National Telecommunications and Information Administration

Broadband Technology Opportunities Program Evaluation Study

Order Number D10PD18645

Case Study Report

Round 2

Future Generations Graduate School

Sustainable Broadband Adoption

Submitted August 8, 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

List of Tables

List of Figures

Executive Summary

> *"You have to raise people's awareness and somehow get them to understand that broadband can be beneficial in so many ways. That means telling the stories of real people. I think that made a difference, but also the fact that we provided resources in their local community. They can come and gain access to broadband in a comfortable environment, an environment that they trust. In that sense, I believe our impact has been great." – Future Generations Graduate School Program Director*

Future Generations Graduate School was founded in 2003 as an outgrowth of the international civil society organization Future Generations. Future Generations Graduate School specializes in community-based approaches to major social challenges and successfully manages complex international and educational programs that rely on broadband. Future Generations Graduate School offers a master's degree in Applied Community Change and Conservation; supports multi-year research initiatives into community-based approaches to conservation, child health, and peace-building; and, along with its parent organization, manages large-scale community capacity-building projects in complex international settings.

On January 1, 2010, the National Telecommunications and Information Administration (NTIA) awarded Future Generations Graduate School a Broadband Technology Opportunities Program (BTOP) Sustainable Broadband Adoption (SBA) grant for $4,461,874 to implement the Equipping West Virginia's Fire and Rescue Squads project. The goal of this project was to make computers and the Internet more accessible and useful to West Virginians in low-income and rural communities. Future Generations Graduate School proposed the following, with the results shown:

- Provide sixty participating local fire departments standardized equipment to establish a community computer lab.[1] Future Generations Graduate School had opened sixty public computer centers (PCC) in volunteer fire station and rescue squad facilities and other community centers by September 2012.[2]
- Establish community-based training programs in basic digital literacy and more specialized topics, reaching more than 37,000 people in the newly established labs.[3] Future Generations Graduate School reported serving 37,031 participants as of December 2012.[4]
- Refurbish and sell refurbished computers to those who cannot afford to purchase a new computer. Future Generations Graduate School estimated selling nearly 500 refurbished computers over the course of the grant period.
- Increase broadband subscribership by more than 12,700 households and businesses.[5] Future Generations Graduate School reported 30,550 new subscribers as of December 2012.[6]

The project focused on rural, low-income, and geographically isolated communities throughout West Virginia. The PCCs were strategically located in fire stations and government buildings of the most economically distressed counties as defined by the Appalachian Regional Commission (ARC). Individual computer labs served senior citizens, the unemployed, students, and other groups based on the demographic characteristics of the community.

Future Generations Graduate School collected 804 quarterly voluntary survey responses, collected throughout six waves of implementation at the thirty PCCs opened in the first year of the project. Users had the opportunity to respond to the survey up to six times. Responses are not necessarily representative. The results indicated that 17 percent of respondents had less than a high school education, 42 percent graduated from high school (diploma or general equivalency diploma [GED]), 29 percent attended college or technical school, and 12 percent earned an undergraduate or

graduate degree.[7] Thirty-two percent of PCC users were within the age range of 41-60 years old, and more than 20 percent were over 60 years old. Less than 10 percent of users fell within the 26-30 age range.[8]

The quarterly voluntary surveys revealed that more than 78 percent of respondents had a functioning computer at home.[9] Nearly 40 percent of respondents had DSL at home and 19 percent had cable. More than 28 percent reported they did not have Internet access at home. Remaining respondents indicated they had satellite, dial-up, or fiber optic connections.[10]

The most prominent reasons respondents reported for not subscribing to broadband include the following:[11]

- Do not have a computer – 29 percent
- Too expensive – 23 percent
- Not available – 23 percent
- Access to free Internet outside of the home – 10 percent
- Other responses included: dial-up is enough, do not need, difficult to learn, privacy concerns, and no time – less than 6 percent.

This case study is one of fifteen case studies performed by ASR Analytics, LLC (ASR) on a sample of eight PCC and seven 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:[12]

- 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. This report includes both qualitative and quantitative components. It will serve as a basis for *Interim Report 2*, which will analyze data from fifteen case studies.

This case study is primarily qualitative. ASR presents the impacts resulting from the Future Generations Graduate School grant to the extent possible given the data the grantee collected. Future Generations Graduate School gathered some program activity statistics and outcome measures beyond the NTIA-required reporting. The evaluation study team collected the information presented here during two field visits to evaluate the social and economic impact of the Future Generations Graduate School grant. The evaluation study team originally met with representatives of Future Generations Graduate School over a two-day period in September 2011, visiting administrative offices and PCC locations in Circleville, South Fork, Upper Tract, Durbin, and Gilbert, West Virginia. ASR conducted a follow-up site visit with the grantee, project partners, and individual users from February 12-14, 2013. The grantee selected the PCCs to be included in the second site visit, including many of the locations visited during the first round: Circleville, Upper Tract, Durbin, and Gilbert. The grantee selected two additional PCCs for ASR to visit: the Flatwoods and Banks computer labs.

The evaluation study team performed eight case study site visit interviews. 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 noted the following major outcomes and impacts of the Future Generations Graduate School grant:

- Future Generations Graduate School implemented an awareness campaign including posters, pamphlets, fliers, and press releases to advertise PCC locations, hours, and services. The "Benefits of Broadband" campaign used real-life examples to demonstrate the relevance of broadband to West Virginians' lives. Future Generations Graduate School reported that awareness efforts had reached 1,263,212 people and resulted in 30,550 new subscribers as of the end of 2012.[13]
- The grant's refurbished computer program provided computers to those who cannot afford to purchase a new computer. Participating fire departments purchased these computers at cost ($125) from Future Generations Graduate School and resold them to their communities. Future Generations estimated selling approximately 500 computers as of the site visit.
- PCC patrons gained the skills necessary to use computers to complete job applications online, conduct job searches, and create résumés and cover letters.
- Mentor salaries and stipends for PCCs helped to support local economies, while the grant's advertising and outreach efforts supported small newspapers and prevented the closure of a local post office.
- Local businesses used the PCCs to save money in purchasing supplies, to price their goods competitively, and to market their products online.
- The PCCs facilitated access to state-mandated firefighter training courses, reducing the time and cost for individuals to participate as volunteer firefighters. Before the grant, some firefighters traveled significant distances to participate in training and accommodate course schedules.
- Patrons with limited computer knowledge gained the skills necessary to operate a computer proficiently. Many patrons who acquired such skills actively used computers and the Internet at home. Users may acquire computers through Future Generations' refurbished computer program or by their own means.
- Users leveraged digital literacy skills to communicate with friends and family via e-mail and social media. Patrons learned to save money by using Facebook and e-mail to communicate with friends and family instead of placing expensive long distance phone calls. Using the PCC for this purpose allowed patrons to increase the frequency with which they communicate with family members.
- Users learned to save money shopping and researching prices online. Users saved money by comparison shopping across retailers and searching for deals and discounts online, including using the Internet to find coupons.
- Thirty lab mentors who completed the Chronic Disease Self-Management training course became aware of online healthcare resources and learned techniques to aid in caring for family members suffering from a chronic disease. Mentors supported PCC patrons seeking healthcare information online and suggested valuable techniques for patrons to use as caregivers.

Without the BTOP grant, it is unlikely that the results described above would have occurred. A significant component of grant efforts focused on enhancing communities' awareness of the Internet's capabilities and affecting their perception of its relevance. Future Generations Graduate School offered exposure to the benefits of the Internet firsthand by providing resources within small, rural communities where residents could access broadband in a comfortable, trusted environment. If Future Generations Graduate School had not received the BTOP grant, the grantee would not have conducted comparable outreach, informing the target population of the capabilities of broadband and its relevance to their lives. Patrons who visited the PCCs without having ever used a computer would likely still lack basic digital literacy skills. Without the grant-funded PCCs, many residents of target communities would not have had access to broadband, as broadband is not available to the entire target population.

Section 1. Introduction

On January 1, 2010, the National Telecommunications and Information Administration (NTIA) awarded Future Generations Graduate School a Broadband Technology Opportunities Program (BTOP) Sustainable Broadband Adoption (SBA) grant for $4,461,874 to implement the Equipping West Virginia's Fire and Rescue Squads project. The goal of this project was to make computers and the Internet more accessible and useful to West Virginians in low-income and rural communities. Future Generations Graduate School partnered with the Partnership of African American Churches (PAAC), Johns Hopkins Bayview Medical Center, Monongahela National Forest, Eastern West Virginia Community & Technical College (EWVCTC), West Virginia State Fire Marshal's Office, New River Community and Technical College (NRCC), West Virginia Library Commission, Mission West Virginia (Mission WV), and SIGNS by Saenz. In addition to these project level partners, the mentors at each lab were encouraged to establish partnerships with local businesses or other entities.

1.1 What the Interviewees Told Us

Figure 1 displays words interviewees used frequently. The interviewees included program management and representatives from six PCC locations: Circleville, Durbin, Upper Tract, Banks, Flatwoods, and Gilbert. The word cloud displays the 100 words used most frequently by the interviewees. 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 and focus groups 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, the terms used most frequently by interviewees, specifically "people," "computer," "patrons," "time," "lab," and "community," reflect the grant's goal of increasing computer and Internet access to residents of rural West Virginia. Other frequently used terms, including "learn," "mentors," "program," "Internet," and "online," reflect the role of community mentors and grant-provided curriculum in facilitating patrons' ability to learn the skills necessary to integrate the Internet into their daily lives. The terms "fire" and "department" also appeared frequently, reflecting the locations Future Generations Graduate School selected to deliver grant services. With a fire station in nearly every community, they were one of the most widely available public facilities in the state and served as de facto community centers.

Figure 1. Words Interviewees Used Frequently

Section 2. Impacts

The most prominent impacts of the Future Generations Graduate School project relate to the focus area of Digital Literacy, which is consistent with the grant's mission to improve the accessibility and usefulness of computers and the Internet to residents in rural West Virginian communities. According to the interviewees, the most prominent impacts of the grant relate to affecting the target populations' perception of relevance and the provision of free access to computers in rural communities where some residents are unable to obtain broadband in the home because of cost barriers and limited service availability. The grantee did not collect data to support the existence of impacts beyond what was required for grant reporting. However, it did provide success stories that indicate impacts in each focus area.

The presence of the PCCs is associated with increased time spent online for personal use, including the use of e-mail and social media to stay in touch with family and friends, couponing, genealogy research, and searching for information. The accounts provided to ASR by staff and patrons included the following:

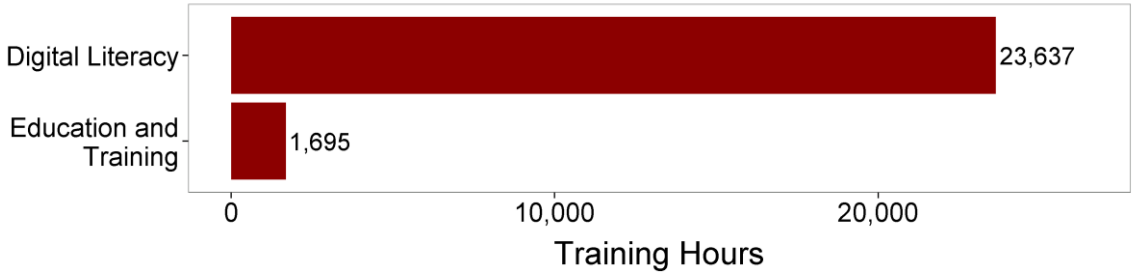
- "Without BTOP, I think there'd be several thousand people who still would not know the impact of broadband or realize how beneficial it can be. They would not know that they could reconnect with family and friends or get resources that they need, whether it's related to their health or education. People are learning. A whole new world's opened up to them."
- "Subscriptions have increased in the state since our project began. We have our numbers from our study, but there's a separate study, too, that shows there's been a tremendous uptake in people subscribing to broadband. We can't take all the credit for that, but I believe we can take a portion of that because we are one of the only organizations in the state doing any type of demand promotions."
- "After spending so much time at the computer center and really getting into all that the Internet offers, we signed up for high-speed Internet at home. Until now, I didn't think we really needed it. It seems like once you get used to having Internet, it becomes a must."
- "Broadband Internet has provided our community members and patrons with high-speed Internet. It has also provided community members and patrons with access to a computer if they do not have a computer, their computer is out of service, or they just want to use Internet that is faster than dial-up."
- "We think the computer center opens a new world to people who have no other means of access to it. I think it is opening doors for both the young and old to learn how to use a computer and get the basic skills needed."

The findings from the case study analysis demonstrate that the BTOP grant supported the goals established by Future Generations Graduate School in the focus area of Digital Literacy to expand computer access in rural, low-income communities in West Virginia by opening sixty new PCCs in fire stations. Fire stations are a central, uniting entity in most of the rural communities serviced by the grant. The grantee focused on empowering seniors, adults, the unemployed, students, and firefighters who needed access to a computer and broadband to use e-mail, search for information online, connect to friends and families, look for employment, and complete online training programs. One-on-one training is the most frequently used method of helping patrons achieve basic digital literacy skills.

2.1 Focus Areas

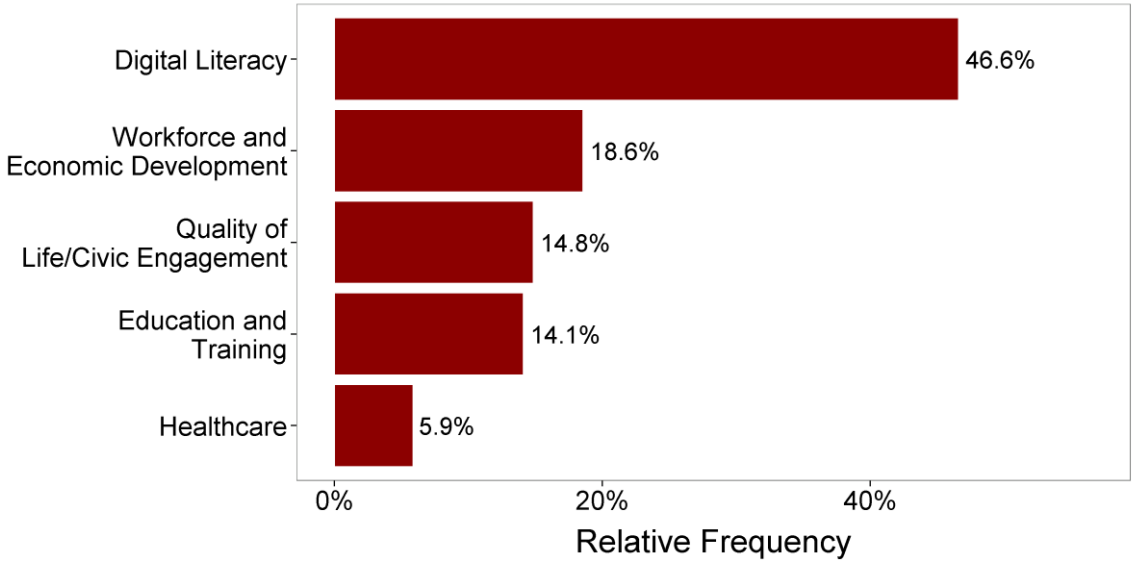
This section describes the impacts of the Future Generations Graduate School project in terms of five focus areas. ASR tabulated the training hours for Future Generations Graduate School reported in the 2012 Annual Performance Progress Report (APR) using the focus area categories described in *Interim Report 1* to analyze where impacts should be found for this project.[14] Future Generations Graduate School reported delivering 25,332 training hours as of December 2012.[15] As shown in Figure 2, 93 percent of the training hours relate to Digital Literacy. Seven percent of the training was conducted in Education and Training.

Figure 2. Grantee Training Hours Categorized by Focus Area



ASR also analyzed the statements grantees made during the interviews and categorized them based on the five focus areas, as shown in Figure 3.

Figure 3. Focus Area Statements Made by Interviewees



The results presented in Figure 3 provide another measure of the grantee's focus. Forty-six percent of interviewee responses focused on Digital Literacy, reflecting the predominant focus of grant goals and activities in this area. While the training reported in the Future Generations Graduate School APR is categorized as Digital Literacy and Education and Training, interviewees also discussed grant activities and outcomes relating to each of the other focus areas. Workforce and Economic Development statements represent slightly less than 20 percent of the grantee responses. Quality of Life/Civic Engagement reflects approximately 15 percent of interviewee

statements, and Education and Training represents about 14 percent. Healthcare represented only about 6 percent of the grantee discussions.

2.2 Digital Literacy

> *"I believe the main impact it's had is that it started to make people understand how broadband can be relevant to them, because that's an issue. Even though availability is still a problem across the state, it's improving, but the fact that people are now starting to understand why it can be relevant to them and it's not just to do office work. They can connect with family and friends." – Future Generations Graduate School Program Director*

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."[16]

Digital literacy and computer access were significant barriers confronting the grant's target population. According to the grantee's observations, the level of digital proficiency among patrons has improved over time. Many patrons first visited the PCCs as new users with limited computer skills. Users complete self-paced basic computer courses, and mentors provide one-on-one assistance. Mentors report that as patrons gain basic computer skills, they are more likely to participate in other digital curriculum or use the acquired skill set to engage in new projects or tasks. For example, one patron interested in his family history completed the computer basics course, explored different genealogy programs, and learned to use them proficiently to research his lineage. The relevance of the Internet was a predominant theme of the grant, emphasized across PCCs, with mentors assisting patrons in finding their individual points of relevance and building the skills necessary to use computers and the Internet independently.

Future Generations Graduate School staff and PCC mentors described the following outcomes and impacts related to the Digital Literacy focus area:

- Patrons with limited computer knowledge gained the skills necessary to operate a computer proficiently. Mentors reported that many users had to improve hand-to-eye-coordination to operate a mouse. These users gained a sense of comfort working with technology and progressed to more advanced objectives such as uploading photos from digital cameras.
- Many patrons became home computer and Internet users. Patrons acquired computers independently or through the grant's refurbished computer program. After gaining the skills necessary to operate a computer independently, some users stopped visiting the PCCs and used their computer at home.
- Users learned to leverage digital literacy skills to communicate with friends and family via e-mail and social media. Users saved money using Facebook and e-mail to communicate with friends and family as opposed to expensive long distance phone calls. Acquiring digital literacy skills enabled users to increase the frequency with which they communicate with friends and family. Patrons also used the computers to communicate and share photos with family members serving abroad rather than relying on handwritten letters.
- Users learned to save money by shopping and researching prices online. Patrons engaged in online activities to save money, including comparing prices before making a purchase, searching for deals and discounts, and using the Internet to obtain coupons.
- Exposure to broadband at the PCCs enhanced patrons' awareness of the Internet's capabilities and its relevance to their lives. Patrons learned to use the Internet to complete daily tasks. For

example, patrons learned to save time using the Internet to monitor the weather and the conditions of local roads rather than waiting for updates on television.

Future Generations Graduate School supported the following Digital Literacy activities:

- Self-paced online training courses, including basic computer and Internet skills and more advanced, application-specific curriculum.
- A mentor-developed genealogy training course. Interested participants learned how to use the Internet to research their family history. Twenty-nine mentors participated in the genealogy training and were able to support patrons with ad hoc inquiries.[17]
- A mentor-developed couponing course. Users learned how to use the Internet to locate and manage coupons. Twenty-nine mentors participated in this training program, enabling them to offer the course at PCCs and advise patrons on the subject matter.[18]
- Access to DigitalLiteracy.gov, a government website with free, online learning resources for patrons.
- Several PCCs offered a Youth Technology Camp during the summer months. The curriculum included digital photography, animation programming, and computer hardware. Table 1 reports the number of attendees at each lab.[19] The Banks PCC offered a class for adults called Keys to the Motherboard. Participants took apart and rebuilt computers. The Banks PCC created this course at the request of parents whose children participated in the Youth Technology Camp.

Table 1. Youth Technology Camp Attendees

Location	Attendees by Session
Banks*	10
Big Otter	5
Big Otter	9
Bradley-Prosperity	7
Coalwood Caretta	11
Flatwoods	9
Flatwoods	6
Morrisvale	3
Valley Head	4
Total	64

** Note: The Banks PCC includes five adult campers*

Finally, Future Generations Graduate School promoted broadband awareness and encouraged adoption through a statewide outreach campaign. The tools they employed include:

- An in-house communications coordinator and graphic designer created posters, pamphlets, fliers, and press releases to advertise PCC locations, hours, and services.
- As a primary component of its outreach efforts, Future Generations Graduate School implemented the “Benefits of Broadband” campaign, demonstrating the potential relevance of broadband to people’s lives. The campaign highlighted daily uses of broadband, such as connecting with family and friends, saving money, and planning a vacation. The campaign featured personal stories of how broadband affected community members’ lives. The intention of the campaign was to present examples of real-life applications of the use of broadband that would spark interest, draw people into the labs, and positively influence their decision to use broadband.

- Future Generations Graduate School implemented a video contest promoting the benefits of broadband. The contest was open to middle school, high school, and college students. Future Generations Graduate School posted winning videos on their website.
- Future Generations Graduate School implemented a contest for mentors to create posters to promote the benefits of broadband within their communities.
- All PCCs have a large, aluminum sign outside of the labs advertising the availability of free, high-speed Internet.

In addition to the activities described above, Future Generations Graduate School offered mentors the following training courses related to Digital Literacy:

- **Web Page Design**: This training included how to create and host a website, how to use the correct coding language to provide customized content for that site, and how to use existing site templates, including wordpress.org and gate.com.
- **Jacob Burns Photography/Videography**: The Jacob Burns Film Center in New York provided a two-day photography/videography training program. This training included tips on taking high-quality photos and videos and using such media to tell the community's story. Mentors learned how to edit videos to make presentations.
- **PowerUser 101**: This training covered how to tune-up Windows computers. Mentors learned to help Windows users keep computers uninfected by viruses and in good working condition. Mentors learned to install Ubuntu, become familiar with Linux fundamentals, address hardware compatibility challenges, configure the average consumer-grade system, perform basic system maintenance, and provide assistance with the refurbished laptops.
- **Couponing/Genealogy**: Mentors learned to demonstrate how to use the Internet effectively for couponing. The genealogy portion trained mentors to use websites and Internet databases for ancestry information and help patrons research their family trees.
- **Technology Camp**: Mentors learned the skills needed to host a Youth Technology Camp, instructing children in digital photography, videography, photo editing, graphic design, computer programming, and other activities.
- **Digital Photography/Desktop Publishing**: This training provided a basic guide to digital camera technology and helped beginners decide which digital camera was most appropriate for their needs. The desktop publishing training covered the basics of the desktop publishing process.

2.3 Workforce and Economic Development

> *"So many job applications are online now. Wal-Mart has a computer that you can use to fill out an online application, but you know what? If you don't know how to use that computer, you're not going to do it." – Future Generations Graduate School Program Director*

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.

Future Generations Graduate School administrative staff and PCC mentors reported the following Workforce and Economic Development outcomes and impacts:

- Online job applications are becoming the standard for many employers, whether the online application is completed at home or at a computer in the place of employment. PCC patrons gained the skills necessary to use computers to complete job applications, conduct job searches, and create résumés and cover letters. Without this skill set, it would not have been possible for job seekers to apply for many positions.
- Participating in PCC activities increased patrons' range of employment opportunities. Patrons participated in classes to gain digital skills relevant to advancing their careers or for other employment-related purposes.
- Mentors reported that local, independent businesses used the PCCs to save money on supplies, to price their goods competitively, and to market their products online.

Location-specific Workforce and Economic Development outcomes and impacts included the following:

- The Upper Tract mentor reported that some PCC patrons obtained employment. These users completed typing classes and were able to obtain office jobs.
- A patron, who six months ago had never used a computer, is now a proficient user through her efforts at the Banks PCC. She received a promotion to manager at her job at a local grocery store because of her skills acquisition and personal growth in using the PCC.
- A Circleville patron reported that the PCC significantly improved her ability to succeed in her job. Specifically, learning to use e-mail had become a great asset at work, helping to expedite the completion of tasks.
- A former mason who was physically unable to sustain a career in the field used the Flatwoods PCC to develop basic computer and typing skills to find a new job.
- A local business owner used the Flatwoods PCC to prepare his welding company to complete the online safety-training course necessary to fulfill a contract in South Carolina.
- The Flatwoods mentor assisted a patron seeking an oil drilling position by using the Internet to identify companies and contact information. The patron was able to obtain employment in his desired field.
- A patron used the Banks PCC to create graphics for his newly founded computer business. This patron advertised his computer repair service in the PCC.

Although PCC staff reported individual success stories, Future Generations Graduate School did not implement a formal survey or process to obtain job statistics uniformly across all PCCs.

To achieve the outcomes and impacts listed above, the PCCs implemented the following activities:

- Mentors received training to assist patrons in searching and applying for jobs online. Mentors directed patrons seeking employment to online resources such as WVinfodepot.org, which has a résumé builder and job database. Mentors also guided patrons to job search websites such as Monster.com and taught them to use search engines to research specific career opportunities.
- PCCs cross-referred patrons to WorkForce West Virginia (WFWV), an organization that provided resources for finding a job, collecting unemployment benefits, and information about the labor market for residents of West Virginia.[20] Future Generations Graduate School assisted patrons with unemployment forms online. Users registered online with WFWV at Future Generations Graduate School PCCs.

Location-specific activities included the following:

- The Gilbert PCC provided computer and Internet access to a local women's rehabilitation center. Graduates of the local substance abuse rehabilitation program continued to visit the PCC to look for work and other opportunities.

- The Gilbert mentor reported that patrons regularly used the PCC to search for employment. After recent layoffs, local coal miners came to the PCC to search for jobs and create résumés.
- The Flatwoods mentor reported that many patrons, including firefighters, used the PCC at some point to look for job opportunities. He indicated that because of the nature of local industry, businesses were subject to closures.
- The Durbin mentor assisted a patron in locating a website for a specific company of interest. The mentor helped the patron look through open positions and identify those that matched his qualifications.

Future Generations Graduate School offered the following courses related to employment objectives:

- **Leadership**: This course examined the type of leadership required to create and maintain high levels of performance in organizations and included an introduction to skills necessary to become an effective leader.
- **Entrepreneurship/E-commerce Training**: Mentors learned to teach entrepreneurship skills to help patrons create economic opportunity, run a small business, gain critical technology and leadership skills, and improve their current job or small business.
- **Small Business**: Topics included how to start a small business, how to deal with employee issues, marketing, a small business simulation exercise, financial recordkeeping, how to raise capital, business plans, and green entrepreneurship.
- **eBay/Job Seeking and Keeping**: The eBay portion of the training taught mentors to teach others to sell successfully on eBay. The Job Seeking/Keeping section of the training taught mentors how to teach patrons to use job-seeking online resources.

2.4 Quality of Life/Civic Engagement

> *"The computer center adds another element to an already supportive community. Our patrons come together to learn, explore, and fellowship. We use our lab as a base for planning, organizing, and completing community activities. As the community supports the fire department, the fire department gives back to the community." – Banks Lab Mentor*

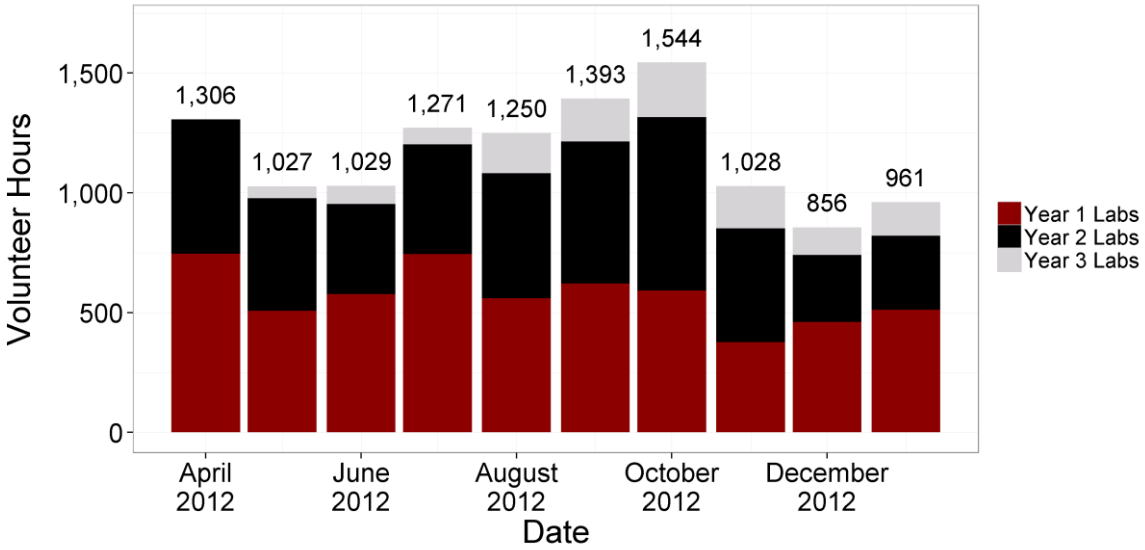
The Quality of Life/Civic Engagement category includes activities that create stronger and more integrated communities, and those that promote interaction between citizens and their governments. The presence of computer labs in volunteer fire stations facilitated the completion of required volunteer firefighter training. Leveraging community volunteers to serve as mentors in each PCC enhanced community involvement as mentors and community members supported and maintained their PCCs. Grant-wide impacts related to Quality of Life/Civic Engagement included the following:

- **Enhanced Community Volunteerism**. The Internet enhanced patrons' awareness of opportunities to volunteer and improve their communities. An enhanced sense of self-confidence gained through the acquisition of digital literacy skills built users' capacity to effect change in their communities. Future Generations Graduate School staff reported that mentors participated in many community causes. A survey conducted in April 2012 reported that 73 percent of forty-nine responding mentors experienced an increase in awareness of their community's strengths and weaknesses.[21] The survey also revealed that 86 percent of respondents indicated that their experience and training as a mentor empowered them to become more confident in working with others.[22]
- **Increased Volunteerism at Fire Departments**. The PCCs facilitated access to required firefighter training courses, reducing the time and effort necessary to participate as a volunteer.

Volunteer firefighters believed that access to online training in the PCCs helped to recruit additional volunteers. Many stations struggled with the recruitment of volunteer firefighters in recent years because younger people left the small communities after they finished high school or college. Section 2.5 describes additional benefits resulting from access to online firefighter certification programs.

While Future Generations Graduate School paid up to three mentors per PCC for six hours of lab supervision per week, mentors were required to volunteer at least four additional hours of their time each week. Figure 4 presents the total number of volunteer hours for PCCs in the final year of the project. Mentors delivered 11,723 volunteer hours from April 2012 through the end of January 2013.[23]

Figure 4. Monthly Mentor Volunteer Hours



PCC mentors and lab users mentioned the following Quality of Life/Civic Engagement outcomes:

- A local woman operated MudBuddies, a nonprofit providing All-Terrain Vehicle (ATV) rides for handicapped children, leveraging the resources available at the Gilbert PCC. The high-speed access at the PCC allowed MudBuddies to minimize operating costs and expand the program's reach by developing an online presence. The organization's founder and director used the PCC for printing, e-mail, website maintenance, and outreach on Facebook. This would not have been achievable without the PCC as the cost of broadband service for the office was too great for the organization to support. Without the PCC, MudBuddies would have had to close its office in the town hall and operate from the founder's home, a significant hindrance, as only satellite Internet service was available. E-mail and uploading large files were infeasible at home with the slow connection. In its two years of operation, MudBuddies had increased the number of rides provided per year from 63 to 100 and the number of events attended from 9 to 15. This also helped promote the local ATV trails and attracted additional tourism to the Gilbert area.
- The Durbin mentor helped several patrons file their taxes independently online. The Post Office no longer offers paper copies of all tax forms. It is necessary for users to go online to print a copy of a form.

Grant activities related to Quality of Life/Civic Engagement included the following:

- The Durbin mentors launched a Town of Durbin website. The website includes town history, local business information, town meetings, and other resources for community members and tourists. Within a year, the mentors plan to turn over ownership of the website to the town.

- A Banks patron used the PCC to apply for disability assistance online.
- The Banks PCC offered West Virginia University (WVU) fire service extension, National Incident Management System (NIMS), and Federal Emergency Management Agency (FEMA) courses. They also leveraged Future Generations Graduate School trainings in Google Earth and geographic information system (GIS) programs.
- The Upper Tract mentor participated in the GIS training program offered by Future Generations Graduate School and held a GIS class at the PCC.
- The Upper Tract mentor completed the grant-writing course and was able to assist the fire chief in applying for a grant.
- The Flatwoods mentor is a pastor and used the PCC to stay connected with his congregation on Facebook and Twitter.
- One of the Gilbert mentors was the town mayor. She worked with the City Council to establish an online presence to post meeting minutes and other community information.
- The Gilbert PCC established plans for local veterans to use the computer lab for activities and meetings.

Future Generations Graduate School provided the following training opportunities related to Quality of Life/Civic Engagement:

- **Emergency Preparedness**: This workshop concentrated on the "Six Steps" involved in developing an emergency preparedness curriculum, including setting community objectives, convening a meeting of community stakeholders, and energizing stakeholders. Sixteen lab mentors completed this training course.[24]
- **GPS/GIS Mapping Training**: The workshop trained users to create a common operational picture (COP) of features, resources/assets, infrastructure, and activities/events. An essential geospatial toolkit will integrate this COP as part of the emergency management process. The course explored Google Earth and ArcGIS Explorer as tools for mapping and analyzing the COP for collaborative planning and achieving situational awareness for all participants. Participants identified base datasets, tools, and staffing for the emergency setting developing an effective and systematic approach for local emergency responders. Fifty-six lab mentors completed this training course. [25]
- **Fire Extension Service Grant Writing**: First Responder Grants provided this grant-writing course. This course taught volunteer fire and rescue squads effective techniques to write a grant for federal funding. Sixty-three mentors completed the grant-writing course. [26]

2.5 Education and Training

> *"I was at home for my first year at college. I found the computer center helpful for completing my work and it made taking an online course easier with high-speed Internet and all the different resources on the computers. When I finished my online course in December 2011, I decided to take four more online classes. I do not have access to high-speed Internet at home, so you can imagine what a blessing it was to have the center when I couldn't get the slower Internet at home to work quite right. I feel like having access to high-speed Internet helped me do so much more in my first year of college."*
> *– Future Generations Graduate School Stories of Success*

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 recognized as valuable for career advancement. Examples of certificates or diplomas include the following: community college degrees, four-year college degrees, advanced degrees, GED, 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.

The West Virginia Library Commission had made available its full set of online curricula at WVInfoDepot.org, including prep courses and practice tests for emergency medical service (EMS) and volunteer firefighter certifications, college prep courses, GED practice tests, and civil service practice tests.

The most significant Education and Training benefits related to access to firefighter training, certification programs, and educational opportunities, including GED, college credit, and homework assignments. Interviewees at the PCCs described the following educational benefits realized by their fire departments:

- The PCCs facilitated access to state-mandated online firefighter training. Volunteer firefighter training requirements now available online include Fire Officer 1 and 2, Firefighter 1 and 2, Hazmat, Driver/Operator/Pumper, and Introduction to Technical Rescue. Regional Education Service Agencies (RESA) Region 8 is beginning to offer the introductory section to these courses in the grant-funded computer labs. These sessions establish online accounts for users to begin the training programs. Users are required to be physically present for three training events. They can complete the remaining sections at home or anywhere with a computer. Firefighters must attend meetings for a presentation and test.
- A survey conducted by Future Generations Graduate School in April 2012 found that 69 percent of fire departments with PCCs used the facility to complete required training programs.[27]
- The Flatwoods firefighters used the PCC to work toward certifications online. Certification efforts had increased in the last six to eight months as West Virginia implemented new mandates for volunteer firefighters. Without access to certification programs online, the mentor believed many volunteer firefighters would have quit the force. Volunteer firefighters often balanced their volunteer efforts with full-time jobs. Attending training certification programs on a set date, at a set time, at a remote physical location, often prohibited participation. If not for access at the PCC, Flatwoods firefighters would have had to drive an hour to an hour and a half each way to participate in the training. At the time of the site visit, the Flatwoods firefighters were participating in Fire Officer 1, Fire Officer 2, Firefighter 1, Firefighter 2, and Hazmat Awareness programs. The Flatwoods PCC was available at any time to help firefighters complete training programs.
- Firefighters from surrounding communities used the Flatwoods PCC to participate in firefighter certification programs. Entire departments frequently visited the PCC together to participate in an introductory class and complete the remainder of the course at home or another computer access point.
- The Banks PCC hosted firefighters from several nearby departments to complete online training programs. The course was 124 hours long. The PCC enabled volunteer firefighters, who often worked full-time jobs, to complete the training at their convenience. This helped to ensure that the courses' time requirements did not deter firefighters from completing and retaining their positions on the force.
- The Upper Tract PCC hosted firefighter training courses. Firefighters would have had to travel a significant distance to Martinsburg, about two hours away, to participate in the required firefighter training if the online course was not available at the PCC.
- Gilbert firefighters used the PCC to complete training programs. All firefighters who started the training programs had completed them. Firefighters from departments in nearby communities had also used the Gilbert PCC to complete training programs.

Location-specific Education and Training activities included the following:

- The grant provided local elementary and secondary students with access to computers and broadband to complete and print homework assignments and projects.

- Upper Tract patrons used the PCC to complete certifications. For example, one patron used the PCC to renew her nursing license.
- The Gilbert PCC was in discussion with the local elementary school to create a formal arrangement that would allow students to use the computer lab for class projects because the school did not have broadband.
- Some local college students used the Gilbert PCC to complete and print assignments. Some students used the PCC during off hours to complete exams in a quiet setting.
- Training, skill building, and teaching activities empowered mentors. One mentor was working toward her master's degree and attributed her pursuit to the mentorship program.
- Students from Glenville State College used the Flatwoods computer lab when their computers malfunctioned.

2.6 Healthcare

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.

Healthcare was not a focus of the Future Generations Graduate School grant. However, mentor training offered by Future Generations Graduate School facilitated the dissemination of material on how to use the Internet to obtain better healthcare for oneself and one's family. Through a partnership with the Partnership of African American Churches (PAAC), Future Generations Graduate School offered mentors training in "Living a Life with Chronic Conditions," which provided content on chronic disease and self-health management. Thirty lab mentors completed the Chronic Disease Self-Management training course.[28] As a result, they learned about online resources and techniques to aid in caring for family members suffering from a chronic disease. Lab mentors were also able to support PCC patrons seeking healthcare information online and suggest techniques to use as caregivers.

Additional healthcare-related initiatives included the following:

- A local, federally funded health clinic used the Banks PCC to conduct healthcare classes.
- Future Generations incorporated additional health-related content to their database of resources. The grantee distributed informational cards promoting online health-related resources at health fairs and related events.
- Future Generations received a grant from the Department of Health and Human Services to implement a community health worker program. Several computer lab mentors served as community health workers, using technology to disseminate health information within their communities. Community health workers developed individualized plans for their communities. The program leveraged the PCCs and the knowledge and expertise mentors gained during the grant implementation.

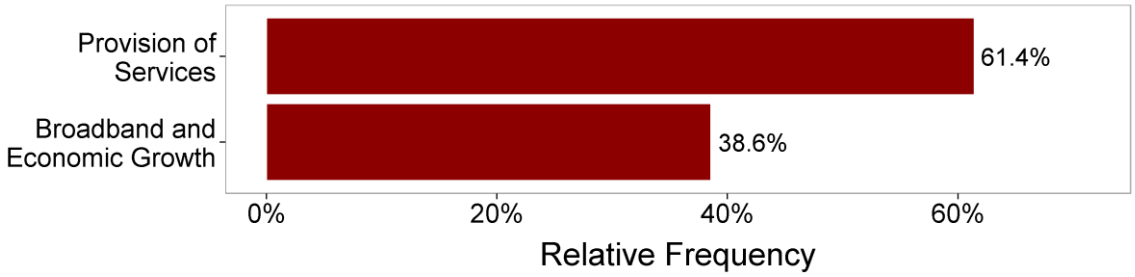
Section 3. Recovery Act Goals

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 shows the frequency with which the grant promoted the two Recovery Act goals described above. The results provide another lens to analyze how the grantee met the requirements of the BTOP grant. More than 60 percent of the conversations with interviewees focused on providing services to increase access to and the use of broadband. Nearly 40 percent of discussions focused on broadband and economic growth, specifically the grant activities supporting local economies and the grant's impact on broadband subscribership.

Figure 5. Recovery Act Statements Made by Interviewees



3.1 Provision of Equipment and Services

> *"He first learned how to create an e-mail account and took basic computer skills courses. He wanted to purchase his own laptop, but was concerned about the price. When we informed him of the refurbished computers for sale, he pulled out his checkbook and purchased one on the spot. Within days of that, he had called his local broadband Internet provider and had it installed in his home." – Future Generations Graduate School Lab Mentor*

Without the BTOP grant, the program director does not believe Future Generations Graduate School would have affected the target populations' awareness of the capabilities or relevance of broadband to the same extent. Nor could the organization have supported the dissemination of digital literacy education throughout the service area, or provided training to a comparable number

of residents without prior computer experience. Without the PCCs, many residents of target communities would not have access to broadband, as many sparsely populated areas of West Virginia lack broadband service. Future Generations Graduate School staff reported that some members of the target population were able to connect to dial-up at home, but they did not have the ability to track these numbers.

Enhancing awareness and perception of relevance was a central component of the grant effort. Future Generations Graduate School offered exposure to the benefits of the Internet firsthand by providing resources within small, rural communities where residents could access broadband in a comfortable, trusted environment. Without the combination of the awareness effort and provision of access, Future Generations Graduate School staff did not believe that Internet broadband subscribership in West Virginia would have reached its present level (discussed in Section 3.2).

The BTOP grant provided access to broadband to those who could not afford service and those without broadband access at home:

- Each PCC operated for a minimum of ten hours per week, with dates and times scheduled for the convenience of community members. Each center received ten computers connected to broadband, a printer, projector or flat screen TV, digital camera, headphones, webcam, and other supplies.
- PCC mentors indicated that, without the PCC, patrons would have had to travel a significant distance to access broadband. All mentors estimated this distance would exceed fifteen miles. While patrons may have had access to dial-up or satellite at home, the speed limits the range of activities they were able to engage in on the computer.
- Several mentors indicated that community members brought personal laptops to the computer lab or parked outside of the PCC to use the free Wi-Fi. The grantee did not track the usage statistics for this activity.
- Without the PCC, most residents in the Gilbert community would not have access to computers and broadband. The mentors identified cost as the most significant barrier. The PCC increased attention and exposure to the relevance of the broadband among the community. Without the PCC, many community members would still be unaware of the capabilities of broadband.
- Participants in a local substance abuse rehabilitation center used the Gilbert PCC as an exclusive means of staying in touch with their families.
- Broadband was available within Flatwoods, but service diminishes near the outskirts of the town. The local library had Internet access, but only three computers were available for public use.

Two examples of community benefits resulting from the grant's provision of broadband access include:

- In the aftermath of a severe storm, the Banks fire department, equipped with a generator, set up a shelter and used the PCC as a communication center. Community members were able to check on friends and family members in other areas.
- A young boy in the Durbin community used the PCC to communicate with his brother receiving cancer treatment in Morgantown, West Virginia. The boy was able to stay in contact with his mother and brother when he was unable to see them for extended periods.

The grant's refurbished computer program provided computers to those who could not afford to purchase a new computer. This project operated a computer-refurbishing center in Circleville, West Virginia. Future Generations Graduate School purchased used computers in bulk from government agencies through Mission WV and repaired, cleaned, and upgraded them with memory, wireless Internet cards, and the Linux operating system. Participating fire departments purchased these computers at cost and sold them to their communities.

Future Generations Graduate School advertised refurbished computers to local communities in newspapers and on its website. Many recipients found out about the computers by word of mouth. The Durbin lab mentor explained that the low cost of the refurbished computers provided community members with an accessible entry point to become an adopter. Twenty Durbin patrons took advantage of the offer and are now home users, visiting the PCC only to ask questions. Future Generations Graduate School estimated selling approximately 500 refurbished computers at the time of the site visit.

Future Generations Graduate School donated refurbished computers to various community causes, such as a fundraiser for a man whose leg was amputated because of diabetes and an elementary school raising money for a sixth grade trip. They also donated refurbished computers to organizations serving veterans. This served a dual purpose, as the computers helped to promote broadband and simultaneously benefited community causes, generating social capital.

3.2 Broadband and Economic Growth

Future Generations Graduate School implemented a household survey at the inception of the BTOP grant, surveying 900 households in the 30 communities that would receive PCCs in the first year of the project. This survey found that 65 percent of respondents owned computers. Of those respondents with computers, 89 percent indicated they subscribed to the Internet.[29] Fifty percent subscribed to DSL, 30 percent subscribed to cable, and 13 percent to dial-up.[30] Sixty-one respondents indicated a reason for not having a computer. Forty-one percent of those respondents cited a perceived lack of need, while 24 percent indicated that cost was the primary reason for not owning a computer.[31] While Future Generations Graduate School conducted a follow-up survey to 1,800 households in all 60 communities receiving computer labs, results are not yet available to the public.

Future Generations Graduate School compared data from both surveys to calculate the number of new broadband subscribers and reported 30,550 new subscribers as of the end of 2012.[32]

Future Generations Graduate School's quarterly voluntary surveys of PCC users through the end of 2011 revealed that more than 78 percent of respondents had a functioning computer at home.[33] Nearly 40 percent of respondents had DSL at home and 19 percent had cable. More than 28 percent reported they did not have Internet access at home. Remaining respondents indicated they had satellite, dial-up, or fiber optic.[34]

The most prominent reasons users responding to the quarterly surveys reported for not subscribing to broadband include the following:[35]

- Do not have a computer – 29 percent
- Too expensive – 23 percent
- Not available – 23 percent
- Access to free Internet outside of the home – 10 percent
- Other responses included: dial-up is enough, do not need, difficult to learn, privacy concerns, and no time – less than 6 percent

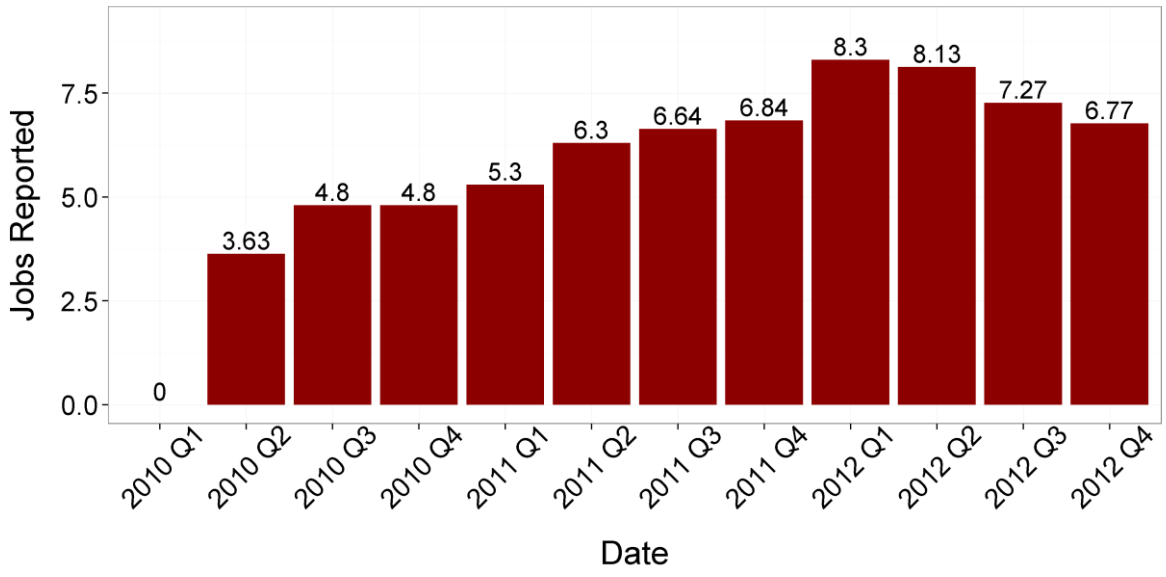
A 2012 study by TechNet, citing the NTIA Digital Nation survey, reported that broadband adoption in West Virginia increased from 33 percent in 2007 to 59 percent in 2010.[36] TechNet ranks West Virginia number thirty-five in its state broadband index. The study identified West Virginia as an "overachiever," described as a state that has inherent disadvantages to adoption, such as difficult terrain and an economy less reliant on technology, yet that has made significant progress in improving home broadband adoption in recent years.[37]

The BTOP grant supported economic growth within West Virginia economies:

- The project helped to increase broadband subscriptions in West Virginia. While Future Generations Graduate School reported that it could not claim all of the credit for this improvement, observations suggest its efforts have made an impact.
- The grant put money into local economies through mentor salaries and PCC stipends. The program paid up to three mentors per PCC $20 an hour for up to six hours per week. Mentors typically spent this money within their local economies. Computer labs received an annual $1,000 supply stipend and a $250 stipend for mentors to purchase additional supplies. Fire departments received a one-time $1,000 training stipend. These stipends also helped support local West Virginia economies. Some mentors opted to donate their pay back to the fire departments.
- Future Generations Graduate School sold refurbished computers to the fire stations for $125. Fire departments were able to sell the refurbished computers to residents at a higher price to earn a profit.
- The Circleville post office informed Future Generations staff that they helped the post office to stay in business because of the high volume of mail of the organization sent and received. Future Generations Graduate School purchased all of its postage from this location.

As required by the Recovery Act, Future Generations Graduate School reported quarterly on the number of jobs created as a direct result of the project. As shown in Figure 6, this has resulted in approximately six additional full-time-equivalent positions created throughout most of the grant's period of performance.[38] In the beginning of 2012, the number of full-time-equivalent positions increased to 8.3 but returned to 6.77 in December of that year. It is important to note that the figure displays only direct jobs created, and does not include indirect or induced job creation.

Figure 6. Direct Jobs Created by Future Generations Graduate School



Section 4. Grant Implementation

> *"There are a lot of people who have their own computers now because of this lab and are connected online. The list is this long of little grandmas we've had in here wanting to get on Facebook so they can see pictures of their grandkids." – Flatwoods Lab Mentor*

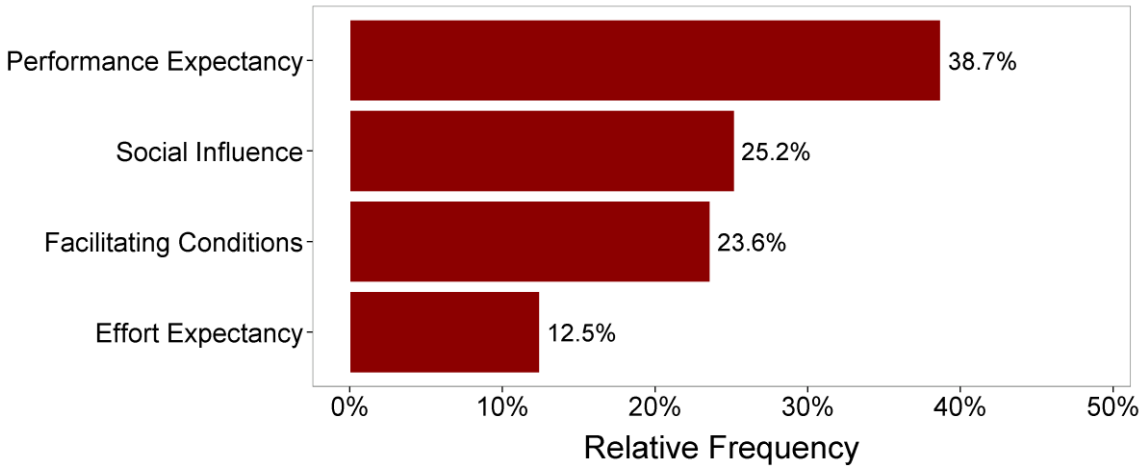
This section describes particular aspects of the implementation of the Future Generations Graduate School grant in order to understand the composition of activities and outcomes observed. The purpose of this categorization is twofold. First, defining a consistent set of categories for each of the grants in the study sample facilitates cross-case comparison and analysis. Second, presentation of the activities and outcomes for this case by category simplifies understanding of the focus of the grantee's 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).[39] The model is among the top three 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 7 presents the relative frequency of topics related to grant implementation as discussed during interviews and focus groups. These topics, placed in four categories, correspond to the four UTAUT categories listed above. Most of the implementation topics discussed relate to Performance Expectancy, although both Social Influence and Facilitating Conditions were common topics of discussion. A relatively small percentage of responses pertained to Effort Expectancy. The grantee emphasized communicating the relevancy of broadband to the community, often requiring the grantee to identify unique strategies, such as couponing, quilting, and purchasing used car parts. The creative outreach campaign resulted in a range of motivations driving patrons to the PCCs.

Figure 7. Distribution of Grant Implementation Topics by Category



4.1 Performance Expectancy

Performance Expectancy measures the degree to which a potential adopter believes that using the public computer center to gain access to broadband is beneficial. 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:

- Despite having computers at home or basic digital literacy skills, some patrons visited the PCC to refine their digital skill set through guidance from lab mentors and training programs.
- Many patrons visited the PCC to learn to use Facebook and e-mail. Facebook was extremely popular across PCCs. Patrons were interested in connecting with family and friends.
- As patrons' understanding of the Internet's capabilities expanded, their interests and goals for using the computer evolved. Patrons learned to use the Internet for their hobbies and interests, engaging in more advanced digital objectives. For example, some patrons learned how to transfer pictures from digital cameras and edit photos on the computer.
- Some patrons visited the PCCs with specific objectives, such as looking for a job or booking a vacation. Mentors assisted patrons in achieving these objectives, providing personalized advice, and directing users to appropriate resources. Knowledge gained in the PCCs influenced some patrons to purchase a computer and become active home users.
- Several Gilbert community members used the PCC to print, as Gilbert is a low-income area and many residents cannot afford printers or ink. Graduates of the local substance abuse prevention program visited the PCC to look for work and other opportunities. Tourists often visited the PCC to access e-mail and contact home.
- The genealogy and social networking sites were popular Internet choices for the Flatwoods patrons. Users visited the PCC with specific objectives, including gaining job-related skills, booking vacations, and researching price information online.

4.2 Social Influence

> *"We have some very dedicated mentors out there. They really, really believe in what they are doing for their community and they are not just in it for the pay. They recognize the benefit of the computer lab that they got for their fire department. They're there to serve the community and you can tell." – Future Generations Graduate School Program Officer*

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 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. Examples include the following:

- Because PCCs were located in small, rural communities, word of mouth played a significant role in promoting lab usage. Quarterly survey respondents indicated that 33 percent of PCC users learned about the PCC from a friend or family member and 34 percent learned about it from an organization with which they had an existing relationship.[40]
- Mentors were encouraged to promote the labs within their own communities. Many labs hosted community events, such as open houses or socials, to bring community members into the lab and to demonstrate the opportunities available. Future Generations Graduate School believed the mentors could determine the most effective modes of advertisement in their own communities.
- The West Virginia volunteer fire departments remain central figures in rural communities. Community members know and trust mentors and the PCC locations. Nearly 50 percent of quarterly user survey respondents indicated that they themselves or a family member volunteers with the fire department, rescue squad, or ladies' auxiliary.[41]
- Frontier Communications, an Internet service provider (ISP), promoted Future Generations Graduate School's efforts within its employee base, on its website, and through other advertising channels. The Frontier and Future Generations Graduate School logos appeared together in newspaper advertisements. Most state residents were familiar with Frontier, which helped to improve Future Generations Graduate School's credibility among state residents.

Location-specific examples illustrating the role of Social Influence in perpetuating broadband use among the target population included:

- Parents of youth participants came into the Flatwoods PCC to pick up or drop off their children at Youth Technology Camp and became aware of the resources available. Getting residents in the door to see the PCC's resources firsthand helped to increase participation.
- The Flatwoods PCC installed an Xbox to help attract kids with an interest in online gaming. The mentors' hoped that exposure to the fire department's environment would influence the children's decision to volunteer later in life.
- The Banks mentors felt the PCC had been successful because groups within the community worked together toward a common goal. Community members often met at the PCC in the morning and brought food or drink for a social gathering. Different groups used the lab, including business associations, business owners, and the local garden club. All community groups had access to the building.
- The Gilbert mentors promoted the PCC at the Hatfield-McCoy National TrailFest, an ATV event hosted annually in Gilbert. Many visitors stopped by the visitor center located in the Town Hall, and then came into the PCC to access the Internet and e-mail.
- The Circleville PCC hosted a Christmas open house offering free food, games, pictures with Santa Claus, and other holiday activities. They advertised door prizes, including laptops and a

camera. During the party, staff members handed out information and took attendees on a tour of the PCC. Patrons observed firsthand the resources that were available at no cost.

4.3 Facilitating Conditions

> *"We have resources for them in their local community and they can come and gain access in a comfortable environment, an environment that they trust." – Future Generations Graduate School Program Director*

This category captures the degree to which the technical infrastructure available to the user supports potential broadband adoption, and the degree to which there are organizational supports to 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 such things as the broadband connection, computers, workspaces, and clean and safe computer labs.

4.3.1 Access

- Mentors in some locations opened the PCC beyond the required ten hours per week based on their willingness to volunteer and the need and interest they observed in the community. Many PCCs established hours of operation that accommodated various patron schedules, including a combination of morning and evening hours.
- Some computer centers, including the Banks PCC, were available to firefighters at all times.
- Future Generations Graduate School opened sixty PCCs during the three years of project implementation. Table 2 lists the locations and approximate dates the PCCs opened to the public.[42]

Table 2. Future Generations Graduate School PCC Opening Dates

Year 1		Year 2	
Bartow-Frank-Durbin	Sep-10	Banks District	Aug-11
Bradley-Prosperity	Sep-10	Coalwood Caretta	Aug-11
Cass	Sep-10	Matoaka	Aug-11
Gilmer	Sep-10	Milton	Aug-11
Lewis Co	Sep-10	Ona	Aug-11
Logan	Sep-10	East Lynn	Sep-11
Maysville	Sep-10	Erbacon	Sep-11
Moorefield	Sep-10	Fairlea	Sep-11
Circleville	Sep-10	Fort Ashby	Sep-11
Cora	Sep-10	Hillsboro	Sep-11
Flatwoods	Sep-10	Teays Valley	Sep-11
Ghent	Oct-10	Belington	Oct-11
Mabscott	Oct-10	Big Otter	Oct-11
Madison	Oct-10	Clay	Oct-11
Meadow Bridge	Oct-10	Lizemore	Oct-11
South Fork	Oct-10	Princeton EMS	Oct-11
Gilbert	Oct-10	Richwood	Oct-11
Beverly	Nov-10	Ripley	Oct-11
Buffalo Creek	Nov-10	Thomas	Oct-11
Grantsville	Nov-10	Valley Head	Oct-11
Kimball	Nov-10	**Year 3**	
Lincoln EMS	Nov-10	Romney	May-12
Matewan	Nov-10	Cheat Lake	Aug-12
Mount Hope	Nov-10	Cool Springs	Aug-12
Wharton-Barrett	Nov-10	Farmington	Aug-12
Upper Tract	Dec-10	Spelter	Aug-12
Mathias-Baker	Jan-11	Follansbee	Sep-12
Morrisvale	Jan-11	Greenbrier Valley	Sep-12
Summers Co.	Jan-11	Ohio Valley	Sep-12
Upper Laurel	Jan-11	Petersburg	Sep-12
		Wellsburg	Sep-12

4.3.2 Equipment

- Future Generations Graduate School provided each lab with equipment. This included ten desktop computers, one laptop, one printer/scanner/copier, and other office equipment and electronics.
- Several mentors mentioned the importance of the printer as a resource to the community. Though some labs charge per copy beyond a certain number of pages, the price per copy is generally cheaper than other community options.
- In addition to the physical equipment, grant funding also provided a one-time $1,000 stipend to the fire station to participate in the online training of their choice, a $1,000 annual lab stipend, and a $250 mentor stipend to cover lab supplies.
- At the end of the grant period, Future Generations Graduate School gave PCCs an option to have Windows or a dual system with Windows and Linux installed. The majority of PCCs

remaining open after the grant period chose a dual system, while most of the labs closing after the grant selected an exclusively Windows operating system.

4.3.3 Training

- The open-entry, open-exit structure of training programs encouraged course participation. Many courses were self-paced, which enabled users to begin a class at any time and pursue lessons at their own pace with support from computer mentors.
- The Flatwoods mentor directed new users to the British Broadcasting Corporation (BBC) WebWise course to familiarize them with computers and the web and to demonstrate the importance of developing a foundation for using computers.
- Future Generations Graduate School trained all lab mentors to provide instruction in online and partner-provided curricula to operate, administer, and promote their PCC effectively. Mentors used this training to provide classes at their PCCs and assist patrons interested in particular topics. Computer mentors also networked and shared best practices with each other during monthly webinars. Table 3 provides the number of mentors attending training in each available course.[43]

Table 3. Mentor Training Attendees

Training	Sessions	Number of Attendees
Mentor Trainings	17	305
Emergency Preparedness	1	16
GPS/GIS Mapping	3	56
Chronic Disease Self-Management	3	30
Ecommerce	1	13
Power Users	1	13
Small Business Training	1	28
Couponing/Genealogy	1	29
Tech Camp Training	1	14
Sustainability Conference	1	56
eBay/Job Seeking & Keeping	1	28
Digital Photography & Desktop Publishing	1	28
Grant Writing	2	63
Community Needs Assessment	1	20
Veterans Group	1	19
Web Design	1	41
Jacob Burns (Photography & Videography)	1	26
Leadership	1	31
Total	**39**	**816**

4.3.4 Support

- Mentors were trusted community members who helped their neighbors overcome uneasiness associated with learning new computer skills. Each lab mentor was encouraged and empowered through the training provided at the project level to take ownership of his or her lab's operations and serve the needs of the surrounding communities.

- Mentors indicated they were available during off-duty hours to support patrons' home computer use. Many answered questions while conducting errands around town or took patrons' phone calls at home. Some occasionally made house calls to assist patrons.
- Mentors emphasized the importance of providing ad hoc and one-on-one support. One-on-one support was often the primary means of teaching users about specific areas of interest (such as e-mail and Facebook). A "classroom-style" setting is not ideal for all patrons. Patrons were able to visit the PCC and learn the material they were interested in, rather than following a preset course curriculum.
- Mentors were an integral aspect of the patrons' success in the PCCs. Mentors walked new patrons through computer basics step-by-step, ensuring that patrons were comfortable and mitigating any challenges that might arise. Mentors accommodated individual needs, providing relevant guidance for users of all skill levels.

4.3.5 Other

- Mentors from several PCCs stressed the importance of having refreshments available for users during open lab hours. Mentors tried to make the PCC as comfortable and inviting for users as possible, helping to ensure that patrons were able to use the lab for extended periods.
- The Upper Tract PCC installed a heating and cooling system. During the first visit, staff mentioned that the lack of air conditioning deterred users during the summer months. The mentor explained that, before installing this system, the Upper Tract PCC faced issues with the functionality of the equipment because of the temperature in the room.

4.4 Effort Expectancy

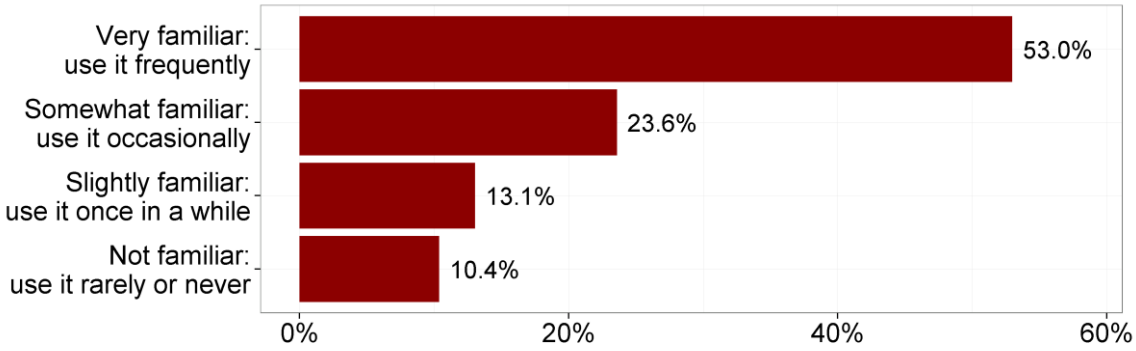
> *"Some patrons say, 'I can't learn this,' or 'I'm stupid about this stuff,' and it is really nice for them to have someone to encourage them and let them know they are worthwhile."*
> *– Future Generations Graduate School Program Director*
>
> *"It is nice to let people know that there is someone out there willing to do something for them or help them with no strings attached." – Future Generations Graduate School Program Coordinator*

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. Examples include the following:

- Many first-time patrons were nervous about using a computer. They were afraid of breaking the computer and making mistakes. Mentors emphasized to students that they were not going to break the computer. Mentors provided individualized advice and offered one-on-one support to each patron.
- As users gained digital competence through their efforts in the PCC, their confidence in their ability to achieve digital objectives increased. Learning basic skills encouraged users to continue to develop their digital literacy skill set. For example, after learning basic computer operations users progressed to e-mail, Facebook, and web research.
- Future Generations Graduate School staff explained that the culture in many parts of West Virginia encourages women to stay at home as homemakers. The Internet often intimidates women in such circumstances. In many cases, husbands are intimidated by their wives' learning to use a computer, fearing that this could lead to their abandoning the homemaker role. This cultural barrier was one that Future Generations Graduate School worked to address through its Benefits of Broadband advertising campaign.

- Future Generations Graduate School asked quarterly survey respondents how comfortable they were using computers. Users at the thirty computer labs opened in the first year of the project received prompts to respond to the voluntary survey upon login. Future Generations implemented six iterations of the survey, through the end of 2011. Users could respond to the survey up to six times. Figure 8 provides a summary of responses.[44]

Figure 8. Self-Reported Level of Comfort Using Computers



Section 5. Techniques, Tools, and Strategies

This section describes successful techniques, tools, and strategies identified by the grantee. Future Generations Graduate School noted many successful techniques, tools, and strategies that it developed over the course of the grant. The grantee also identified several challenges throughout the grant award period.

5.1 Techniques, Tools, and Strategies

- Mentors demonstrated the Internet's relevance through activities that piqued patrons' interest, including genealogy and meal planning. For example, the Banks mentors assisted patrons in using computers to engage in activities relevant to their individual interests and hobbies such as finding quilting patterns, creating databases for class reunions, and designing flower gardens.
- Future Generations Graduate School did not originally intend to offer training for mentors. However, they found this to be the best way to empower and incentivize mentors to take a more proactive approach in helping their patrons and communities.
- Future Generations Graduate School originally taught digital literacy courses using a Microsoft program, which was not particularly popular among participants. They switched to the BBC WebWise course and found it to be an effective tool for teaching users basic digital literacy skills. Users found the course content and speed more engaging and less intimidating.
- Future Generations Graduate School coordinated mentor meetings once a month. They considered various schedules and offered one meeting at 9:00 AM and one at 6:00 PM. Mentors were particularly responsive to these meetings. The meetings discussed challenges and issues that occurred within the PCCs.
- Future Generations Graduate School staff found that some mentors did not have the labs open during the hours they informed the public they would be open. Future Generations Graduate School put these labs on "improvement plans" and conducted unscheduled, surprise visits. If the labs were unable to resolve the issue, Future Generations Graduate School would meet with the particular fire department and recommend the facility hire a new mentor.
- At the time of the site visit, Future Generations Graduate School was creating a binder that covers "How to Open a Computer Lab," which would be available for interested organizations. This would encapsulate what they had learned through grant implementation. The binder would be available to organizations interested in establishing community computer centers.
- The BTOP webinars offered for grantees were helpful to Future Generations Graduate School. The annual meetings and other opportunities to collaborate with other grantees were extremely useful.
- Mentor training discussions included strategies for increasing the number of patrons using the centers. Suggested activities included offering free food; door prizes; using flat screen TVs or projectors for a football game party, Super Bowl, or community movie night; a registration point for some sort of local group; hosting 4H meetings; or inviting scouts in to earn a technology badge. Incentives offered earlier in the grant period to increase participation included a $50 gas card, a digital camera, an iPod, and a refurbished laptop.
- The three Gilbert mentors covered each other's shifts to ensure the lab was open whenever possible. There was flexibility in the PCC hours of operation to allow community residents to use it.
- The Gilbert PCC is located within the town hall rather than the fire department. The multipurpose facility also housed other community organizations, which increased foot traffic in the PCC.

- The Banks fire department supported the PCC since its inception, which helped to ensure the PCC's success. The mentors emphasized that the fire department and the computer lab provided customer service.
- If the Banks mentors could not be present in the PCC, one of the firefighters volunteered to supervise the lab during open hours.
- The Durbin lab recruited a mentor born and raised in the community, who was also a local minister who worked in the schools. His involvement with the PCC helped to increase community participation.
- The Durbin lab had four mentors available to supervise patrons. Between the four mentors, they were able to ensure the lab was always open during its scheduled hours of operation and had flexibility to address scheduling conflicts.

5.2 Challenges

- Some Circleville patrons expressed interest in college-level courses and other courses that would improve their employability. Although a local community college, Eastern West Virginia Community and Technical College, delivered a presentation at the PCC, the upfront cost deterred patrons interested in obtaining college credit.
- Future Generations Graduate School cut back the operating hours of some of the labs to five hours per week because they did not meet performance goals. However, Future Generations did not require any of the ten computer labs opened in the third year of the project to operate on reduced hours. These labs were open for a shorter period relative to those open in the first and second years of the project, thus provided the opportunity to continue to operate at full capacity.
- Future Generations Graduate School intended to procure subscribership data from local ISPs for each community that received a computer lab for the period from the project's inception through the end of the project. Local ISPs declined to provide subscribership data to Future Generations Graduate School.
- In some target communities, Internet access was unavailable to many residents. This reduced interest in purchasing refurbished computers.
- Future Generations Graduate School did not deliver the Chronic Disease Self-Management course as frequently as they originally intended. The course delivery format was too rigorous to generate the participation they anticipated. Mentors must offer the course to their patrons with a PAAC representative present. There were predefined start and end dates to the course. Students could not miss a class and still complete the training program. This limited flexibility was a deterrent to most. Future Generations Graduate School ultimately decided not to offer the course during the final year of the project.
- Future Generations Graduate School promoted the Social Security Administration (SSA) online benefits program. The SSA recently shifted its programs online; it is no longer sending checks in the mail, but rather using direct deposit. At the time of the site visit, residents had not yet shown much interest in learning about this, as the elderly in general are nervous about identify theft.
- The Flatwoods mentor believed the PCC could have been more effective if the center had implemented more consistent hours of operation. This would help to limit confusion among patrons regarding the hours of operation.
- The Durbin lab struggled with the speed and consistency of Internet service. This was particularly challenging when working with beginners in the computer lab. Interruptions in service decreased over the past six to eight months.
- The Durbin mentors suggested additional marketing to increase participation at the PCC. Outreach to the community included Facebook, newspaper ads, and radio commercials. However, participation did not reach the levels the mentors had hoped.

Section 6. Conclusions

The Future Generations Graduate School grant approached issues of broadband access and adoption by promoting its relevance and providing digital literacy training. The grant extended the provision of broadband services to residents who may not have had access to a computer before the grant. Many of the underserved communities targeted by the grant were located in rural areas, with some communities isolated by mountains. The rugged terrain and sparse population of these communities have not provided a strong incentive for ISPs to deploy broadband. Pockets of underserved and unserved communities did not have access to computers and broadband. The grant helped to fill this need by providing free computer and broadband access to almost half of the population in West Virginia.

The program strategically placed sixty computer labs in fire stations, organizations that are a central, uniting entity in most of the rural communities serviced by the grant. A volunteer fire department is located in nearly every community. The organizations were one of the most widely available public facilities in the state and served as de facto community centers. The grant's service model focused on empowering seniors, adults, the unemployed, students, firefighters, and other individuals who needed access to a computer and broadband to use e-mail, search for information online, connect to friends and families, look for employment, and complete online classes and training programs. One-on-one training was the most frequently used method for teaching patrons basic digital literacy skills. Although some patrons were more advanced and had a higher level of computer skills and knowledge, most users had little or no experience using a computer.

Future Generations Graduate School trained community mentors in a range of digital applications. Mentors used this training to support PCC patrons in developing a digital skill set and using the Internet to accomplish personal objectives. Services provided by the grant enabled patrons to achieve the following benefits:

- Patrons with limited computer knowledge gained the skills necessary to operate a computer proficiently.
- Patrons gained the skills necessary to use computers to complete job online applications, conduct job searches, and create résumés and cover letters.
- Many patrons became active home computer and Internet users.
- Users learned to leverage digital literacy skills to communicate with friends and family via e-mail and social media. Users saved money using Facebook and e-mail to communicate with friends and family as opposed to making expensive long-distance phone calls.
- Users learned to engage in activities to save money, including shopping and researching prices online.
- Local businesses learned to save money by purchasing supplies, pricing their goods competitively, and marketing their products online.
- Mentors assisted patrons in obtaining healthcare information online and suggested valuable techniques for caregivers.
- Firefighters used the PCC to complete state-mandated firefighter training courses online, reducing the time and effort necessary to participate as a volunteer firefighter.

The grant-funded equipment in the computer labs will remain in the fire stations in many rural communities. Before the BTOP grant, the primary location residents could access a computer was the local library. Most often, especially in smaller communities, the libraries had only one or two computers and did not always have high-speed Internet. Time restrictions imposed on the computers made it challenging for patrons to complete tasks such as searching for information

online, using Facebook, applying for government benefits online, applying for a job online, or conducting genealogy research.

The Future Generations Graduate School met its goals through activities that provided computer access and training opportunities to the target population. Digital Literacy was the predominant focus of the grant, affecting many users in rural West Virginia who have never had access to a computer, broadband, or the skill set necessary to use such tools.

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 of case study 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.

Future Generations Graduate School conducted a sustainability survey in April 2012. Forty-nine of the fifty PCCs open at the time responded to the survey. Thirty-two of the forty-nine PCCs indicated they would remain open after the grant period.[45] Grant-funded PCCs received full ownership of the equipment. After the grant period, the financial burden on the fire departments includes only computer maintenance and broadband service, which was a prerequisite for receiving a PCC. Not all PCCs will remain open after the grant period. Some will continue to operate on a voluntary basis, while others will close and distribute the remaining resources to other fire departments and community organizations. The PCCs visited during the site visit identified the following next steps:

- The Flatwoods fire department intends to sustain the PCC beyond the grant period. The fire department plans to open the lab five or six days per week and is in the process of constructing a new space for the computers. The Flatwoods Youth Technology Camp was particularly successful. The PCC will continue to offer this program after the grant period. The Flatwoods PCC used the stipends provided to support printing and supplies. As a fire department, it is looking for ways to fund this service in the future, possibly through community fundraisers.
- The Gilbert fire department will transfer some of the PCC's computers to the fire department after the grant period. The Gilbert mentors will keep the lab open after the grant period.
- The Banks PCC will stay open after the grant. The Banks fire department will use the six remaining refurbished computers in their fire trucks to assist with logistics when responding to fires and emergencies. Integrating the laptops into the fire trucks will increase the department's efficiency, allowing them to retrieve information on their way to emergencies. For example, there is a disc with information about extricating passengers from auto crashes. The first responders can input the car model and retrieve all of the necessary information. They can also locate fire hydrants ahead of time.
- The mentor in Circleville plans to secure a staff member to continue to offer training after the grant period.

After the grant, a veterans' computer and help center in Logan, West Virginia will receive some refurbished computers and desks from labs that will close.

Future Generations Graduate School is implementing a community health worker program, funded by the Department of Health and Human Services. Some mentors will leverage their experience in the PCCs and transition into the program, which intends to create an online platform for community capacity building, highlighting successful initiatives, and providing guidance and resources for

community projects. In the future, they hope to establish a grant program that will allow communities with similar goals to connect and collaborate on projects.

Future Generations Graduate School and Frontier Communications applied for a grant from the West Virginia Broadband Deployment Council for a demand promotion project to offer low-income families and low-income veterans discounted broadband service and a free refurbished computer. The stipulations included mandatory digital literacy and financial literacy training and an introduction to online social services and e-government. Whether or not Future Generations Graduate School receives money from the council, it will still collaborate with Frontier. Sustainable adoption efforts will continue after the grant through this partnership.

In September 2014, ASR will deliver a *Final Report* that quantitatively and qualitatively measures the economic and social impacts 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, “Future Generations Graduate School Equipping West Virginia’s Fire and Rescue Squads with Technology and Training to Serve Communities Fact Sheet”, 2010, http://www2.ntia.doc.gov/files/grantees/WV_FutureGenerations_FINAL.pdf.

[2] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions”, 2013.

[3] National Telecommunications and Information Administration, “Future Generations Graduate School Equipping West Virginia’s Fire and Rescue Squads with Technology and Training to Serve Communities Fact Sheet.”

[4] National Telecommunications and Information Administration, “Post-Award Monitoring (PAM) Database 2013-03-11” (Washington, D.C.: Distributed by National Telecommunications and Information Administration, 2013).

[5] National Telecommunications and Information Administration, “Future Generations Graduate School Equipping West Virginia’s Fire and Rescue Squads with Technology and Training to Serve Communities Fact Sheet.”

[6] National Telecommunications and Information Administration, “Post-Award Monitoring (PAM) Database 2013-03-11.”

[7] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[8] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[9] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[10] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[11] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[12] National Telecommunications and Information Administration, “Statement of Work for Broadband Technology Opportunities Program (BTOP) Evaluation Study”, 2010.

[13] National Telecommunications and Information Administration, “Post-Award Monitoring (PAM) Database 2013-03-11.”

[14] 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, 2012), http://www.ntia.doc.gov/report/2012/progress-towards-btop-goals-interim-report-pcc-and-sba-case-studies.

[15] National Telecommunications and Information Administration, “Post-Award Monitoring (PAM) Database 2013-03-11.”

[16] Federal Communications Commission, *Connecting America: The National Broadband Plan*, 2010, http://www.broadband.gov/plan/.

[17] Future Generations and LeeAnn Shreve, “Mentor Training Details”, 2013.

[18] Future Generations and LeeAnn Shreve, “Mentor Training Details.”

[19] Future Generations and LeeAnn Shreve, “Tech Camp Information”, 2013.

[20] ASR also conducted site visits with WorkForce West Virginia and submitted a case study report to NTIA describing the impacts of the grantee.

[21] Future Generations Rural America Program, “Sustainability Survey Results”, 2012.

[22] Future Generations Rural America Program, “Sustainability Survey Results.”

[23] Future Generations and LeeAnn Shreve, “Future Generations Volunteer Hours by Month”, 2013.

[24] Future Generations and LeeAnn Shreve, “Mentor Training Details.”

[25] Future Generations and LeeAnn Shreve, “Mentor Training Details.”

[26] Future Generations and LeeAnn Shreve, “Mentor Training Details.”

[27] Future Generations Rural America Program, “Sustainability Survey Results.”

[28] Future Generations and LeeAnn Shreve, “Mentor Training Details.”

[29] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[30] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[31] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[32] National Telecommunications and Information Administration, “Post-Award Monitoring (PAM) Database 2013-03-11.”

[33] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[34] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[35] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[36] National Telecommunications and Information Administration, *Digital Nation: Expanding Internet Usage*, 2011, http://www.ntia.doc.gov/report/2011/digital-nation-expanding-internet-usage-ntia-research-preview.

[37] John B Horrigan and Ellen Satterwhite, “TechNet’s 2012 State Broadband Index”, no. December (2012), http://www.technet.org/wp-content/uploads/2012/12/TechNet_StateBroadband3a.pdf.

[38] The Recovery Accountability and Transparency Board, “How Jobs are Calculated,” *Recovery.gov*, 2010, http://www.recovery.gov/News/featured/Pages/Calculator.aspx.

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

[40] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[41] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[42] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[43] Future Generations and LeeAnn Shreve, “Mentor Training Details.”

[44] Future Generations and LeeAnn Shreve, “BTOP Site Visit Follow-Up Questions.”

[45] Future Generations Rural America Program, “Sustainability Survey Results.”

Glossary

Acronym	Definition
APR	Annual Performance Progress Report
ARC	Appalachian Regional Commission
ASR	ASR Analytics, LLC
ATV	All-Terrain Vehicle
BBC	British Broadcasting Corporation
BTOP	Broadband Technology and Opportunities Program
CCI	Comprehensive Community Infrastructure
COP	Common Operational Picture
EMS	Emergency Medical Services
EWVCTC	Eastern West Virginia Community Technical College
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
GED	General Equivalent Diploma
GIS	Geographic Information System
GPS	Global Positioning System
ISP	Internet Service Provider
NIMS	National Incident Management System
NRCC	New River Community College
NTIA	National Telecommunications and Information Administration
PAAC	Partnership of African American Churches
PCC	Public Computer Center
PPR	Quarterly Performance Progress Report
RESA	Regional Education Service Agencies
SBA	Sustainable Broadband Adoption
SSA	Social Security Administration
UTAUT	Universal Theory of Acceptance and Use of Technology
WFWV	WorkForce West Virginia
WVU	West Virginia University

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, 2012. http://www.ntia.doc.gov/report/2012/progress-towards-btop-goals-interim-report-pcc-and-sba-case-studies.

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

Future Generations and LeeAnn Shreve. “BTOP Site Visit Follow-Up Questions”, 2013.

———. “Future Generations Volunteer Hours by Month”, 2013.

———. “Mentor Training Details”, 2013.

———. “Tech Camp Information”, 2013.

Future Generations Rural America Program. “Sustainability Survey Results”, 2012.

Horrigan, John B, and Ellen Satterwhite. “TechNet’s 2012 State Broadband Index”, no. December (2012). http://www.technet.org/wp-content/uploads/2012/12/TechNet_StateBroadband3a.pdf.

National Telecommunications and Information Administration. *Digital Nation: Expanding Internet Usage*, 2011. http://www.ntia.doc.gov/report/2011/digital-nation-expanding-internet-usage-ntia-research-preview.

———. “Future Generations Graduate School Equipping West Virginia’s Fire and Rescue Squads with Technology and Training to Serve Communities Fact Sheet”, 2010. http://www2.ntia.doc.gov/files/grantees/WV_FutureGenerations_FINAL.pdf.

———. “Post-Award Monitoring (PAM) Database 2013-03-11”. Washington, D.C.: Distributed by National Telecommunications and Information Administration, 2013.

———. “Statement of Work for Broadband Technology Opportunities Program (BTOP) Evaluation Study”, 2010.

The Recovery Accountability and Transparency Board. “How Jobs are Calculated.” *Recovery.gov*, 2010. http://www.recovery.gov/News/featured/Pages/Calculator.aspx.

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.