Final SBI Project Summary

Performance Progress Report - Attachment A
State Broadband Intitiative Q1-2015

April 30, 2015

Period of Performance: November 2009 - January 2015

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I. DATA COLLECTION PROJECT

A. Project Overview and Objectives

Over the past 5 years, MBI has developed comprehensive statewide broadband datasets, made available through a map gallery on the [MBI web site](#) and incorporated into the [National Broadband Map](#). The primary goal was to significantly improve the quality, completeness, and level of detail about broadband services available throughout the state, allowing MBI to make better decisions about investing in broadband planning and infrastructure.

MBI prepared and submitted an initial dataset to the NTIA in December 2009, based on existing knowledge of broadband availability prior to the start of the grant. Updated datasets were then submitted to the NTIA every April and October for 5 years, concluding in October 2014, based on data collected from broadband service providers and Community Anchor Institutions (CAI). The datasets included:

- Wired broadband availability, technologies, and speed by census block and street segment;
- Wireless broadband availability, technologies, and speed by service area;
- Middle mile interconnection facility descriptions, and locations; and
- CAI broadband service information and locations.

Data processing and verification methods are explained in detail in the Massachusetts Methodology papers included with each data submission, and are available on the SBI Mapping Reports page of the MBI web site. Additional data collected and developed by MBI were used to verify or modify the broadband availability data from the providers. Key data verification efforts included:

- Collecting and maintaining broadband survey data collected through MBI's on-line survey, paper surveys distributed at events or by the towns, and targeted phone calls;
- Developing and refining street-level cable and DSL service area models through existing infrastructure data sources, field surveys, and community engagement, including an extensive cable and DSL community map verification project completed with the assistance of five Regional Planning Agencies (RPA);
- Completing mobile wireless drive studies across western and central Massachusetts and on Martha's Vineyard with assistance from Fitchburg State University and Westfield State University students, to capture wireless capacity, signal strength, and network quality information and utilizing the FCC mobile speed test app; and
- Giving providers feedback and data review opportunities through data summary reports, PDF maps, and a secure on-line provider mapping portal.

Other significant project activities included:

- Negotiating and executing Non-disclosure agreements (NDA) with 17 broadband service providers to protect information they consider confidential;
- Developing and launching the interactive Massachusetts Broadband Map website on February 17, 2011, the same day as the National Broadband Map launch;

- Continuing website development throughout the life of the project to increase functionality and improve usability of the interactive mapping tools;

- Updating the MBI public broadband survey and CAI survey web sites;

- Researching and analyzing adoption statistics, resulting in a broadband adoption report; and

- Using broadband service areas and address points to identify unserved populations within towns served by cable and supporting planning efforts for a broadband expansion project.

B.   Project Milestones and Timeline

Milestone	Date
Began negotiating NDAs with broadband service providers	November 2009
Preliminary broadband availability data submission	December 21, 2009
Created on-line CAI surveys	February 2010
Interim Round 1 broadband availability & CAI data submission	March 31, 2010
Round 1 broadband availability & CAI data submission	April 30, 2010
RFP and vendor selection for web development	May - June 2010
Round 1 broadband availability & CAI data resubmission	June 15, 2010
Kicked off Phase 1 of community map verification with RPAs	July 2010
Acquired & tested drive study equipment and software	November 2010
Round 2 broadband availability & CAI data submission	October 8, 2010
Fitchburg State University students pilot drive study	November 2010
Began engaging communities in broadband map verification	December 2010
Launched the Massachusetts Interactive Map website	February 17, 2011
Round 3 broadband availability & CAI data submission	April 1, 2011
MBI staff and Westfield State University students drive studies	April - July 2011
Completed Phase 1 of community map verification with RPAs	September 2011
Round 4 broadband availability & CAI data submission	October 1, 2011
Kicked off Phase 2 of community map verification with RPAs	October 2011
Round 5 broadband availability & CAI data submission	April 1, 2012
Completed new CAI survey website	August 2012
Round 6 broadband availability & CAI data submission	October 1, 2012
Completed Phase 2 of community map verification with RPAs	December 2012
Launched provider data review portal	January 2013
Round 7 broadband availability & CAI data submission	April 1, 2013
Round 8 broadband availability & CAI data submission	October 1, 2013
Round 9 broadband availability & CAI data submission	April 1, 2014
Purchased statewide business dataset	April 2014
Completed broadband adoption analysis and report	July 2014
Completed new public broadband survey website	July 2014
Street level data sharing & review with cable providers	July - December 2014
Round 10 broadband availability & CAI data submission	October 1, 2014
Cable map verification meetings with target communities	November - December 2014

C.   Project Outcomes and Benefits

In 2009, Massachusetts had just begun to take a deeper dive into understanding the status of broadband availability in the Commonwealth, working on improving the accuracy and granularity of the existing data. MBI was working with the state GIS agency, MassGIS, to use existing cable strand and central office (CO) location data to develop approximate street level service area models in western Massachusetts. The greatly improved data resulting from the State Broadband Initiative (SBI) program has and will continue to be valuable for planning and executing programs to expand broadband into unserved areas over the next several years.

An overview of some of the key benefits, which are notably focused on relationships and data, includes:

- Significantly more comprehensive, granular and accurate data – moving from town based survey and word-of-mouth information to census block (i.e., neighborhood) based provider information that included more technologies and companies as well as speed information;

- Acquiring in-house Geographic Information Systems (GIS) skills and resources, and demonstrating the value of integrating GIS into broadband projects from the outset and the importance and utility of good spatial data;

- Established data sharing relationships with providers, which have already proved valuable on a cable expansion project as MBI continues to increase the accuracy and granularity of the data in moving from census block to street level data;

- Developing relationships with town administrators and select board members, local broadband committee members, and other community broadband activists – those who generally know the local infrastructure and conditions best, who MBI is still actively engaging with on multiple last mile broadband planning and expansion projects;

- Forming relationships with SBI colleagues from neighboring states – including periodic New England working group meetings – and throughout the country that are solving similar problems, creating opportunities to exchange methods, share results, and discuss lessons learned;

- Leveraging overlapping CAI data requirements between the SBI and Broadband Technology Opportunities Program (BTOP) project and ongoing network operations oversight, for which the CAI data continues to be helpful in evaluating network adoption rates and issues; and

- Participating in cross-agency collaborations and multi-state, multi-discipline working groups, resulting from additional overlap and synergies with other federal grant programs (e.g., BTOP and FirstNet) in the New England region.

Project Evolution

The census block based broadband availability data developed through this program is significantly improved compared to the program's beginning, and MBI will continue to use that data, now being collected by the Federal Communications Commission (FCC), for statewide efforts. However, the focus of MBI's data collection and verification efforts have shifted to improving granularity to reach the street and address level in the unserved and underserved areas.

MBI reviewed and made improvements to its tools and processes throughout the grant period, demonstrated in part by the implementation of several pilot projects. Each pilot project involved a review of lessons learned that were evaluated for incorporation into the next phase of the project. For example:

- The two RPAs that participated in the pilot cable and DSL community map verification project recommended strategies for conducting outreach, resource suggestions for map reviewers, map design suggestions, and map review instruction suggestions.
- Students from Fitchburg State University that participated in the pilot wireless drive study project provided insights on phone battery and overheating issues, software glitches, route map design, and navigation difficulties.

The websites and other tools used in or developed under this project were evaluated and replaced or modified over time to improve functionality and user experience including:

- Working with the software vendor, QoS Solutions, to improve the performance and quality of the data acquired during the drive studies.
- Redesigning the on-line public broadband survey and associated speed test to standardize data entries and streamline the data integration and validation process;
- Developing a custom CAI web survey that allows repeat users to access and update the most current information in the database and MBI staff to save considerable time formatting, merging, and correcting data, which replaced the original surveys that proved to have difficult and time-consuming formatting to work with; and
- Enhancing the interactive map website based on internal and external user feedback from the general public and service providers, including feedback from a small fixed wireless provider that led to a more intuitive interface and new search functionality.

Findings

National providers found it difficult to review and respond to slight variations in the data requests from each state. The more clarity the providers had from the national level, the more smoothly things went. Any future data collection that involves similar coordination will benefit greatly from better defined requirements and processes up front.

MBI encountered numerous data collection challenges related to non-disclosure agreements, data formatting, and provider resources throughout the grant period. Although these improved significantly over the course of the project as relationships were established and processes were streamlined, the best solution was generally personalized one-on-one attention or, in some cases, use of a technology consultant to act as a go-between.

Community outreach played an important part in MBI's data verification process. MBI compared the data received directly from providers to other data sources collected and developed by MBI. Outreach performed by MBI and the RPAs demonstrated that the level of broadband knowledge and involvement in the towns and levels of feedback varies widely, from extremely knowledgeable to virtually non-existent. In MBI's experience, unserved and underserved regions generally, but not always, had the most active and knowledgeable people.

Data Collection Details

The majority of providers, including the key providers, participated in the program and are included in the data submissions. The number of providers included in the data submissions increased from 19 in the first round to 37 in the final round. Throughout the 10 data submission rounds, MBI included data from 42 different providers, which is includes fluctuations in providers due to mergers and drop-outs.

The tables below provide a summary of the 10 official data submissions. Detailed information on each data submission was included in an accompanying "data package" spreadsheet, methodology paper, and read-me file, available from the National Broadband Map and Broadband USA website download pages.

Table 1: Summary of Semi-Annual Broadband Availability Datasets

Submission	Census Blocks		Road Segments		Wireless Areas	
	# Providers	# Records	# Providers	# Records	# Providers	# Records
April 2010	19*	1,173,923	14*	79,927	N/A	N/A
October 2010	16	225,818	10	7,181	9	1,687
April 2011	17	269,170	10	10,917	12	20
October 2011	18	424,663	11	8,721	14	24
April 2012	18	418,996	11	11,142	15	24
October 2012	18	419,154	11	11,819	15	27
April 2013	18	414,502	12	11,682	16	31
October 2013	18	407,031	12	11,327	16	35
April 2014	17	407,159	12	9,534	15	37
October 2014	19	413,717	12	9,755	17	45

Total includes wireline and wireless providers. Wireless service provider data included in census block and road segment datasets in this submission.

Table 2: Summary of Semi-Annual Middle Mile and CAI Datasets

Submission	Middle Mile		CAIs	
	# Providers	# Records	# Institutions	# Records
April 2010	10	220	*[1]	4,333
October 2010	12	418	*[1]	1,310*[2]
April 2011	15	546	4,291	4,382
October 2011	17	599	4,282	4,558
April 2012	17	582	4,283	4,595
October 2012	17	602	5,069	5,343
April 2013	16	303	5,072	5,325
October 2013	16	278	5,224	5,657
April 2014	16	107	6,628	7,274
October 2014	16	108	6,258*[3]	6,556*[3]

[1] Unique CAI counts not calculated for these data submissions.

[2] CAIs without broadband service information were not included in this submission.

[3] Removed extra CAI records unintentionally added in the previous submission.

Key Partnerships

MBI worked closely with MassGIS at the start of this grant to acquire initial street level cable and DSL data used for provider data verification and to support MBI as it developed its in-house GIS capabilities. MassGIS also donated road and orthophotography data that served as in-kind matching contribution for the grant funding. Many other datasets maintained by and made publicly available on the MassGIS website were used throughout the course of this project, including many of the initial CAI datasets.

MBI worked with WesternMA Connect, a regional broadband organization, and RPAs in western and central MA to verify or correct DSL and cable service area data in their regions. The RPAs prepared maps for review and feedback from the communities, recruited and coordinated with town representatives, and incorporated the community feedback. The five RPAs were:

- Berkshire Regional Planning Commission (BRPC);
- Central Massachusetts Regional Planning Commission (CMRPC);
- Franklin Regional Council of Governments (FRCOG);
- Montachusett Regional Planning Commission (MRPC); and
- Pioneer Valley Planning Commission (PVPC).

MBI, along with state and regional partners, conducted CAI outreach activities to encourage program and survey participation. These organizations assisted MBI in distributing and voicing support for the survey, publishing announcements in organization newsletters, allowing MBI to present at organization meetings, and, when available, sharing their own datasets of CAI locations and broadband usage. Partners that provided CAI outreach support include:

- Massachusetts Board of Library Commissioners (MBLC);
- Central/Western Massachusetts Automated Resource Sharing (C/W MARS), connecting libraries in central and western MA;
- Massachusetts Department of Elementary and Secondary Education (ESE);
- Massachusetts Chiefs of Police Association (MCOPA);
- Massachusetts Municipal Association (MMA;) and
- Massachusetts Department of Revenue (DOR).

II. ORIGINAL PLANNING PROJECT

A. Project Overview and Objectives

MBI partnered with WesternMA Connect, Inc. (Connect) to develop and implement a planning program that would identify and address key broadband access and adoption problems and support other last mile planning initiatives in western and central Massachusetts. This region was targeted because it lacked the broadband infrastructure and resources typically available in the rest of the state. Connect is a regional leader in efforts to encourage the deployment of broadband infrastructure and improve broadband access in western MA. Their work on this project can be grouped into three principal categories:

- Identifying barriers and assets to deploying broadband access in the region;
- Conducting outreach and capacity building to targeted audiences and the general public; and
- Pursuing efforts that encourage the adoption of broadband.

To accomplish this mission, Connect worked with the five western and central Massachusetts regional planning agencies (RPA):

- Berkshire Regional Planning Commission (BRPC);
- Central Massachusetts Regional Planning Commission (CMRPC);
- Franklin Regional Council of Governments (FRCOG);
- Montachusett Regional Planning Commission (MRPC); and
- Pioneer Valley Planning Commission (PVPC).

Key activities conducted by Connect and the RPAs included:

- Compiling information on local conditions that could impact the deployment of both wireline and wireless broadband infrastructure;
- Working with select municipalities to examine and recommend changes to their zoning bylaws to lessen barriers to wireless broadband deployment, summarized in a Wireless Broadband Zoning Bylaw Project report as a reference for other communities;
- Conducting outreach and building capacity – targeting local officials, Community Anchor Institutions (CAIs), service providers, and the general public – to encourage broadband adoption and educate them on opportunities and benefits of the *MassBroadband 123* fiber-optic network build, a Broadband Technology Opportunities Program (BTOP) middle mile project;
- Developing materials to support demand aggregation studies, including a sample survey that can be used by municipalities or other community groups to collect demand information to share with broadband service providers;
- Creating an "Innovative Uses of Broadband in Your Community" guidance document, illustrating the benefits and uses of next generation broadband (e.g., fiber-optic networks) to CAIs;
- Building a database of major employers that could be targeted for marketing of next generation network services, to encourage broadband adoption by the private sector;

- Developing and distributing a CAI baseline inventory survey for municipal CAIs and public schools in the *MassBroadband 123* project area, to assess current telecommunications contract terms, spending, and current and anticipated usage; and

- Developing a service provider Request for Information (RFI) and aggregating responses provide CAIs with an "apples-to-apples" comparison of the types and cost of services expected to be offered by service providers using the open-access *MassBroadband 123* network.

In addition to the work performed by Connect and the RPAs, MBI employed contractors with telecommunications expertise to:

- Meet with infrastructure builders and service providers to review opportunities and discuss potential constraints in deploying infrastructure services;

- Perform comprehensive last mile analyses to identify and characterize the underserved areas in western and central MA; and

- Perform cost benefit analyses for deploying various last mile solutions in the underserved communities.

B.   Project Milestones and Timeline

Milestone	Date
Project kick-off meeting with MBI, Connect, and RPAs	December 2009
Hosted municipal broadband forum	February 3, 2010
Created initial community contacts database	January 2010
Hosted regional outreach meetings	September 2010
Completed final route conditions database	December 2010
Hosted a broadband technologies summit	March 19, 2011
Completed final wireline & wireless facilities databases	May 2011
Held wireless technology workshop to educate RPAs	July 2011
Hosted regional outreach meetings	October-– November 2011
Completed comprehensive last mile analysis	September 2011
Completed cost benefit analysis	December 2011
Developed draft zoning bylaws for 3 pilot towns	March 2012
Completed a guide on innovative uses of broadband	November 2012
Hosted initial CAI informational workshops	May 2012
Distributed CAI baseline inventory survey	July - December 2012
Completed major employers marketing database	November 2012
Completed wireless broadband zoning bylaw report	December 2012
Coordinated and prepared materials for municipal briefings	October 2012 – September 2013
Released two rounds of service provider RFIs	January - March 2013
Hosted final CAI workshops	January - June 2013
Aggregated and posted final service provider RFI responses	April 2013
Completed final project report	December 2013

C.   Project Outcomes and Benefits

Connect's planning activities coincided with and directly supported the *MassBroadband 123* network deployment and other MBI projects in the region. Therefore, the successes of the planning project were closely tied to the successes of the *MassBroadband 123* project and subsequent network operations. One of the most significant benefits of the project is the experience gained by all parties involved, including MBI, Connect, the RPAs, CAIs, municipal officials, and many others.

Project Evolution

Research and data gathering were a necessary first step for this project. The resulting databases enabled the team to identify needs, generate education materials, advise stakeholders, and define more specific project goals. Many of the project activities were spawned from this initial data collection effort or the results of the activities that followed. This flexibility made the project more dynamic and meaningful. For example:

- While developing the wireless facilities database in 2010-2011, Connect and the RPAs determined that many existing zoning bylaws inadvertently impeded fixed broadband deployment by treating fixed and mobile wireless facilities the same, indicating a need for a wireless zoning bylaw review project;

- Vague feedback from some communities indicated a need for additional assistance in understanding how to acquire services on and benefit from the MassBroadband 123 network, leading to development of a guidance document in late 2012 on innovative broadband uses, CAI baseline inventory survey, and service provider RFI; and

- Survey responses identified a need for individual municipal briefing meetings to explain the specific steps necessary for municipal CAIs to access broadband, at which point Connect began preparing materials and facilitating meetings between the municipalities and MBI technology outreach teams, beginning in late 2012 and continuing beyond the end of the grant period.

One of the desired benefits of the municipal briefing meetings was to assist schools and municipally-based CAIs to sign up for robust broadband services as quickly as possible as the MassBroadband 123 fiber-optic network became operational. Although impossible to know the exact impact of these meeting on subscription rates, as of April 2015 there are 453 municipal CAIs that have an active service on the *MassBroadband 123* network at their location.

Communications, Outreach and Education

Outreach and education are two of the key components of the planning project, which went hand in hand. Looking back on the project, we can say that:

- Valuable connections were made between MBI and stakeholders and among stakeholders, enabling more open dialogue;

- Developing municipal government media outlet contacts and community venue databases were essential to facilitating outreach;

- Recruiting single points of contact from each community was critical first step to all outreach tasks, simplifying communications and focusing education efforts;
- Using local staffing resources increased overall knowledge of broadband issues and opportunities across the region at the municipal, regional, and state level;
- Education was a critical component of this project, not only for the target outreach audiences, but for MBI, Connect and the RPAs as well; and
- MBI brought Connect together with the network operator and network design-build contractor from the *MassBroadband 123* project to facilitate information sharing and open doors for Connect to provide planning support.

MBI and Connect did an extensive community outreach tour over the course of the project, hosting meetings that were geographically dispersed across the *MassBroadband 123* project area. These meetings provided general broadband education and updated communities and CAIs on current broadband issues relevant to MBI projects in the region. Outreach lessons learned include:

- Leveraging existing meetings and events and other established systems for communication, such as town newsletters, yielded greater participation in outreach events and a broader platform for messaging; and
- Using repetitive and consistent messaging is critical when discussing complex broadband topics.

Research and Analysis Findings

MBI's telecommunications consultants aggregated demographic research and analysis by clusters and did a cost benefit analysis of deploying various technologies in each cluster. The results of this work, performed in 2011, were incorporated into community outreach materials and recommended strategies to aid last mile deployment in each community. Analyses included:

- Cost and demand drivers, resource characteristics of each community, and aggregation of communities into logical groupings;
- Technology options, per unit costs of each technology, and the most appropriate technologies for each group; and
- Deployment costs estimates for each community for each technology option.

Partner Benefits and Recommendations

The RPAs in western and north central MA have become significantly more aware of broadband issues in their respective regions and have learned a great deal about broadband technology. For example, the wireless bylaw zoning research done in 2011-2012 exposed a gap in understanding and provided an opportunity to build knowledge. Prior to working with pilot communities, an initial workshop was required to educate the RPAs on wireless broadband technologies and how they are impacted by zoning regulations. At the completion of the project, the RPAs documented their experiences to share with others, including the communities in their regions and other RPAs throughout the state. As a testament to the value of this work, the wireless telecommunications facilities bylaw prepared for the pilot Town of Athol passed unanimously at their annual town meeting.

In their final project report, Connect recommendations include:

- Evaluate the value of the local conditions and broadband facilities databases for distribution to last mile providers if updated and/or enhanced;

- Make resources produced through this project easily accessible in a single web page targeted for municipal governments, residents, and businesses;

- Continue engaging CAIs as the *MassBroadband 123* network comes on line and use their experiences and stories to demonstrate the benefits of the network businesses and service providers in the area;

- Follow the progress of the FRCOG's municipal broadband Information Technology (IT) project to determine the potential for replicating this project in other regions to support local government adoption of advanced broadband services[1]; and

- Continue to involve the RPAs to assist with broadband activities in their regions.

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[1] MBI did in fact implement a municipal technical assistance pilot similar to the FRCOG program, to evaluate municipal IT capabilities and needs with respect to broadband and provide recommendations to integrate or improve their use of broadband.

III.   ADDRESS FILE PROJECT

A.   Project Overview and Objectives

The primary goals of this project were to develop address point data that could be used to improve the granularity and accuracy of broadband availability and resulting analysis, and to collaborate with the state GIS agency, MassGIS, to incorporate it into a statewide master address dataset that will be made available to the public.

The bulk of the address data and application development work on this project was done by a competitively procured vendor. Project activities included:

- Creating an address data model compliant with national addressing data standards and compatible with the MassGIS address database;
- Developing address points for 51 towns using existing digital parcel and roof print data from MassGIS, later supplemented with draft address points for 6 additional towns from the parallel MassGIS addressing project;
- Performing initial data quality control (QC) tests;
- Developing tools to automate basic address data standardization tasks to simplify data loading, geocoding, and/or address matching tasks;
- Developing a web-based address maintenance application designed for community volunteers to review, verify and field check address points and allow off-line editing;
- Creating detailed help documentation and training materials for the address maintenance application;
- Making application enhancements based on user feedback from the beta testing and community verification pilot;
- Enlisting and training volunteers to use the application and verify or correct the addresses and locations during the pilot;
- Conducting an in-depth review of the address data to identify and correct errors discovered during the pilot phase; and
- Conducting community outreach to verify and correct street names for each town, which will be used to correct street name values in the data or assign street name aliases.

Outreach and training efforts included:

- Working with volunteers from the Town of Leverett[2] to test and provide feedback on the beta application;
- Volunteer recruiting and training meetings with the central and western MA towns of Hardwick, Buckland and Shelburne, in coordination with last mile planning efforts for a cable expansion project.

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[2] The Town of Leverett is a western MA community that was in the process of designing and building a municipal fiber-optic network in August 2013 when they participated in the beta testing.

B. Project Milestones and Timeline

Milestone	Date
Project kickoff and scope definition with MassGIS	January 2012
Select address data and application development vendor	September 2012
Complete draft functional requirements for application	November 2012
Complete initial draft of master address dataset	December 2013
Complete address standardization toolkit	February 2013
Complete and launch beta address maintenance application	April 2013
Beta application testing with Leverett	August 2013
Completed application help documentation	June 2014
Launch updated address maintenance application	June 2014
Pilot community verification with Hardwick, Buckland & Shelburne	June - August 2014
Perform street name verification outreach	June 2014 - January 2015
Complete new address standardization toolkit	January 2015
MBI staff and consultants QC master address dataset	August 2014 - ongoing

C. Project Outcomes and Benefits

This project was significantly more time consuming and complicated than originally anticipated, but resulted in a comprehensive address dataset that has proven to be very good in many of the communities reviewed. Although additional work remains to be done to improve the accuracy of the data, it is already being used to support last mile planning and is much more accurate than commercial datasets previously used for that work.

Project Evolution

MBI and MassGIS have collaborated on this project since the grant application process. MassGIS has been working on its own address point dataset for public safety, in parallel with this project. The projects were naturally compatible, since MBI is focused on the rural communities of western and central Massachusetts while MassGIS had an initial focus on urban areas.

The original goal was to create address points for 45 towns in western MA that lack robust wireline broadband infrastructure. The fastest technologies available to these communities are DSL, basic fixed wireless, or satellite. Based on analysis performed with the broadband availability data, an additional 12 underserved towns – in towns with partial cable coverage – were added to the list to enable address-based analysis to support last mile planning projects. It was determined that MBI would focus on these 57 unserved and underserved towns identified using the broadband availability data, while MassGIS addressed the remainder of the state.

In order to keep the projects from diverging too far, MBI included MassGIS in the database and application design discussion to factor in data compatibility and sharing requirements. The design and use of the address maintenance application has changed over time to accommodate project

requirements and data quality realities. The original project plan contemplated a publicly accessible application that paid users 15 cents for every address they entered that was verified by another user.

There was concern that a public, crowd sourced dataset would have too many coverage gaps to allow meaningful conclusions to be drawn from analysis performed to support last mile broadband planning, which would need extensive and time consuming review and editing to fill in the gaps. As a result, it was decided to recruit volunteers from the communities that have a vested interest in producing a quality product and are accessible if any questions or concerns arise from their work.

It became evident during the community verification pilot that additional QC and data development and needed to be done before rolling the project out to other towns. Due to the complexity of the data, MBI decided to address this work in-house and through consultants prior to engaging additional communities. Despite these challenges, the draft address dataset has already been a valuable and high profile broadband planning resource on MBI's last mile projects.

Address Data Details

The initial goal was to generate 27,000 address records in 45 towns. To date, we have approximately 42,000 address records and 103,000 address points in 57 towns. Additional review and editing work remains to be done to address outstanding data quality issues; however, the majority of the 57 communities have reviewed and provided feedback on the initial draft of their address data. MBI is currently in the processing of incorporating this feedback into the master address dataset and adding additional address and broadband deployment related information collected including use classifications, unit counts, part-time/seasonal occupancy indicators, and status as a potential customer.

Examples of data quality issues that continue to be addressed include:
- Duplicate address records or duplicate points;
- Addresses with null or zero building number;
- Unnamed streets or streets with multiple names or spellings;
- Points assigned to the incorrect street;
- Points are not located on the building; or
- Not all buildings at an address have a point.

Partnerships

The partners on this project, MassGIS and WesternMA Connect, were also partners on the data collection and planning projects. For this work, MBI:
- Collaborated with MassGIS on the data model and application design and shared interim datasets with MassGIS, while they were working on a parallel address data development project; and
- Worked with WesternMA Connect on community verification outreach and training to use the address maintenance application, and more extensive community outreach to verify and update street name lists.

IV. APPLICATION AND INTERNET USAGE PROJECT

Project Name: Massachusetts Veterans' Portal

A.   Project Overview and Objectives

The Massachusetts Veterans Portal, known as MassVetsAdvisor.org, is a web portal designed to help military veterans and their family members find benefits and programs that help them transition to and succeed in civilian life. The MassVetsAdvisor.org idea started from the desire to provide a meaningful on-line tool that would reach and benefit a large and diverse population across all of Massachusetts, and encourage the use of Internet and computer technologies.

Military veterans and their families represent approximately 12-15% of the population in Massachusetts and cover a wide range of ages, genders, races, and socio-economic levels, a large number of which have been slow to adopt the use of computer technology and the Internet. The goal of this project was to give veterans and their families a compelling reason to use computers and the Internet through an easy to use tool that would help them find all of the benefits and services they are qualified to receive, from a single source, and assist them in getting those benefits and services.

Project work began in late 2010, was divided into two phases, and concluded in January 2015.

Phase I: Design and Development – This work took approximately 18 months, from late 2010 through the MassVetsAdvisor.org public launch on May 25, 2012. It included:

- Information gathering and research;
- Forming a management team;
- Meeting with veterans and service providers;
- Requirements definition;
- A competitive RFP process to select a software development vendor;
- Creating an outreach and marketing plan;
- Web portal software development; and
- Loading benefits data into the web portal and testing.

Phase II: Maintenance and Operation – This work was performed from the time the web portal was launched through the end of the grant period, and continues today. This work focused on:

- Maintaining and updating the information in the web portal;
- Improving the web portal and adding new features;
- Extensive outreach, training and support;
- Evaluating the program's success;
- Developing a sustainability plan;
- Preparing the software and documentation so it can be shared with others; and a
- Program assessment.

B.   Project Milestones & Timeline

Milestone	Date
Needs assessment RFP completion	December 2011
Stakeholder engagement	February 2011
Formation of Advisory Group of stakeholders	February 2011
Design workshop with stakeholders	March 2011
Preliminary goals & design criteria	March 2011
Requirements definition	April 2011
Requirements validation with focus groups	May 2011
Final requirements definition	June 2011
Web developer RFP completion	July 2011
RFP process, evaluation & award	August 2011
Vendor contract negotiation	September 2011
Software development started	October 2011
Design validation & testing with stakeholders	November 2011-January 2012
Software development complete	February 2012
Software testing	March 2012
Initial data load	April 2012
Initial system and user training	April 2012
Hire MBI Community Manager position	April 2012
Data validation & testing	May 2012
Develop & test operational procedures	May 2012
Web portal go-live and launch event	May 25, 2012
End-user training (VSOs, DVS, providers, outreach events)	June 2012 to present
On-going outreach/training activities	May 2012 to present
On-going operation & maintenance	June 2012-to present
Website refresh, mobile design, new VSO town search	January 30, 2015

C.   Project Outcomes and Benefits

MassVetsAdvisor.org has been used by tens of thousands of veterans, family members, and service providers. Web statistics show that the level of use continues to grow. Since the launch of the web portal on May 25, 2012 there have been:

- Over 120,000 visits to MassVetsAdvisor.org;
- More than 90,000 unique individual users visiting the site (the equivalent of 20% of the population of all veterans in Massachusetts, although the site is also used by veterans' family members, service providers and other interested parties);
- Over 430,000 page views, with consistent growth over time; and
- Approximately 75% of visitors to the site are new first time users.

Information content on the web portal has been continually updated and maintained for accuracy. MassVetsAdvisor.org contains:

- All 140 Massachusetts State and Federal veterans benefits;
- 305 programs and services for veterans, provided by private and non-profit organizations;
- Listings and contact information for all 331 Veterans' Service Officers (VSO), covering every city and town in Massachusetts; and
- Over 4,200 registered users, even though registration is not required to use the site.

User Experience

Visitors to the website are typically looking for specific benefits or programs and their local VSO. An unfiltered search of the 445 benefits and services contained in MassVetsAdvisor.org will display the results in order of popularity. The most viewed benefits and services changes over time – for example, the Massachusetts Welcome Home Bonus was among the top benefits viewed in 2012 when many Operation Iraqi Freedom (OIF) veterans returned from deployment.

The most frequently used features of the web portal, in order, are:

- Open search box on the home page, used to find benefits and services;
- Indices of benefits and programs; and
- VSO search function.

A survey of the web portal was conducted in the fall of 2014 to see who was using the site, if they were able to complete the purpose of their visit, if they were satisfied with the result, and to discover what elements of the website should be improved. Results of the survey were used to inform a refresh of the website home page to simplify searching; in particular, making health benefits more prominent.

Website statistics, survey data, and interviews indicate that MassVetsAdvisor.org was successful in encouraging a large group of individuals to employ technology and broadband. This data shows that the majority of MassVetsAdvisor.org users are older age groups, which often adopt the use of technology at a less rapid pace. Overall, the data demonstrates that users consistently found what they needed, and were generally satisfied with the results:

- Over 70% of all survey respondents indicated they were able to complete the purpose of their visit to MassVetsAdvisor.org;
- Over 65% said the information results were satisfactory;
- 75% of visitors are veterans or family members of veterans; and
- Veterans and family members reported higher levels of satisfaction than the average among all users.

Education and Awareness

The MBI Community Manager worked with the Massachusetts Department of Veterans' Services (DVS), the Massachusetts Veterans' Services Officers Association (MVSOA) and the Boston VA to promote the

portal to those working most closely with veterans and to help train those agencies in the use of the portal. Massachusetts VSOs are natural users and promoters of the portal and have found the portal to be helpful as a source of information for themselves, and as a resource they can recommend to veterans.

Training and outreach activities often went hand-in-hand. The MBI Community Manager, a decorated veteran of the Army Reserve who served a combat deployment in Operation Enduring Freedom (OEF) in Afghanistan, was able to establish good relationships with veterans of all ages and service branches throughout Massachusetts. He participated in a large number of events to promote the MassVetsAdvisor.org website, and provided one-on-one and group training for VSOs, veterans, and service providers. Training included using the portal and basic digital literacy. The BridgestoBenefits.org website was created as a digital literacy supplement to the MassVetsAdvisor.org site.

The broad visibility gained through outreach efforts resulted in continued high use of the web portal, as evidenced by use statistics. Stakeholders interviewed in the summer and fall of 2014 agreed that MassVetsAdvisor.org has provided noticeable, positive results to the veterans they work with daily and that active engagement with the veteran community was essential to the web portal's ongoing success. Outreach activities included:

- Development of comprehensive marketing materials;

- A monthly newsletter that was widely distributed to veterans and veterans organizations;

- Attending, exhibiting, presenting and/or training at veterans related events on a weekly basis, including many events with state and federal government officials;

- Taping of multiple public service announcements, available through Comcast OnDemand and on YouTube;

- Hosting and producing a cable show featuring veterans' benefits on Westborough TV, local public access television;

- Regular participation in other cable-access television and radio appearances; and

- Procurement of in-kind marketing services, most notably electronic highway billboards that still display advertisements for MassVetsAdvisor.org.

Partnerships

MassVetsAdvisor.org has greatly benefited from the participation of a group of highly engaged and supportive stakeholders. The stakeholders see great value in the portal and have been valuable partners to promote its use among veterans and in their agencies, and have continually offered support and suggestions to make the portal better. This project would not have achieved the high level of success it has had without this committed group of stakeholders. The Advisory Group of stakeholders, who participated from the beginning of the project and remain active as the MassVetsAdvisor.org Advisory Board, is made up of individuals representing:

- The Massachusetts Department of Veterans' Services;

- The U.S. Department of Veteran Affairs;

- The Massachusetts Veterans' Service Officers Association;

- Individual Veterans' Service Officers; and
- Other stakeholders from government and private or non-profit service providers, most notably among them the Home Base Program

Although SBI grant funding ended on January 31, 2015, the web portal continues to be operational and under the control of the Massachusetts Technology Collaborative. Work is under way to transition the web portal to the Massachusetts Department of Veterans Services on June 30, 2015. The portal should continue to evolve and be assessed periodically to make sure it meet users' needs and improves efficiencies to help with a complicated and challenging process. Stakeholders have stressed the importance of continued outreach activities and training to maintain and increase the visibility of the portal.

V. OWNERSHIP AND ADOPTION PROJECT

Project Name: CDCs Helping Small Businesses and Non-Profits

A. Project Overview and Objectives

The grant program was established to enable Community Development Corporations (CDC) to provide small grants to small businesses and non-profits that help incorporate or enhance the use of computer and Internet technologies into their daily operations. The project, CDCs Helping Small Businesses and Non-Profits (CDC Project), was intended help these businesses thrive and create jobs in their regions.

MBI worked with four competitively selected Community Development Corporation (CDC) subrecipients, geographically dispersed across the state:

- Dorchester Bay Economic Development Corporation;
- Pittsfield Economic Revitalization Corporation;
- Quaboag Valley Community Development Corporation; and the
- Community Economic Development Center of Southeastern MA.

The overall CDC project goals defined in the Request for Applications (RPA) were to:

- Improve Internet access and computer ownership;
- Build broadband and technology adoption in underserved areas;
- Help approximately 40 small businesses acquire or improve technology skills, and effectively use broadband and computer technology to run and improve their organizations;
- Build capacity in the CDCs to provide broadband and technology assistance in their regions; and
- Provide a vehicle for the CDCs to build additional relationships with small businesses in their regions.

In total, the project distributed $800,000 over two funding rounds to the four CDCs in Massachusetts to help them create and run technical assistance programs for 77 businesses. The four CDCs designed similar but unique programs that fit the needs of their communities and small business awardees. The CDCs were able to develop the capability to create and run technology assistance programs to help small business acquire broadband services, computer technology, and technology skills to improve their businesses.

The program at each CDC included the following components to address the project's overall goals:

- Technology assessment, planning, and training – either conducted by the CDC or by CDC approved consultants;
- Assistance getting up to date computer hardware including computers, printers, mobile devices and other equipment needed by the business;
- Assistance evaluating software needs, selecting and installing software, and software training;

- Assistance creating or improving their on-line presence, with websites, on-line marketing, e-commerce, social media, data exchange, and other on-line services; and
- Assistance with establishing a broadband connection or increasing bandwidth.

Work was divided into two phases: program creation and program implementation.

Phase I: MBI Program Creation – This phase lasted approximately 14 months, from July 2011 through the first round of small business awards in Fall 2012. Work included:

- Information gathering and research;
- Forming a management team;
- Meeting with stakeholders;
- Defining program goals;
- A competitive RFP process to select and contract with the four CDCs;
- CDCs creating their individual programs; and
- CDCs choosing small business awardees through a competitive selection process.

Phase II: CDC Project Implementation – The four CDCs began their technical assistance programs at different times, with the earliest starting in the fall of 2012. MBI provided oversight of and assistance to the CDCs throughout this phase of the project. This work in this phase included:

- Assessing technology needs and creating a technology plan;
- Purchasing and installing hardware, software and technology services;
- Conducting training to the businesses;
- Building on-line services, including websites, e-commerce, and social media;
- Providing support to the businesses; and
- Evaluating the program's success.

B. Project Milestones and Timeline

Milestone	Date
Stakeholder engagement	July 2011
RFA development	Aug-Sept 2011
RFA process, evaluation & award	Dec. 2011 - April 2012
Contract negotiation	May 2012
CDCs create programs	Summer-Fall 2012
CDCs solicit applications and select businesses	Fall - Winter 2012
CDCs conduct program with business awardees	March 2013-May 2014
Project assessment planning and data gathering	Sept. 2013 – Nov. 2014
2nd round of program funding awarded to CDCs	May 2014
2nd round of business selection and programs	June –Sept. 2014
Project evaluation and closeout with CDCs	Dec. 2014 – Jan. 2015

C.   Project Outcomes and Benefits

Although similar, each CDC program had unique elements, and each was successful in meeting the technology needs of the small business awardees. MBI allowed the CDCs to leverage their skills and knowledge of their communities to create individualized programs and approaches. Each CDC gained valuable technology program expertise and capacity, and have integrated technology assistance into their other existing training and business program offerings.

Most business awards were substantially less than the $25,000 maximum, allowing the CDCs to reach many more businesses than the MBI had anticipated. Savings from MBI program administration funds allowed for an additional $200,000 to be reallocated for a second round of awards. The 2½ year, $800,000 program successfully helped 77 small businesses and non-profits, and allowed for upgrades to CDC training facilities.

Impacts to Businesses

Although each business had different needs and uses for technology, all saw benefit from the program. Many of those benefits were quite significant, even for businesses with very small awards. Through access to broadband, new computer equipment, software and training, the CDCs were able to help almost all of the businesses increase operational efficiencies and reduce operating costs. Many businesses were also able to expand their service area, hire additional staff, and increase revenues.

Businesses that had some level of experience with technology, but were held back by the inability to afford new equipment, software or technology services, were often transformed. Examples include:

- Adding online services, including e-commerce and websites, resulting in more customers and increased sales;
- Using on-line marketing and social media to expand market reach;
- Adding automated on-line scheduling and payment tools for customers and clients, allowing the business owners and staff to focus on products and services; and
- Using new software and broadband to exchange data with customers and manufacturers, speeding turn-around and production; thereby increasing sales, production capacity, and efficiency.

The businesses that required the most help were generally smaller businesses that had not used technology before. Although these businesses required the most effort, they also experienced large improvements, brought about by things like automated bookkeeping, point-of-sale systems, and online marketing.

Project Assessment

Although the overall program and the individual CDC programs worked well, it was not without some growing pains. Not surprisingly, the range of technical expertise and capacity in the businesses added a level of complexity and added time to the CDCs' work that may not have been fully anticipated. While

the flexibility to let the CDCs create their own programs was universally appreciated, more templates and streamlined processes are recommended. Suggestions include:

- Developing uniform project tracking, reporting, accounting, and invoicing processes and forms to make administration simpler;
- Creating and publishing a program template, best practices guide, and list of pre-approved consultants to make it easier and quicker to get started, and to make available to other development organizations;
- Scaling programs to available funding; even small amounts of funding can have significant impact;
- Creating a mentoring program to and among organizations operating programs; and
- Embedding the use of technology within the program itself to model effective use of technology in running a business.

The four CDCs involved with this project have all gained knowledge, skills and capacity to run technology assistance programs. Although none has additional funding at this time to provide technology grant awards to small businesses, several of the CDCs have incorporated technology training into their on-going service and assistance programs to small businesses. The technology assistance programs created through this project could easily be continued and replicated, even with modest funding, and would be useful to both the businesses recipients and the organizations running the programs.

This project has clearly demonstrated the positive impacts technology can bring to businesses and how even a small amount of funding to a critical function can have a transformative effect, resulting in increased revenue and jobs. Without this program, many of the businesses would not have been able to take advantage of technology or at a level the program allowed them to. Success stories from selected businesses may be found on the MBI website and in the May 2013 MBI newsletter.

Participant Feedback

Surveys of the CDCs and the business awardees showed that all benefitted from the programs. The CDCs were appreciative of the opportunity to help businesses in their communities improve through technology and for the opportunity to build their own capacity to assist with technology programs. Common themes noted by the CDCs included:

- "The program gave us insight into how small businesses are challenged by and can benefit from greater use of the Internet."
- "A relatively small investment in technology can make a really big difference to a small business."
- "The program brought businesses to us that we hadn't met before, and many benefited from the variety of complementary services we had to offer them."
- "(The program) had a significant impact on internal business operations, enabling most awardees to significantly accelerate their productivity."
- "Inspired us to create a web marketing course for small businesses – (it) has been highly successful."
- "Helped us become more of a resource for technology for small businesses."

Businesses appreciated the program funding for technology and training that they would not have otherwise been able to afford and the improvements that resulted. Representative comments from small business awardees included:

- "The Website alone has been terrific and having the internet to push Facebook, customer recruiting has been enormous. We post items on the web and people are lined up when we open to buy the items."
- "Updated hardware and added new CAD capabilities including software. Improved business processes to increase efficiency and sales."
- "The grant program has helped us double the size of the business through increased ability to manage information."
- "We needed new software as well as computers as the business had grown. We had contracts to do kitchen and bathroom installations with 4 Home Depot Stores. We now have contracts to install for 11 stores as we were able to put forth an organized and professional appearance."
- "The addition of an Ipad, Square register and system allowed us to be more flexible for our customers. We were able to track sales activity by product and time to adjust our product offerings and schedule. We increased our profit margin because of this system."
- "The technology assistance program has helped me increase my presence on social media, interact with the public to promote the business resulting in increased business. It has also help me organize the daily paper work, pay bill, order supplies etc."
- "The Technology Assistance Program helped us designed a new website for our commercial division that has helped to generate over $85k in 2014 in additional sales."

Individual Program Details

Community Economic Development Center of SE MA (CEDC)

CEDC awarded sub-grants to a total of 13 small business and non-profit organizations. The awardees included two non-profits and a wide and diverse range of 11 small businesses, as shown in the table below. CEDC also used $7,000 of their grant to update technology and improve their training lab, including the addition of mobile devices that can be used for client on-site training.

All CEDC awardees completed assessments, created plans, received training and acquired hardware and/or technology services. The program faced challenges resulting from a greater lack of digital literacy than they had anticipated, and the training required to bridge technical skills gaps and language barriers required substantially more time and effort than estimated. However, all businesses reported improvements to their businesses through increased efficiencies and on-line marketing.

Business Name	Location	Grant Amount
4-3-2 Custom Clothing	New Bedford	$4,000.68
Blisscapes Landscape & Nursery	South Dartmouth	$8,400.00
Coalition for Social Justice	New Bedford	$1,240.00
Folco Jewelers	New Bedford	$8,295.49
Illusions Dance Studio	New Bedford	$4,395.70
Immigrants Assistance Center	New Bedford	$14,799.00

Nautical Dive Group	New Bedford	$7,499.98
Path to Vibrant Health	E. Sandwich	$4,178.25
Spanish Speaking Group:		
- Cafeteria Saenz	New Bedford	
- Lucy's Party Store	New Bedford	
- Quichelenses Market	New Bedford	
- Sara's Bakery	New Bedford	
- Taqueria LaRaza	New Bedford	$24,511.18
		$77,320.28

Dorchester Bay Economic Development Corporation (DBEDC)

Awards were made to 20 small businesses, totaling $104,675, as shown in the table below. DBEDC used $3,000 to update its training facility to include mobile devices that can be used for training in other locations or at business sites. All business participants received training and equipment or services. The majority of awardees created a new website or updated an existing one, and most acquired new software to operate their business, ranging from bookkeeping software to industry specific applications.

Business Name	Location	Grant Amount
A Sweet Place, LLC	Dorchester	$5,850.00
Blue Dynasty Entertainment and Travel LLP	Mattapan	$10,500.00
Blue Nile Ethiopian Restaruant DBA Marathon Foods	Jamaica Plain	$3,689.02
Boston Bayside Properties LLC	Dorchester	$7,406.25
Codman Sq. Chiropractic and Rehabilitation	Dorchester	$5,219.33
Common Wealth Realty Services and Property Preservation	Hyde Park	$6,055.04
Discount Shoes Store	Dorchester	$1,500.00
Halisi Day Spa & Salon	Dorchester	$3,763.07
Hyatt Associates	Dorchester	$1,945.53
Island Style Restaurant, Inc.	Dorchester	$1,227.84
K-ZEE African Hair Braiding	Dorchester	$4,926.33
Kasko Art	Braintree	$1,803.90
Logwood Company	Stoughton	$2,724.66
MonkeyShine Studio, LLC	Allston	$8,607.56
Newmarket Business Association	Boston	$11,756.87
Onyx Spectrum Technology	Boston	$964.19
Tails, Inc.	Roslindale	$9,229.21
The Record Company, Inc.	Boston	$7,010.98
Tremendous Maid LLC	Jamaica Plain	$9,148.14
Xposure by Noel	Jamaica Plain	$1,347.57
		$104,675.49

Pittsfield Economic Revitalization Corporation (PERC)

PERC made sub-grants to 17 businesses with awards totaling $180,500, as shown in the table below. Due to their deep experience conducting small business loan programs and the thorough pre-implementation audit and planning work that was done for each small business, PERC had the lowest program operational costs among the four CDCs. As a result, they were able to devote more of their grant to awards.

PERC's individual awards were generally larger than the other CDCs. This allowed the small businesses to acquire more hardware, software, and services, which resulted in substantial changes and improvements for many of the businesses. It was typical for PERC's business participants to create or update their websites, add online services or e-commerce, and implement software to improve the capacity and efficiency of the business.

Business Name	Location	Grant Amount
Ancient Language Collection	Pittsfield	$17,031.14
Bascom Lodge Group	Windsor	$3,750.00
Berkshire Engineering, Inc.	Lee	$20,544.00
Berkshire Fairfield Insurance Agency, LLC	Pittsfield	$14,280.00
Bershire Scenic Railway Museum	Pittsfield	$18,588.00
Berkshire Sterile Manufacturing, Inc.	Lee	$14,529.21
Central Berkshire Habitat for Humanity, Inc.	Pittsfield	$19,928.00
China Array Plastics, LLC	Pittsfield	$25,000.01
Connors Bros. Moving & Storage	Williamstown	$4,875.00
Dottie's Coffee, LLC	Pittsfield	$6,038.04
East Coast Refinishing and Surface Stripping	Pittsfield	$2,250.00
Joe Roth Contracting	Great Barrington	$10,099.00
Klara's Gourmet Cookies	Lee	$1,181.75
Love's Beauty Studio	Pittsfield	$5,494.00
Luma's Muffin & Mug	North Adams	$815.74
Naji's Catering, Inc.	Great Barrington	$6,791.00
PhD Design & Photography	Pittsfield	$9,305.11
		$180,500.00

Quaboag Valley Community Development Corporation

A total of 27 small businesses participated in the program, for a total of $128,912 in awards, as shown in the table below. QVCDC had experience conducting technology programs in the past, and was able to translate that into a very practical and quick moving program.

The majority of business awardees received hardware, software, website design services, and new or improved Internet service. Depending on the identified needs and resulting plan, the scale of the grant

was adjusted. All businesses created technology plans and received training and assistance with their new technology and services. QVCDC also leveraged their other business services and classes to help improve the program participants' overall business operations and management, and established a pre-qualified pool of consultants to assist their awardees.

Business Name	Location	Grant Amount
Balicki Auto Body	Ware	$10,322.51
Breezelands Orchards, Inc.	Warren	$135.06
Carson Center/Valley Human Services	Ware/Westfield	$13,504.98
Chantel Bleau Accounting Services	Ware	$900.00
D & D Fitness Factory	Ware	$1,850.25
Dream Catchers, Inc.	Palmer	$3,513.19
Greene Room Productions	Monson	$2,931.88
Hardwick Post and Beam	Hardwick	$12,976.10
K.E.Y. Property Services	Palmer	$6,022.83
KM Graphics	Ware	$1,873.50
Landscape Evolution	Holland	$1,125.00
Martha Davis, LMT	East Brookfield	$1,478.94
New England Small Farm Institute	Belchertown	$4,950.00
Palmer Trailer Sales	Palmer	$16,894.81
Rainbow Kids	Wales	$3,109.11
ROMEG Enterprises, PC, d/b/a Bright Star Health	North Brookfield	$8,072.38
Sanitation Systems, Inc.	Thorndike	$1,511.35
Saskia Cote, LMT	Bondsville	$943.29
Second Chance Animal Shelter	East Brookfield	$9,243.30
Small Business Solutions	Belchertown	$1,136.73
Southbridge Bicycle	Southbridge	$3,288.75
The Brookfield Institute	Brookfield	$1,419.26
Tony V. Entertainment	Bondsville	$1,799.06
Urgent Transport Courier	Brookfield	$4,015.69
Ware Adult Literacy Center	Ware/Greenfield	$8,947.88
WARE Broadcasting	Palmer	$5,595.19
Wickaboag Family Chiropractic	West Brookfield	$1,351.04
		$128,912.08