP) Public Computer Center (PCC) grant for \$9,588,279 to implement the Texas Connects Coalition (TxC2) project. TFA collaborated with Austin Free-Net (AFN) to develop a network of high-capacity PCCs in urban and rural communities throughout Texas. TFA operated PCCs in a service area that included seventeen rural and urban counties across Texas with locations in Houston, Austin, San Antonio, Duval County, and small communities in the Brazos Valley. AFN supports PCC locations in Austin and leads training development efforts.

1.1 What the Interviewees Told Us

Figure 1 displays words interviewees used frequently. These nine interviews included program management, PCC staff members, and PCC users across the State of Texas. The purpose of the word cloud is to provide a succinct visual summary of the conversations that occurred. Statements made by ASR personnel during the interviews were excluded from the analysis, as were common words, such as prepositions, articles, and conjunctions, which were identified using a standard “stop list.”

As shown in the word cloud, interviewees spoke most frequently about “computers,” “sites,” “centers,” and “community,” indicating how the TxC2 project improved access to computers across different community-based locations. The group spoke frequently about “time,” particularly concerning the timesaving benefits of the digital literacy activities. The group also spoke about the staff and its focus on helping PCC users gain skills to obtain employment. This is reflected in the frequency of “users,” “classes,” and “training.” The interviews mentioned “library” as a key place to use computers, especially among the grantee staff and users serving in rural Texas.

Figure 1. Words Interviewees Used Frequently



Section 2. Impacts

The most prominent impacts of the TXC2 project were in the focus area of Digital Literacy. TFA strategically promoted broadband awareness through local organizations such as the Chamber of Commerce, churches, schools, and libraries in rural areas and through human and social service organizations in urban areas. TFA provided an array of training ranging from basic computer classes for those without prior computer experience to advanced classes and certifications for more proficient users.

PCC Program Specialists helped patrons learn how to use computer programs, find information online, use software to develop résumés, and complete online job applications. TFA trainers reported that individuals often used PCCs to achieve a personal goal, but also realized the benefits of technology and digital literacy skills for improving their lives. At the inception of the grant, TFA aimed to train 6,000 individuals and complete 73,000 teacher-led hours of training.¹⁴ By the end of 2012, TFA had provided more than 1.9 million hours of training to nearly 1.3 million participants.¹⁵

Although there was not a mechanism in place to collect data across the partners beyond what was required for the grant, TFA discussed successful outcomes during each interview. The program's services targeted vulnerable populations, including veterans, senior citizens, and people with limited English proficiency. One director described the majority of the site's clients as unemployed, having low levels of education, or living in poverty.

The accounts provided by interviewees include the following:

- “Not only are they getting jobs, literally, but we’re also helping them to understand that the technology piece is actually a piece of empowerment. This is how you succeed in life.”
- “I have a lot of people who are doing manual labor come in here and want to get into a forklift certification program or want to apply for jobs where they need to learn how to do a spreadsheet so they can look at inventory. So I found that job readiness and workforce development are the most apparent impacts.”
- “I know how BTOP has improved us, how it is supporting us, how it is engaging us, how it is connecting us, our community, our students, and our staff to find better ways of communicating, working, and workplace readiness. It is equipping us for the future.”
- “There are so many homeless to touch on and [we have gone] far with the homeless community from what I’ve seen. At a minimum, it has been a way for folks to reconnect with their family members. It’s also a great job hunting tool. Along with that, there has been initial training in order to get people familiar with the computer environment, being online, understanding what it means to fill out a job form online. So having the computers makes a world of difference.”

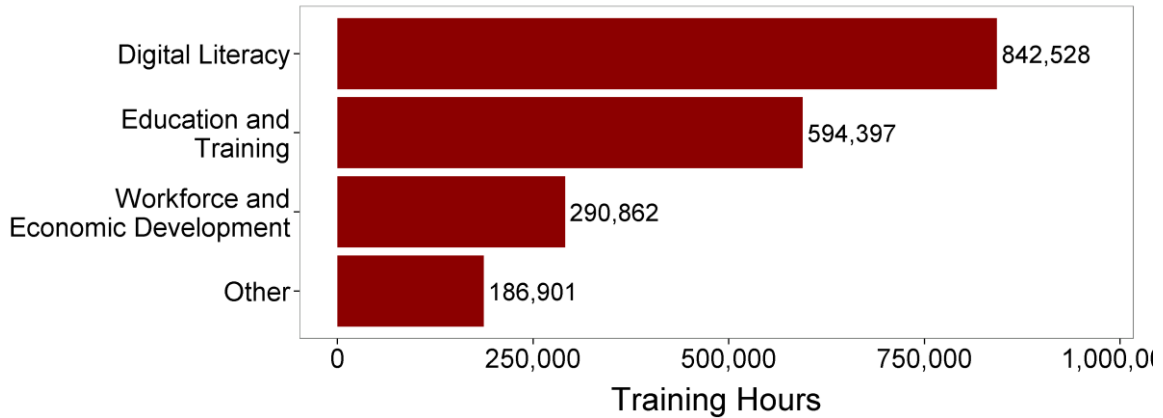
This qualitative evidence supports the conclusion that the grant facilitated the improvement and expansion of TFA service programs. These programs provided the public, particularly vulnerable populations, with free digital literacy training, workforce development support, and access to a broader range of social services through the Internet.

2.1 Focus Areas

This section describes the impacts of the TXC2 project in terms of five focus areas. In order to analyze where impacts should expect to be found for this project, ASR tabulated the training hours for TFA reported in the 2012 Annual Performance Progress Report (APR) using the focus area

categories described in *Interim Report 1*.¹⁶ TFA provided more than 1.9 million hours of training through December 2012 to nearly 1.3 million participants, as shown in Figure 2.¹⁷

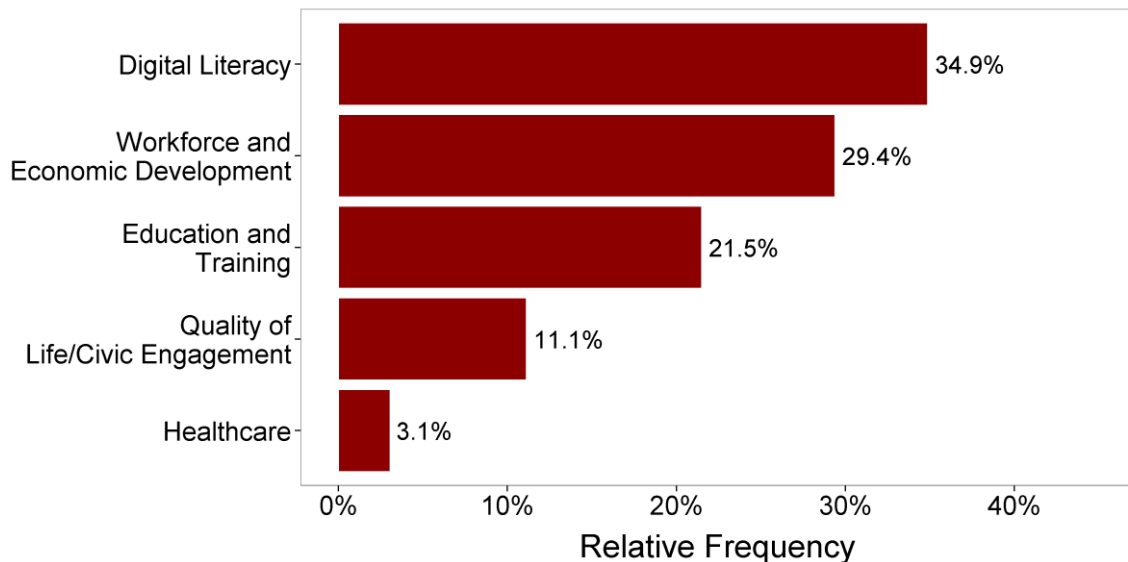
Figure 2. Grantee Training Hours Categorized by Focus Area



TFA dedicated the greatest number of hours, more than 840,000 hours, 44 percent of total training, in the focus area of Digital Literacy. The project provided approximately 31 percent of training hours in the focus area of Education and Training. Workforce and Economic Development training constituted nearly 15 percent of total training. The 2012 APR describes the “Other” training as adult literacy, social media, and language classes, but does not provide a breakdown of these trainings.

ASR also analyzed the statements grantees made during the interviews and focus groups and categorized them based on focus area, as shown in Figure 3. Interviewees discussed Digital Literacy more than any other topic, followed by Workforce and Economic Development and Education and Training. These are also the three most frequent training areas. The grantee also discussed Quality of Life/Civic Engagement and Healthcare activities, but less frequently.

Figure 3. Focus Area Statements Made by Interviewees

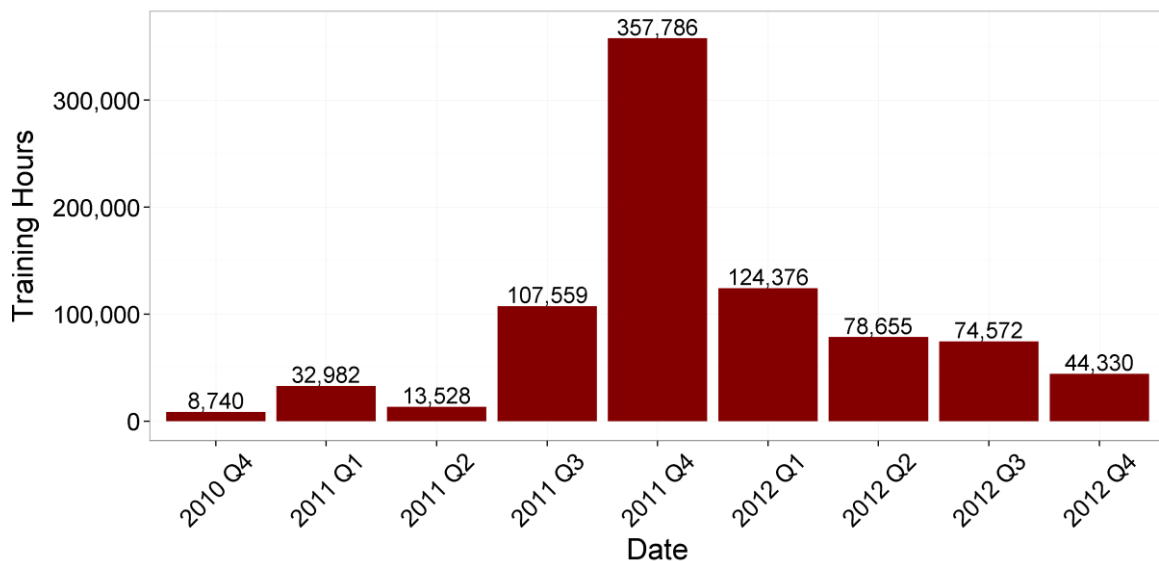


2.2 Digital Literacy

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 Federal Communications Commission (FCC) defines digital literacy as "the skills needed to use information and communications technology to find, evaluate, create, and communicate information."¹⁸

TFA training efforts emphasized Digital Literacy, as the staff observed a critical need for basic computer skills among the target population. The project devoted more than 800,000 training hours to Basic Internet and Computer Use training, which represented the most popular training class of the project.¹⁹ PCC staff reported that the majority of users had little or no prior experience with computers and the Internet. In order for patrons to be able to complete important tasks such as submitting an online job application, it is necessary to acquire basic skills such as turning on a computer and operating a mouse. Figure 4 presents the hours of Digital Literacy training TFA delivered through December 2012.²⁰ The delivery of digital literacy training per quarter spikes in the fourth quarter of 2011. This spike in hours was caused by different partners using different reporting methodologies. TFA worked with the partners to clarify the reporting requirements in subsequent quarters.

Figure 4. Quarterly Digital Literacy Training



Staff and patrons reported the following outcomes and impacts from Digital Literacy activities:

- TFA trainers observed progress in Digital Literacy skills of users. Many PCC users stated that they struggled with basic computer skills, such as using the keyboard, copying and pasting, and finding information online. Likewise, these users lacked skills and experience in more advanced activities such as Microsoft Word, Excel, and PowerPoint, and digital communication. For example, a semester-long class began with basic training and concluded with Microsoft Office Suite training. At the end of the class, participants that started with little to no computer experience were able to create their own graduation announcements using Microsoft Publisher.
- PCCs helped individuals transition out of homelessness. Staff used the grant-funded computers to train patrons in personal financial management skills and to search for housing. TFA staff reported that, since 2010, more than 1,000 people had found permanent housing using grant-funded equipment and services.

- Staff often used social media to introduce patrons with limited prior computer or Internet experience to additional digital opportunities and uses. TFA staff observed the importance of social media in patrons' lives, particularly seniors, ex-offenders, and the homeless, who might have lost contact with family and friends. With staff assistance, a homeless patron who had not been in contact with his family in fifteen years, used Facebook to connect with his sister.
- TFA staff stated that basic computer skills training lead to greater computer and Internet use. One patron had not used a computer before participating in training at the PCC. Through digital literacy training, he developed the skills to shop online, and he planned to purchase a laptop.
- PCC staff incorporated the use of mobile technologies such as tablets and smartphones into English as a Second Language (ESL) training. Program Specialists taught patrons to use their devices more efficiently by helping them locate useful apps and websites to find resources and information.
- Program Specialists and general equivalency degree (GED) instructors received training to learn to operate grant-funded equipment, including computers and projectors, in order to teach PCC users effectively.
- Staff members reported that a Program Specialist in Rural Texas used grant-funded laptops to deliver computer training to approximately forty-four seniors at their local church.

2.3 Workforce and Economic Development

“The computers have added such wealth and depth to the program, and the overall success can be seen in the numbers that have secured employment and improved their educational standing.” – PCC Program Specialist

This focus area 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 and Economic Development activities can be performed for one's own benefit, or they may be done on behalf of another person to assist with his or her employment situation. In order for project activities to be included in this 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.

Activities in this focus area emphasized improving job readiness among PCC users. TFA staff reported that users most frequently sought job related assistance from trainers. In some cases, it was necessary for job-seeking patrons to first complete basic computer training. Many PCC patrons had no prior access to or experience with computers. The workforce readiness training assisted participants in acquiring skills ranging from basic keyboarding through Microsoft Word. Patrons used the grant-funded equipment to create résumés, search for employment, and complete online applications. AFN survey data suggests 65 percent of PCC patrons used the grant-funded equipment to seek employment. Preliminary findings from the evaluation conducted by the University of Texas indicated that more urban users than rural users stated that they believe developing computer and Internet skills would assist them in their job search.²¹

TFA delivered more than 290,000 hours of Workforce and Economic Development training to more than 17,000 participants.²² Although grant-wide employment-related statistics are unavailable, interviewees reported Workforce and Economic Development outcomes and impacts, including those affecting vulnerable populations, such as ex-offenders, the homeless, and the unemployed:

- TFA staff reported that 802 Haven for Hope patrons had gained employment.²³ Haven for Hope offers shelter, basic needs, and other resources for the homeless of Bexar County, Texas, for which San Antonio serves as the county seat. The organization offers transitional services to assist clients returning to the workforce.

- TFA found that many patrons were homeless and may have criminal backgrounds, mental illnesses, and drug addiction, creating challenges for employment. Program Specialists helped these patrons format their résumés and cover letters to highlight their skills and experience to secure the interview. Staff members received feedback from patrons stating that, without the help from the PCC staff, they would not have secured employment.
- AFN stated that it helped patrons develop nearly six résumés per week and approximately fifty people per week with job searches. AFN staff estimated that 25-30 percent of job seekers obtained at least short-term employment.
- A Denver Harbor PCC user did not have Internet access at home. He used the PCC to create several résumés and received an interview after four months without a response from employers. Without the PCC, he believes he would not have been able to access these resources and find a job. He planned to complete additional digital literacy training.
- A Denver Harbor PCC patron stated he initially used the PCC to obtain his GED, and then continued to use the resources to build his résumé and apply for jobs. The user has since received an interview with an automotive service company.
- AFN found that the restaurant industry's high turnover rate facilitated homeless patrons' ability to obtain employment. Additionally, restaurants typically provided employees with uniforms, easing the transition to work for those who could not afford work uniforms or work attire. AFN prepared job seekers for employment by assisting them with the online application process and funding the \$20 food handler certification required by the City of Austin. AFN staff reported that nearly all applicants requesting this assistance obtained employment.
- Some community employers supported TFA efforts by hiring graduates from the PCC training program. One individual was homeless and had a history of substance abuse, but held a college degree. After completing the PCC training program, the participant secured a position in local government.
- AFN offered scholarships for advanced training, increasing earning potentials to \$20 to \$40 per hour rather than \$8 per hour.

Workforce and Economic Development activities included the following:

- TFA offered a range of assistance for job seekers with varied digital literacy skills. Unemployed patrons with no computer experience received one-on-one training. Library staff assisted users in their job search by directing them to online job boards and employment websites, helping them set up e-mail accounts, and creating and printing résumés.
- Some PCCs focused on quick jobs, such as fast food restaurant positions, by assisting users in completing online job applications. Staff developed and adjusted training topics based on individual users' demands and needs. Participants could also complete self-paced training modules, such as the Fast Jobs Project.
- At a job fair in Houston, the PCC provided tablets and laptops to job fair attendees to complete online job applications. TFA did not track the number of job applications completed or jobs acquired.
- PCC staff provided computer, Internet, and Microsoft Office Suite training to organizations, helping to build and develop existing staff members' skills. In Houston, one organization used the Denver Harbor PCC and staff to provide basic computer skills and Microsoft Office training to its employees. Because the organization was transitioning to a paperless work environment, computer skills were essential to performing the job, although many employees had no experience with computers.
- In one location, case managers escorted users to the PCC and provided one-on-one assistance with job-related tasks such as creating résumés and completing online applications.²⁴
- AFN required all staff members to obtain certification from the US Department of Justice as an Offender Employment Specialist. Through the training program, staff obtained skills to enhance

their ability to assist ex-offenders and others with challenging backgrounds in obtaining employment.

- AFN staff taught job seekers how to use e-mail to communicate electronically with employers. Job seekers also learned how to attach files, such as a résumé, to an e-mail.
- PCCs prioritized job search activities by providing longer usage windows for patrons completing lengthy job applications. PCCs that enforced shorter usage windows extended time limits for users performing job-related activities.

2.4 Education and Training

This focus area includes activities that lead to a certificate or diploma, typically awarded by an educational institution, or that indicates the recipient has received training that is valuable for career advancement. Examples of certificates or diplomas include the following: community college degrees, four-year college degrees, advanced degrees, GEDs, 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.

TFA delivered more than 594,000 hours of Education and Training programs.²⁵ TFA offered Education and Training activities including certificate programs, GED preparation, ESL education, and office skills training to enhance employment opportunities for participants. TFA observed the following outcomes and impacts related to Education and Training:

- AFN offered a thirteen-week A+ certification program, the completion of which demonstrates competence as a computer technician. TFA reported that six individuals completed the pilot program and three obtained employment in the technology industry.
- At Haven for Hope, patrons used computers for job-specific training and certifications. Staff members regularly observed patrons engaging in Forklift safety and Occupational Safety and Health Administration (OSHA) training. These trainings and certifications were vital assets for vulnerable groups in order to improve their employment opportunities.
- Across PCC locations, TXC2 staff delivered 330,000 hours GED training programs.²⁶
 - At Haven for Hope, patrons used PCCs to access additional tutorials to ensure mastery of GED skills, and twenty-six individuals had earned their GED.²⁷ GED test takers prepared for the exam at PCCs using online practice tests. In the future, the GED exam will only be available online. Successfully completing the GED certification improves employability.
 - AFN established a Memorandum of Understanding (MOU) with Austin Community College (ACC) to provide computer skills to help clients acclimate to the new online GED test platform. Grant-funded equipment and trainers enabled the formation of this partnership. Some GED students completed the training program, received their GED, and enrolled in college.
- Across the TXC2 project, staff delivered nearly 130,000 hours of ESL training.²⁸ Incorporating computers into ESL training resulted in patrons improving both English-language skills and digital literacy skills. One patron had limited English proficiency before participating in grant-funded training. The user's skills improved and she earned a position as a lab monitor at a PCC.
- PCCs enabled adult patrons to participate more actively in their children's education by assisting with computer-based homework and accessing school websites. TXC2 staff identified a growing need for families to be comfortable accessing school information and educational resources online. With local school districts providing an increasing amount of school information online, PCC instructors offered information and tutorials to teach parents how to access the school website and learning management systems.

- The PCC staff in Houston developed training to teach parents how to use the school district's Parent Portal to monitor their children's grades and academic progress. This training helped parents to participate actively in their children's education.
- During an eight-week course, AFN conducted training in six Austin Independent School District (AISD) schools, serving more than eighty parents who, through an eight-week course, gained the computer skills necessary to improve educational achievement for their children.
- TXC2 partnered with Volunteers in Communities Tutoring Our Responsible Youth (VICTORY), a free tutoring program for elementary through high school students. VICTORY used twenty tablets, ten iPads, and ten Android devices to help improve literacy and math skills among students performing below grade level.²⁹ The pilot test was successful and subsequently expanded to offer a summer program.

2.5 Quality of Life/Civic Engagement

The Quality of Life/Civic Engagement category includes activities that create stronger and more integrated communities, and those that promote interaction between citizens and their governments. Quality of Life/Civic Engagement was not a focus of the TXC2 project. However, the presence of the PCCs allowed for several outcomes and impacts.

According to data collected by AFN, 6 percent of AFN patrons used PCCs to apply for state benefits such as Temporary Assistance for Needy Families (TANF) and Women, Infants, and Children (WIC).³⁰ AFN had a certified trainer on staff to assist PCC users in finding state benefit information online. The AFN executive director stated that assisting users with this information often introduced them to the benefit of computers and the Internet in their daily lives.

The Smithville Community Network PCC became a hub to support disaster relief efforts during wildfires in 2011 that damaged the communication infrastructure and left hundreds of area residents without homes. TFA provided evacuees with computers and broadband, enabling them to access important news updates and connect with family and friends. Evacuees used the computers to search for information about their homes and property and find a means of transporting property, such as livestock, to safety. Without the grant-funded computers, the Smithville Community Network PCC could not have provided area residents a facility to communicate with relatives or obtain updates on the wildfire damage.

After the wildfires, Program Specialists developed a class to help people learn how to prepare for potential disasters. The class focused on document preservation, training individuals to scan and save important documents and photos on a flash drive in case of disasters. The TFA training manager also developed a project to help students at a rural Texas high school learn about the economic impacts of the wildfires using Geographic Information System (GIS) tools. As of March 2013, two high schools had participated in the project.³¹ The project taught high school students about important changes in the rural Texas economy over time, while enabling them to gain valuable workforce skills through GIS-based research and training.

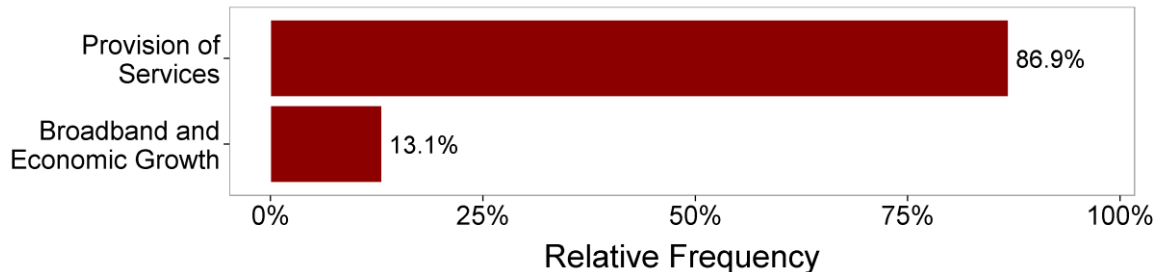
Section 3. Recovery Act Goals

This section describes the activities and outcomes associated with Recovery Act goals. Of the five Recovery Act goals for the BTOP program as a whole, two relate most directly to PCC and SBA programs:

1. 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
2. Stimulate the demand for broadband, economic growth, and job creation

Figure 5 presents the two Recovery Act goals supported by TFA. Approximately 87 percent of the conversations related to providing access to broadband, equipment, and training. The remaining 13 percent represented workforce-related training and efforts by PCC patrons, either independently or with the support Program Specialists.

Figure 5. Recovery Act Goals Statements Made by Interviewees



3.1 Provision of Equipment and Services

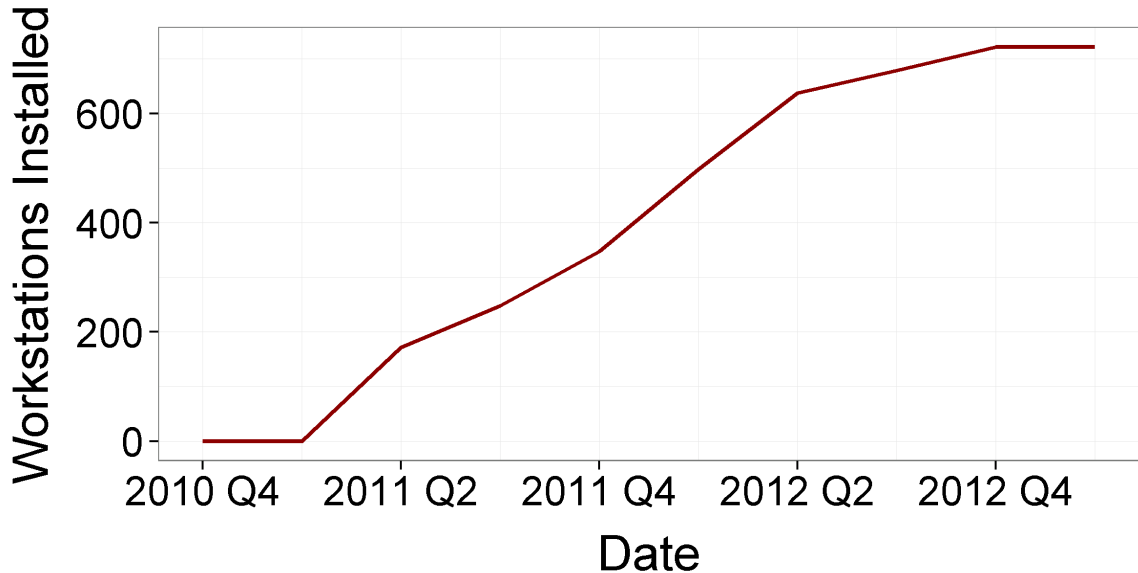
“The overwhelming majority of our clients are unable to afford computers, so broadband only exists for them during the time that they are onsite at our PCC locations.” – AFN Executive Director

Grant funding enabled TFA to offer the combination of open computer access and computer training to its target population. TFA staff observed differences in Internet connectivity and digital literacy skills of urban and rural residents. In rural Texas, a lack of Internet Service Providers (ISP) hindered residents’ ability to identify locations to connect to the Internet. In urban areas, often with more options for connecting to the Internet available, some residents did not possess the knowledge and skills necessary to use the Internet productively. Additionally, some urban residents subscribed to connections that preclude the ability to complete certain tasks online, such as dial-up or a mobile device. AFN reported that the majority of their patrons could not afford to purchase computers or pay for an Internet subscription. The grant enabled TFA to meet the needs of urban and rural Texas residents by providing awareness and open access to equipment, staff, education,

and training to more than 1.28 million users through the end of 2012.³² TFA discussed the following activities and strategies related to provision of service:

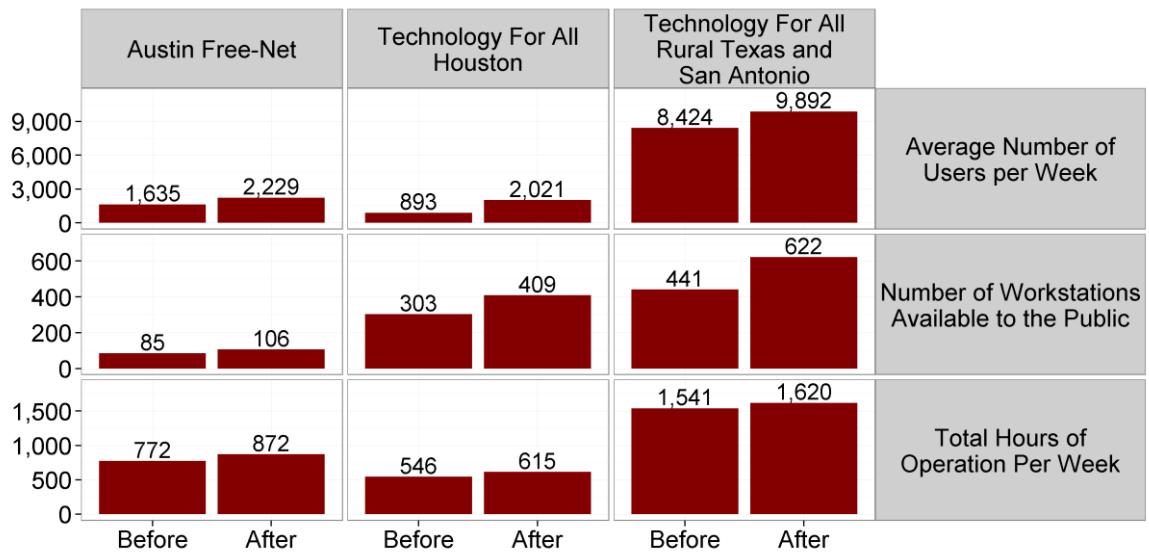
- As shown in Figure 6, TFA installed 722 new workstations and replaced 710 workstations, distributing 1,432 workstations to 10 upgraded and 3 new rural PCCs and 61 upgraded and 18 new urban PCCs throughout Texas.³³ In some locations, the computers were outdated and malfunctioning. The Navasota Library in rural Texas received new computers, a printer, and headphones, attracting more library patrons.

Figure 6. Cumulative Workstation Installations



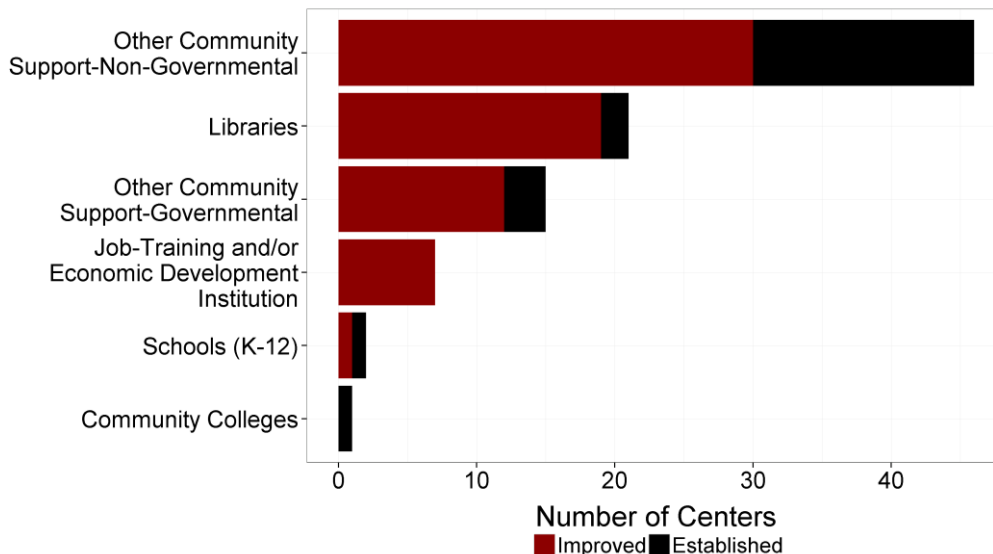
- The grant enhanced the capacity at existing PCCs. The provision of 1,432 new workstations enabled staff to support an average of more than 3,000 additional users and nearly 600 additional hours of operation each week. Figure 7 presents the enhanced service capacity for three areas.³⁴

Figure 7. PCC Service Capacity Before and After Upgrades



- The grant did not fund connectivity enhancements. The grant partners were responsible for providing a broadband connection for each PCC. TFA required each PCC to have at least a 50 Mbps connection. Some partners also provided wireless connectivity at the PCCs.
- PCCs allowed patrons longer or unlimited usage windows, exceeding the twenty- to thirty-minute usage window typically offered at public libraries. The extra time allowed patrons to complete lengthy job applications. The AFN DeWitty Center allowed public access for up to four hours per day. AFN reported that the DeWitty Center is the only PCC in Austin that allows patrons to use the computers uninterrupted for any purpose deemed essential to life's daily necessities.
- The grant funded mobile devices, such as laptops, iPads, and tablets, for events across the service area. Mobile devices supported senior citizen digital literacy training, afterschool support for underperforming students, and the completion of online job applications at a job fair.
- Figure 8 shows the distribution of PCC locations. The PCCs operated primarily in community-based centers, approximately 46 percent of PCCs, followed by libraries, government centers, job-training centers, K-12 schools, and community colleges.³⁵ Most PCCs were co-located with facilities that offered human services and education and training opportunities for patrons before the grant. The facilities used the computers to expand existing services for their patrons. For example, Haven for Hope is a homeless residential and drug recovery center in San Antonio that seeks to transition its residents out of homelessness. Before the grant, this facility had no computers. The facility used the fifty grant-funded computers to train users to search for employment opportunities and housing options online. At other PCCs, staff reported the inclusion of technology in the existing offerings such as online GED training, online ESL training, Microsoft Office training, college preparation activities such as taking the SAT and ACT exams, and applying for scholarships and financial aid.

Figure 8. Distribution of PCC Locations



- PCC staff employed multiple strategies to promote broadband awareness. TFA used traditional marketing and outreach methods, such as fliers and advertisements, across the grant service area and relied on PCC staff for promotion efforts. TFA hired Program Specialists who lived in the areas surrounding PCCs. These staff members, familiar with the needs of the residents and community, implemented community-focused broadband promotion and outreach. In rural areas, Program Specialists joined local chambers of commerce and contacted local groups and organizations such as senior residential communities to promote grant-funded services. In urban areas, some patrons were existing clients of facilities for human and social services. Program Specialists spoke with existing clients individually and promoted the grant-funded services that fit their specific needs. AFN promoted its services as solutions for daily life to help users understand the benefits of broadband access, the importance gaining digital literacy skills, and the opportunities that arise from possessing such skills.
- TXC2 established the Broadband Across Texas Week. This weeklong event promoted free access to computers, Internet, and training offered at the PCCs. The labs offered an array of activities to raise awareness of grant-funded services, including workshops focusing on how to use social media to connect with family and friends and how to create electronic copies of important documents and photos in case of disaster. During this event, staff assisted users with creating résumés during extended open-access times. AFN hosted Broadband Across Texas Week events and served 4,300 people across all sites, including 3,500 people at the DeWitty Center alone.

3.2 Broadband and Economic Growth

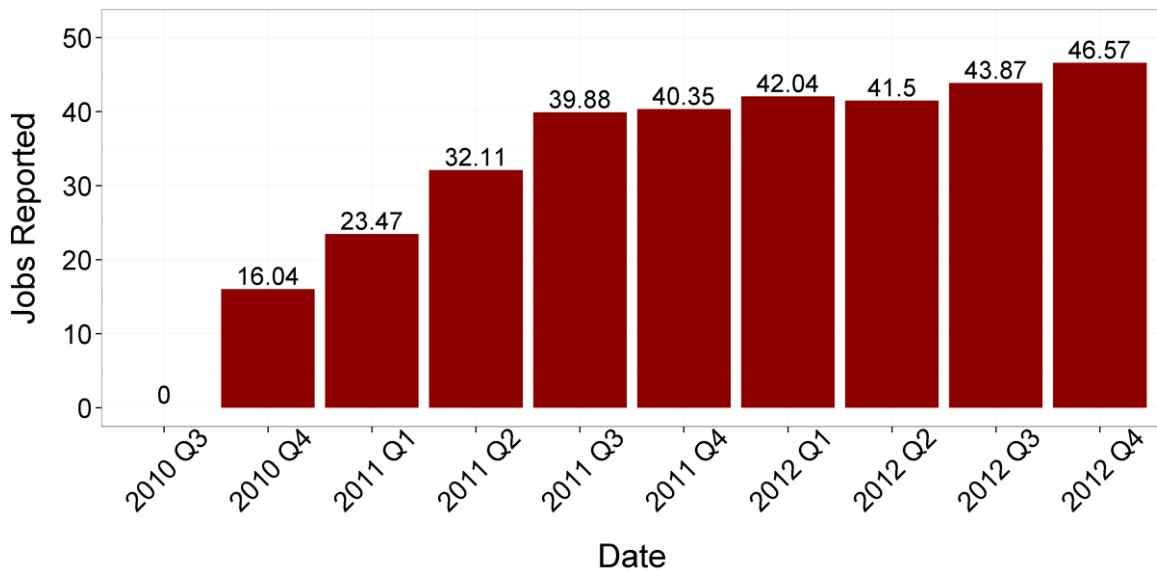
PCCs provided opportunities for users and interns to learn valuable skills that are essential in the workplace. AFN sponsored information technology interns to maintain network systems throughout the service area. The interns learned valuable skills that they used daily in maintaining, securing, and troubleshooting grant-funded equipment. TFA also hired some training participants to work in the PCCs. One user spoke limited English before frequenting the PCC, and now monitors an AFN PCC. Rural Texas PCCs offered telecommuting opportunities. TFA staff observed patrons using PCCs to complete work-related tasks rather than commuting longer distances to an office.

TFA stimulated the demand for broadband by providing PCC patrons with information about home broadband subscriptions and discount computer options, and raffling netbooks and tablets during

the Broadband Across Texas Week. At the end of 2012, TFA formed a partnership with Connected Texas, an organization that offers affordable computers and Internet access to Texans. PCC staff members provided information about broadband subscriptions and discount computers available through this program to PCC patrons. TFA did not track the grant's influence on computer purchases or home adoption, but stated that many users cannot afford monthly home Internet access fees and computer equipment, while others do not have access to a provider where they live.

As required by the Recovery Act, TFA reported quarterly on the number of jobs created as a direct result of the project. Figure 9 shows that the program created and sustained as many as forty-seven positions by the end of 2012.³⁶ These progressive increases correspond with the acquisition of PCC staff and administration across the grant. These staff members maintained the PCC facilities, computers, and software. Staff members also traveled from site to site regularly to teach classes. AFN employed 17.5 FTEs to support the grant efforts, including hiring 13 previously unemployed individuals.³⁷

Figure 9. Direct Jobs Created by Grantee



It is important to note that the figure above displays only direct jobs created, and does not include indirect or induced job creation.

Section 4. Grant Implementation

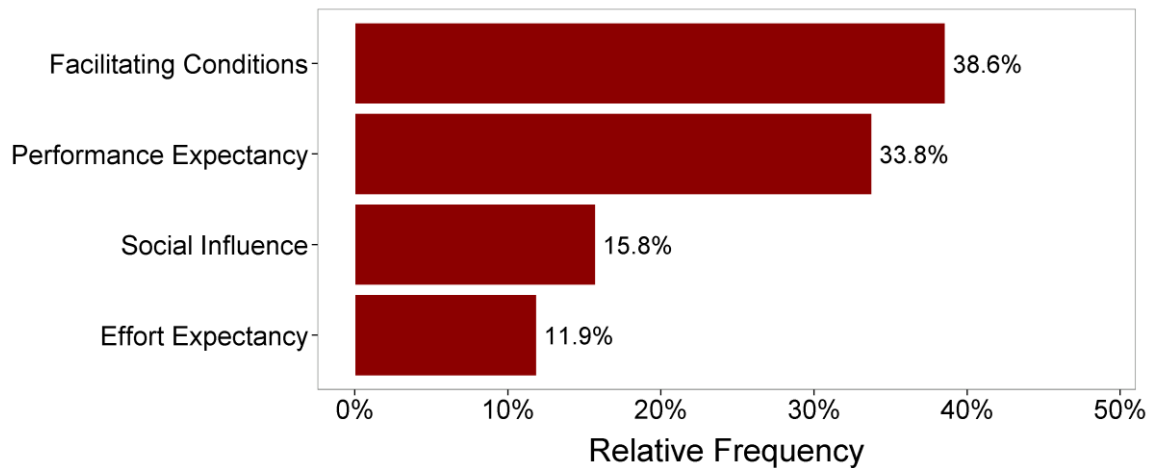
This section describes particular aspects of implementation of the TXC2 project in order to understand the composition of activities and outcomes observed. The purpose of this section is twofold. First, defining a consistent set of categories for each of the grants in the study sample facilitates cross-case comparison and analysis. Second, presentation of the activities and outcomes for this grant by category simplifies understanding of the focus of the grantees' work. This analysis is based on qualitative observations made during the site visit.

ASR is using a theory-based evaluation approach to examine the social and economic impacts of the BTOP program. This permits deeper understanding of grant features in terms of theory, which helps to explain how the grant activities produce impacts. For the PCC and SBA grants, ASR uses theories of technology adoption to examine factors that shape the demand-side of broadband services. The key theory ASR employs is the unified theory of the acceptance and use of technology (UTAUT), a technology adoption model proposed by Venkatesh et al. (2003).³⁸ The model is among the top three most frequently cited articles published in the information systems field and the preeminent article explaining the adoption of information systems. The UTAUT model traces its history from theoretical constructs found in literature that have a bearing on a user's intention of technology adoption and use. The UTAUT model is derived from the leading theories of technology adoption, including the theory of reasoned action, technology acceptance model, motivational model, theory of planned behavior, a combined theory of planned behavior/technology acceptance model, model of personal computer use, diffusion of innovations theory, and social cognitive theory.

UTAUT explains technology acceptance by looking at a user's intention to use an information system and the user's long-term use of that technology. The UTAUT model combines concepts found in earlier models of technology use to posit a unified theory of information technology adoption and use. UTAUT includes four dimensions determining user intention and technology use: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. Each of these dimensions is further classified into constructs constituting the dimension. The subsections below define and discuss each of these dimensions. Venkatesh empirically tested the model and reported that it was successful in explaining more variation in user adoption of technology than other adoption models tested.

Figure 10 presents the relative frequency of topics related to grant implementation as discussed during interviews and focus groups. These topics were placed in four categories, corresponding to the four UTAUT categories listed above. Most of the implementation topics discussed related to Facilitating Conditions and Performance Expectancy, while fewer discussions related to Social Influence and Effort Expectancy.

Figure 10. Distribution of Grant Implementation Topics by UTAUT Dimension



4.1 Facilitating Conditions

This category captures how the technical infrastructure available to the user supports potential broadband adoption, and the degree to which there are organizational supports for adoption. This includes access to broadband technology, the extent to which users can choose to use broadband, the compatibility of broadband with their lifestyle and activities, and the cost of using broadband. This also includes the resources needed to support the PCC's services to provide access to the Internet and computers. Specific examples of Facilitating Conditions include the following:

- TFA worked with its partners to create a service model for PCCs to facilitate an improved user experience, particularly those who had not adopted broadband, enhancing users' sense of comfort using computers and the Internet.
- TFA provided computers loaded with commonly used software packages for web browsing, office tasks, publishing content, and communication. TFA adopted a standard, preconfigured software image for all computers. One technology director explained that the standard image made it feasible to manage a large network of computers with very limited staff. TFA updated all workstations to use Microsoft Office 2010, and considered upgrading to Microsoft Office 2013 as the grant closed out.
- All of the PCCs had printers available for patrons. A PCC director working in rural Texas observed patrons printing certificates after completing training programs. In some cases, a hard copy certificate is required for employment.
- The TXC2 program developed a strategy to hire Program Specialists and trainers who had extensive experience serving a wide range of individual needs. Trainers possessed digital literacy training skills, effective communication skills, and strong outreach and marketing skills.
- AFN reported that PCCs without trainers or staff to provide assistance are lower performing than PCCs with trainers present. They reported that patrons prefer to visit the PCCs when a trainer is available to provide assistance, rather than visit for open lab access.
- TXC2 deployed an Americans with Disabilities Act (ADA)-compliant workstation at each PCC site. The machine offers a special mouse, large screen with zoom capacity, and furniture equipped for wheel chairs and other physical needs. TXC2 reported deploying approximately ninety ADA-compliant desktops.
- PCCs operating before the grant expanded their hours of operation. By adding 591 additional hours per week, the PCCs provided patrons with ample time to learn and accomplish time-intensive tasks, such as job searching. TXC2 partners adjusted PCC hours to meet local needs, and some extended the session times for users.

- In the PCCs, the grantee created a physical environment that was conducive to learning digital literacy skills. Program Specialists modified labs so that trainers sat in the rear of classrooms to ensure that users focused on productive activities. Staff posted schedules and other materials to ensure they were visible to all users.
- The grant funded mobile labs to provide greater access to computer resources. TXC2 partners used a mobile laptop lab to offer classes in locations without an existing PCC, such as community rooms at public facilities, churches, senior centers, and civic clubs.
- TFA used the Windows 7 and 8 operating systems. TFA staff reported that offering innovative technology, and providing trainings that incorporated the latest developments and trends, attracted users to PCCs and prepared them for continued computer use.

4.2 Performance Expectancy

Performance Expectancy measures the degree to which a potential adopter believes that using the public computing center to gain access to broadband is beneficial for job searching or for an activity in another focus area. Aspects of Performance Expectancy include the perceived usefulness of the new technology, outcomes expectations, and the perceived relative advantage of the technology versus previously used technologies. Examples include the following:

- AFN staff explained that a user survey helped to identify the types of activities that drew users to the PCC. Users could select more than one option for activities performed in the PCC. One interviewee discussed the results of one survey:³⁹
 - 65 percent of patrons search for employment
 - 37 percent of patrons use social media sites (Facebook, Twitter, and others)
 - 35 percent of patrons complete adult education activities
 - 12 percent of patrons learn computer skills
 - 6 percent of patrons research and apply for human service benefits (Supplemental Nutrition Assistance Program [SNAP], TANF, WIC, and Medicaid)
 - 3 percent of patrons research information for veteran services
 - 2 percent of patrons use the Austin Independent School District's Parent Connect system, an online student information portal for parents
- Students arrived in the PCCs with different levels of experience. Staff members helped patrons achieve individual objectives using technology. Trainers emphasized the benefits and capabilities of technology to achieve personal goals, from getting an e-mail address to finding a job.
- Trainers reported that patrons generally visited the PCC to learn how to perform an activity using the computer, such as scanning photos or creating a résumé, rather than to learn how to use a specific software application such as Microsoft Word or Excel.
- Case managers occasionally brought clients to a workstation to demonstrate how to complete specific tasks. Interviewees reported instances of local organizations, ex-offender case managers, and social service case managers assisting their clients in PCCs and other caseworkers assisting in workforce-related activities.

4.3 Social Influence

“Seniors, the homeless, and veterans are all shown to be vulnerable to feelings of isolation that lead to depression. By connecting them with family and friends, we’ve seen wonderful things. A new mom showed her baby’s father a picture of his child for the first time. He lived in Mexico and she was able to connect with him through Facebook. Many times our homeless clients find family and friends who are willing to help them get off the streets. Elderly clients’ faces light up when they find old friends and see pictures of their grandkids.” – AFN Training Manager

This category measures the degree to which potential adopters perceive that others will view them favorably or interact with them in a positive way if they adopt broadband technology. This includes friends and family members who might already be using broadband technology. It also includes measures of whether the use of broadband is considered to be a social norm for the social group to which the potential adopter belongs. Components of social influence include subjective norms, social factors, and the image associated with broadband use. Specific examples include the following:

- The TXC2 project offered targeted training for seniors to learn to use computers and the Internet to keep in contact with family. A PCC staff member reported that family members urge seniors to access the Internet to view family photos and contact relatives. Without the training, seniors would not have the skills to operate a computer and perform these online activities.
- The project hired trainers who were familiar to the targeted service area in order to enhance community awareness and use of PCC services. A PCC director explained that these trainers often had closer ties to community residents, local civic organizations, and leaders. They also understood the community’s needs and were able to target training accordingly.
- Social media was an important tool for engaging PCC users with no previous exposure to computers and the Internet. TFA stated that studies have shown the psychological benefits to veterans and seniors of connecting with friends and family using social media. To assist populations often subject to feelings of isolation that can lead to depression, such as seniors, the homeless, and veterans, TFA taught these patrons to use social media to connect with family and friends.
- Word of mouth was an important tool for encouraging technology use. PCC staff observed users bringing friends to classes to the extent that classes become homogenous. As a result, classes were full of users who possessed similar backgrounds, needs, and digital literacy skills.

4.4 Effort Expectancy

This category measures the expectations of the potential adopter regarding the difficulty of using broadband to achieve benefits in one or more of the focus areas described above. It includes preconceived ideas about the difficulty of using broadband technology and computers in general, and anxiety or concerns about the risks of broadband use. For PCCs, it indicates how the service model made using broadband to access information and services on the Internet easier. Examples of Effort Expectancy include the following:

- To reduce patrons’ anxiety about new technologies, ranging from basic operating system questions to concerns about security and privacy, PCCs offered customized classes and informal one-on-one training.
- TXC2 partners adopted a problem-based learning (PBL) approach to teach digital literacy skills as opposed to a linear curriculum. Rather than present lessons in computer operations, TFA incorporated relevant applications, such as learning how to use computers to preserve important documents and photos after a natural disaster. The approach helped new computer

and Internet users recognize the relevance of computers and the Internet as tools of empowerment.

- The San Antonio PCCs implemented a training program called My Project to provide individuals with a PBL approach to learn Microsoft Office. My Project provides one-on-one training for users to accomplish their individual goals using practical applications that promote digital literacy.
- AFN delivers training to parents in Austin schools because the locations increase parents' comfort level. Through the program, participants obtained their first e-mail address and learned how to track their child's progress in schools.

Section 5. Techniques, Tools, and Strategies

This section describes successful techniques, tools, and strategies identified by the grantee. TFA noted many successful techniques, tools, and strategies that it developed over the course of the grant.

5.1 Techniques, Tools, and Strategies

- Recognizing the importance of individualized and flexible training, TXC2 developed strategies that focused on providing digital literacy training to meet the specific needs of each patron. Upon entering a PCC, a staff member greeted each patron and inquired about objectives. Instructors provided individualized training to help the patrons obtain the skills necessary to accomplish their goals.
- Two project partners served homeless patrons, Haven for Hope (San Antonio) and ARCH. These sites provided tips to assist instructors in developing learning approaches to teach a variety of patron populations. Instructors learned to offer specialized assistance for the homeless, ex-offenders, and other vulnerable populations.
- AFN supported training development, as some staff members possessed Master's degrees in Special Education, Curriculum Development, and ESL certifications. These resources enabled AFN to produce a curriculum that was not only easy to deploy, but also easy to understand while having users at different skill levels concurrently occupy the same space. Courses modify the same core curriculum, facilitating AFN's ability to create new programs to fill niches.
- AFN instructors found that a linear approach to learning did not align well with patrons' needs, particularly among patrons facing literacy challenges embedded in economic, social, and health difficulties. Through a series of questions and observations, instructors assessed student skill levels. When patrons identified a specific objective, for example, to apply for a job online, the instructors provided a color-coded laminated index card listing all of the skills needed to perform the task. Staff assisted students in working toward self-identified goals at their own pace, providing students with mini-tutorials, one-on-one assistance, and tracking the skills developed during each session on the index card.
- TFA reported that successful PCC staff needed the ability to assess student needs and skills quickly, work in a learning environment with multiple students and multiple levels, and respect and understand the human development needs and possible learning challenges of each student.
- TXC2 partners improved the communication and coordination among the teams providing broadband adoption programs by creating a learning and knowledge-sharing environment. Innovations for sustainable broadband adoption activities diffused across sites as TXC2 leadership encouraged instructors and staff to share new ideas or approaches for dealing with issues through professional meetings.
- AFN developed a volunteer program where volunteers monitored open labs on Fridays. This program enabled staff members to participate in weekly staff development training.
- TXC2 used data analytics to determine staff and technology resource allocations to maximize the average number of users per site. Early in the project implementation, TFA realized slower-than-expected growth in average weekly PCC users. The project team addressed this challenge by conducting additional awareness events at PCCs. A TXC2 director reported that when the outreach failed to affect the usage numbers, the project team reallocated computers and program staff based on trends in the average number of users per site over monthly reporting increments.

- The project faced challenges in reconciling the data collection methods used by different sites, specifically the number of users, user sessions, and training activities. TFA developed an online reporting system and defined the terms and processes to improve consistency. The system tracks key statistics on user participation in TXC2 programs and activities. Staff analyzed the data with statistical methods in Microsoft Excel.
- AFN collected user data employing a method consistent with the other TXC2 data. AFN workstations offered an optional user survey on the web browser's homepage, intending to collect patrons' reasons for visiting the PCC. AFN opted not to make the survey mandatory or use any optional popup windows, as the vulnerable populations using the computers could react negatively to the request for information.
- Some patrons had difficulty remembering their login credentials. AFN staff distributed small index cards for patrons to write down usernames and passwords.

5.2 Challenges

- TFA experienced a problem working with a key partner. The partner initially was responsible for providing PCCs in rural Texas communities. TFA refined expectations on all geographical areas during the grant period. More planning in the beginning of the grant period would have been beneficial, particularly to determine whether expectations aligned with the proposed investments in those locations.
- The project faced technical issues in keeping the computers and the network in operation. Not all trainers had prior IT management experience. Some trainers reported spending time troubleshooting a range of technical issues from computers not booting to reimaging several computers. Security settings on the computers restricted automatic software updates, and Program Specialists had to dedicate a significant amount of time to update each imaged workstation.
- AFN developed a partnership with the Multicultural Refugee Coalition to extend services to other immigrant populations in the Austin area. The organization was unable to secure a facility to host the training session, and the target population was not willing to travel to an unfamiliar location.
- Transportation and childcare issues could interfere with patrons' ability to attend training sessions.
- TXC2 reported it was difficult to track the number of people who used wireless connections. Patrons could use their laptops or tablets in any of the classrooms or surrounding area.

Section 6. Conclusions

The TXC2 BTOP grant provided broadband access and encouraged adoption by promoting digital literacy and relevant applications. The grant provided the equipment necessary to support facilitated access and training opportunities at ninety-two PCCs in urban and rural Texas. The grant focused on assisting underserved populations in developing digital literacy skills through basic computer and Internet training. The emphasis on the development of digital literacy skills provided a foundation for job search activities, including résumé development, searching and applying for jobs online, and preparing for interviews and entering the workforce.

Users without prior computer or Internet experience used grant-funded tools and training to obtain employment, locate permanent housing, apply for government benefits, and recover after natural disasters. In line with the goals of the Recovery Act, TFA provided patrons with information about discount computer opportunities and home broadband subscription options. TFA provided broadband education and training, increased awareness of the availability of PCC resources, promoted the benefits of broadband, increased rural Texans' access to broadband, and raffled netbooks and tablets. Implementation of the project allowed partner organizations to design curriculum and outreach efforts to fit the needs of their specific target populations. The grantee believes that this approach enhanced grant-wide benefits.

At the time of the site visit, graduate students from the University of Texas at Austin were conducting an evaluation of the TXC2 project. The evaluation used qualitative and quantitative data to examine staff observations, and user motivations, experiences, and activities performed in TXC2 PCCs. ASR did not have access to raw data from the ongoing evaluation.

Without the grant, TFA believes that the human services organizations participating in the project would not have had the resources necessary to expand services to include new technologies or affect additional residents. TFA and AFN could not have created or expanded PCCs to offer additional service hours or serve additional patrons. Nor could project members support the provision of training offered through the grant, or the addition of staffing resources to support such training.

Section 7. Next Steps for the BTOP Evaluation Study

In early 2014, ASR will deliver *Interim Report 2* to NTIA. This report will include a summary of the second round site visits to the fifteen PCC and SBA grants, allowing for an analysis of the impacts of the grants over time. *Interim Report 2* will also summarize the findings from case study visits to twelve Comprehensive Community Infrastructure (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.

TFA has taken steps to ensure sustainability over the next two to three years. The grantee continues to operate the weeklong Broadband Across Texas Week event and encouraged organizations such as public libraries to offer training during that time. Additional sustainability efforts include developing partnerships with community organizations and pursuing additional resources and funding to support ongoing training activities.

In September 2014, ASR will deliver a *Final Report* that will quantitatively and qualitatively measure 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 round out the conclusions presented.

Notes

¹ National Telecommunications and Information Administration, "Technology For All Fact Sheet," *Broadband USA Connecting America's Communities*, September 2010, <http://www2.ntia.doc.gov/files/grantees/factsheettxtechnologyforall.pdf>.

² National Telecommunications and Information Administration, "Technology For All Fact Sheet."

³ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11" (Washington, DC: Distributed by National Telecommunications and Information Administration, 2013).

⁴ National Telecommunications and Information Administration, "Technology For All Fact Sheet."

⁵ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

⁶ National Telecommunications and Information Administration, "Technology For All Fact Sheet."

⁷ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

TFA calculated training hours by multiplying the length of a course by the number of participants. For example, a four-hour course with twenty participants equals eighty training hours.

⁸ United States Census Bureau, "2005-2009 ACS 5-year Summary File," *American Community Survey*, 2011, http://www.census.gov/acs/www/data_documentation/summary_file/.

⁹ National Telecommunications and Information Administration, "BTOP Evaluation Study," *Broadband USA Connecting America's Communities*, 2013.

¹⁰ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

¹¹ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

TFA calculated training hours by multiplying the length of a course by the number of participants. For example, a four-hour course with twenty participants equals eighty training hours.

¹² National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

¹³ National Telecommunications and Information Administration, "Technology For All Fact Sheet."

¹⁴ National Telecommunications and Information Administration, "Technology For All Fact Sheet."

¹⁵ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

TFA calculated training hours by multiplying the length of a course by the number of participants. For example, a four-hour course with twenty participants equals eighty training hours.

¹⁶ ASR Analytics, *Progress towards BTOP Goals: Interim Report on PCC and SBA Case Studies, Broadband Technology Opportunities Program Evaluation Study (Order Number D10PD18645)* (Potomac, MD, December 5, 2012), <http://www.ntia.doc.gov/report/2012/progress-towards-btop-goals-interim-report-pcc-and-sba-case-studies>.

National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

¹⁷ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

TFA calculated training hours by multiplying the length of a course by the number of participants. For example, a four-hour course with twenty participants equals eighty training hours.

¹⁸ Federal Communications Commission, *Connecting America: The National Broadband Plan*, 2010, <http://www.broadband.gov/plan/>.

¹⁹ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

²⁰ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

²¹ LBJ School of Public Affairs University of Texas, "Digital Inclusion in Texas," in *Evaluating the Impact of the TCC BTOB Program in Texas*, 2013.

²² National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

²³ Technology For All, Inc., "Haven for Hope Impacts", April 25, 2013.

²⁴ University of Texas, "Digital Inclusion in Texas."

²⁵ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

²⁶ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

²⁷ Technology For All, Inc., "Haven for Hope Impacts."

²⁸ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

²⁹ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

³⁰ Austin Free-Net, "AFN Survey Results", 2013.

³¹ Technology For All, Inc., "Technology For All Teams up with Local High Schools on Interactive Mapping Project," 2013, <http://www.techforall.org/2013/03/press-release/>.

³² National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

³³ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11"; United States Census Bureau, "2010 TIGER/Line® Urban Area (UA) Nation-based Shapefile (2010 Census)" (Washington, DC, March 26, 2012), <http://www.census.gov/geo/maps-data/data/tiger-line.html>.

³⁴ National Telecommunications and Information Administration, "Post-Award Monitoring (PAM) Database 2013-03-11."

³⁵ Technology For All, Inc., "ASR Raw Data Save 6 13 13", 2013, Email attachment June 25, 2013.

³⁶ The Recovery Accountability and Transparency Board, "Recovery API," *Recovery.gov* (Washington, DC, March 20, 2013), <http://www.recovery.gov/FAQ/Developer/Pages/RecoveryAPI.aspx>.

³⁷ Recovery.org provides the following guidance and example for calculating grant-funded jobs:

1. If a normal full-time schedule is 40 hours a week, multiply 40 hours x 52 weeks = 2,080 Total Hours per year.
2. Divide 2,080 Total Hours by 4 to equal 520 regular quarterly hours.
3. If two full-time employees each worked 520 hours (1,040 hours) for the quarter and another half-time employee worked 260 hours, the Total Hours for the three employees is 1300 (520 + 520 + 260 = 1300).
4. Divide 1300 by 520 to equal 2.5 Recovery funded jobs during that quarter.

For more information, visit <http://www.recovery.gov/News/featured/Pages/Calculator.aspx>

³⁸ Viswanath Venkatesh et al., "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly* 27, no. 3 (September 2003): 425–478.

³⁹ Austin Free-Net, "AFN Survey Results."

Glossary

Acronym	Definition
ACC	Austin Community College
ACT	American College Testing
ADA	Americans with Disabilities Act
AFN	Austin-Free Network
AISD	Austin Independent School District
APR	Annual Performance Progress Report
ARCH	Austin Resource Center for the Homeless
ASR	ASR Analytics, LLC
BTOP	Broadband Technology Opportunities Program
CCI	Comprehensive Community Infrastructure
ESL	English as a second language
FCC	Federal Communications Commission
GED	General equivalency degree
GIS	Geographic Information System
ISP	Internet service provider
MOU	Memorandum of Understanding
NTIA	National Telecommunications and Information Administration
OSHA	Occupational Safety and Health Administration
PBL	Problem-based learning
PCC	Public Computer Center
PPR	Quarterly Performance Progress Report
SAT	Scholastic Assessment Test
SBA	Sustainable Broadband Adoption
SNAP	Supplemental Nutrition Assistance Program
TANF	Temporary Assistance for Needy Families
TFA	Technology For All, Inc.
TXC2	Texas Connects Coalition
UTAUT	Universal Theory of Acceptance and Use of Technology
VICTORY	Volunteers in Communities Tutoring Our Responsible Youth
WIC	Women, Infants, and Children

Bibliography

- ASR Analytics. *Progress towards BTOP Goals: Interim Report on PCC and SBA Case Studies. Broadband Technology Opportunities Program Evaluation Study (Order Number D10PD18645)*. Potomac, MD, December 5, 2012.
<http://www.ntia.doc.gov/report/2012/progress-towards-btop-goals-interim-report-pcc-and-sba-case-studies>.
- Austin Free-Net. "AFN Survey Results", 2013.
- Federal Communications Commission. *Connecting America: The National Broadband Plan*, 2010.
<http://www.broadband.gov/plan/>.
- National Telecommunications and Information Administration. "BTOP Evaluation Study."
Broadband USA Connecting America's Communities, 2013.
- . "Post-Award Monitoring (PAM) Database 2013-03-11". Washington, DC: Distributed by National Telecommunications and Information Administration, 2013.
- . "Technology For All Fact Sheet." *Broadband USA Connecting America's Communities*, September 2010. <http://www2.ntia.doc.gov/files/grantees/factsheettechnologyforall.pdf>.
- Technology For All, Inc. "ASR Raw Data Save 6 13 13", 2013. Email attachment June 25, 2013.
- . "Haven for Hope Impacts", April 25, 2013.
- . "Technology For All teams up with local high schools on interactive mapping project", 2013.
<http://www.techforall.org/2013/03/press-release/>.
- The Recovery Accountability and Transparency Board. "Recovery API." *Recovery.gov*. Washington, DC, March 20, 2013.
<http://www.recovery.gov/FAQ/Developer/Pages/RecoveryAPI.aspx>.
- United States Census Bureau. "2005-2009 ACS 5-year Summary File." *American Community Survey*, 2011. http://www.census.gov/acs/www/data_documentation/summary_file/.
- . "2010 TIGER/Line® Urban Area (UA) Nation-based Shapefile (2010 Census)". Washington, DC, March 26, 2012. <http://www.census.gov/geo/maps-data/data/tiger-line.html>.
- University of Texas, LBJ School of Public Affairs. "Digital Inclusion in Texas." In *Evaluating the Impact of the TCC BTOP Program in Texas*, 2013.
- Venkatesh, Viswanath, Michael G. Morris, Gordon B. Davis, and Fred D. Davis. "User Acceptance of Information Technology: Toward a Unified View." *MIS Quarterly* 27, no. 3 (September 2003): 425–478.