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Report to Congressional Committees

September 2012

RECOVERY ACT

Broadband Programs Are Ongoing, and Agencies' Efforts Would Benefit from Improved Data Quality

GAO-12-937

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GAO Highlights

Accountability * Integrity * Reliability

Highlights of GAO-12-937, a report to congressional committees

Why GAO Did This Study

Access to affordable broadband service is seen as vital to economic growth and improved quality of life, yet residents in many areas of the country lack access to or do not use broadband. To extend broadband access and adoption, the American Recovery and Reinvestment Act of 2009 (Recovery Act) provided over $7 billion to NTIA and RUS for grants or loans to support broadband projects. NTIA and RUS made all awards by September 30, 2010.

This report responds to mandates under the Recovery Act for GAO to examine the use of Recovery Act funds and report on the quarterly estimates of jobs funded. This report addresses (1) the progress of broadband projects, (2) their effect on expanding access to and adoption of broadband, and (3) any challenges awardees face in completing projects and agency actions to address these challenges. GAO analyzed program documentation and data and interviewed agency officials and BTOP and BIP awardees.

What GAO Recommends

To ensure RUS is collecting reliable information regarding the effect of its investments in broadband, GAO recommends that RUS take steps to improve the quality of its data on the number of fiber miles and wireless access points created by BIP projects. RUS disagreed with GAO's characterization that it does not collect adequate data, and stated it has already taken steps to improve data quality. GAO believes that more reliable data will permit RUS to better assess the progress of the BIP program.

View GAO-12-937. For more information, contact Mark L. Goldstein at (202) 512-2834 or goldsteinm@gao.gov.

What GAO Found

The progress of the broadband projects is difficult to measure because of data limitations. As projects progress, the National Telecommunications and Information Administration (NTIA) and the Rural Utilities Service (RUS) disburse awarded funds to projects on, for example, a reimbursement basis. As of July 2012, NTIA has disbursed approximately $1.9 billion of the $3.8 billion it awarded for projects under the Broadband Technology Opportunities Program (BTOP), and as of June 2012, RUS has disbursed approximately $1 billion of the $3.3 billion it awarded for projects under the Broadband Initiatives Program (BIP). These disbursements are one measure of progress, and the disbursements indicate that the projects in aggregate are less than half complete. However, disbursements sometimes lag behind actual progress for a number of reasons, such as contracts that provide for payment after work is completed. In addition, the agencies have been inconsistent in collecting non-financial data on project progress. While NTIA has collected data on BTOP projects, RUS did not collect data until recently. According to NTIA data, 76 percent of planned network miles are complete. According to RUS, the data it has recently collected are not reliable measures of fiber miles and wireless access points deployed by BIP projects. Without reliable information on the progress of BIP projects in expanding infrastructure, RUS may struggle to demonstrate the progress and effectiveness of the BIP program.

Data limitations make it difficult to fully measure the effect of BTOP and BIP on expanding access to and adoption of broadband. NTIA's non-financial data indicate that BTOP awardees have established over 57,000 new or upgraded network miles, with connections to over 8,000 community anchor institutions, such as schools, libraries, and hospitals, and nearly 34,000 new computer workstations for use in public computer centers, such as libraries. RUS initially did not collect comparable non-financial data for BIP projects, and the data it has are not reliable; therefore, it is not possible to fully assess the effect of BIP on expanding access to broadband. With respect to broadband adoption, however, both NTIA and RUS have faced difficulties collecting reliable data from awardees on subscribership for BTOP and BIP projects. Both agencies have taken steps to address this issue, with NTIA providing guidance to awardees and RUS developing a tool for staff reviews of subscribership data reported by awardees.

Both NTIA and RUS helped awardees address multiple challenges in completing their broadband projects. Specifically, awardees identified challenges complying with regulations and obtaining permits, as well as handling construction-related issues such as broadband fiber shortages. BTOP's non-infrastructure projects—which provide computers to libraries or encourage broadband adoption—faced a different set of challenges, including staffing, contracting, and procurement. NTIA and RUS have taken a number of actions—including providing regular contact and expertise, webinars, and guidance—to help awardees address these challenges. In addition, RUS hired additional staff to address delays in its review and approval of contracts, a challenge that delayed some BIP projects.

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Abbreviations

BIP	Broadband Initiatives Program
BTOP	Broadband Technology Opportunities Program
CCI	Comprehensive Community Infrastructure
FCC	Federal Communications Commission
FPO	Federal Program Officer
GFR	General Field Representative
FTE	full-time equivalent
NTIA	National Telecommunications and Information Administration
OMB	Office of Management and Budget
PCC	public computer center
Recovery Act	American Recovery and Reinvestment Act of 2009
RUS	Rural Utilities Service
SBA	sustainable broadband adoption

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GAO
Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

September 14, 2012

The Honorable John D. Rockefeller IV
Chairman
The Honorable Kay Bailey Hutchison
Ranking Member
Committee on Commerce, Science, and Transportation
United States Senate

The Honorable Fred Upton
Chairman
The Honorable Henry A. Waxman
Ranking Member
Committee on Energy and Commerce
House of Representatives

Access to affordable broadband telecommunications[1] is increasingly viewed as vital to long-term economic growth and improved quality of life, just as electricity, telephone, and the interstate highway system filled similar roles in previous generations. The ability to share large amounts of information at ever-greater speeds increases productivity, facilitates commerce, and drives innovation. Furthermore, broadband can improve citizens' quality of life. For example, broadband technology makes it possible for a patient to visit a local clinic and receive medical attention from specialists hundreds of miles away, for a student to access information not available from the local library, and for a firefighter to download blueprints of a burning building. Broadband is particularly critical in rural areas, where advanced communications can reduce the isolation of remote communities and individuals.

To extend access to broadband throughout the United States, as well as to stimulate the economy and create jobs, Congress appropriated $7.2 billion for broadband programs under the American Recovery and

[1]The term broadband commonly refers to high speed Internet access. GAO, *Telecommunications: Broadband Deployment Is Extensive throughout the United States, but It Is Difficult to Assess the Extent of Deployment Gaps in Rural Areas*, GAO-06-426 (Washington, D.C.: May 5, 2006).

Reinvestment Act of 2009 (Recovery Act), enacted on February 17, 2009.[2] This $7.2 billion included:

- $4.7 billion for the Department of Commerce's National Telecommunications and Information Administration (NTIA) to create the Broadband Technology Opportunities Program (BTOP) to award competitive grants to a variety of entities for broadband infrastructure, public computer centers, and innovative projects to stimulate demand for and adoption of broadband.[3]
- $2.5 billion for the Department of Agriculture's Rural Utilities Service (RUS) for the Broadband Initiatives Program (BIP) to provide loans, grants, and loan/grant combinations for broadband infrastructure projects primarily in rural areas.[4]

The agencies made all awards by September 30, 2010. As of July 2012, there were 225 BTOP awards comprising $3.8 billion in awarded funds.[5] As of June 2012, there were 263 BIP projects comprising $3.3 billion in awarded funds.[6]

[2]Pub. L. No. 111-5, 123 Stat. 115 (2009).

[3]Of the $4.7 billion provided to NTIA, approximately $293 million was used to fund 56 grants to states and territories for the purposes of gathering broadband data in order to develop and maintain a nationwide map on the availability of broadband service, with some funds to be transferred to the Federal Communications Commission for the development of the national broadband plan. These activities are not included in our review. Recovery Act, 123 Stat., 128 and div. A, title VI, 123 Stat., 512, codified at 47 U.S.C. § 1305.

[4]Recovery Act, div. A, title I, 123 Stat., 118-119.

[5]Several factors contribute to the discrepancy between the funds appropriated for BTOP and the funds awarded. On August 10, 2010, Congress rescinded $302 million from BTOP, reducing the program's funding to approximately $4.4 billion. See Pub. L. No. 111-226, § 302, 124 Stat. 2389, 2404. NTIA also terminated one award, had one awardee not accept an award, and four awardees terminate their project voluntarily.

[6]The amount of funds awarded by RUS exceeds its appropriation because RUS can award and obligate funds in excess of its budget authority through the use of loans. For grants, the face amount of each grant is charged against RUS budget authority. However, the Federal Credit Reform Act of 1990, Pub. L. No. 101-508, div. A, title XIII, § 13201(a), 104 Stat. 1388-609, codified at 2 U.S.C. ch. 17A, subch. III, requires RUS to account for the budgetary impact of loans by estimating the expected net loss (or gain) of loans. This net amount, which is estimated by calculating the net present value of all cash flows to and from RUS over the lifetime of the loans, is referred to as the subsidy cost of the loans. RUS must charge the subsidy cost of loans to its budget authority. In addition, as of June 2012, RUS had terminated 38 BIP awards.

Nearly 2 years have passed since all BTOP and BIP Recovery Act awards were made; thus, this review provides an opportunity to assess the status of the projects. This report is part of GAO's ongoing efforts to monitor Recovery Act programs and builds on our prior reports reviewing BTOP and BIP.[7] In particular, we examined: (1) What progress has been made implementing broadband projects funded by the Recovery Act? (2) What effect, if any, have these projects had on expanding access to and adoption of broadband service? (3) What challenges, if any, do grant and loan recipients face in completing broadband projects and what actions have the agencies taken to help address these challenges? The information provided in this report and in appendix II responds to two recurring mandates in the Recovery Act. The first, which we respond to as part of this report, requires that we review bimonthly, the use of Recovery Act funds by recipients.[8] The second, which we respond to in appendix II, requires us to comment and report quarterly on estimates of jobs funded and counted as full-time equivalents (FTE), as reported by recipients of Recovery Act funds.[9]

To address our objectives, we reviewed program data collected by NTIA and RUS, interviewed agency officials and program awardees, and reviewed relevant documentation. Specifically, to determine the progress made implementing broadband projects, we analyzed the data collected by NTIA and RUS on the total funding awarded and the amount of funds disbursed to each project. We also reviewed NTIA's data on the progress made in meeting BTOP's program targets related to deploying

[7]GAO, *Recovery Act: Broadband Program Awards and Risks to Oversight*, GAO-11-371T (Washington, D.C.: Feb. 10, 2011); *Recovery Act: Further Opportunities Exist to Strengthen Oversight of Broadband Stimulus Programs*, GAO-10-823 (Washington, D.C.: Aug. 4, 2010); and *Recovery Act: Agencies Are Addressing Broadband Program Challenges, but Actions Are Needed to Improve Implementation*, GAO-10-80 (Washington, D.C.: Nov. 16, 2009).

[8]Recovery Act, div. A, title IX, § 901, 123 Stat.,191. Updates on GAO's oversight of Recovery Act funds can be found at: http://gao.gov/recovery. As of July 20, 2012, the Department of the Treasury had paid out $255.2 billion in Recovery Act funds for use in states and localities.

[9]Recovery Act, div. A, title XV, § 1512(e), 123 Stat., 287. FTE data provide insight into the use and impact of the Recovery Act funds, but recipient reports cover only direct jobs funded by the Recovery Act. These reports do not include the employment impact on suppliers (indirect jobs) or on the local community (induced jobs). Both data reported by recipients and other macroeconomic data and methods are necessary to understand the overall employment effects of the Recovery Act.

infrastructure; RUS did not collect comparable data until recently, and could not assure the quality of its data. To assess the effect of the projects on expanding access to and adoption of broadband service, we analyzed the data reported by BTOP awardees on the number of network miles deployed (which can include miles of broadband fiber and non-fiber miles, such as microwave links), institutions connected, computer workstations installed in public computer centers, and broadband subscribers. We also interviewed BTOP and BIP awardees to understand the effects of their individual projects; we selected awardees to interview that varied in progress (gauged by the percentage of their total award that had been disbursed), and that were geographically dispersed. We also selected awardees who received large awards. To determine the challenges that grant and loan recipients face in completing projects, we interviewed NTIA and RUS officials, as well as BTOP and BIP awardees. We also reviewed BTOP awardees' progress reports for the first quarter of 2012, in which awardees noted challenges or issues they were facing in achieving planned progress. For BIP, we reviewed a tracking spreadsheet maintained by RUS where agency officials note the status of each BIP project and, in some cases, would note issues or challenges facing individual projects. To determine the reliability of the data used in this report, we reviewed relevant documentation, including manuals, guidance, and forms provided to awardees reporting the data, descriptions of internal controls, and Inspector General reviews of the data from the Department of Agriculture and the Department of the Treasury (which manages the payment system used by BTOP recipients). We also interviewed agency officials about their processes for reviewing the data and ensuring their accuracy. We found the data generally reliable for our purposes and note the limitations of the data where appropriate. For more information on our scope and methodology, see appendix I.

We conducted this performance audit from November 2011 through September 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

In addition to being administered by different agencies, BTOP and BIP differ in several ways, including in methods for providing funding to awardees, types of awardees funded, and services funded through the

programs. NTIA funded a range of organizations from states and municipalities to non-profit and commercial organizations, whereas RUS made BIP loans, grants, and combinations of loans and grants primarily to private-sector entities, including for-profit companies and cooperatives. In addition to funding infrastructure projects, BTOP funded public computer center (PCC) projects and sustainable broadband adoption (SBA) projects. Also, the vast majority of BTOP's infrastructure awards were investments in "middle-mile" infrastructure projects, which provide a link from the Internet backbone to the last mile networks of local providers (such as cable or phone companies) that provide broadband service to end users. The availability of broadband service to end users depends upon access to adequate middle-mile facilities, which can be costly to deploy in rural areas. In contrast, BIP primarily funded "last-mile" infrastructure projects that provide service directly to end users. Table 1 provides more detail about the BTOP and BIP programs, including the current number of projects and the amount of funding they represent.

Table 1: Summary of Recovery Act Broadband Programs, as of June and July 2012

Program	Project category[a]	Number of projects	Total program funds	Description
BTOP	*Comprehensive community infrastructure*	117	$3.4 billion	Deploy broadband infrastructure. NTIA primarily funded middle-mile projects, which do not provide service to end users (such as households and businesses), but instead provide a link from the Internet backbone to the networks of local service providers, such as cable or phone companies. The projects also provide new or upgraded connections to community anchor institutions, such as schools, libraries, colleges and universities, medical and healthcare providers, public safety entities, and other community support organizations. Seven of these awards fund projects that intend to use the 700 MHz spectrum to deploy public safety broadband systems.[b]
	Public computer center	65	$200 million	Expand public access to broadband service and enhance broadband capacity at entities such as community colleges and public libraries. Awardees also provide classes at these entities, in which citizens can receive training on topics such as online job searching, basic computer and Internet skills, and certification and educational courses.
	Sustainable broadband adoption	43	$250 million	Increase Internet use and broadband subscribership among individuals and businesses. Projects may include digital literacy training and outreach campaigns to increase the relevance of broadband in people's everyday lives.

Program	Project category[a]	Number of projects	Total program funds	Description
BIP	*Infrastructure and satellite*	263	$3.3 billion	Deploy infrastructure in rural areas, with an emphasis on last-mile infrastructure. A last-mile project is defined as any project that provides service to end users or end-users' devices. Four of these awards fund satellite broadband projects, which offer satellite broadband connections to users in rural locations where terrestrial broadband services are not available. Twelve awards funded middle-mile projects.

Source: GAO analysis of NTIA (as of July 2012) and RUS (as of June 2012) data.

Note: Canceled projects removed from totals.

[a]We excluded certain activities funded under BTOP and BIP, such broadband mapping projects and funds transferred to FCC for the national broadband plan under BTOP and technical assistance projects funded under BIP.

[b]In February 2012, Congress enacted the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6002, 126 Stat 156, 203 (2012), codified at 47 U.S.C. § 1422, which contained provisions to create a nationwide interoperable public safety broadband network, with one entity holding the license for the 700 MHz spectrum. In light of this development, NTIA partially suspended the seven BTOP-funded 700 MHz public safety projects to ensure that they proceed in a manner that supports development of the nationwide, interoperable network.

NTIA and RUS solicited applications to the programs and made awards in two rounds, with the first funding round beginning in June 2009 and ending in April 2010, and the second round beginning in January 2010 and ending in September 2010. In the joint *Notice of Funds Availability*, NTIA and RUS provided that projects should be substantially complete within 2 years of receiving an award. The agencies disburse awarded funds as projects progress. To meet the substantially complete requirement, a project must receive two-thirds of its award 2 years after receiving the award.[10] NTIA and RUS also provided that projects should be complete within 3 years of receiving an award. In October 2011, RUS modified these requirements to provide that BIP projects must commence within 180 days of the latter of the completion of the project's historic preservation or environmental review, and be fully complete no later than June 30, 2015. NTIA maintained the original requirements. Since NTIA made several rounds of awards, the 3-year completion deadlines for the projects are staggered throughout 2012 and 2013. Table 2 shows the various deadlines, and the number of BTOP projects subject to that deadline.

[10]74 Fed. Reg. 33104, 33110 (2009).

Table 2: Deadlines for BTOP Projects

Deadline	Total award value (in millions)	Number of BTOP projects subject to deadline: Comprehensive community infrastructure	Public computer center	Sustainable broadband adoption	Total
November 2012	$64	2	4	2	**8**
December 2012	$71	2	2	1	**5**
January 2013	$533	24	11	3	**38**
February 2013	$212	7	3	6	**16**
March 2013	$110	5	0	1	**6**
June 2013	$440	18	11	0	**29**
July 2013	$1,463	43	15	9	**67**
August 2013	$864	16	12	14	**42**
September 2013	$46	0	7	7	**14**
Total	**$3,803**	**117**	**65**	**43**	**225**

Source: GAO analysis of NTIA data.

Note: Canceled projects removed from totals. April and May 2013 are not included because none of the BTOP projects have a deadline occurring in those months.

NTIA and RUS must oversee BTOP and BIP projects, respectively, through each program's completion. NTIA and RUS both have officials monitoring the overall progress of the programs and reviewing requests for funds. In addition to these officials, the agencies also provided staff to serve as the primary point-of-contact for their awardees and answer questions and address issues that arise for specific awardees. NTIA's Federal Program Officers (FPO) provide this assistance to BTOP awardees; RUS's General Field Representatives (GFR) serve the same role for BIP awardees. In addition, BTOP and BIP awardees face a variety of reporting requirements. For example, the Recovery Act requires fund recipients, including BTOP and BIP awardees, to submit quarterly reports that provide a description of their projects or activities, the progress of their projects, and estimates of the number of resulting jobs

funded, measured on a FTE basis.[11] NTIA also requires that BTOP awardees submit quarterly and annual progress reports to the agency that provide financial data and information on the projects' status and effects. RUS requires that BIP awardees submit quarterly reports that provide subscribership data, and according to RUS, these efforts also include financial statements consisting of income statements, balance sheets, and cash flow statements.

The Progress of Recovery Act Broadband Projects Is Difficult to Measure because of Data Limitations

NTIA and RUS both use the amount of funds disbursed to awardees as one method of tracking progress, and less than half of all the awarded funding has been disbursed to Recovery Act BTOP and BIP awardees. BTOP awardees appear to have made more progress than BIP awardees, as NTIA has disbursed half of BTOP's funds while RUS has disbursed less than one-third of BIP's funds. However, the agencies disburse awarded funds for projects as payment becomes due, sometimes only as contracts are complete. Because disbursements do not fully reflect the amount of work completed, NTIA has established other non-financial indicators of progress, such as network miles deployed. In contrast, RUS did not initially establish indicators to measure the deployment of infrastructure.

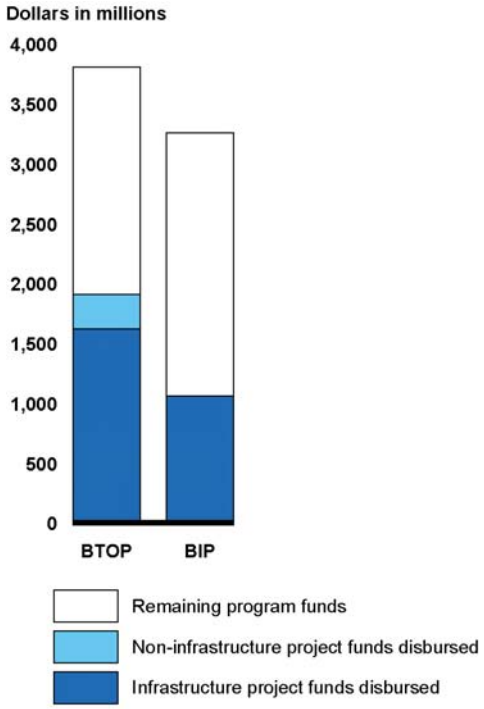
Amount of Funding Disbursed as an Indicator of Progress

As awardees implement their projects, they request funds from the agency administering their award. NTIA and RUS track how much of each project's award that they have disbursed to the awardee, which serves as one indicator of progress. The data that NTIA and RUS collect indicate that the agencies have disbursed less than half of all awarded funds. Of the roughly $3.8 billion available for the BTOP projects, NTIA has disbursed approximately $1.9 billion (50 percent) to its awardees. As noted in figure 1, disbursements to NTIA's infrastructure projects

[11]Pub. L. No. 111-5, § 1512(e), 123 Stat. 115, 288. FTE data provide insight into the use and impact of the Recovery Act funds, but recipient reports cover only direct jobs funded by the Recovery Act. These reports do not include the employment impact on suppliers (indirect jobs) or on the local community (induced jobs). Both data reported by recipients and other macroeconomic data and methods are necessary to understand the overall employment effects of the Recovery Act. OMB defines FTEs as the total number of hours worked and funded by Recovery Act dollars within the reporting quarter divided by the quarterly hours in a full-time schedule. OMB Memorandum, M-10-08, *Updated Guidance on the American Recovery and Reinvestment Act – Data Quality, Non-Reporting Recipients, and Reporting of Job Estimates* (Dec. 18, 2009).

comprise $1.6 billion of BTOP's disbursed funds, while disbursements to public computer center and sustainable broadband adoption projects total $290 million. Of the roughly $3.3 billion available for the BIP projects, RUS has disbursed approximately $1 billion (30 percent) to its awardees.

Figure 1: Amount of Awarded Program Funds Disbursed to Current BTOP and BIP Awardees, and Remaining Program Funds, as of June and July 2012



Source: GAO Analysis of NTIA (as of July 2012) and RUS (as of June 2012) data.

Note: Canceled projects removed from totals.

Our analysis of the disbursements indicates that BTOP awardees have made more progress than BIP awardees. Sixty-eight percent of BTOP awardees have received more than half of their awarded funds, versus 24 percent of BIP awardees. The fact that the BTOP program includes non-infrastructure projects, such as public computer center and sustainable broadband adoption projects, may partially explain this disparity; NTIA officials noted that since most of these non-infrastructure projects are not required to undergo an environmental assessment, they tend to progress more quickly than the infrastructure projects. See table 3.

Table 3: Distribution of BTOP and BIP Awardees by the Percentage of Project Funding Disbursed, as of June and July 2012

	BTOP		BIP	
Percent of project funding disbursed	No. of awardees	Percentage of awardees	No. of awardees	Percentage of awardees
0%	2	1%	15	6%
Greater than 0% to 25%	15	7%	132	50%
Greater than 25% to 50%	55	24%	52	20%
Greater than 50% to 75%	89	40%	27	10%
Greater than 75% to less than 100%	59	26%	30	11%
100%	5	2%	7	3%
Total	**225**	**100%**	**263**	**100%**

Source: GAO analysis of NTIA (as of July 2012) and RUS (as of June 2012) data.

Note: Canceled projects removed from totals.

Of the BTOP projects that have reached the 2-year target to be substantially complete, more than half have received two-thirds of their total award. As previously mentioned, NTIA provided that BTOP projects should receive two-thirds of their total award within 2 years of receiving the award. There are 102 projects that started before August 2010 and thus have reached the two-thirds benchmark in terms of project time elapsed. Of these 102 projects, 61 have received two-thirds of their awarded funds as of July 2012. NTIA officials told us that in cases where a project does not meet the two-thirds complete threshold, NTIA program officers follow up to determine whether the project is delayed, or whether disbursements are not reflecting the amount of work completed, as mentioned above. In these cases, program officers will conduct a hands-on review, which helps NTIA determine whether the project needs a performance improvement plan with specific actionable recommendations to get the project back on track.

While disbursements are one measure of progress, officials from NTIA and RUS told us that disbursements do not fully reflect the amount of work completed. NTIA and RUS disburse awarded funds for projects as payment becomes due, sometimes only as contracts are completed. Thus disbursements do not fully reflect the amount of work completed at any point in time. NTIA officials noted that in some cases, awardees have entered into contracts that are structured so that the awardee does not pay the contractor until the bulk of construction is complete. For example, one awardee we interviewed noted that although the project was 95 percent complete, it had only received 65 percent of the project's funding, giving the incorrect impression that the project was behind schedule. In

our review of BTOP awardees' first quarter 2012 reports to NTIA, we found that some recipients cited this issue when reporting their financial progress in the quarterly reports. Others noted that cost savings made their disbursements appear as if the project were behind schedule, but that was not the case. In other words, a project that is on schedule but incurring costs below the levels anticipated in its original plan could appear to be behind schedule, since its disbursements will be lower than expected.

Non-Financial Indicators of Progress

NTIA established other non-financial performance measures that show that awardees have made progress in implementing their projects. Specifically, NTIA established performance metrics for measuring BTOP's progress against key performance indicators, such as the number of network miles deployed and leased, community anchor institutions connected, new workstations in public computer centers, and new broadband subscribers. NTIA established the baselines for these key performance indicators by aggregating the information awardees provided in their applications to the program, and provided program targets to the Office of Management and Budget (OMB).[12] NTIA tracks progress against these indicators and reports that as many as 76 percent of network miles are complete and more than 97 percent of new workstations are complete. These results, when compared with the amount of funds disbursed, are consistent with NTIA's statements that in some cases, disbursement of funds lags behind progress of projects.

In contrast, RUS did not establish non-financial performance metrics for measuring BIP's progress in deploying infrastructure, such as miles deployed.[13] RUS officials told us that because of RUS's traditional role as a loan administrator, it tends to focus on ensuring that the funding is

[12]NTIA adjusted the projected benefits estimated in BTOP recipients' initial applications. NTIA revised projections to reflect changes in the projects that occurred after awards were made, such as rerouting of planned broadband networks because of environmental issues or changes in partners. Total miles were reduced from 127,072 to 75,000, community anchor institutions connected were reduced from 29,557 to 15,000, new workstations were reduced from 35,334 to 35,000, and subscribers were reduced from 785,862 to 500,000. NTIA officials told us they raised three of the projections to 110,000 miles, 18,000 community anchor institutions, and 37,500 workstations.

[13]RUS is collecting data on subscribers to show the effect of BIP on broadband adoption, which we discuss later in this report. However, we do not consider this a measure by which one can evaluate the progress of a project toward completion.

disbursed, the project is built, and the agency is repaid, instead of tracking project outcome information. In addition, the Recovery Act did not require RUS to collect performance metrics from awardees. Nevertheless, the Recovery Act sought to provide an unprecedented level of transparency with respect to how funds were being spent and program outcomes were being achieved, and we have noted the importance of collecting complete, accurate, and consistent data to document program performance. In June 2012, RUS officials told us that they began tracking the number of fiber miles and wireless access points deployed by BIP projects; however, they could not ensure the quality of the data at that time. Without reliable information on the progress of BIP projects in expanding infrastructure and moving toward completion of projects, RUS may not be able to demonstrate the progress and effectiveness of the BIP program.

NTIA Has Expanded Access to Broadband through BTOP Projects; However, Data Limitations Make it Difficult to Measure the Effects of BTOP and BIP on Broadband Adoption

NTIA collects data on network miles deployed, community anchor institutions connected, and workstations added at public computer centers, which helps illustrate that BTOP expanded broadband infrastructure and provided increased access to the public. As previously mentioned, RUS did not begin collecting this type of information until this year and cannot assure the quality of the data; thus, BIP's contribution to these goals is less clear. Both NTIA and RUS face challenges in ensuring the quality of subscribership data, and therefore, it is difficult to measure the effect of BTOP and BIP on broadband adoption.

BTOP Expanded Infrastructure and Provided Access at Public Computer Centers

As previously mentioned, the current goal of BTOP's Comprehensive Community Infrastructure (CCI) projects is to deploy or upgrade 75,000 miles of broadband infrastructure and provide broadband access to 15,000 community anchor institutions, such as schools, libraries, health care providers, and public safety entities. As of March 31, 2012, BTOP's 117 infrastructure projects reported that they have established over 57,000 new or upgraded network miles, with connections to over 8,000 community anchor institutions. See table 4.

Table 4: BTOP Infrastructure Expansion, as of March 31, 2012

Miles	
Network Miles Installed	14,192
Network Miles Leased	27,207
Existing Miles Upgraded	13,327
Existing Miles Leased	2,523
Total	**57,249**
Community Anchor Institutions	
Institutions with New Access	2,420
Institutions with Improved Access	5,952
Total	**8,372**

Source: GAO analysis of NTIA data.

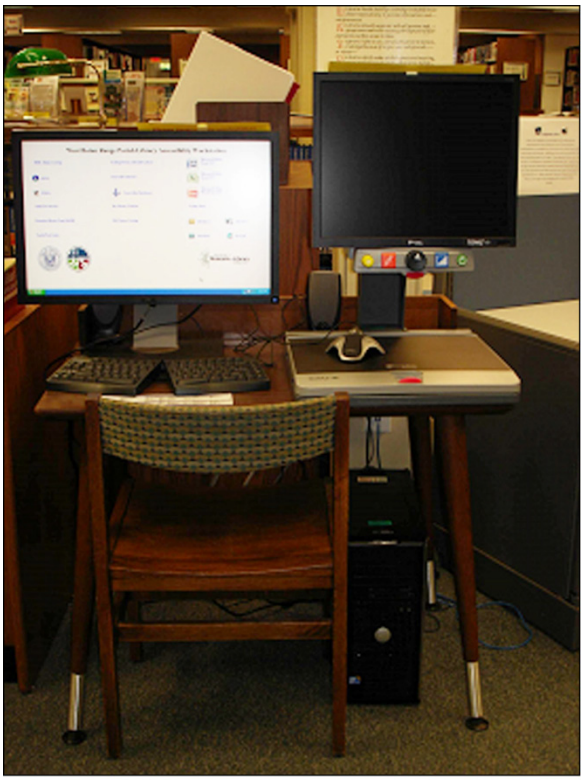
As shown in table 4, BTOP projects report several different types of miles of broadband infrastructure:

- "Network miles installed" includes newly constructed miles, such as new aerial or buried fiber, built using BTOP funds.
- "Network miles leased" includes new network capacity acquired via lease using BTOP funds.
- "Existing network miles upgraded" refers to existing capacity that was upgraded using BTOP funds.
- "Existing network miles leased" refers to capacity that was acquired from a third-party prior to BTOP and that is being used or improved using BTOP funds.

In our discussions with BTOP awardees, they explained how their individual projects expanded broadband access in their communities. For example, one awardee who received BTOP and BIP funds explained that the majority of the areas served by its projects did not have broadband service, with one community lacking basic telephone service. The awardee added that as broadband expands in the area, the local economy has benefited as tourism-oriented businesses are better able to provide Web sites and online reservation systems. Another awardee noted that its project serves some areas that previously had broadband service; however, the choice of service provider was limited, and the broadband options were generally expensive and slow. This awardee reported that its BTOP-funded infrastructure improved broadband speed for community anchor institutions, including schools, community colleges, and health care providers, from 1 gigabyte per second to 10 gigabytes per second.

Interviewees also reported that the public computer center (PCC) program expanded access to broadband in their communities. BTOP's 65 PCC projects have deployed new workstations (computers) at multiple locations, such as community colleges and public libraries, throughout a city or state. For example, the New Jersey State Library reported that its PCC project has deployed 845 computers to 124 public libraries, and 128 laptops that community colleges use to provide workforce development courses to the public. Some public computer centers also received upgraded broadband connections and wireless routers. Officials from the State Library of Louisiana noted that residents will use wireless hot spots in the library to access the Internet from their own devices, adding that one woman brings her children to the library parking lot after hours so that they can access the signal and work on their homework when the library is closed. In addition, PCC projects have installed workstations designed to be accessible by users with visual impairments. The workstation in figure 2 includes software that reads aloud what is on the computer screen, screen magnification software, and a desktop magnifier that enlarges materials placed under it. As of March 2012, PCC awardees reported that they provided nearly 34,000 new workstations for public use.

Figure 2: Example of an Accessible Workstation, with Desktop Magnifier.



Source: GAO.

PCC projects have also provided classes on a variety of topics, including English as a second language, digital literacy, and job training. Officials from the New Jersey State Library project noted that while they initially targeted people with limited or no computer skills and provided basic computer training, they encountered unexpectedly high demand and expanded course offerings to reach recent college graduates, those with managerial experience, as well as offering additional resources for small businesses and entrepreneurs. We visited classes in Louisiana and Washington, D.C., and observed participants learning software programs. The State Library of Louisiana noted in its first quarter 2012 report that its various training programs had over 19,000 participants. During our visit, we observed a training class, and participants stated that they had driven several hours to attend some classes, and wanted to attend more. For more information see, the sidebar titled “Example of PCC Project: State Library of Louisiana.”

Example of PCC Project: State Library of Louisiana

This PCC project provides classes at local libraries throughout the state. Louisiana residents register in advance for the classes, which typically last an entire day. Topics include computer basics, software training on Microsoft and Adobe programs, job search, résumé, and interview skills, and business skills, such as accounting and customer service. The project is also using BTOP funds to support a number of electronic resources, such as Homework Louisiana – a free online tutoring service for Louisiana students attending kindergarten through college. Students can receive individual tutoring in math, science, social studies, and English. In addition, Louisiana’s Jobs and Career Center portal provides job search and small business resources, and the Learning Express Library provides study guides and practice tests for GED, college, graduate school, as well as professional licensure and certifications.

Total award funding: $8,797,668

Measurement and Data Limitations Make It Difficult to Assess the Programs' Effects on Broadband Adoption

NTIA and RUS have faced difficulties in ensuring that awardees provide reliable data regarding broadband subscribership for their BTOP and BIP projects, which makes it challenging to fully and accurately determine the effects of the programs on broadband adoption. NTIA's sustainable broadband adoption (SBA) projects were established to stimulate demand for broadband Internet access, and applicants were required to describe how they would calculate subscribership for their projects. For example, the SBA project Computers for Youth/Los Angeles Unified School District Broadband Engagement Program provides 4-hour workshops in high-poverty Los Angeles schools, during which it provides hands-on, bilingual training to sixth-grade students and their families on using broadband for educational purposes. The participants receive a free computer pre-loaded with educational software as well as access to toll-free bilingual help-desk support, and Computers for Youth conducts a survey before and after the workshop to determine whether the families subscribed to broadband service after attending the workshop. Computers for Youth stated in its first quarter 2012 report that over 30,000 participants (students and their parents) had attended a family-learning workshop during the course of its program and that nearly 5,000 households had newly subscribed to broadband. Program officials noted that by highlighting the relevance of broadband to children's education and offering free computers and technical support, they were able to generate broadband subscribers despite the lack of discounted broadband service.

Although current data reflect an increase in subscribers as a result of BTOP projects, they may not be accurate. As of March 31, 2012, SBA projects reported that they generated over 334,000 broadband subscribers. However, NTIA officials told us that many recipients have faced difficulties in measuring broadband subscribers related to the project and have revised their counting methods. Thus, NTIA officials noted that the total subscribers reported to date may not represent the true number of new subscribers. In our review of awardees' first quarter 2012 reports, we found that 13 of 43 SBA projects reported difficulties with collecting subscriber data. For example, some awardees reported that they thought they would be able to obtain subscribership data from Internet service providers to determine the effect of their projects, but later found that Internet service providers were unwilling to provide subscribership data. NTIA has provided training on this issue, and facilitated sessions in which projects share best practices for measuring subscribership. Program officials told us NTIA is also working with individual projects to help them find ways to address the challenges involved in collecting subscribership data.

Similarly, RUS data on the effects of BIP projects on broadband adoption may not be accurate. RUS established a goal for BIP projects to provide new or improved broadband service to 359,450 subscribers, and in 2010, RUS stated that it exceeded this goal because it estimates that BIP projects will provide new or improved service to 847,239 subscribers. However, this total does not reflect actual program outcomes, because it is based on the estimates of applicants prior to the execution of their funded projects. RUS requires recipients to report quarterly on the number of households, businesses, educational providers, libraries, health care providers, and public safety providers receiving new or improved broadband service. However, when we reviewed the data, we noted discrepancies. When we asked RUS about these discrepancies in the subscribership data, RUS officials noted that the data are inaccurate and that RUS has implemented quality checks to improve the information. Specifically, RUS developed a spreadsheet tool that RUS staff use to review the subscriber data submitted by individual projects, note whether the data appear to be correct, and report how any problems with the data were resolved. In its comments on a draft version of this report, RUS noted that its field staff provides extensive contact and guidance to awardees.

NTIA and RUS Have Acted to Address the Variety of Challenges Awardees Identified in Completing Projects

BTOP and BIP awardees identified multiple challenges in completing projects, including compliance with regulations and construction related challenges. Additionally, BIP awardees identified some additional challenges related to RUS's processes and requirements, and non-infrastructure projects participating in BTOP face challenges related to staffing and deploying the projects. In some cases, these challenges have contributed to the lack of progress discussed above. NTIA and RUS have taken a number of actions to help awardees address these challenges, including providing awardees with regular contact, expertise, webinars, and guidance.

Challenges

While BTOP and BIP awardees have identified some of the same challenges they have faced, they also identified some different challenges because the programs are administered by different agencies and fund different services. Table 5 lists the challenges we identified facing BTOP and BIP awardees based on our interviews and content analysis of NTIA and RUS documents.

Table 5: Challenges Faced by BTOP and BIP Awardees

Challenges	BTOP	BIP
Environmental review and compliance	X	X
Prevailing wage requirements	X	X
Permitting, right of way, and make-ready work	X	X
Weather and terrain	X	X
Broadband fiber availability	X	X
Approval of contracts and plans by RUS		X
Compliance with RUS reporting requirements		X
Proposed changes to the Federal Communications Commission's Universal Service Fund		X
Staffing or expertise	X[a]	
Contracting, procurement, and financing	X[a]	
Technical issues	X[a]	
Outreach and program participation	X[a]	

Source: GAO analysis of interviews and NTIA and RUS documents.

[a]These challenges were identified as pertaining to BTOP PCC and SBA projects.

NTIA and RUS officials and awardees all identified challenges associated with environmental compliance, as BTOP and BIP awardees were required to comply with the National Environmental Policy Act[14] and the National Historic Preservation Act.[15] This involved working with state and federal agencies to address any environmental or historic preservation issues related to the project before construction could commence. According to our analysis of BTOP awardees' first quarter 2012 reports to NTIA, 44 of 114 infrastructure awardees reported challenges associated with the environmental assessment and historic preservation review.[16] Likewise, RUS officials told us that the environmental assessment process took significantly longer than anticipated and stated that one cause of this was a backlog within the state offices that conduct the

[14]Pub. L. No. 91-190, 83 Stat. 852 (1970), as amended, codified at 42 U.S.C. ch. 55.

[15]Pub. L. No. 89-665 (1966), as amended, codified at 16 U.S.C. ch. 1A, subch. II.

[16]As mentioned previously, BTOP awardees are required to submit reports on a quarterly basis that among other things, discuss projects' progress made during the preceding 3 months and discuss challenges as to why projects may not have met their targets. These reports only include the challenges awardees reported during this period. Awardees may have experienced these or other challenges in prior quarters.

assessments because of the large volume of Recovery Act work. The initial environmental assessment process was also the most common challenge cited by RUS's GFRs, who told us that these assessments took longer than anticipated and negatively affected all awardees' schedules. Officials from NTIA and RUS both noted delays associated with the environmental assessment process, and NTIA officials noted that these delays have been up to 6 months for BTOP projects.

BTOP and BIP awardees reported facing other delays in beginning project construction, such as:

- *Prevailing wage requirements.* The Recovery Act requires that all laborers and mechanics employed by contractors and subcontractors on projects funded directly by or assisted in whole or in part by and through the federal government under the Recovery Act be paid at prevailing wage rates.[17] NTIA and RUS officials and an awardee told us that in many cases identifying the prevailing wage for activities such as fiber deployment was difficult because that type of work had often not been done in that area and the prevailing wage had not yet been determined by the Department of Labor.

- *Permitting, right-of-way agreements, and make-ready work.* Awardees must apply for and receive permits and right of way agreements before beginning construction. NTIA officials and awardees told us that for some projects, obtaining these agreements from all the relevant stakeholders took longer than anticipated and put the projects behind schedule. For example, these agreements may have to be obtained from state and local governments, tribal governments, federal entities (such as the Bureau of Land Management), private landowners, and railroads. One awardee we spoke with experienced delays of up to 9 months in the installation of equipment and fiber because of the amount of time it took to receive right of way permits from railroad companies. In addition, make-ready work, which includes the tasks associated with preparing utility poles for the installation of equipment and fiber, must be complete before any construction occurs, and this need has posed challenges to maintaining project timelines. For example, one BTOP awardee indicated in its first quarter 2012 report to NTIA that "keeping make-ready completion ahead of construction crew availability remains the major challenge for the project."

[17]Recovery Act, div. A, title XVI, § 1606, 123 Stat. 303.

- *Weather, terrain, and broadband fiber availability.* Weather-related challenges and difficult terrain can cause delays in construction. Awardees reported delays for, among other things, a major tornado that caused damage to a service area and equipment, hurricanes, snowfall, and flooding. Difficult terrain can also cause delays. One awardee told us that its project unexpectedly called for boring through solid granite under a river, which required additional tools and time. NTIA and RUS officials told us that BTOP and BIP projects were also delayed due to fiber shortages caused by the 2011 tsunami in Japan and increased worldwide demand for fiber. For example, one BTOP infrastructure awardee noted in its first quarter 2012 report to NTIA that it was "experiencing delays in the delivery of the fiber…[and that] while we received a few shipments during this quarter it was much less than promised."

RUS officials also noted some challenges specific to the BIP program, such as:

- *Approval of contracts and plans.* RUS officials told us that to ensure quality construction is completed, they require that awardees gain approval of contracts before the construction begins or materials are purchased. RUS officials said that on average, it takes the agency 1 and a half months to 2 months to approve a contract. However, some RUS GFRs and awardees said that RUS did not approve BIP contracts in a timely fashion in some instances, which resulted in project delays. In particular, some GFRs said that RUS took 6 to 12 months to approve a contract. RUS officials noted that there could be a number of reasons why contracts had not been approved, including that the contracts were not correct when they were submitted for approval.

- *Compliance with reporting requirements.* RUS officials told us some awardees that received a loan or loan/grant combination have experienced challenges complying with RUS reporting requirements. The officials explained that awardees who had not previously borrowed from RUS are more likely to experience difficulties complying with reporting requirements than those awardees with a history of borrowing from RUS.

- *Proposed changes to the Federal Communications Commission's (FCC) Universal Service Fund*. Some RUS officials were concerned about how reforms to FCC's Universal Service Fund, which provides telecommunications funding to some BIP awardees, could potentially affect projects' income streams. FCC's reforms include changes to the

distribution and use of Universal Service Fund payments to make the funds available to support both telephone service and broadband deployment.[18] As a result of the reforms, rural telecommunications carriers could receive reduced universal service support payments. In August 2011, RUS provided data to FCC on how these changes could potentially affect the income stream of RUS borrowers and grant awardees. Subsequently, in its 2011 *Order and Further Notice of Proposed Rulemaking* on this issue, FCC stated that the reforms it adopted were more modest than the estimates used by RUS to determine the potential impact of the reforms, and that RUS did not consider the potential for borrowers to adopt operational efficiencies that would offset reductions in universal service support.[19]

NTIA officials and awardees also identified challenges that apply to non-infrastructure BTOP projects, such as:

- *Staffing or expertise.* PCC and SBA projects faced staffing and expertise challenges, such as high staff turnover, or the need for additional staff to handle tasks such as providing technical support for computers or manning computer labs. Our analysis of BTOP awardees' first quarter 2012 reports to NTIA indicate that 7 of 43 SBA projects and 22 of 64 PCC projects reported challenges with either a lack of staff or lack of staff expertise.

- *Contracting, procurement, and financing.* Contracting and procurement issues also commonly caused delays at the beginning of PCC and SBA projects, according to NTIA officials. These projects can be run by state or local entities, and four of the Federal Program Officers (FPOs) we spoke with told us that the projects they oversee were delayed by the need to comply with state or local contracting or procurement requirements. For example, FPOs told us that one project was delayed by 4 to 5 months because the state legislature needed to approve the spending of BTOP funding, and another project run by a large city was delayed by more than a year because of its internal contracting process.

[18]We previously reported on the need for FCC to reform the Universal Service Fund. GAO, *Telecommunications: FCC Has Reformed the High-Cost Program, but Oversight and Management Could be Improved*, GAO-12-738 (Washington, D.C.: July 25, 2012).

[19]In the Matter of Connect America Fund, 26 FCC Rcd. 17663 (2011), as corrected, 27 FCC Rcd. 4040 (2012).

- *Technical issues.* Issues related to equipment, software, and Internet service, have also been challenging to SBA and PCC projects. Our analysis of BTOP awardees' first quarter 2012 reports to NTIA indicate that 8 of 43 SBA projects and 16 of 64 PCC projects noted challenges with the technical aspects of the projects. For example, one awardee reported that software conflicts caused system crashes for the workstations deployed for seniors and adults with disabilities.

- *Outreach and program participation.* Some awardees reported outreach and participation challenges, such as difficulty in participant retention. For example, one awardee reported that most of the participants were senior citizens and were easily discouraged when they felt that they could not retain new skills after each class or training session. Overall, according to our analysis of BTOP awardees' first quarter 2012 reports to NTIA, 13 of 43 SBA projects and 10 of 64 PCC projects reported challenges related to outreach or participation.

Agencies' Actions to Address Challenges

NTIA and RUS provided resources and took action to help awardees address their challenges. Both agencies have provided awardees with regular contact and support. For example, NTIA officials told us that they have regularly scheduled calls between awardees and FPOs to encourage dialog and early resolution of problems. The officials also noted they have encouraged awardees to come to the agency for help, especially in complex situations where federal influence can help resolve challenges. For example, NTIA officials stated that they worked with FCC and state public utility commissions to ensure that they prioritized their review of BTOP projects' requests for permits. Likewise, RUS officials told us that GFRs and other agency staff have provided regularly scheduled contact to determine project status and challenges early on so they can begin addressing them. Both FPOs and GFRs told us that they worked to identify options for dealing with fiber shortages and provided that information to awardees.

Both NTIA and RUS developed webinars and training sessions to inform awardees and provide them with updated information. NTIA has provided guidance to awardees through webinars and conference calls and has held several webinars on topics including pole attachment issues, computer recycling and refurbishing, and numerous other topics. Some awardees told us the webinars and conference calls were both useful and timely. RUS also developed and held webinars focused on assisting grant and loan recipients with the contract process; which according to officials, could increase the likelihood that the contracts are approved more

expeditiously so that awardees can be reimbursed in a more timely fashion. NTIA also has a monitoring process to identify projects with schedule, performance, or other challenges, and as needed provides such projects with performance improvement plans and corrective action plans. In its comments on a draft version of this report, RUS noted that it has implemented a detailed review process to identify issues with BIP awards and is constantly providing guidance and assistance to the awardees to overcome issues with the performance of the award.

In addition to providing the general resources and actions described above, NTIA and RUS took the following actions to address some of the specific challenges described earlier in this report:

- NTIA took steps to facilitate the sharing of information and best practices among projects by identifying projects that had already successfully addressed a particular issue and asking them to share their experiences with similar projects. For example, a significant number of infrastructure projects were experiencing similar make-ready challenges, and NTIA organized and moderated a discussion where awardees discussed problems and solutions.

- NTIA also created different groups for PCC and SBA projects to share information on a range of issues that were challenging awardees related to K-12 education, seniors, tribes, municipalities, and healthcare.

- RUS proposed contract modifications to streamline and simplify the timeline for construction and hired 8 additional engineers and loan and grant technicians and allowed some GFRs overseeing larger projects to approve routine contracts to help address the contract approval backlog described above.

Conclusions

BTOP and BIP, as established by the Recovery Act, are intended to promote the availability and use of broadband Internet access throughout the country, as well as create jobs and stimulate economic development. The ability to measure the progress of BTOP and BIP projects and their effects on expanding access to and use of broadband Internet access is an important component of program management and oversight, and could inform future federal programs. NTIA and RUS track the amount of funds disbursed to projects as one measure of progress. However, disbursements do not fully reflect the amount of progress made. Thus, data on non-financial measures of progress, such as the amount of infrastructure deployed, can provide insights into the progress of

broadband projects. While NTIA established performance measures and collected data on non-financial measures of progress, RUS did not initially collect comparable data, and once it did begin collecting these data, it could not ensure their quality. Collecting accurate data would enable RUS to better demonstrate BIP projects' progress toward completion, and outcomes for the BIP program. We also identified challenges that NTIA and RUS both faced in ensuring the accuracy of projects' subscribership data. Because both agencies have taken steps to improve the quality of the subscribership data reported by awardees, we are not making a recommendation to address this issue in this report.

Recommendation for Executive Action

To ensure RUS is collecting reliable information regarding the effect of investments in broadband, we recommend that the Secretary of Agriculture direct RUS to take steps to improve the quality of its data on the number of fiber miles and wireless access points created by BIP projects.

Agency Comments and Our Evaluation

We provided a draft of this report to the Secretary of Commerce and the Secretary of Agriculture for review and comment. The Department of Commerce provided technical comments that we incorporated into the report as appropriate. The Department of Agriculture provided written comments on a draft of this report, which appear in appendix III. The department disagreed with our characterization that RUS does not collect adequate data to measure the progress of BIP and noted that RUS collects financial data as well as contract-level data with information on planned construction for each project. The department also noted that RUS collects data on the number of subscribers, which it implies is a relevant measure of performance for the BIP program. We agree that RUS collects financial data, but as we note in the report, financial data do not fully reflect the progress of the program. Thus, non-financial data, such as fiber miles and wireless access points deployed, provide an additional indicator of BIP's progress. As we note in the report, RUS's data for these measures, as well as the number of subscribers, are unreliable, which hinders RUS's ability to assess the progress of BIP. Although the department neither agreed or disagreed with our recommendation that RUS should improve the quality of its data on the number of fiber miles and wireless access points created by BIP projects, the department stated that RUS has already taken steps to improve the quality of its data. If RUS takes action and can demonstrate that the data are reliable, we will close the recommendation as implemented.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Agriculture, and the Secretary of Commerce. In addition, the report is available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-2834 or goldsteinm@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix IV.

Mark L. Goldstein
Director, Physical Infrastructure

Appendix I: Scope and Methodology

This appendix provides information on the methodologies that we used to assess (1) the progress made in implementing broadband projects funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act),[1] (2) the effect of the projects on expanding access to and adoption of broadband service, and (3) the challenges that grant and loan recipients face in completing broadband projects, and the actions that agencies are taking to help address these challenges.

Progress of Programs

To determine the progress made in implementing the projects funded by the Recovery Act, we obtained data that allowed us to calculate the amount of funds awarded and the amount of funds disbursed to projects participating in the Broadband Technology Opportunities Program (BTOP) administered by the National Telecommunications and Information Administration (NTIA), and the Broadband Initiatives Program (BIP) administered by the Rural Utilities Service (RUS). In addition, we obtained data from NTIA on the status of BTOP in meeting the targets for the key performance indicators established by NTIA: miles deployed or leased, community anchor institutions connected, workstations installed in public computer centers, and new broadband subscribers. To determine the reliability of these data, we reviewed relevant documentation, including manuals, guidance and forms provided to awardees reporting the data, descriptions of internal controls, and Inspector General reviews of the data from the Department of Agriculture and the Department of the Treasury (which manages the payment system used by BTOP recipients); and we interviewed agency officials about their processes for reviewing the data and ensuring their accuracy. We found the data generally reliable for our purposes of reporting the amount of funds disbursed to BTOP and BIP awardees, and the amount of progress made toward meeting NTIA's targets for BTOP, although we did note and report on limitations with NTIA's subscribership data.

Effect of Programs

To assess the effect of the projects on expanding access to and adoption of broadband service, we reviewed data collected by NTIA and RUS, such as the aforementioned data on the progress of BTOP projects in deploying miles, connecting community anchor institutions, installing workstations in public computer centers, and creating new broadband

[1]Pub. L. No. 111-5, 123 Stat. 115 (2009).

subscribers. Our efforts to determine the reliability of BTOP's program data are discussed above. We reviewed the data that RUS collects from BIP awardees on the number of subscribers accessing BIP-funded service, but based on conversations with RUS officials, determined the data were not reliable for our purposes. We also interviewed BTOP and BIP awardees to understand the effects of their individual projects. We used the following criteria to select awardees to interview: projects that had received two-thirds of their award (thereby meeting NTIA's "substantially complete" requirement), large award size, and geographic dispersion.

Challenges

To determine the challenges that grant and loan recipients face in completing projects, we interviewed NTIA and RUS officials, including NTIA's Federal Program Officers (FPO) and RUS's General Field Representatives (GFR), who serve as a point-of-contact for the awardees. We also interviewed the BTOP and BIP awardees mentioned in the previous paragraph, as well as some awardees that had not received two-thirds of their award. For BTOP, we reviewed awardees' progress reports for the first quarter of 2012,[2] which covered the time period from January 1, 2012, to March 31, 2012. In these quarterly reports, awardees must report on their progress toward meeting milestones (progress is based on expenditures), and describe the reason for any variance from their baseline plan or subsequent written updates provided to their program officer. Awardees must also describe any challenges or issues faced in the past quarter in achieving planned progress, and any areas where assistance from NTIA is needed. We created content categories for the challenges reported by the awardees and for whether they requested assistance from NTIA. Two analysts independently coded each response into one of the categories; any discrepancies in the coding of the two analysts were discussed and addressed by the analysts. For BIP, we reviewed a tracking spreadsheet maintained by RUS, in which the GFRs provide the status of each BIP project and in some cases, note issues or challenges facing individual projects.

[2]NTIA requires that BTOP awardees submit quarterly and annual progress reports.

Agency Actions to Address Challenges

To determine the actions NTIA and RUS are taking to address challenges facing BTOP and BIP awardees, we interviewed NTIA and RUS officials, including FPOs and GFRs. We also reviewed documentation of guidance, training, webinars, and workshops provided by the agencies. We asked the BTOP and BIP awardees we interviewed about their experiences with NTIA and RUS, including whether the awardees had faced challenges and the awardees' perceptions of NTIA and RUS guidance and resources.

We conducted this performance audit from November 2011 through September 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Analysis of Employment Data Submitted by Program Awardees

This appendix responds to a recurring GAO mandate in the American Recovery and Reinvestment Act (Recovery Act) requiring us to comment and report quarterly on estimates of jobs funded and counted as full-time equivalents (FTE) as reported by recipients of Recovery Act funds.[1] To assess the quality of FTE reporting by awardees participating in the National Telecommunications and Information Administration's (NTIA) Broadband Technology Opportunities Program (BTOP) and the Rural Utilities Service's (RUS) Broadband Initiatives Program (BIP), we examined recipient-reported data publicly available at Recovery.gov as of August 1, 2012, for these two programs over the 10 quarters in which they reported FTE data.[2] While Recovery Act recipients' reporting of FTEs began in September 2009, the first quarter that FTE data were submitted for the BTOP and BIP programs was the first quarter of 2010 for BTOP and the second quarter of 2010 for BIP.

Our assessment of the FTE reporting included interviewing NTIA and RUS program officials familiar with awardees' recipient reporting and a review of the FTE figures and other recipient reported data. Our matches showed a high degree of agreement between the agencies' assessments of FTE positions reported and our analyses of information recipients provided on their quarterly reports. Based on our analyses and interviews with agency officials, we determined that the recipient-reported data appeared to be sufficiently reliable for the purpose

[1]Pub. L. No. 111-5, § 1512(e), 123 Stat. 115, 288 (2009). FTE data provide insight into the use and impact of the Recovery Act funds, but recipient reports cover only direct jobs funded by the Recovery Act. These reports do not include the employment impact on suppliers (indirect jobs) or on the local community (induced jobs). Both data reported by recipients and other macroeconomic data and methods are necessary to understand the overall employment effects of the Recovery Act.

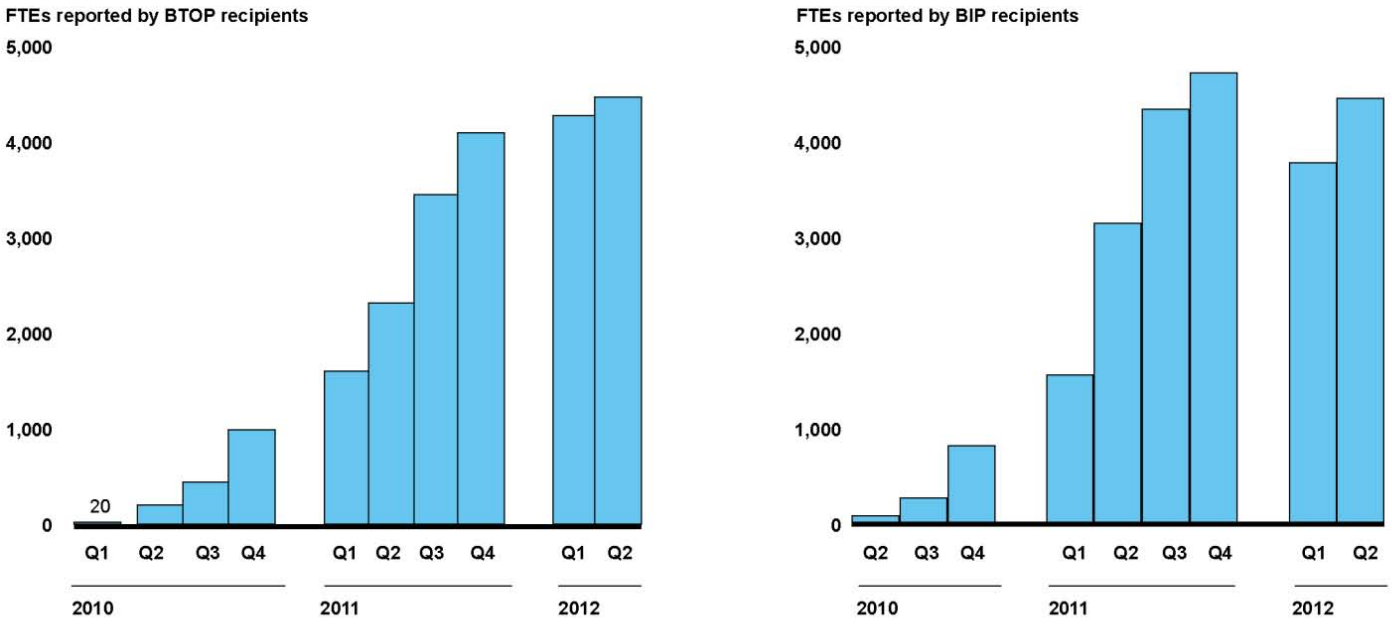
[2]In addition to conducting our analyses of recipient report data for BIP and BTOP programs under the Recovery Act, we continued, as in prior rounds, to perform edit checks and analyses on all prime recipient reports to assess data logic and consistency and identify unusual or atypical data.

of providing summary, descriptive information about FTEs and other information submitted on grantees' recipient reports.[3]

The FTE data reported by BTOP and BIP recipients showed an overall rise in the level of employment activity among the projects. As shown in figure 3, the number of FTEs reported by both programs steadily increased from quarter to quarter in 2010 and 2011 with BTOP continuing to show an increase in the second quarter of 2012 while BIP showed a decrease during the first quarter of 2012, and an increase from that in the second quarter of 2012.

[3]We did notice, however, in our review of BIP's FTE data that some recipients did not report their FTEs in accord with RUS guidance. Recipients that received awards that were a combination of loans and grants were to report FTEs separately for each component of the award. RUS officials stated that they instructed the recipients that funds should be drawn down proportionally from the loan and grant, and to divide FTEs along that same proportion. Thus, if the award is 50 percent loan and 50 percent grant, then FTEs for the entire project were to be divided evenly between the grant and the loan reports for the reporting quarter. We observed that there were recipients who received combination awards with different, unequal grant and loan award amounts, but reported FTEs equally split between the loan quarterly report and the grant quarterly report. The apportioning of the FTEs did not match the apportioning of the loan and grant amounts. RUS officials stated that without following up with the individual recipients, they could not determine the reason for this.

Figure 3: FTEs Reported by BTOP and BIP Recipients, January 2010 through June 2012



Source: GAO Analysis of Recovery.gov data.

Notes: FTE values are shown for each individual quarter and are not cumulative.
Technical assistance awards for BIP are not included in the totals.

Recipients reported that BTOP-funded FTEs increased from about 20 FTEs in the first quarter of 2010 to a peak quarter of about 4,500 FTEs in the second quarter of 2012. BIP recipients reported an increase from 86 FTEs in the second quarter of 2010 to about 4,500 in the second quarter of 2012, with a peak of over 4,700 FTEs in the fourth quarter of 2011.

Appendix III: Comments from the Department of Agriculture

Note: GAO comments supplementing those in the report text appear at the end of this appendix. Page numbers in the draft report may differ from those in this report.

United States Department of Agriculture
Rural Development
Office of the Under Secretary

SEP 4 2012

Mark L. Goldstein
Director, Physical Infrastructure Issues
U. S. Government Accountability Office
441 G Street, NW
Washington, D.C. 20548

Dear Mr. Goldstein:

Thank you for providing the United States Department of Agriculture's (USDA) Rural Utilities Service (RUS) your Government Accountability Office (GAO) draft report entitled, "*RECOVERY ACT: Broadband Programs are Ongoing and Agencies' Efforts Would Benefit From Improved Data Quality,*" Report Number GAO-12-937 for review. USDA offers the following comments on the draft report and requests that a copy of these comments be included in your final report. USDA's response is focused primarily on portions of the GAO report relating to USDA's RUS.

We commend GAO for providing this report and a recommendation on ways we can better demonstrate the success of broadband deployments financed through the American Recovery and Reinvestment Act (Recovery Act).

As background, USDA's RUS is a policy, planning and lending agency that makes loans, loan guarantees and grants available to finance rural electric, telecommunications and water and wastewater infrastructure. It oversees a $65 billion portfolio of rural infrastructure loans that it has awarded. These investments support the development of sustainable local and regional economies, and attract and leverage private capital in rural and tribal areas.

Through the Recovery Act, RUS, alongside the Department of Commerce's National Telecommunications and Information Administration (NTIA), was given responsibility to provide financial resources to promote the expansion of broadband infrastructure throughout the United States. RUS used the 2.5 billion budget authority appropriated by the Recovery Act to make grants, loans and loan/grant combination awards. In total for RUS' Broadband Initiatives Program (BIP), this level of funding supported more than $2.33 billion in grants and $1.19 billion in loans made to 320 projects totaling over $3.5 billion in program level. Of those 320 projects, there were 297 for infrastructure, 4 for satellite broadband service support and 19 for technical assistance, the majority of which went to tribal communities.

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Grant dollars were targeted to those areas with the greatest need of service and that were the most rural. Grant dollars were also used to leverage additional private investments in broadband infrastructure projects. RUS focused its efforts to help communities gain "sufficient access to high speed broadband service to facilitate rural economic development…." as required by the Recovery Act.

Through BIP investments RUS broadband will connect nearly 7 million rural Americans, along with more than 360,000 businesses and more than 30,000 critical community institutions, such as schools, healthcare facilities, and rural public safety agencies, to new or improved service. The projects funded will bring broadband service to 2.8 million households, spanning across more than 300,000 square miles in 45 states and 1 U.S. territory. These projects also overlap with 31 tribal lands and 125 persistent poverty counties, and they are estimated to create more than 25,000 immediate and direct jobs for rural workers in a variety of industries.

Data provided by the United States Department of Education show that more than one million K-12 students attend school within areas served by BIP awards. More than 100 colleges and technical schools are located in areas served by BIP awards. Data provided by the United States Department of Health and Human Services show that nearly 600 rural healthcare facilities are located in areas served by BIP awards. All of these healthcare facilities will gain access to advanced broadband services, which can expand the use of telemedicine and electronic medical records initiatives.

The response to BIP was tremendous. Our funding ratio was roughly only one in ten applications approved. It was a rigorous competition with multiple checks to verify compliance with the statute and regulations. There were a number of good projects which simply could not be funded. We are hopeful that many of these applicants consider participating in our ongoing Farm Bill Broadband Loan Program and our Community Connect Grant program. Some are submitting new applications to bring needed services to rural areas.

Winning an award in a competitive process is only the beginning. The Agency's 75-year history of scrutiny of projects continues throughout the project's life. Portfolio management is a Rural Development priority. That sustained level of vigilance, supervision and review has led to the rescission of 38 BIP awards. As a result, nearly $300 million in program level funding has been returned to the Treasury.

Before commencing BIP projects, recipients were required to execute RUS loan and grant Agreements. They are also required to complete environmental and historic preservation reviews. In order to receive loan and grant funds, or "advances," under a loan or grant, the recipient project must be fully compliant with these requirements and can only submit a request for funds to the RUS staff after requirements are met.

RUS technical and financial staff reviewed the requests for advances to ensure that they comply with the BIP requirements and are consistent with the budget and network system design submitted that was approved by RUS during the application process. Recipients generally determine the timing of the loan/grant advances. Under the Recovery Act, contracts signed by

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awardees require that all loan/grant funds must be advanced by September 30, 2015, or they will be rescinded by RUS and returned to Treasury. In light of the current economic climate and the urgent need to put Americans back to work, the Administration directed agencies to accelerate spending of the remaining Recovery Act funding. Accordingly, RUS and senior USDA officials have repeatedly encouraged awardees to complete Recovery Act projects as quickly as possible, and have asked each awardee for a schedule by which they expect to expend funds and complete their projects. RUS field employees – our General Field Representatives (GFRs) and Field Accountants (FAs) – vigorously monitor the progress of construction and compliance by recipients with BIP requirements, together with a highly competent and focused National Office staff.

The vast majority of the BIP awards were obligated between March and September 2010. Projects are progressing well and within expectations. RUS has worked closely with Federal and state partners to complete required reviews and to address regulatory or processing issues. The Agency is working closely with awardees to expedite project construction.

RUS manages a Telecommunications program of approximately $4 billion; and makes approximately $1 billion in additional loans and grants per year. With the $3.5 billion in BIP awards, our Telecommunications portfolio nearly doubled in less than a year. This tremendous increase in our portfolio had to be managed in a prudent manner. It also contrasts with NTIA's Broadband Technologies Opportunity Program (BTOP) which was solely a grant program. As such, RUS' primary goal was to collect accurate and timely financial data from awardees. As a lending institution, this is critical to ensuring that the taxpayer's investment is properly secured and that the project is both sustainable and financially viable well into the future.

Additionally, while both RUS and NTIA were authorized to utilize three percent of Recovery Act funds for Salary & Expenses (S&E) through September 30, 2010, RUS has continued to manage its Recovery Act portfolio without any increase in its S&E budget since that time. Despite no additional S&E funds, Rural Development was able to redirect resources to ensure that the BIP program received proper oversight. Staffing was limited and the Agency made the conscience decision to continue to collect rigorous financial data and curtail collection/verification of aggregated non-financial data until after the awards were under way.

The Draft GAO Report negatively contrasts the data collections between both the BIP and BTOP programs, contending that BIP does not have the same data as BTOP. While we agree that RUS focuses primarily on financial data, we do not agree that it is less reliable than non-financial data. Financial and non-financial data collections are used to measure different results. As noted in the GAO report, BTOP focused on middle mile projects which do not provide service to end-users (such as households and businesses), but instead provide a link from the internet backbone to the networks of local service providers. RUS primarily financed last-mile projects that provide service to end-users such as household and businesses. As a result, the performance measures for the program should be different. For a middle mile project, the number of fiber miles laid is a valid measure of performance. However, for a last mile project, the number of fiber miles laid is not as relevant as the number of subscribers. We believe the Draft Report's

See comment 1.

attempt to compare data between the Agencies does not recognize that the projects financed by the two Agencies have different goals and purposes.

See comment 2.

We also disagree with the Draft Report's assertion that RUS does not have adequate data to measure the success of the BIP program. RUS has extensive reporting and tracking mechanisms. As an experienced lender on broadband deployments, RUS already had tools in place to monitor the performance of projects and to be able to ascertain performance measurements. In addition, RUS built additional tracking tools to monitor the performance of BIP projects. These tools are discussed in more detail below along with your Draft Findings and Recommendation for Executive Action.

See comment 2.

Highlights Page: This page infers that that RUS only recently started collecting non-financial data and that this data was not reliable. And as a result, RUS would struggle to demonstrate the progress and effectiveness of the BIP program. These broad statements only take into account the fact that RUS recently starting tracking fiber miles and access points on an aggregated basis. From Day One, through the approval of construction contracts, RUS has been monitoring the construction of fiber facilities and the installation of access points on a project by project basis. As a lender, there was no need to track this at an aggregated level. RUS can readily demonstrate the progress and effectiveness of the BIP program.

See comment 3.

The Highlights page also references a RUS tool that was developed to assist staff in quality control of the subscribership data reported by awardees. The most important part of this process is not referenced and should be included – that these results are provided only after extensive oversight and consultation that the RUS field staff conducts with awardees on an ongoing basis.

See comment 2.

Page 3: In the second paragraph, the statement is made that RUS did not collect data comparable to NTIA and could not assure the quality of their data. As previously indicated, due to the differences in the type of projects financed, the data collected should be different. Also, although RUS may not have collected data comparable to the metrics that NTIA uses, the data that RUS collects is more detailed than NTIA, is very reliable, and its source is RUS review and approval of actual construction contracts. The contracts are tracked against the construction that was approved in the application for each type of construction that was proposed.

See comment 4.

Page 8: At the bottom of the first paragraph the statement is made that RUS requires that BIP awardees submit quarterly reports that provide subscribership data. This is a correct statement, but it does not indicate that these quarterly reports also include financial statements consisting of Income Statements, Balance Sheets and Cash Flow Statements. Again, as a lender, RUS collects extensive financial data from its awardees to ensure that the project is built according to the approved application and contracts, and is sustainable in the long-term.

See comment 2.

At the bottom of the second paragraph it is inferred that RUS did not initially establish indicators to measure the deployment of infrastructure as did NTIA. This is an incorrect statement. RUS' entire monitoring process tracks the deployment of infrastructure in a very detailed manner. For any BIP award, RUS has the ability to detail every piece of equipment purchased or number of fiber miles deployed. There was no need to establish special indicators with the processes that

have been employed for monitoring the projects as these processes inherently monitor the progress of deployment.

Page 12: The first paragraph states that RUS did not establish non-financial performance metrics. This is incorrect. Please reference the comments provided above for Highlights Page, Page 3 and Page 8. RUS did not establish the same type of metrics as NTIA because NTIA's awardees were primarily for middle mile projects and RUS' awardees were primarily last mile projects. Tracking the aggregated number of fiber miles or access points for last mile projects is of very negligible value. Last mile projects need to be tracked on an individual basis and our processes were established with this in mind.

See comment 1.

The last paragraph again makes the incorrect statement that RUS did not begin collecting information until this year and that the quality of the data cannot be assured. Please refer to previous comments.

Page 17: Although the second paragraph indicates that RUS implemented quality control procedures for the collection of subscriber data by developing a tool for staff, the Draft Report does not recognize the data sources for this information or the fact that RUS field staff provide extensive contact and guidance to awardees.

See comment 3.

Page 23: Although the last paragraph acknowledges that NTIA has developed monitoring processes to identify challenges with projects, it does not recognize that RUS has implemented a detailed review process to identify issues with the BIP awards and is constantly providing guidance and assistance to the awardees to overcome any issues with the performance of the award. These processes consist of the BIP Expenditure Report, Draw Throughput Report, Dashboards and Financial Reports, as well as many other levels of monitoring.

See comment 5.

Page 24: In the conclusion, the Draft Report again indicates that RUS did not initially collect non-financial reporting data and that the data it now collects has quality issues. As previously indicated, this is an inaccurate assertion.

See comment 6.

Recommendation for Executive Action: *To ensure RUS is collecting reliable information regarding the effect of investments in broadband, we recommend that the Secretary of Agriculture direct RUS to take steps to improve the quality of its data on the number of fiber miles and wireless access points created by BIP projects.* RUS has already taken steps to improve the quality of its data on the number of fiber miles and wireless access points for BIP, the results of which will be available later in calendar year 2012.

See comment 6.

Again, thank you for your continuing oversight of these critical Recovery Act projects. RUS is proud of our accomplishments in bringing broadband to unserved and underserved through these precious Recovery Act resources and will continue to monitor, track and report on their successful outcomes and value to America.

If you have any questions, please contact John Dunsmuir, Acting Director, Financial Management Division, at (202) 692-0080.

Sincerely,

Dallas Tonsager
Under Secretary

The following are GAO's comments on the Department of Agriculture's letter dated September 4, 2012.

GAO Comments

1. We do not imply that RUS does not or should have the same data as NTIA. Rather, we note that the agencies have financial and non-financial measures of progress. Both NTIA and RUS have reliable financial measures of progress. However, as we note, the financial data do not fully reflect the amount of work completed. Therefore, non-financial data provide additional insight into the progress of the programs toward completion. In its letter, RUS says that the number of fiber miles is not as relevant as the number of subscribers. But, since RUS began tracking fiber miles and wireless access points deployed, we assume the agency considers these important measures of progress. Yet, at the time of our review, RUS officials told us that they could not ensure the quality of the data. We agree that the number of subscribers is an important performance measure for the programs; however, unlike fiber miles and wireless access points deployed, the number of subscribers is not an indicator of the progress of a project toward completion. Rather, it is an outcome-based performance measure for a completed project, as the number of subscribers depends in part on the deployment of fiber miles and wireless access points. Further, as we discuss in the report, RUS officials told us that its subscriber data are inaccurate. Therefore, at an aggregate, program level, RUS does not have accurate non-financial data to measure the progress of BIP.
2. We acknowledge that RUS tracks the progress of individual BIP projects through its review and approval of contracts. RUS noted that it uses the information provided in contracts to monitor the construction of fiber facilities and the installation of access points on a project-by-project basis. RUS also noted that as a lender, there was no need to track these measures at an aggregate level. However, considering the number of BIP projects, the provision of grants in addition to loans, and the emphasis on transparency and quickly deploying Recovery Act-funded projects, aggregated information provides a holistic view of the progress of BIP. In addition, if the underlying project-level data are reliable, it is unclear why the aggregate level information would be unreliable, as RUS officials told us during our review.
3. We included additional information on RUS's efforts in the body of our report.

4. We revised our report to note that the quarterly reports also include awardees' financial statements.
5. We revised our report to identify the additional steps that RUS has taken to help awardees address their challenges, including implementing a detailed review process and providing guidance and assistance to awardees.
6. At the time of our review, RUS officials told us that they could not ensure the quality of the data on the number of fiber miles and wireless access points deployed. RUS officials attributed the problems with data quality to the short collection period, as they had begun collecting these data in June 2012. If RUS takes action and can demonstrate that the data are reliable, we will close the recommendation as implemented.

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Mark L. Goldstein, (202)512-2834 or Goldsteinm@gao.gov.

Staff Acknowledgments

In addition to the contact named above, Michael Clements (Assistant Director), Tom Beall, Crystal Huggins, Bert Japikse, Aaron Kaminsky, Carol Patey, Amy Rosewarne, Beverly Ross, and Jon Stehle made key contributions to this report.

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