**OFFICIAL APRIL 2012 UPDATE SUBMISSION TO
THE NATIONAL TELECOMMUNICATIONS AND INFORMATION
ADMINISTRATION UNDER THE
STATE BROADBAND INITIATIVE GRANT PROGRAM FOR THE
STATE OF MICHIGAN**

April 1, 2012

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COVER LETTER

April 1, 2012

Ms. Anne W. Neville
SBI Grant Program Director
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW Room 4716
Washington, DC 20230

Dear Ms. Neville:

As the State Broadband Designated Entity, in partnership with the Michigan Public Service Commission, please accept this submission from Connected Nation on behalf of the state of Michigan's State Broadband Initiative (SBI) Grant Program, known as Connect Michigan.

It is with highest regard that the collective stakeholders of Connect Michigan offer congratulations to the U.S. Department of Commerce's National Telecommunications and Information Administration (NTIA) on the one-year anniversary of the release of the National Broadband Map. This extraordinary milestone demonstrates the ongoing intense and joint effort of the NTIA, Federal Communications Commission (FCC), state governments, industry, and non-profits like Connected Nation as it continues to serve as a key tool for the American public and policymakers, resulting in smarter investments and targeted state and local broadband policies and programs. We are proud of the role that Connect Michigan has played in creating and maintaining such a powerful tool that has benefitted and surely will continue to benefit not just Michiganders, but consumers and businesses nationwide.

These artifacts should be found to be compliant with the April 1, 2012, deadline for the semi-annual data update and in accordance with the terms of the July 1, 2009, Notice of Funds Availability (NOFA) and all subsequent clarifications pertaining to delivery of state-level mapping of broadband service availability. This packet includes:

Inventory of Deliverables, Connect Michigan: April 1, 2012

NOFA Requirement	Data Transfer Model	Data Description
Appendix A: 1(a)(i)	BB_Service_CensusBlock	Broadband Service Availability of Facilities-Based Providers in Census Blocks of No Greater Than Two Square Miles in Area

Appendix A:	1(a)(ii)	BB_Service_RoadSegment	Broadband Service Availability of Facilities-Based Providers by Road Segment in Census Blocks Larger in Area Than Two Square Miles
Appendix A:	1(b)	BB_Service_Wireless	Broadband Service Availability of Wireless Services Not Provided to a Specific Address
Appendix A:	3(b)	BB_ConnectionPoint_MiddleMile	Broadband Service Infrastructure Middle-Mile and Backbone Interconnection Points
Appendix A:	4	BB_Service_CAInstitutions	Community Anchor Institutions-Listing
Appendix A:	4	n/a	Community Anchor Institutions-Narratives
VII.A.1(a)		n/a	Accuracy and Verification Report
n/a		DataPackage.xlsx	Worksheets of Contact Information, Record Count, and Provider Summary Table
n/a		n/a	List of Changes and Corrections to the Dataset
n/a		n/a	Non-Participating Provider (NPP) Narratives
n/a		n/a	Broadband Provider Roster and Participation Status

In addition, this data update submission should be found to be compliant with the additional program requirements instituted by the National Telecommunications and Information Administration since the time of the October 2011 SBI data submission for the Connect Michigan program. Specifically, these new requirements are:

SBI Data Transfer Model
The submission of the broadband dataset for April 1, 2012, is contained within the SBI Data Transfer Model as released on the Grantee Workspace on January 17, 2012. All efforts have been made to comply with formatting, domain, and metadata requirements to include as much information on each provider as possible.

Additional Submission Guidance
This submission continues to follow the speed technology guidance released by the Program Office on December 22, 2011, to review speed tier codes in correspondence with technology of transmission codes. In the October 2011 submission, descriptions were provided in the methodology paper that offered an explanation for any submitted technology of transmission and speed combinations that were outside of the expected value range. That

practice continues in this submission as technology and speed combinations are reviewed and scrutinized; any questionable information supplied by providers is reviewed more in depth with the provider to ensure the information is accurately captured or a proper explanation is provided as to why the speed information should be submitted as supplied even if it falls outside the expected value range.

In addition to the requirements mentioned above, please find this methodology paper to be inclusive of a new section pertaining to industry mergers and acquisitions – specifically this section will detail any and all mergers or acquisitions that have taken place in Michigan since the October 2011 submission. The intent of this new section is to provide a better understanding of how the broadband provider landscape has changed over time.

This April 2012 semi-annual data update under the State Broadband Initiative Grant Program continues to demonstrate our dedication to implementing the joint purposes of the Recovery Act and the Broadband Data Improvement Act (BDIA) by gathering comprehensive and accurate state-level broadband mapping data, developing state-level broadband maps, aiding in the development and maintenance of the National Broadband Map, and undertaking statewide initiatives for broadband planning.

Broadband Service Availability — Provider Outreach and Verification

This data update submission under the SBI program includes datasets for approximately 87.86 percent of the Michigan provider community, or 123 of 140 total providers. There are 120 participating providers and 3 additional non-participating providers whose estimated coverage areas have been submitted. Of the 120 participating providers, 46 supplied an update to their network or coverage area(s), while 48 have reported no change. The remaining 26 represent providers who previously supplied data but were non-responsive in the April 2012 update effort; therefore their previous dataset is being put forward as part of this compilation. A complete roster by provider depicting participation status and contact record is contained herein. Of the 17 providers that are not represented in the attached datasets, 9 have refused to participate in the voluntary program or were non-responsive to multiple contact attempts, and 8 providers are currently in some form of progress toward data submission but were not able to submit coverage areas at the time of this submission.

As the aforementioned roster and attached methodology documentation will attest, it is the collective opinion of the Connect Michigan principals that all commercially reasonable efforts were made to account for 100 percent of the known Michigan broadband provider community pursuant to this semi-annual data update submission.

Connect Michigan has also continued to perform broadband verification activities through several means. In addition to confirmation of service area(s) by each provider, Connect Michigan conducts field validation efforts. To date, 79 (56.43 percent) providers have been validated through field verification activities. Additional details on verification activities are contained within the Field Validation Methodology.

The Connect Michigan website, (www.connectmi.org), continues to serve a prominent role in the outreach and data collection effort. This program asset provides a way for the general public to participate in the process by offering interactive tools for users to test their connection speed, submit broadband inquiries, or contact a program representative. The Connect Michigan website was redesigned and improved to, among other things, better serve Michigan stakeholders and to achieve goals as established by the State Broadband Initiative Grant Program.

As an indicator of stakeholder penetration, the Connect Michigan website encountered 7,266 unique visits during this reporting period (29,397 total to date for the life of the grant awarded on December 20, 2009). Additionally, this pronounced Web activity netted 191 broadband inquiries over this same reporting period (1,376 grant inception to date). The website also provides the BroadbandStat application, which allows the consumer to confirm or dispute the coverage represented on the broadband inventory map. These consumer-initiated actions are facilitated through the Connect Michigan website and the Connect Michigan interactive mapping tool (BroadbandStat) that offer the citizens the vehicles to provide information regarding availability in their respective service area, either in affirmation or contest of the reported data represented in the Connect Michigan mapping artifacts. Since the initial data collection and release of corresponding maps, feedback in the form of broadband inquiries has allowed Connect Michigan to identify additional areas that are in need of field validation, which is scheduled as soon as possible.

Community Anchor Institutions

Connect Michigan has established an ongoing mechanism for gathering data on the location and broadband connectivity of Community Anchor Institutions (CAI), in accordance with the data requirements of the SBI NOFA Technical Appendix.

In conjunction with the Michigan Public Service Commission, outreach was conducted during this data update reporting period by Connect Michigan to continue identification of existing, centralized sources for CAI connectivity data. Additionally, outreach was coordinated to distribute the CAI survey to institutions throughout the state through multiple methods including a customized online survey available on the Connect Michigan website. Connect Michigan focused mostly on capturing CAI data from the education sector including Michigan Association of Computer Users in Learning, REMC of Michigan Association, and the Michigan Department of Education. Connect Michigan will continue to build upon these relationships over the coming months and utilize its contacts throughout the state to collect data and raise awareness of this project.

From our work in Michigan, as well as other states, we recognize the great value of this data to future collaboration efforts within the state as well as its value to the National Broadband Map. We plan to continue to bring best practices to the Connect Michigan efforts, along with an investment of both human and technical resources required to reach our goal of increasing the data that is secured and reported as part of this process.

The Connect Michigan program exists to improve data on the deployment and adoption of broadband services and to assist in the extension of broadband technology across all regions of the great state of Michigan, as well as the United States through contribution to the National Broadband Map. We look forward to the continuing work ahead.

Respectfully submitted,

Thomas W. Ferree
President and Chief Operating Officer
Connected Nation, Inc.

DATA ACQUISITION: MICHIGAN COMMUNITY ANCHOR INSTITUTIONS METHODOLOGY

In this fifth reporting period of the SBI, Connect Michigan, working in close coordination with the state of Michigan, has established an ongoing mechanism for gathering data on the location and broadband connectivity of Community Anchor Institutions (CAI), in accordance with the data requirements of the SBI NOFA Technical Appendix. During this reporting period Connect Michigan has continued to focus efforts on conducting outreach and raising awareness of this important project.

Connect Michigan has continued to identify and process CAI data obtained through an ongoing statewide outreach campaign. Physical address information continues to be augmented through manual sourcing and geocoded by Connect Michigan through ESRI ArcGIS software.

Connect Michigan continues to utilize a customized online survey hosted through SurveyMonkey, with a landing page on the Connect Michigan website that was developed during the first reporting period. This survey, in combination with a customized data-gathering spreadsheet, was distributed on a regular basis to a targeted list of CAI throughout the state as well as organizations and agencies that work closely with the CAI. Connect Michigan will continue to use these data-gathering tools for future targeted outreach efforts throughout the coming months leading up to the next reporting period. These materials are customized to fit the CAI categories as defined in the SBI NOFA.

The survey can be accessed at this link: http://www.surveymonkey.com/s/RTWDM66.

Connect Michigan conducts significant research as part of an ongoing process to identify existing, centralized sources for CAI connectivity data. In tandem with these efforts to identify existing data, Connect Michigan continues to identify key CAI contacts in an effort to distribute and promote the online survey and raise awareness of the importance of CAI broadband connectivity. Also, when possible, Connect Michigan works with the Michigan Public Service Commission to identify existing relationships that can support CAI outreach.

Connect Michigan has an ongoing mission to educate CAI throughout the state on the importance of participating in the project. Participation by these institutions will raise awareness about the importance of broadband connectivity and the need to report the requested data for inclusion on the National Broadband Map. Connect Michigan also works closely with Michigan Collaborative Broadband Committee to provide continuing education about the National Broadband Map as well as efforts to expand broadband. Connect Michigan worked closely with the Michigan Department of Education as well as other education agencies and associations to educate K-12 schools about their role and impact as a CAI. Moreover, the Library of Michigan continues to be a strong partner, offering regular updates regarding public libraries across the state.

The greatest challenge with collecting CAI data continues to be educating the CAI about the Connect Michigan project as well as self-awareness of their own CAI connectivity (specifically upload and download speeds). Connect Michigan will continue to research key CAI organizations and agency contacts in an effort to raise awareness of this project among CAI. The Michigan Public Service Commission will regularly be briefed on the current CAI data and provided information so

they can assist with outreach and promotion within the state. The Michigan Public Service Commission is an essential resource when researching and identifying agencies and organizations in CAI sectors with minimal responses regarding their connectivity.

A CAI summary of all processed and submitted data is provided below:

CAI Type	Total	Physical Address	Lat/Long	Technology of Transmission	Download Speed	Upload Speed
K-12 Schools	4616	4616	4612	357	328	329
Libraries	2286	2286	2285	892	897	36
Healthcare	264	264	264	4	4	4
Public Safety	958	958	957	18	17	17
Higher Ed Institutions	146	146	146	35	34	34
Other Government	90	90	90	26	23	23
Other Non-Government	512	512	510	8	7	7
Total	8872	8872	8864	1340	1310	450

During the coming months, CAI data collection will be supported by regular reporting to the Connect Michigan team. The CAI data is proving an invaluable resource to all components of the Connect Michigan effort. The data identifies potential local champions, sector trends, and opportunities for improvement as well as opportunities to educate CAI not familiar with their current connectivity.

SBI DATA SUBMISSION METHODOLOGY

The submission of the broadband dataset for April 1, 2012, is contained within the SBI Data Transfer Model and additional components as released on the Grantee Workspace on January 17, 2012. Connected Nation (CN) has reviewed all literature that relates to the release and use of this data transfer model and recognizes that it does not replace or dictate how data is stored, processed, or displayed for the state, as it is meant primarily as a means to transfer the broadband data from all states and territories and populate the National Broadband Map in a seamless fashion. Guidance from the Technical Mapping Guide, as released on the Grantee Workspace on March 24, 2011, was also followed to ensure the completeness and validity of the submission through completion steps and checklists, completing the DataPackage spreadsheet, uploading broadband datasets into the Data Transfer Model, and checking the dataset using the SBDD_CheckSubmission receipt process.

In addition to the methodologies contained herein, as well as the DataPackage.xls containing contact information, the data dictionary, and a provider summary table, the following feature classes are submitted within the SBI Data Transfer Model for the state of Michigan.

Inventory of Deliverables, Connect Michigan: April 1, 2012

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Appendix A: 1(b)	BB_Service_Wireless	Broadband Service Availability of Wireless Services Not Provided to a Specific Address.
Appendix A: 3(b)	BB_ConnectionPoint_MiddleMile	Broadband Service Infrastructure Middle-Mile and Backbone Interconnection Points.
Appendix A: 4	BB_Service_CAInstitutions	Community Anchor Institutions- Listing.

The provider data collected by CN on behalf of the state of Michigan have been formatted per the given specifications and uploaded into the appropriate feature classes of the SBI Data Transfer Model. Wireline availability is contained within census blocks and road segments, wireless availability is contained as polygons of coverage areas, and middle-mile connections and Community Anchor Institutions are contained as point data. All speed data is contained at the census block, road segment, or wireless polygon level of availability. All efforts have been made to comply with formatting, domain, and metadata requirements to include as much information as possible.

Connected Nation has continued outreach to satellite providers on their availability, technology, and speed information, but granular coverage is not yet available. Submitted within the wireless feature class are the satellite companies providing service to Michigan as a polygon of the state boundary. Efforts will continue to collect, process, or otherwise create more granular satellite data based on availability analyses and guidance received from NTIA. Process development is underway at CN as well to be able to create more granular satellite coverage based on satellite equipment positioning and geographic inputs.

MERGERS AND ACQUISITIONS

Throughout the course of the SBI program, CN has maintained a repository of electronic records related to its provider outreach activities. Recently, due to the high volume of mergers and acquisitions (M&A) within the provider community, CN elected to create a listing of M&A activities for this mapping cycle as a way of supplementing the Provider Changes and Corrections section of this document. M&A activities for this state are listed below with a brief description and date as obtained through public records or provider disclosure.

- **Level 3 Acquired Global Crossing**
  The Global Crossing website confirmed that Level 3 and Global Crossing joined forces under the brand name Level 3 on October 4, 2011.

- **SMR Communications Inc. Acquired Portions of Parish Communications**
  Excerpted from Michiana website, Michiana Supernet, the data services division of SMR Communications, Inc.: *Recently, we have acquired the Cable TV/Internet plant for Bainbridge and Pipestone Township. We welcome Parish Communications longtime customers into our local South West Michigan internet family and will continue to provide television programming consistent with an ever competitive market as well as bring VoIP and triple play options to the area.*

- **Windstream Acquired PAETEC**
  The News section of the Windstream website dated December 1, 2011, announced that it had completed the acquisition of PAETEC Holding Corp. in a transaction valued at approximately $2.3 billion.

MICHIGAN FIELD VALIDATION METHODOLOGY

CN focused a portion of its time on specific validation processes such as:

- conducting random spectrum analysis studies throughout the state using an Avcom PSA-37-XP spectrum analyzer;
- conducting mobile speed tests throughout the state using an iPhone, Android (or other smart phone) as well as provider-specific aircards (Sprint 3G/4G, Clearwire et al);
- identifying pre-selected, provider-submitted wireless transmit tower sites and cross-referencing data about that tower against the Federal Communications Commission (FCC) databases such as Antenna Structure Registration and/or the Universal Licensing System;
- cross-referencing Federal Registration Number data against available FCC Form 477 data as well as the FCC **CO**mmission **RE**gistration **S**ystem (CORES);
- validating provider submitted data (for example: latitude/longitude) using a handheld Garmin eTrex Summit GPS unit or GPS enabled software such as Microsoft Streets and Trips;
- locating physical wire-line attributes (such as Central Offices, Remote Terminals, CATV plant, etc.) and comparing them against provider submitted data; and
- conducting on-net and off-net speed tests using the FCC portal at http://www.broadband.gov/qualitytest/about/ or using the Ookla Net Metrics enabled speed test utility located on each of CN's state specific websites.

Additionally, CN cross-referenced numerous public documents in order to ensure that all known broadband providers were located and contacted. This included searching membership logs from trade associations (WISPA, WCAI, PCIA, etc.), the Cable Television Fact Book, Public Utility Commission records, Public Service Commission records, Chamber of Commerce, etc.

To date, Connected Nation's staff conducted on-site validation tests in Michigan on the following providers: 2020 Communications LLC (also d.b.a. 123Net); 2125 Cable Company LLC (d.b.a. Sunrise Communications); Ace Telephone Company of Michigan, Inc. (also d.b.a. Peninsula Telephone Company); Agri-Valley Communications, Inc. (also d.b.a. Pigeon Telephone Company); AIRGRANT; Allendale Telephone Company; AT&T, Inc.; Azulstar, Inc.; Baraga Telephone; Barry County Telephone; Bitwise Wireless, LLC; Bloomingdale Communications, Inc.; Boardman River Communications LLC; Broadstripe; Cable America Michigan LLC; Camp Communications Services, Inc.; Carr Communications; Crystal Automation Systems, Inc.; CenturyLink; Charter Communications; Cherry Capital Connections LLC; Clearwire Corporation; CMS Internet, LLC; COLI, Inc.; Comcast Cable Communications LLC; Custom Software, Inc.; D & P Communications, Inc.; DMCI Broadband LLC; Drenthe Telephone Company; FreedomNet Solutions; Fourway Computer Products, Inc.; Frontier Communications Corporation; Hiawatha Telephone (d.b.a. Jamadots, Chippewa County Telephone); Hidden Lake Wireless; I-2000, Inc.; Interlink Computers Technology, Inc.; Iron Bay Computer and Design; ISP Management; KEPS Technologies, Inc. (also d.b.a. ACD.Net); Leap Wireless International, Inc.; Lighthouse Computers; Merit Network; MetaLINK Technologies, Inc.; Michigan Cable Partners; Michwave Technologies, Inc.; Microtech Services, Inc.; Mutual Data Services; NCATS; Nodin Communications; Ogden Communications, Inc.; PAETEC Communications, Inc. (also d.b.a. Talk America), Parish Communications; Pasty.Net, Inc.; Peninsula Fiber Network LLC; Reliable Internet; Sister Lakes Cable TV; Small Business Solutions Group (d.b.a. RuralReach.Com); SMR Communications, Inc.; SpeedNet LLC; Springcom, Inc.; Sprint Nextel Corporation; T2 Communications LLC; TC3Net; TDS Telecommunications Corporation; The ISERV Company; T-Mobile; Town & Country CATV; Tri-County Wireless, Inc.; Tucker Communications; Upper Peninsula Telephone (d.b.a. LIPC, Alphacomm.net); Verizon North, Inc.; Vision Quest Technology Solutions; Waldron Telephone Company; West Michigan Broadband; Winn Telephone Company; Wireless Technology Solutions; Wyandotte Municipal Services; Xyotek; and Zing Networks, Inc.

From program initiation through this reporting period, CN has completed in-the-field validation testing against 79 companies (out of a universe of 140 viable providers) totaling 56.43 percent within the state of Michigan. This percentage also considers the non-participating provider records submitted to NTIA as may be contained herein (see "Data Submission and Coverage Estimation of Non-Participating Provider" below).

CN has also continued to review provider datasets for accurate speed information, platform listings, and other intricacies that may fall outside of the standard SBI Data Transfer Model parameters. Any providers whose submitted coverage and attributes are anticipated to come into question have been further reviewed and confirmed; details on a case-by-case basis are presented below.

AT&T Inc.
Issue: DSL platform with maximum advertised download speed in tier 7.
Resolution: Provider website advertises download speed of up to 24 Mbps; screenshot below.

Compare Internet Packages

	Pro	Elite	Max	Max Plus	Max Turbo
Standard Monthly Rate	$38*	$43*	$48*	$53*	$63*
Downstream Speed	Up to 3 Mbps	Up to 6 Mbps	Up to 12 Mbps	Up to 18 Mbps	Up to 24 Mbps

Barry County Telephone Company
Issue: DSL platform with maximum advertised download speed in tier 7.
Resolution: Provider website advertises 10 Mbps; screenshot below.

10Mb/1Mb †

150 X's FASTER than Dial up…

$99.00 * per month

7 hours free USA long distance!

(select MEI Long Distance as your carrier)

10Mb/1Mb † + 5 Features + Unlimited Long Distance

150 X's FASTER than Dial up…
(select MEI Long Distance as your carrier)

$79.90 * per month

Call Waiting, Caller ID, Voicemail, 3-way calling, and Call Forwarding

Bright House Networks, LLC
Issue: Cable platform with maximum advertised download speed in tier 8.
Resolution: Provider website advertises 40 Mbps; screenshot below.

Features

- Choice of speeds up to 40 Mbps
- PowerBoost™, available with Road Runner Turbo – giving you the speed you need for a fast Web experience
- Always-on Internet connection that allows you to be on the Internet and your Home Phone at the same time
- Up to 25 email accounts
- Wireless home networking available
- Free advanced features like spam blockers, personal firewall and anti-virus protection
- No contracts to sign or equipment to buy

CenturyLink
Issue: DSL platform with maximum advertised download speed in tier 7.
Resolution: Provider website advertises 25 Mbps; screenshot below.
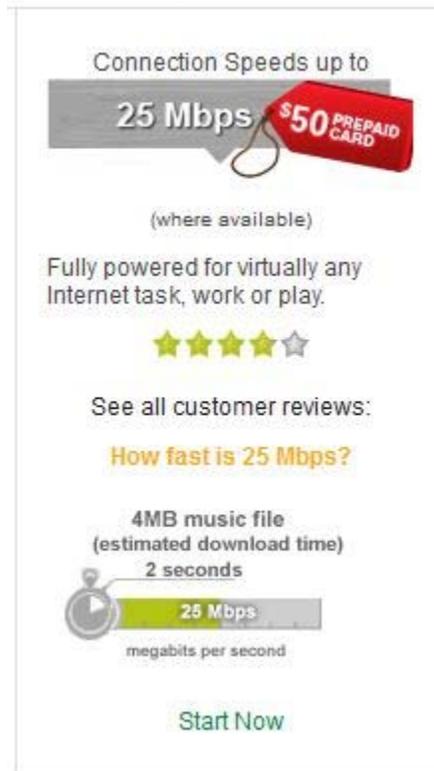
Hiawatha Communications, Inc.
Issue: DSL platform with maximum advertised download speed in tier 7.
Resolution: Provider website advertises 15 Mbps; screenshot below.

KEPS Technologies, Inc.
Issue: DSL platform with maximum advertised download speed in tier 7.
Resolution: Provider website advertises 20 Mbps; screenshot below.

Scott Cook, Inc.
Issue: Fixed wireless platform with maximum advertised download speed in tier 7.
Resolution: Provider website advertises 10 Mbps; screenshot below.

SpeedNet, LLC
Issue: Fixed wireless platform with maximum advertised download speed in tier 7.
Resolution: Provider website advertises 10 Mbps; screenshot below.

TDS Telecommunications Corporation
Issue: DSL platform with maximum advertised download speed in tiers 7 and 8.
Resolution: Provider website advertises 15 and 25 Mbps; screenshot below.

The Computer Care Company
Issue: DSL platform with maximum advertised download speed in tier 7.
Resolution: Provider website advertises 15 Mbps; screenshot below.
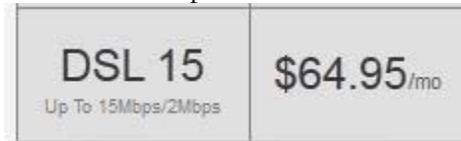
The Iserv Company, LLC
Issue: DSL platform with maximum advertised download speed in tier 7.
Resolution: Provider website advertises 10 Mbps; screenshot below.

Time Warner Cable LLC
Issue: Cable platform with maximum advertised download speed in tier 8.
Resolution: Provider website advertises 30 Mbps; screenshot below.

T-Mobile USA, Inc.
Issue: Mobile wireless platform with maximum advertised download speed in tier 7.
Resolution: Provider website advertises download speeds greater than tier 6; screenshot below.

Verizon North Inc.

Issue: Mobile wireless platform with maximum advertised download speed in tier 7.
Resolution: Provider website advertises 12 Mbps; screenshot below.
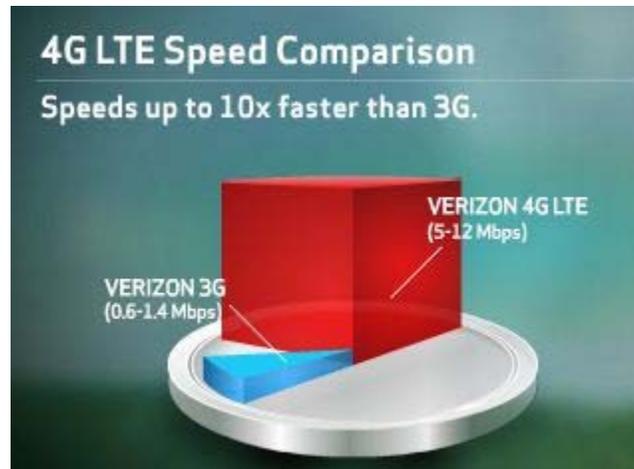
DATA SUBMISSION AND COVERAGE ESTIMATION OF NON-PARTICIPATING PROVIDER

Bitwise Wireless, LLC

As part of its ongoing broadband mapping efforts, Connected Nation has developed a series of processes with the goal of submitting mapping data to NTIA for every known and qualifying broadband provider, regardless of whether the provider has chosen to support and participate in the State Broadband Initiative (SBI) program.

The following narrative provides detail regarding the recent data collection and coverage estimation activities related to Bitwise Wireless, LLC, a wireless Internet service provider (WISP), located in Davison, Michigan, with a service area around Genesee and Lapeer counties. The narrative will include information regarding how and where CN obtained publicly available data and the on-the-ground validation techniques that support the underlying data.

<u>Background</u>
CN staff members have continued trying to obtain the participation of the provider with 18 instances of communication via telephone and e-mail sessions since May 24, 2011, through February 21, 2012. Telephone discussions were held with a company representative June 13, 2011, and January 3, 2012, with a response of wanting to participate, but too busy to collect the data necessary to develop propagation maps on its own. Additionally, a CN staff member visited the business office of Bitwise Wireless, LLC on January 25, 2012, to discuss the broadband mapping project in

person with Bitwise Wireless staff. A company representative provided certain transmit site locations and broadcast frequencies.

The Issue
CN staff e-mailed technical data and propagation maps to Bitwise Wireless, LLC, though its lack of responsiveness since January 25, 2012, has predicated its inability to participate in the Connect Michigan broadband mapping initiative simply because of a lack of resources.

Identification of Provider's Service Plans, Service Area, Legal Name, d.b.a., FRN, and Licensing
CN began building a file based on research information and, as time progressed, enriched the file with information obtained through the public domain. For example, CN reviewed the provider's website (http://www.bitwisewireless.com) to determine the residential service plans **(Exhibit A)** and the service areas **(Exhibit B)** of the provider's wireless network. A search for a Federal Registration Number ("FRN") on the FCC **CO**mmission **RE**gistration **S**ystem ("CORES") system yielded an FRN of 0019402494 **(Exhibit C)** with contact information relative to the owner of the company. Also, to support field validation of access points, the FRN was referenced against the FCC Universal Licensing System (ULS) to identify any spectrum authorizations that may be held by the provider that could supplement the dataset of estimated coverage by isolating and identifying active wireless access points for the service area. This process yielded license WQLJ361 **(Exhibit D)**, Radio Service: NN - 3650-3700 MHz with 0 active locations.

Exhibit A: Service Plans

Exhibit B: Service Area

Exhibit C: Federal Registration Number

Exhibit D: WQLJ361 License Reference

Preliminary Identification of Provider's Coverage Area

The CN engineer, using the information provided by Bitwise Wireless, drove to the four disclosed transmit locations and confirmed coordinates and the existence of fixed wireless equipment. The website service area was utilized to create a Google Earth image overlay **(Exhibit E).** The image overlay was positioned to match the Google Earth base map's roadways, county boundaries, and water bodies. The provider's service area depiction is represented by tower symbols as shown in **Exhibit E**. The four referenced locations were identified in Google Earth and examined utilizing the zoom option of the aerial imagery. All four location structures were identified as matching the descriptions provided by company representative as can be seen in the Google Earth screen shot of the water tower in Columbiaville, Michigan **(Exhibit F)**, identified as a transmit site. This provided a means of establishing coordinates for the all wireless access point locations and these coordinates were then entered into Microsoft *Streets & Trips* mapping application **(Exhibit G)** to develop a route for the validation process.

Exhibit E: Google Earth: Provider's Service Area Image Overlay
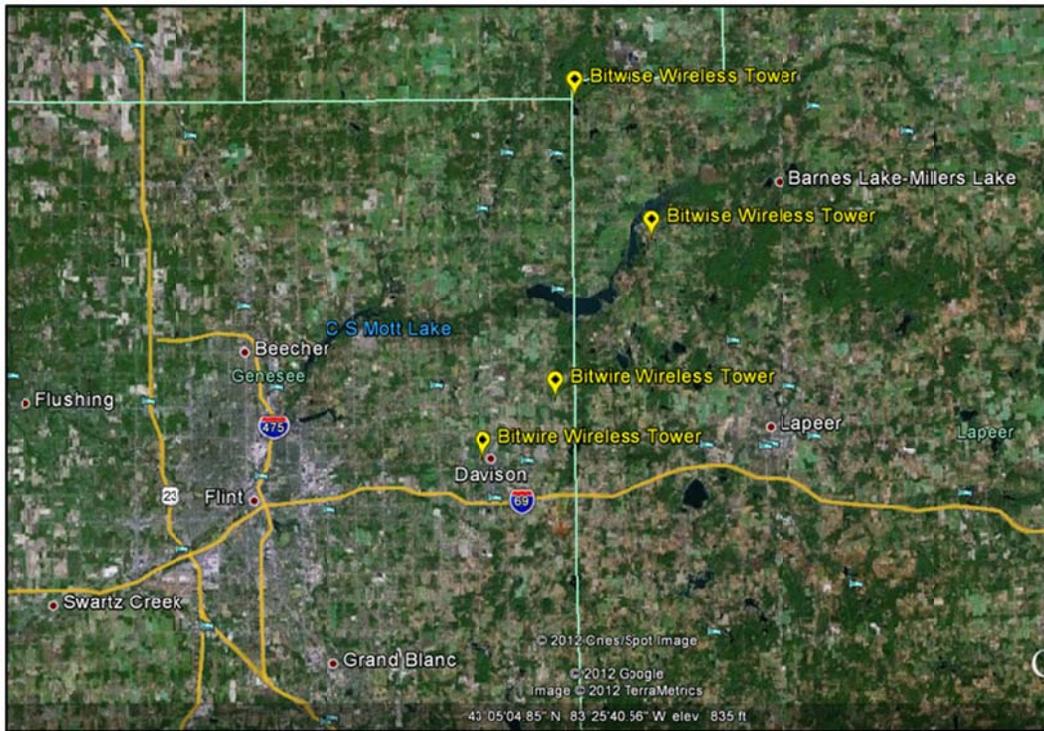
Exhibit F: Google Earth Screenshot of Columbiaville, MI Water Tower

Exhibit G: Validation Points for AP Structures
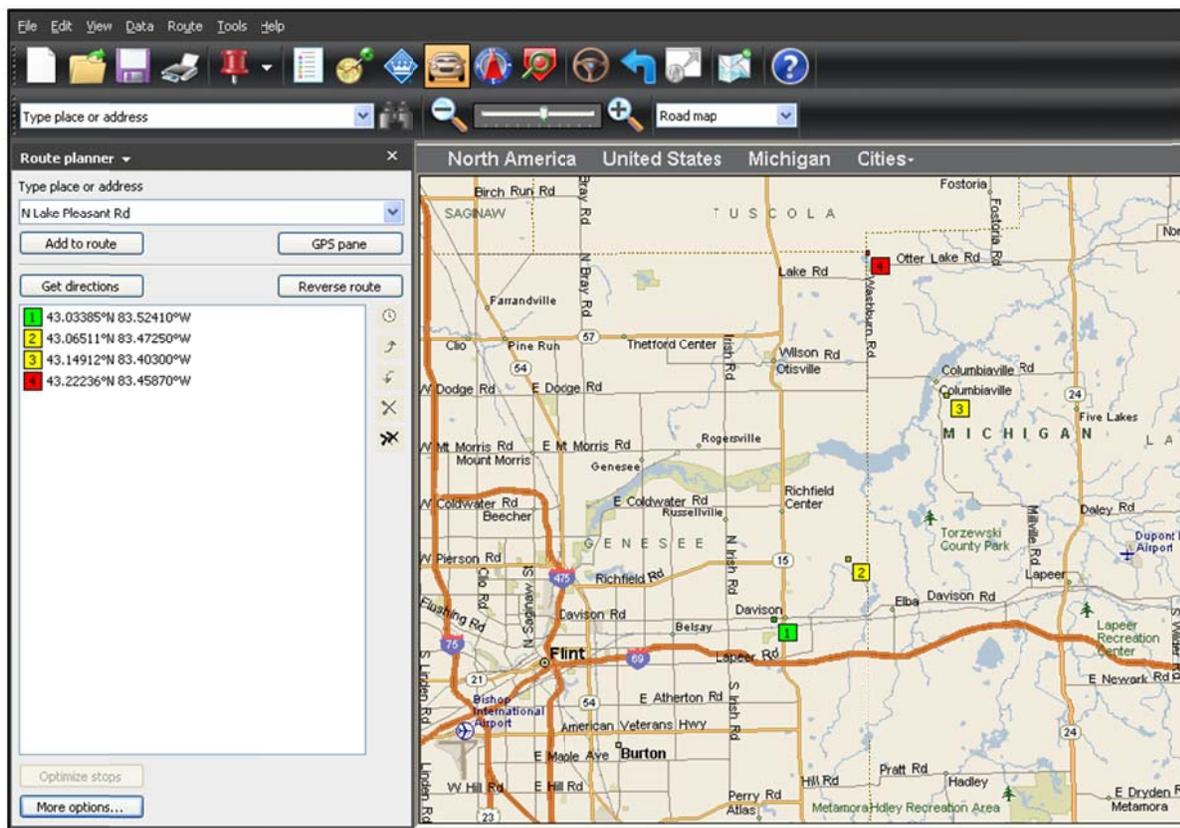
Testing Techniques

Connected Nation staff developed a data collection and site validation route based on data provided by Bitwise Wireless representative, derived from the Google Earth image overlay and the sites selected in *Streets and Trips*. The CN wireless engineer was equipped with an AVCOM PSA-37XP analyzer with RF detection from 1 MHz to 6 GHz and an array of antennas tuned specifically for the 900 MHz, 2.4 GHz, 3.65 GHz, and 5 GHz frequency bands as can be seen from the screen shots taken at the Davison tower site **(Exhibit H)**. Each validation point was scrutinized for frequency of operation. A screen image of the operating frequency (or frequencies) was captured; general notes were recorded for each location-approximate antenna height, frequency of operation, antenna type (omni or sectored), and photographs were taken of the access points.

Exhibit H: Field Data for Bitwise Wireless Davison Tower Location
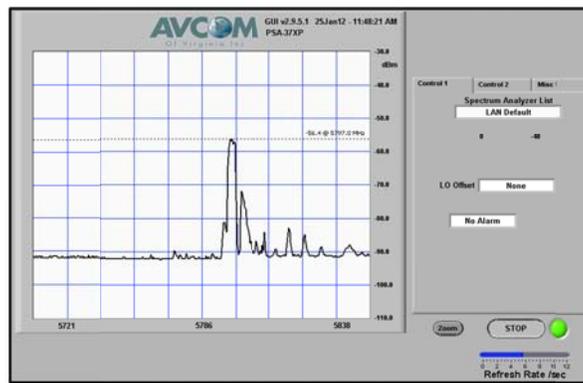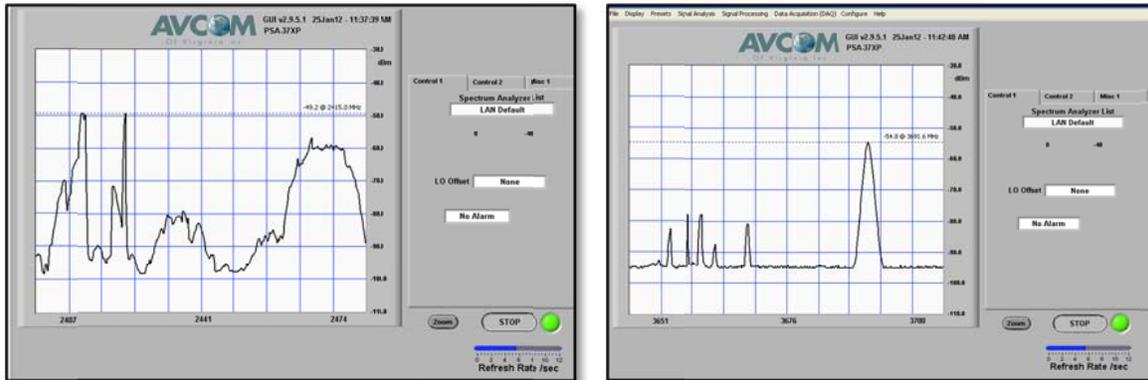
Results and Submission for April 2012

Of the 4 locations visited during the validation point route, 10 access points were identified and relative information was logged into the Bitwise Wireless field validation notes file **(Exhibit I)**. The field and the publicly available data were transferred to the CN Provider Information file. A composite propagation study was completed based on the field data **(Exhibit J)**. Both documents were forwarded to Bitwise Wireless as courtesy copies and the provider was advised that the estimated coverage information would be submitted to Connect Michigan and to the NTIA unless the provider notified CN, within 48 hours, of discrepancies of the estimated coverage. The provider did not respond to CN and, as of this date, CN believes the information to be an accurate estimation of the service area of Bitwise Wireless, LLC.

Exhibit I: Field Validation Notes

Exhibit J: Bitwise Composite Coverage
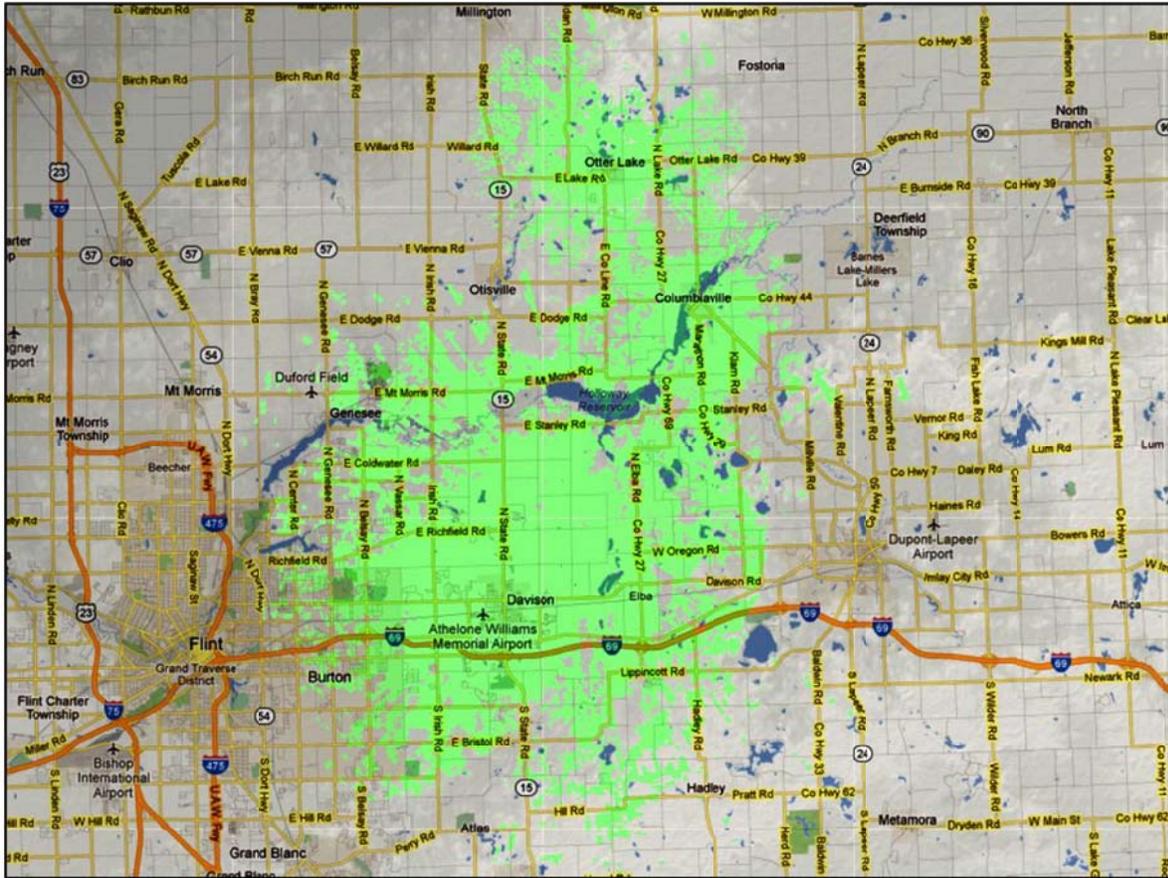
Tri-County Wireless, Inc.

As part of its ongoing broadband mapping efforts, Connected Nation has developed a series of processes with the goal of submitting mapping data to NTIA for every known and qualifying broadband provider, regardless of whether the provider has chosen to support and participate in the State Broadband Initiative (SBI) program.

The following narrative provides detail regarding the recent data collection and coverage estimation activities related to Tri-County Wireless, Inc., a wireless Internet service provider (WISP), located in Fenton, Michigan, with a service area around Genesee, Oakland and Livingston counties. The narrative will include information regarding how and where CN obtained publicly available data and the on-the-ground validation techniques that support the underlying data.

Background
CN staff members have continued trying to obtain the participation of the provider with 26 instances of communication via telephone and e-mail sessions between December 31, 2009, and November 1, 2011. Only 4 communication replies have been received from a company representative: 1) on February 23, 2010, with a response indicating they would determine the technical difficulty of providing data; 2) on February 25, 2010, when company representative left a voice message requesting type of information being sought; 3) on February 14, 2011, when an e-mail was received from company representative requesting requirements for data submission; and 4) on November 1, 2011, when a company representative e-mailed that they decline to participate.

The Issue
Tri-County Wireless, by its response on November 1, 2011, declines to participate in the Michigan broadband mapping initiative.

Identification of Provider's Service Plans, Service Area, Legal Name, d.b.a., FRN, and Licensing
CN began building a file based on research information and, as time progressed, enriched the file with information obtained through the public domain. For example, CN reviewed the provider's website (www.tcwireless.us) to determine the residential service plans **(Exhibit A)** and the service areas **(Exhibit B)** of the provider's wireless network. A search for a Federal Registration Number ("FRN") on the FCC **CO**mmission **RE**gistration **S**ystem ("CORES") system yielded an FRN of 0018468553 **(Exhibit C)** with contact information relative to the owner of the company. Also, to support field validation of access points, the FRN was referenced against the FCC Universal Licensing System (ULS) to identify any spectrum authorizations that may be held by the provider that could supplement the dataset of estimated coverage by isolating and identifying active wireless access points for the service area. This process yielded license WQKE949 **(Exhibit D)**, Radio Service: NN with 3 pending locations.
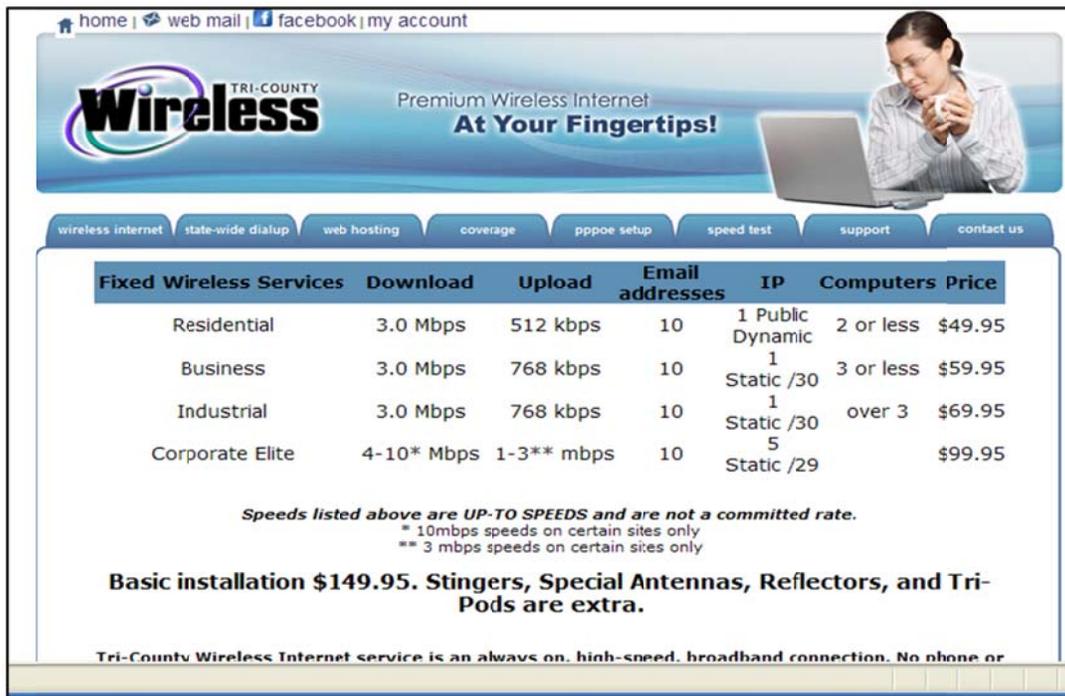
Exhibit A: Service Plans

Fixed Wireless Services	Download	Upload	Email addresses	IP	Computers	Price
Residential	3.0 Mbps	512 kbps	10	1 Public Dynamic	2 or less	$49.95
Business	3.0 Mbps	768 kbps	10	1 Static /30	3 or less	$59.95
Industrial	3.0 Mbps	768 kbps	10	1 Static /30	over 3	$69.95
Corporate Elite	4-10* Mbps	1-3** mbps	10	5 Static /29		$99.95

Speeds listed above are UP-TO SPEEDS and are not a committed rate.
* 10mbps speeds on certain sites only
** 3 mbps speeds on certain sites only

Basic installation $149.95. Stingers, Special Antennas, Reflectors, and Tri-Pods are extra.

Tri-County Wireless Internet service is an always on, high-speed, broadband connection. No phone or

Exhibit B: Service Area
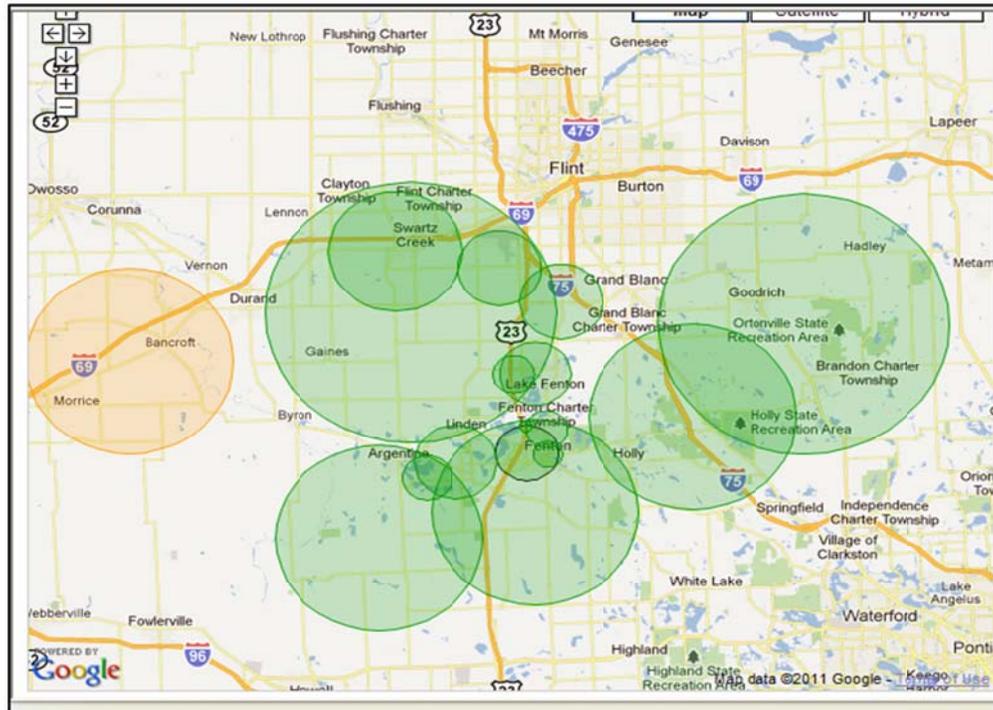
Exhibit C: Federal Registration Number

Registration Detail	
FRN:	0018468553
Registration Date:	01/30/2009 09:24:00 AM
Last Updated:	12/23/2009 11:56:26 AM
Business Name:	Tri-County Times Wireless INC
Business Type:	Private Sector , Corporation
Contact Organization:	Tri-County Times Wireless INC
Contact Position:	CTO
Contact Name:	Mr Fredric S Moses
Contact Address:	256 N. Fenway Drive Fenton, MI 48430 United States
Contact Email:	fred.moses@tcwireless.us
ContactPhone:	(810) 433-6800 6767
ContactFax:	(810) 373-7520

Exhibit D: WQKE949 License Reference

REFERENCE COPY

This is not an official FCC license. It is a record of public information contained in the FCC's licensing database on the date that this reference copy was generated. In cases where FCC rules require the presentation, posting, or display of an FCC license, this document may not be used in place of an official FCC license.

Federal Communications Commission
Wireless Telecommunications Bureau

RADIO STATION AUTHORIZATION

LICENSEE: Tri-County Times Wireless INC

ATTN: FREDRIC MOSES
TRI-COUNTY TIMES WIRELESS INC
256 N. FENWAY DRIVE
FENTON, MI 48430

Call Sign	File Number
WQKE949	0004878639
Radio Service	
NN - 3650-3700 MHz	
Regulatory Status	
Private	

FCC Registration Number (FRN): 0018468553

Grant Date	Effective Date	Expiration Date	Print Date
04-24-2009	09-20-2011	04-24-2019	09-20-2011

Market Name: Nationwide

Channel Block: 003650.00000000 - 003700.00000000 MHz

Waivers/Conditions:

This nationwide, non-exclusive license qualifies the licensee to register individual fixed and base stations for wireless operations in the 3650-3700 MHz band. This license does not authorize any operation of a fixed or base station that is not posted by the FCC as a registered fixed or base station on ULS and mobile and portable stations are authorized to operate only if they can positively receive and decode an enabling signal transmitted by a registered base station. To register individual fixed and base stations the licensee must file FCC Form 601 and Schedule M with the FCC. See Public Notice DA 07-4605 (rel November 15, 2007)

Universal Licensing System

FCC > WTB > ULS > Online Systems > License Search

3650-3700 MHz License - WQKE949 - Tri-County Times Wireless INC
Administration
🔍 New Search 🔍 Refine Search ⬅ Return to Results 🖨 Printable Page 📋 Reference Copy ✛ Map License

MAIN	ADMIN	LOCATIONS

Call Sign	WQKE949		Radio Service	NN - 3650-3700 MHz

Applications

Receipt Date	File Number and Type			Status
09/19/2011	0004878766 RL – Register Link/Location			Pending
09/19/2011	0004878762 RL – Register Link/Location			Pending
09/19/2011	0004878726 RL – Register Link/Location			Pending
All Applications (8)				

Preliminary Identification of Provider's Coverage Area
CN extracted the Tri-County Wireless service area map directly from the provider's website. Information from that website was used to identify transmit sites such as water towers, grain elevators, and tower structures. The website service area was utilized to create a Google Earth image overlay **(Exhibit E).** The image overlay was positioned to match the Google Earth base map's roadways, county boundaries, and water bodies.   The provider's service area depiction is represented by polygons as shown in **Exhibit B**. The thirteen licensed locations' coordinates were inputted into Google Earth and examined utilizing the zoom option of the aerial imagery. All

thirteen locations structures were identified. This provided a means of establishing coordinates for all access point locations. All 13 locations were entered into the Microsoft *Streets & Trips* mapping application **(Exhibit F)** to develop a route for the validation process.

Exhibit E: Google Earth: Provider's Service Area Image Overlay
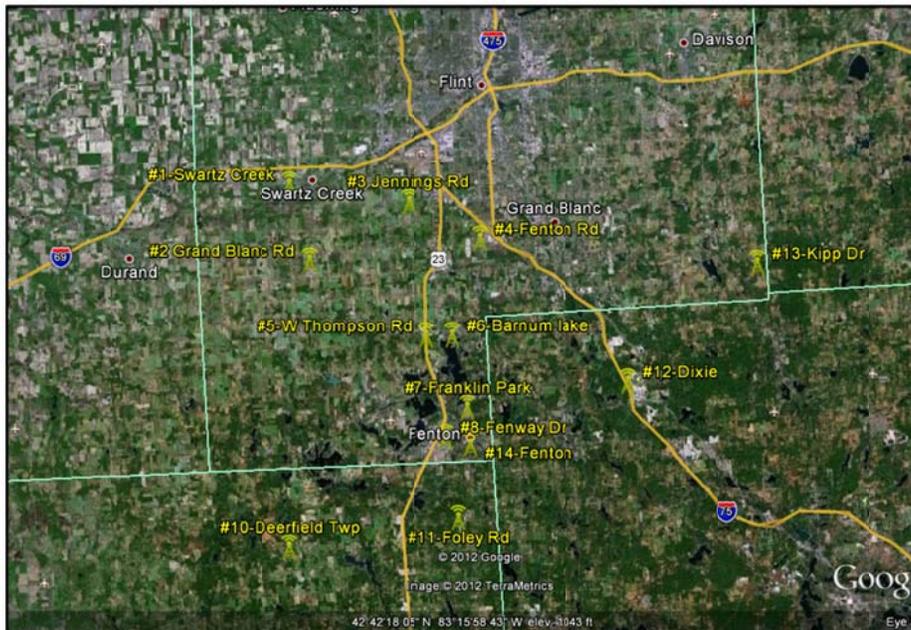
Exhibit F: Validation Points for AP Structures
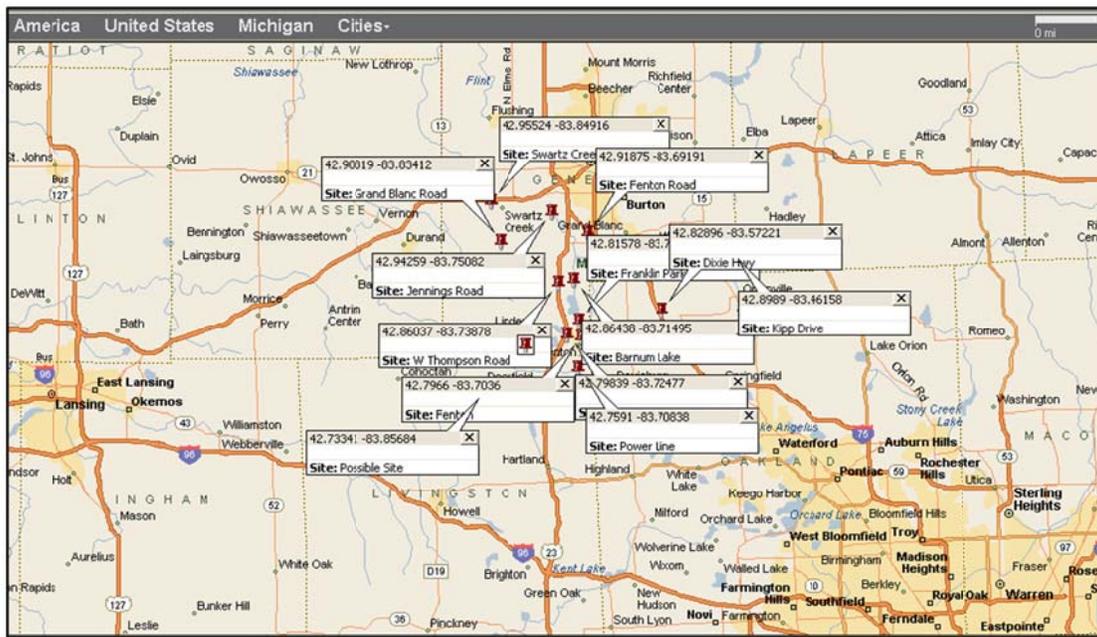
Testing Techniques

CN staff developed a data collection and site validation route based on information derived from the Google Earth image overlay of Tri-County's publicly available coverage on its website. The CN wireless engineer was equipped with an AVCOM PSA-37XP analyzer with RF detection from 1 MHz to 6 GHz and an array of antennas tuned specifically for the 900 MHz, 2.4 GHz, 3.65 GHz, and 5 GHz frequency bands **(Exhibit G)**. Each validation point was scrutinized for frequency of operation. A screen image of the operating frequency (or frequencies) was captured; general notes were recorded for each location-approximate antenna height, frequency of operation, antenna type (omni or sectored), and photographs were taken of the access points.

Exhibit G: Field Data for Tri-County Wireless Office/Hub Location
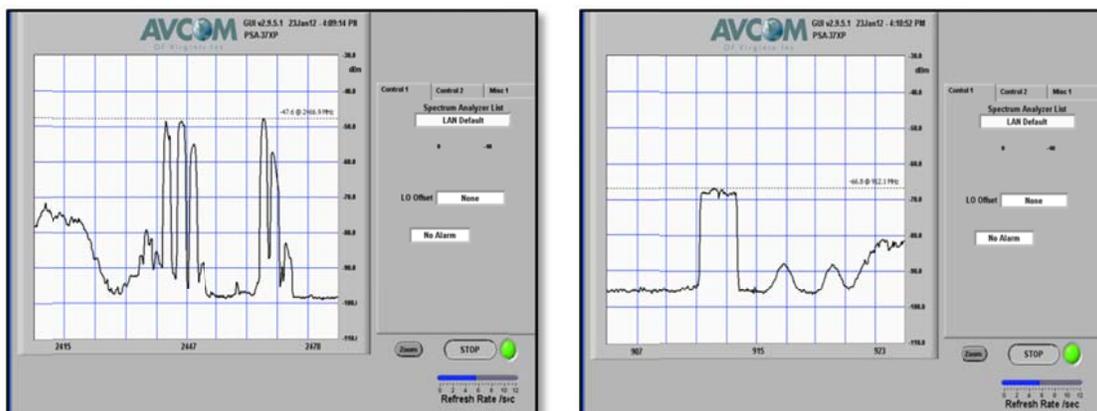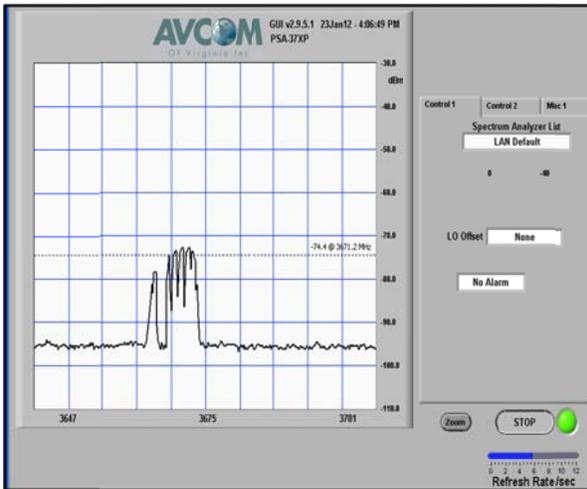
Results and Submission for April 2012

Of the 13 locations visited during the coverage estimation and validation point route, multiple access points were identified and relative information was logged into the Tri-County Wireless field validation notes file **(Exhibit H)**. The field and the publicly available data were transferred to the CN Provider Information file. A composite propagation study was completed based on the field data **(Exhibit I)**. Both documents were forwarded to Tri-County Wireless as courtesy copies and the provider was advised that the estimated coverage information would be submitted to Connect Michigan and to the NTIA unless the provider notified CN, within 48 hours, of discrepancies of the estimated coverage. The provider did not respond to CN and, as of this date, CN believes the information to be an accurate estimation of the service area of Tri-County Wireless.

Exhibit H: Field Validation Notes

	Site #	Date	Provider	Location Description	Coordinates NAD 83 REQUIRED								Platform Type		Test Data		Visual Confirmation		Signal Verification/Spectrum Analyzer				
					Lat Deg	Lat Min	Lat Sec	(-)Long Deg	Long Min	Long Sec	(N) Lat Decimal	(-)(W) Long Decimal	Type	Presence Confirmed	Type	Pass or Fail?	Type	Images	Peak Freq	Peak Sig Strength	Spectrum Analyzer	Time	Images
3	1	1/24/12	Tri-County	Water Tower	42	57	18.86	-83	50	56.96	42.9552	-83.8492	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	915.5	-57.6	Avcom PS	12:26 PM	Yes
4	2	1/24/12	Tri-County	AM Radio Tower Field	42	54	29.49	-83	50	2.82	42.9082	-83.8341	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	2441	-46.4	Avcom PS	12:50 PM	Yes
5	3	1/24/12	Tri-County	Grain Elevator	42	56	33.33	-83	45	2.96	42.9426	-83.7508	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	2416.4	-46.8	Avcom PS	7:39 AM	Yes
6	4	1/24/12	Tri-County	Self-supporting tower	42	55	7.5	-83	41	30.88	42.9188	-83.6919	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	2446.2	-46	Avcom PS	11:42 AM	Yes
7	5	1/24/12	Tri-County	Freeway Sports Center	42	51	37.33	-83	44	19.61	42.8604	-83.7388	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	2417	-46.8	Avcom PS	11:21 AM	Yes
8	6	1/24/12	Tri-County	Manufacturing plant	42	51	36.55	-83	43	1.59	42.8602	-83.7171	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	5812.6	-68.8	Avcom PS	10:55 AM	Yes
9	7	1/24/12	Tri-County	Commercial area	42	48	56.82	-83	42	22.79	42.8158	-83.7063	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	2423.6	-52.8	Avcom PS	10:34 AM	Yes
10	8	1/23/12	Tri-County	Tri-County Wireless Office	42	47	54.28	-83	43	29.18	42.7984	-83.7248	Fixed Wi	Yes	Signal Veri	Pass	Sales Off	Yes	2466.9	-47.6	Avcom PS	4:56 PM	Yes
11	9	1/24/12	Tri-County	Self-supporting tower	42	44	0.29	-83	51	24.63	42.7334	-83.8568	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	2461.4	-59.2	Avcom PS	9:23 AM	Yes
12	10	1/24/12	Tri-County	Guyed Tower	42	44	55.01	-83	42	58.9	42.7486	-83.7164	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	906	42	Avcom PS	8:50 AM	Yes
13	11	1/25/12	Tri-County	Self-supporting tower	42	49	44.25	-83	34	19.96	42.829	-83.5722	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	2426.2	-48	Avcom PS	9:46 AM	Yes
14	12	1/25/12	Tri-County	Guyed Tower	42	53	56.1	-83	27	40.8	42.8989	-83.4613	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	2404	-61.6	Avcom PS	10:23 AM	Yes
15	13	1/24/12	Tri-County	Fenton Police Station	42	47	37.22	-83	42	16.62	42.7937	-83.7046	Fixed Wi	Yes	Signal Veri	Pass	Wireless	Yes	913.1	-62.8	Avcom PS	9:55 AM	Yes
16	14										0	0											
17	15										0	0											
18	16										0	0											
19	17										0	0											
20	18										0	0											
21	19										0	0											
22	20										0	0											

Exhibit I: Tri-County Wireless, Inc. Estimated Composite Coverage
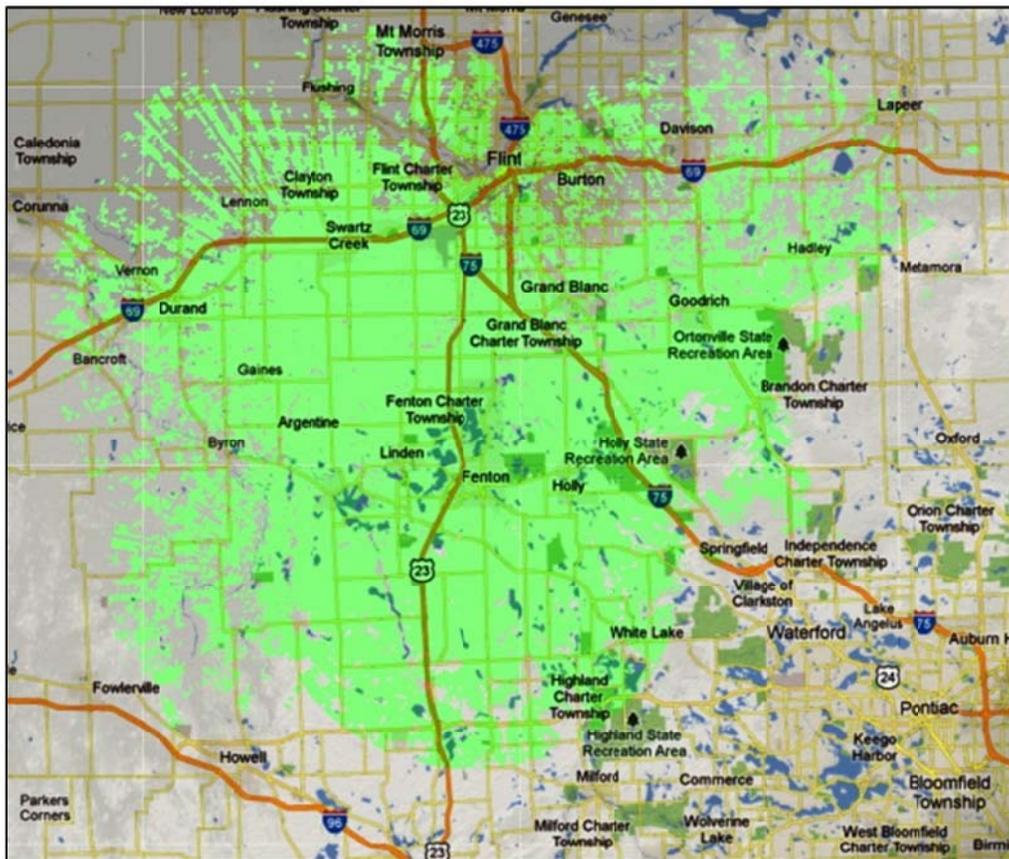
VQ Wireless

As part of its ongoing broadband mapping efforts, Connected Nation has developed a series of processes with the goal of submitting mapping data to NTIA for every known and qualifying broadband provider, regardless of whether the provider has chosen to support and participate in the State Broadband Initiative (SBI) program.

The following narrative provides detail regarding the recent data collection and coverage estimation activities related to VQ Wireless, a wireless Internet service provider (WISP) located in Davison, Michigan, with a service area in and around Davison. The narrative will include information regarding how and where CN obtained publicly available data and the on-the-ground validation techniques that support the underlying data.

Background
A CN staff member discovered this provider while conducting field research on another provider and stopped in its business office on January 25, 2012. During the ensuing discussions, a representative for VQ Wireless stated it had launched its wireless broadband service in December 2011 from the single tower site next to the office. The company representative provided broadcast frequencies and transmit antenna height on the tower. While on site, the CN staff member captured coordinates of the tower and conducted signal analysis to confirm frequencies being broadcast at that location. CN staff members have continued trying to obtain the participation of the provider with 5 instances of communication via telephone and e-mail sessions since January 25, 2012, through February 20, 2012.

The Issue
VQ Wireless, by its lack of responsiveness since January 25, 2012, has predicated its unwillingness to participate in the Connect Michigan broadband mapping initiative.

Identification of Provider's Service Plans, Service Area, Legal Name, d.b.a., FRN, and Licensing
CN began building a file based on research information and, as time progressed, enriched the file with information obtained through the public domain. For example, CN reviewed the provider's website (http://www.vqwireless.com/) **(Exhibit A)** to determine the residential service plans and the service area of the provider's wireless network; neither of which can be found on the provider's website. A search for a Federal Registration Number ("FRN") on the FCC **CO**mmission **RE**gistration **S**ystem ("CORES") system yielded an FRN of 0021227970 **(Exhibit B)** with contact information relative to the owner of the company. Also, to support field validation of access points, the FRN was referenced against the FCC Universal Licensing System (ULS) to identify any spectrum authorizations that may be held by the provider that could supplement the dataset of estimated coverage by isolating and identifying active wireless access points for the service area. This process yielded a "No Matches Found" response **(Exhibit C).**

Exhibit A: Service Plans

Exhibit B: Federal Registration Number

Exhibit C: "No Matches Found"

Preliminary Identification of Provider's Coverage Area

CN created the VQ Wireless service area map from the information provided by the company representative and from signal analysis conducted at the tower site to further identify the frequencies being used by this provider. This data was utilized to create a Google Earth image overlay **(Exhibit D).** The image overlay was positioned to match the Google Earth base map's roadways, county boundaries, and water bodies. The provider's service area depiction is represented by tower symbols as shown in **Exhibit D**. The single transmit tower location was entered into the Microsoft *Streets & Trips* mapping application **(Exhibit E)** to develop a route for the validation process.

Exhibit D: Google Earth: Provider's Tower Site Image Overlay
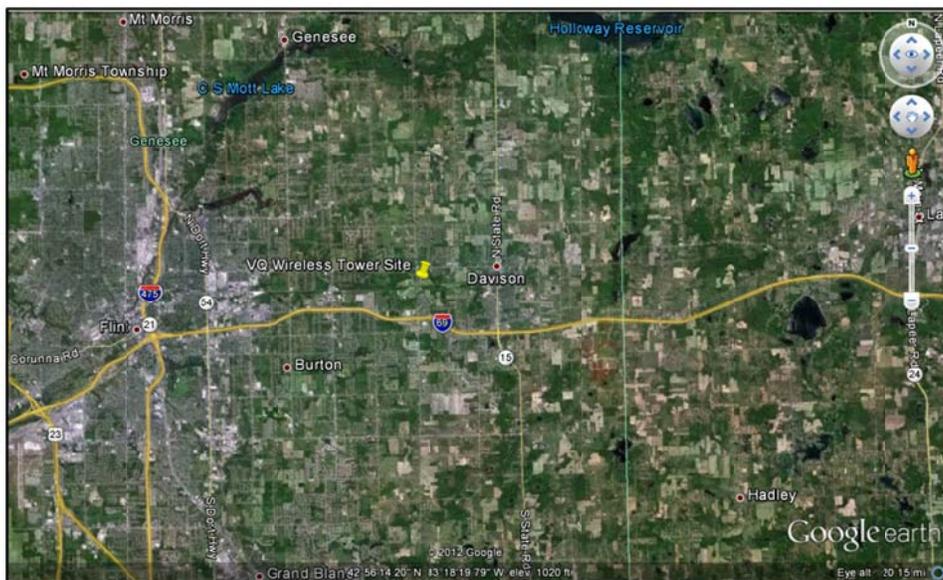
Exhibit E: Validation Point for AP Structure
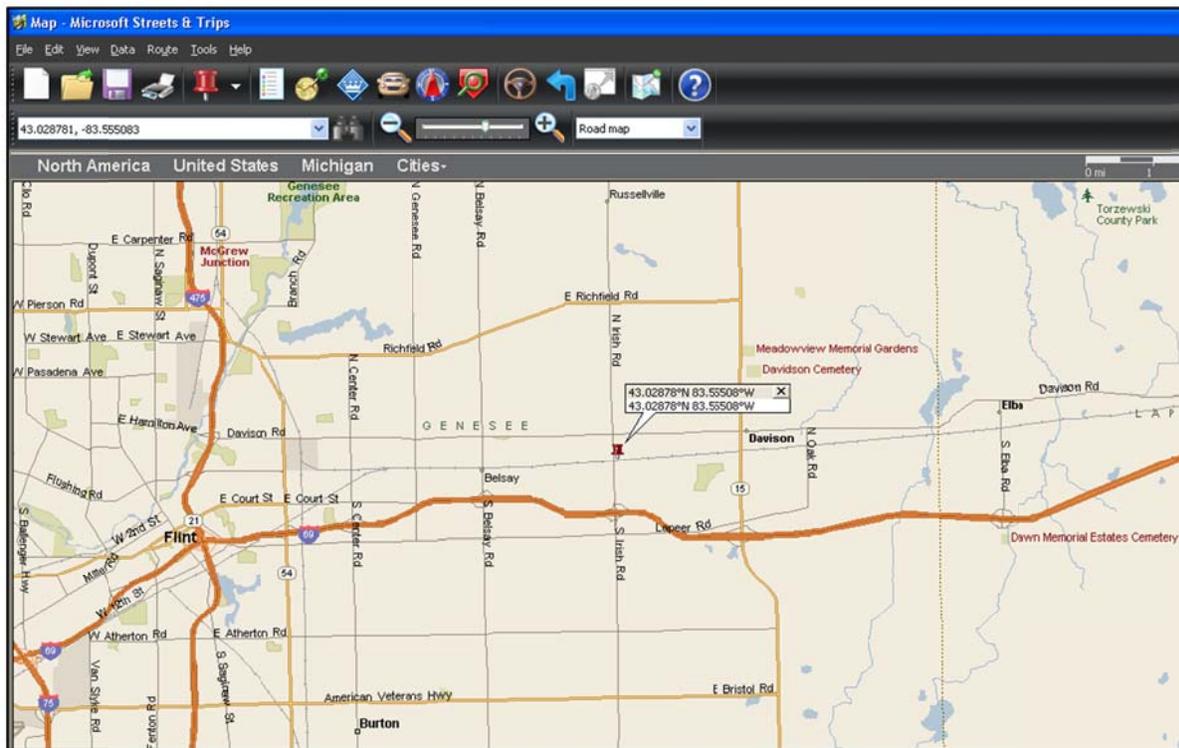
Testing Techniques

The CN engineer then developed a data collection and site validation route based on information derived from the Google Earth image overlay and publicly available data obtained while at the principal offices of VQ Wireless. The CN wireless engineer was equipped with an AVCOM PSA-37XP analyzer with RF detection from 1 MHz to 6 GHz and an array of antennas tuned specifically for the 900 MHz, 2.4 GHz, 3.65 GHz, and 5 GHz frequency bands **(Exhibit F)**. The single validation point was scrutinized for frequency of operation to confirm the data as provided by the provider representative. A screen image of the operating frequency (or frequencies) was captured; general notes were recorded for each location-approximate antenna height, frequency of operation, antenna type (omni or sectored), and photographs were taken of the access points.

**Exhibit F: Field Data for VQ Wireless Office/Hub Location**
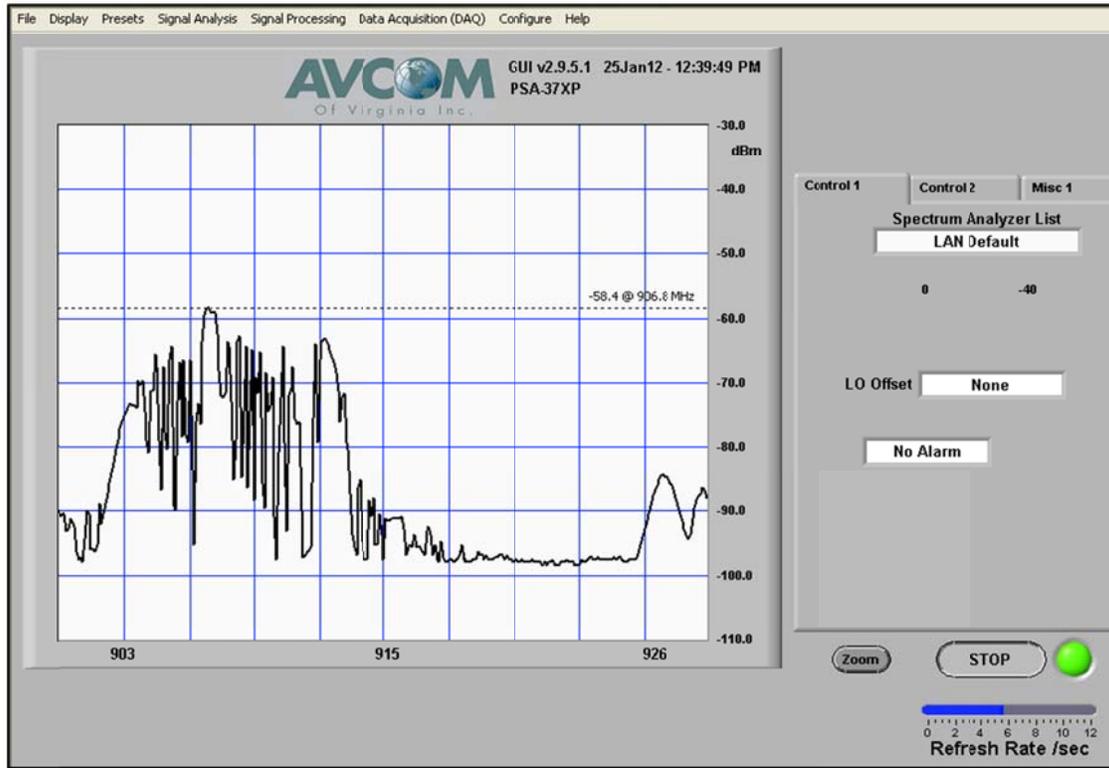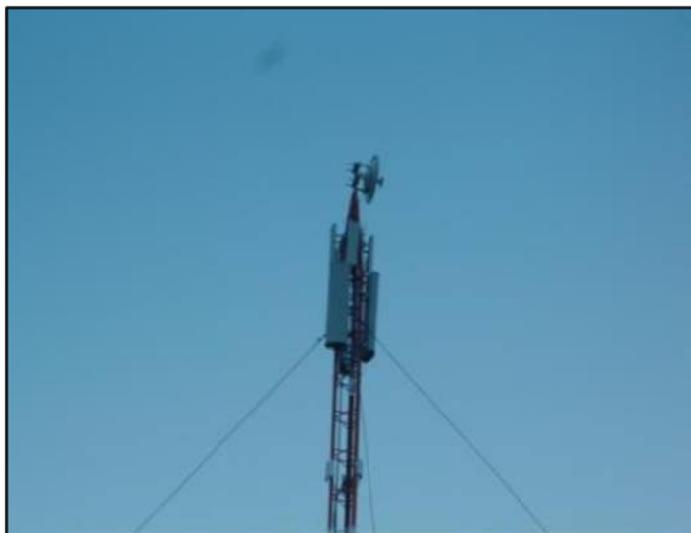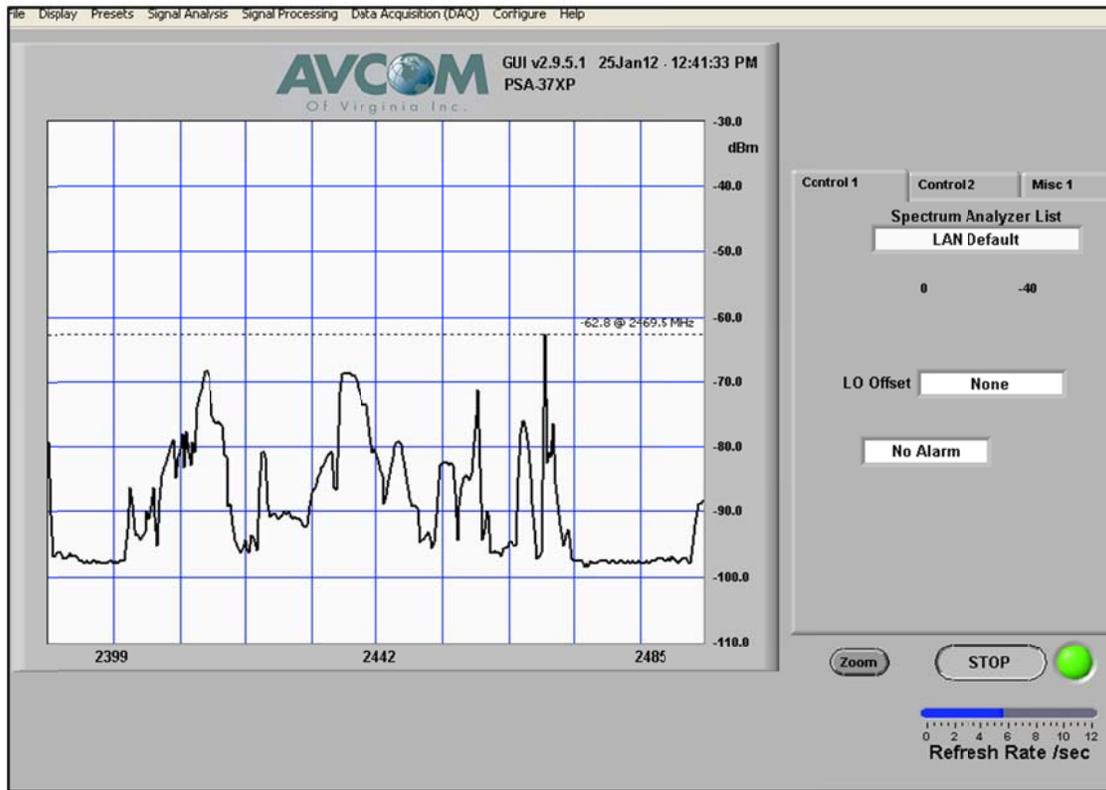
Results and Submission for April 2012

Of the single location visited during the validation point route, two access points were identified, and relative information was logged into the VQ Wireless field validation notes file **(Exhibit G)**. The field and the publicly available data were transferred to the CN Provider Information file. A propagation study was completed based on the field data **(Exhibit H)**. Both documents were

forwarded to VQ Wireless as courtesy copies, and the provider was advised the estimated coverage information would be submitted to Connect Michigan and to the NTIA unless the provider notified CN, within 48 hours, of discrepancies of the estimated coverage. The provider did not respond to CN and, as of this date, CN believes the information to be an accurate estimation of the service area of VQ Wireless.

Exhibit G: Field Validation Notes

Exhibit H: VQ Wireless Coverage
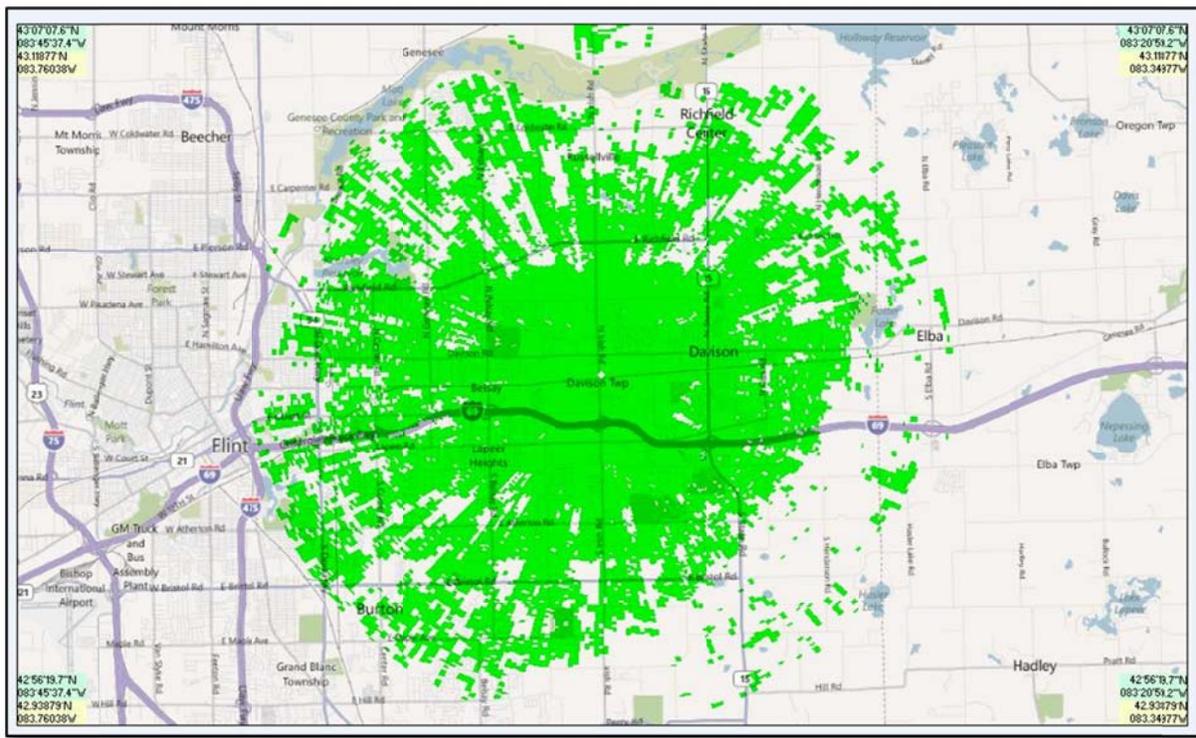
ACCURACY AND VERIFICATION: PROVIDER VALIDATION METHODOLOGY

Broadband providers maintain their service area data in many different formats, all in varying levels of complexity and granularity. In order to ensure that the data required by the NTIA is standardized across all providers and that it is as accurate as possible, CN translates and formats the data that providers are able to supply into a GIS shapefile and produces maps for the provider to review. The resulting map(s) and review process allow for providers to see their service area in a geographic format – for some providers, this is the first time they have seen maps of their broadband service area. Having the mapped service area allows providers to quickly identify any issues that appear in the data representation, whether the issue is in the data translation into a GIS format or from the original data collection and submission. Often data is provided from various sources and through the review and revision process, local engineers who operate the networks and work in the field are able to ensure that the tabular data that has been submitted is accurate and represents the real-world network extent. Any issues in how the service area is represented on the map(s) are remedied by CN, whether they are additions, removal of service, or any other revisions. Revised maps of service area representations are sent to the provider for review and approval; CN will revise data and return maps as many times as necessary until the provider is in agreement that the map represents their service area as accurately as possible. Once the review process has been completed and final approval of the data is provided, the data is deemed ready for NTIA submission.

Once the data collection has been aggregated at a statewide level, static maps of statewide and county-level availability are produced and made publicly available. In addition, consumers can visit the interactive online tool, BroadbandStat, to create customized views of broadband service areas and analyze corresponding demographic information. Leveraging broadband service data on various platforms allows for public users, providers, and other stakeholders to review, scrutinize, and provide feedback on the represented data. This feedback becomes a validation method in itself as consumers submit inquiries to CN either affirming where service is not available or identifying areas where broadband service is shown on the map, but in actuality is not available. This allows for a follow-up to providers regarding revisions to the data as it is represented; it also allows for CN to identify locations where on-site visits may be necessary to complete field validation of available services. Public feedback on all forms of mapping products serves as a localized validation method for provider-supplied information and allows CN to resolve inaccuracies as they are identified to ensure that only the highest quality information is provided to stakeholders.

Additionally, NPP narratives that were submitted in previous mapping cycles are subjected to the same level of scrutiny. Occasionally, a provider may elect to voluntarily participate (thus eliminating the need for future data estimation activities in the field. However, more often than not, the NPP narrative is updated with a combination of data gleaned from the provider's website, data obtained through FCC research and/or data collected/verified in the field by a CN staff engineer.

Estimates derived from provider-validated data indicate that approximately 1.79 percent of Michigan households do not have terrestrial fixed broadband service available, and approximately 0.17 percent[1] of Michigan households have neither mobile nor fixed broadband service available.[2]

Within rural areas of the state, results derived from provider-validated data indicate that approximately 3.01 percent of rural Michigan households do not have terrestrial fixed broadband service available, and approximately 0.28 percent[3] of rural Michigan households have neither mobile nor fixed broadband service available.[4] Please note that the availability estimates presented are based on Census 2010 household information.

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[1] In accordance with NTIA's definition of available broadband service as specified in the SBI NOFA, this estimate includes both terrestrial fixed *and* mobile broadband service, if the service offers download speeds of at least 768 Kbps and upload speeds greater than 200 Kbps.

[2] Due to the nature of the SBI data collection methodology as defined by the NTIA and based on both census block geographic units and street segment data, the estimates of broadband availability derived from provider-validated data may include an overstatement of the actual number of households with broadband availability. Under the census block-based data collection method, a provider will typically report broadband availability for an entire census block whether its network is present across the whole or only a subset of that census block. This potential overestimation at the census block level can be amplified as the data is aggregated across the entire state.

[3] See footnote 1.

[4] See footnote 2.

WIRELESS METHODOLOGY

Broadband Service Availability in Provider's Service Area
Wireless Services Not Provided to a Specific Address

Data solicited from a fixed wireless provider to create propagation models include, but are not limited to:

1. The name of the structure.
2. Whether the transmitting device is operational or proposed.
3. The maximum advertised downstream speed, the maximum advertised upstream speed.
4. The typical downstream speed, the typical upstream speed (peak periods for both).
5. The frequency range of spectrum being used (as prescribed by NTIA). In the case of NPP documents, this may include (but is not limited to) spectrum authorizations identified within the Federal Communications Commission (FCC) Universal Licensing System (ULS) database or located on the FCC's Spectrum Dashboard.
6. The primary population center(s) being served (for geopolitical boundary reference).
7. The physical address of the transmit site (in the event latitude/longitude is unavailable from the provider this allows a quick reference point for geocoding).
8. Latitude in either Degrees, Minutes, and Seconds and/or in Decimal Degrees (typically received as NAD 27 or NAD 83).
9. Longitude in either Degrees, Minutes and Seconds and/or in Decimal Degrees (typically received as NAD 27 or NAD 83).
10. Antenna pattern (e.g. omni-directional, 180°, 120°, 90°, etc.).
11. Azimuth of antenna (e.g. 360° with magnetic declination if known).
12. Approximate transmit radius (in feet, miles, or kilometers).
13. Polarity of transmit antenna (Vertical or Horizontal).
14. Transmit antenna gain (in dBi).
15. Line loss (applicable only to providers using coax, heliax, waveguide or other forms of cabling – excludes power-over-Ethernet devices).
16. Mechanical and/or Electrical beam tilt (if applicable).
17. Equipment Manufacturer (allows easy cross-reference against manufacturer's specification sheet).
18. Power output of the transmitting device (if unknown, FCC standards or manufacturer specifications are applied).
19. AMSL at base of tower site.
20. Antenna centerline AGL (height of antenna above ground level measured at the centerline of the actual antenna).
21. Foliage factors (Evergreens/Deciduous and percent of ground cover).
22. Ground Clutter (primarily used in rural areas to account for foliage and in metropolitan areas to account for types and heights of buildings if known).
23. Average gain of receive antenna.

24. Receive antenna is estimated at height above average terrain (HAAT) of 6.2 meters/20 feet.

25. Federal Registration Numbers (if applicable) which may allow opportunities to cross-reference and/or obtain additional data from the FCC's ULS and the **CO**mmission **RE**gistration **S**ystem.

Propagation modeling combines scientific data and empirical mathematical formulation for the characterization of radio wave propagation as a function of frequency, distance, and other conditions. Propagation software(s) typically use the Irregular Terrain Model (also known as Longley-Rice) of radio propagation for frequencies between 20 MHz and 20 GHz. This model is based on electromagnetic theory and statistical analyses of the combination of terrain features and radio measurements, then predicting the median attenuation of a radio signal as a function of distance and the variability of the signal in time and in space. For metropolitan areas, the software can typically be adjusted to use the Okumura-Hata model which accounts for predicting the behavior of cellular transmissions in areas where buildings are the primary obstructions. The resulting product from either model depicts a graphical illustration of the theoretical propagation characteristics of a selected frequency range based on defined variables (receiver sensitivity of the home/mobile device, foliage factor, and digital elevation terrain input).

After converting propagation models into a geospatial format, additional processing is completed to remove the small pixels representing service present in the resulting dataset. These areas are initially created based on the parameters entered in the software from the provider equipment information, the underlying data parameters of elevation, hillshade, etc., and the limitations of the software itself to display a broadband service area as accurately as possible. Generally, these random pixel striations appear as a result of signal levels reaching the highest elevated points within the prescribed radius. Typically, while this pixilation anomaly shows legitimate areas where signals can be received, these highly elevated points may have exceedingly sparse populations or are entirely void of population. As a result, and congruent to the *Wireless Technology Methodologies and Business Logic* white paper submitted to NTIA on January 20, 2011, all independent pixels representing service that are less than 0.125 square miles in area have been removed from the geospatial representation of each wireless provider.

BROADBAND INQUIRIES METHODOLOGY

CN collects consumer feedback in the form of broadband inquiries (BBIs). These inquiries represent any type of communication received from the public regarding broadband service. Once BBIs are received across the state, this information is overlaid with the broadband availability information which was collected through the SBI program. This allows for a real-world comparison of the broadband landscape to the information received from broadband inquiries. Consumers submitting these inbound comments and/or inquiries are able to provide information regarding three categories: 1) residents who do not have broadband but want it; 2) residents who have broadband but want a different provider; and 3) residents who do not have broadband, but the broadband inventory maps indicate that they do.

BBIs are submitted frequently by consumers via the Connect Michigan website. Inquiries often seek help to identify local broadband provider options, or to learn when a specific provider may be able to provide service to that consumer. Consumer comments also provide information which may help modify maps with actual service area information. The primary objectives of CN regarding these inquiries are 1) to improve the accuracy of the state maps with submitted consumer information and follow-up field research; 2) to provide broadband options to consumers through cooperation with mapped providers and by facilitating new broadband service options; and 3) to map and analyze information from consumers about areas of unmet broadband demand and alternatives to currently mapped services. A prime example of the second option is the utilization of the Rural Utility Service satellite eligibility tool. By simply entering the consumer's address, the CN engineer can quickly determine if the consumer meets the initial qualification status for BIP satellite subsidies.

New BBIs are assigned to either the GIS department or the Engineering & Technical Services (ETS) team depending on the category entered by the consumer on the website submission form. The GIS or ETS team members respond to each inquiry according to the information requested by the consumer. Many BBIs can be resolved through desktop research; however, if a BBI requires research in the field, the assigned ETS team member conducts such research when performing field validations in the area of the inquiry, or at other such time as is practical and appropriate. GIS and ETS team members respond to and conclude BBIs via telephone contact and/or e-mail communication.

The broadband inquiry process has been implemented in each of the CN state programs with successful results. Altogether CN has received over 18,000 broadband inquiries since 2007, allowing the state programs to evaluate each inquiry for broadband demand and data verification. These inquiries are continuously examined against current broadband availability, updated every six months, to determine if previously unserved households have been expanded to and can now receive broadband at their residence. This database of broadband inquiries has also allowed the CN state programs to aggregate demand in concentrated areas to show providers the exact locations where the population has made it clear that they would purchase broadband if it was made available to them. Providers in the states have responded to this process and have expanded to areas knowing that their investment will be worthwhile. Data verification methods have also proven successful, as the state programs have been able to show those inquiries that indicate the broadband service areas are misrepresented on the map to providers, who then verify where service cannot reach in regard to that residence(s). The broadband coverage in these states has been altered to create a more accurate map based on the inquiries submitted by the public.

During this reporting period, the Connect Michigan project has received a total of 191 inquiries (1,376 grant inception to date). As more inquiries are submitted to Connect Michigan, a more thorough validation of the broadband landscape can be performed, while also allowing providers to see which areas have a high demand for broadband adoption.

BROADBANDSTAT METHODOLOGY

BroadbandStat is an online, interactive mapping tool for viewing, analyzing, and validating broadband data. Developed through a partnership with ESRI, the market leader in geographic information system (GIS) software, BroadbandStat is a multi-functional, user-friendly way for local leaders, policymakers, consumers, and technology providers to devise a plan for the expansion and adoption of broadband.

First and foremost, BroadbandStat allows consumers to locate their residence and identify providers that offer broadband Internet service to that location. The interactive platform allows for users to build and evaluate broadband expansion scenarios using a wealth of data, including education and population demographics, broadband availability, and research about the barriers to adoption.

New functionality in BroadbandStat allows the consumer to provide feedback on the broadband data displayed on the interactive map. Through the collection of this feedback, a visual demand for broadband is presented. This visualization allows the CN state programs the ability to validate the broadband availability for accuracy. If residents within a region state they are without broadband, but the interactive map shows otherwise, this allows CN to approach the providers within that area in an effort to trim down their coverage to more accurately represent real-world availability on the ground.

The Connect Michigan project launched BroadbandStat on May 20, 2010, and has received a total of 8,344 visits to date, of which 1,883 occurred this reporting period.

SPEED TEST METHODOLOGY

The 2,883 speed tests that are represented in the Connect Michigan Speed Test Report during this reporting period (11,584 grant inception to date) are the result of a partnership between CN and Ookla Net Metrics. Utilizing this relationship increases the level of confidence in the data being collected and provides for a far greater sample size than could be collected by a single testing site.

Ookla owns and operates Speedtest.net, as well as develops and deploys speed tests, such as the Connect Michigan speed test website, for partners around the world. This network of sites that is developed and run on its testing technology provides Ookla with a vast dataset that, due to the variability of geographic information collected across the varying speed test sites, is geocoded utilizing Geo-IP technology. This technology allows for tests to be geocoded to points of aggregation, typically larger nodes across provider networks. While there are hundreds of thousands of tests that have been conducted, the level of aggregation is only sufficient for county-level detail due to the test results being located at these larger nodes and not at an absolute location for each speed test.

In an effort to validate broadband data from the Connect Michigan project, speed test information is collected throughout the state. Speed tests provide speed information on the path taken through all networks (a provider's network as well as additional networks) a local machine must connect to in order to reach the host test. The benefit of this collection of speed information is two-tiered. First,

it allows for a comprehensive dataset of speeds, while also providing Connect Michigan with the information on where broadband services are available. Second, unlike theoretical speed information which was received through the data collection process, the use of speed tests provide real-world information on the speeds that currently exist within the state of Michigan.

PROVIDERS DEEMED NON-VIABLE

The following list of companies represents the remainder of the broadband provider universe that was originally identified as complete for outreach to begin for the State Broadband Initiative. These providers are not included in the Data Package for the April 2012 submission because they have been deemed non-eligible under the parameters and guidance of the SBI grant program. This list of companies includes, but is not limited to providers offering service but below the current definition of broadband, those that have gone out of business, technology consulting firms, infrastructure or network construction companies, etc.

	Company Name	URL	Comments
1	20/20 Communications, LLC	n/a	Company has been sold to another area WISP
2	21Globe, Inc.	n/a	Company is no longer in business
3	650Net	http://www.650net.net/	This company provides dial-up only in Michigan
4	A 007 Access	n/a	Acquired by another company
5	Aaccess Network Communications	n/a	Not a broadband provider
6	Access123.net	http://www.access123.net/	Not a broadband provider
7	ACERX.NET	n/a	Not a broadband provider
8	Airbaud, Inc	http://www.airbaud.net/	No longer a fixed wireless provider in Michigan
9	Airespring, Inc.	http://www.airespring.com	Nonfacilities-based reseller
10	Airewaves Broadband, LLC	n/a	Company is no longer in business
11	Airmail247.com	n/a	Company is no longer in business
12	All-In-One Wireless, Inc.	n/a	No longer in business; acquired by another company
13	Antioch Wireless Broadband	www.antiochwirelessbroadband.com/	Not a broadband provider
14	Arrowheadnet.com	http://www.arrowheadnet.com/	Not a broadband provider

15	bargainisp.net	http://www.bargainisp.net/	Not a broadband provider
16	Bayville Wireless	n/a	Company is no longer in business
17	Beanstalk Internet	n/a	Company is no longer in business
18	Beaver Island Broadband, Inc.	n/a	Not a broadband provider
19	Big Bay Broadband	n/a	Company is no longer in business
20	BlazeConnect, Inc.	n/a	Company is no longer in business
21	Blue Communications, LLC	http://www.bluecommunicationsllc.com	Not a broadband provider
22	Broadband National	http://www.broadbandnational.com	Nonfacilities-based reseller
23	Broadview Networks Holdings, Inc.	http://www.broadviewnet.com	Not a Michigan provider
24	BullsEye Telecom, Inc.	http://bullseyetelecom.com	Nonfacilities-based reseller
25	Cable Vision, Inc.	n/a	Company is no longer in business
26	Cablemax Communications	n/a	Company is no longer in business
27	CAC MediaNet, Inc.	n/a	Not a broadband provider
28	Camino-Net Internet Services	http://www.camino-net.com	This company provides dial-up only in Michigan
29	Caspian Community TV Corporation	n/a	Not a broadband provider
30	Cbeyond Communications, LLC	n/a	Company has refused to participate
31	CCIS.net	http://www.ccis.net	Not a Michigan provider
32	Celito Communications	http://www.celito.net/	Nonfacilities-based reseller
33	CIMCO Communications, Inc.	n/a	This company is not a broadband provider
34	City of Crystal Falls	http://www.crystalfalls.org/ Electric%20Department.htm	This company is not a broadband provider
35	City of Negaunee	http://cityofnegaunee.com/ Cable.html	This company is not a broadband provider
36	Clear Rate Communications, Inc.	http://clearrate.com/	This company provides dial-up only in Michigan
37	Cleartouch.Com	n/a	Company is no longer in business
38	CMC Telecom, Inc.	http://cmctelecom.net	Nonfacilities-based reseller

39	Crystal Cable TV	n/a	They do offer broadband, but not over the cable lines; it is provided though satellite link.
40	Deltaforce	http://www.deltaforce.net	Nonfacilities-based reseller
41	deluxehost.com	http://deluxe-host.com	This company is not a broadband provider
42	DGUI	n/a	Company is no longer in business
43	Dial National	n/a	Company is no longer in business
44	Dialer.net	http://www.dialer.net	Nonfacilities-based reseller of mobile 3G services
45	DIECA Communications, Inc.	http://www.covad.com/	Company has been acquired by another company
46	DSL@interlync	www.interlync.com	Company has been non -responsive
47	DSTech	http://www.dstech.us/	They only provide wireless hotspots for the City of Escanaba and are not a fixed wireless provider
48	DTS-NET.COM	http://www.dts-net.com/	Nonfacilities-based reseller
49	Dundee Internet Services, Inc.	n/a	Company is no longer in business
50	Eagles Internet Services	n/a	Company is no longer in business
51	Enventis Telecom Inc.	http://www.enventis.com	Company does not provide broadband services in Michigan
52	ETI - Connecting Your World	http://www.cyberenet.net/	Nonfacilities-based reseller
53	Fast Dependable Access	n/a	Company is no longer in business
54	First Communications, LLC	www.firstcomm.com	Company has been non-responsive
55	Global Crossing Telecommunications, Inc.	http://www.globalcrossing.com/	Acquired by another company
56	Grid4 Communications, Inc.	http://www.grid4.com	Nonfacilities-based reseller; company has refused to participate
57	Holland Board of Public Works	http://www.hollandbpw.com	This company is not a broadband provider
58	Hubwest Protected Networks LLC	http://www.hubwest.com	Company does not provide broadband services in Michigan
59	Imbris, Inc.	http://www.imbris.com	Company does not provide broadband services in Michigan
60	IMGISP.NET	http://www.imgisp.net/	This company is not a broadband provider

61	Incredible Networks	n/a	Company is no longer in business
62	Industrial Grade Broadband, LLC	n/a	This company is not a broadband provider
63	Inercom Communications Inc.	http://www.inercom.com	Company is no longer in business
64	Interactiveinfo.com Inc	http://www.rocketbroadband.com	Company does not provide broadband services in Michigan
65	International Broadband Electric Communications, Inc.	http://ibec.net	This company is not a broadband provider
66	Intouch Internet Services, Inc.	http://www.intouchmi.com	Nonfacilities-based reseller
67	iRadical	n/a	Company is no longer in business
68	ISG	http://www.leapfrogbroadband.com	This company is not a broadband provider
69	ISPartner.net	n/a	Company is no longer in business
70	ITWifi, Inc.	http://www.fnw.us/	Company has been sold to another area WISP
71	Jackpine Internet	http://www.jackpine.com	Nonfacilities-based reseller
72	Jenco Speed Web	http://www.jencospeed.net	Company does not provide broadband services in Michigan
73	LARIAT.NET	http://www.lariat.net/	Company does not provide broadband services in Michigan
74	LCSisp.com	http://www.lcsisp.com/index.cfm	This company provides dial-up only in Michigan
75	Lightyear Network Solutions, LLC	http://lightyear.net	Nonfacilities-based reseller
76	LinkAmerica.Net	n/a	Company is no longer in business
77	Local Exchange Networks of Michigan, Inc.	n/a	Company is no longer in business
78	M55 WiFi Wireless Internet Service	http://www.m55wifi.net/	No longer in business
79	MainBoard, LLC	http://www.mainboard.cc/internet.htm	Company does not provide broadband services in Michigan
80	Maine Cable and Wireless	n/a	Company is no longer in business
81	Maple River Networks, LLC	n/a	Company is no longer in business
82	Marcin Company	n/a	Company is no longer in business
83	MediaNet	n/a	Company is no longer in business

84	Metropolitan Telecommunications Holding Company	http://www.mettel.net	Non-facilities based reseller
85	Mich1 Internet, Inc.	http://www.mich1.net	Nonfacilities-based reseller
86	Michiana Wireless, Inc.	http://www.michianawireless.com	Company does not provide broadband services in Michigan
87	Michigan Department of Information Technology	http://www.michigan.gov/dit/	This company is not a broadband provider
88	Microwave Communications, Inc.	n/a	This company is not a broadband provider
89	Midwest Communications Services, Inc.	http://mwcomm.com	This company is not a broadband provider
90	Midwest Energy Cooperative	http://teammidwest.com/	No longer in business
91	Millenicom Inc.	http://www.millenicom.com	Oregon-based reseller of mobile broadband plans
92	MIMesh	http://www.mimesh.com	This company is not a broadband provider
93	Nanomega.Com	n/a	Company is no longer in business
94	NetAccess, Inc.	http://www.nas.net/	This company is not a broadband provider
95	NetSpeed Online	n/a	Company is no longer in business
96	New Edge Network, Inc.	www.newedgenetworks.com	Nonfacilities-based reseller of backhaul services
97	Nextlink Wireless, Inc.	n/a	Company does not provide broadband services in Michigan
98	Northern Michigan Online	http://www.nmo.net	This company is not a broadband provider
99	Northwest ISP	www.northwestisp.com/	Company is no longer in business
100	NSIGHTTEL WIRELESS, LLC	www.nsighttel.com	Company does not provide broadband services in Michigan
101	Overarch Broadband	www.overarch.com	Company does not provide broadband services in Michigan
102	Pacific Internet Exchange	n/a	Company does not provide broadband services in Michigan
103	PAETEC Communications, Inc.	http://www.paetec.com/	Acquired by another company
104	Paknet Limited	n/a	This company is not a broadband provider

105	Planet Online	www.planetonline.net/	This company is not a broadband provider
106	PremoWeb	n/a	This company is not a broadband provider
107	Raser, Inc.	http://www.wmis.net/	Company has been non-responsive
108	Renaissance Networks	www.renaissancenetworks.com/	This company is not a broadband provider
109	Rural Communications, Inc.	http://www.ruralcommunications.net/	No longer in business
110	Saturn Telecommunication Services, Inc.	n/a	Acquired by another company
111	Seneca Communications	www.senecacommunications.com	This company is not a broadband provider
112	Simply Dialup A Metrogeek Company	www.simplydialup.com/	This company is not a broadband provider
113	Sling Broadband	www.slingbroadband.com/	Company does not provide broadband services in Michigan
114	Star Video	n/a	Company is no longer in business
115	State of Michigan	n/a	Not a broadband provider
116	StoneBridge Wireless Broadband	n/a	Acquired by another company
117	Surferz.Net	www.surferz.net/	This company is not a broadband provider
118	T1 Shopper	www.t1shopper.com	Non-facilities based reseller
119	Talk America Inc.	n/a	Acquired by another company
120	Telefonica USA, Inc.	www.telefonica.com/	Company does not provide broadband services in Michigan
121	TelNet Worldwide, Inc.	www.telnetww.com	Company has been non-responsive
122	Telovations, Inc.	www.telovations.com	Company does not provide broadband services in Michigan
123	Thumbnet	n/a	Acquired by another company
124	Total Access Networks, Inc	n/a	Not a broadband provider
125	TRANSWORLD NETWORK, CORP	n/a	Not a broadband provider
126	True Connections, LLC	n/a	Company is no longer in business
127	TSISP.NET	n/a	Company is no longer in business
128	TVC Inc.	www.tvcinc.com	Not a broadband provider
129	University Corporation for Advanced Internet Development	n/a	Not a broadband provider

130	UNUM Telecommunications, Inc.	n/a	Company does not provide broadband services in Michigan
131	WilTel Communications, LLC.	n/a	Acquired by another company
132	WingsComm Communications	n/a	Company is no longer in business
133	Wireless First LLC	n/a	Acquired by another company
134	Wireless Roanoke, Inc.	n/a	Company is no longer in business
135	Wireless Ypsi	www.wireless.ypsi.com	Company provides free hotspots in Ypsilanti area
136	wisbin	www.wisbin.com/	Company does not provide broadband services in Michigan
137	www.AmericanAngel.us	www.AmericanAngel.us	Company is no longer in business
138	YEYZOO.NET	www.yeyzoo.net/	Not a broadband provider
139	YLISP (Your Local ISP)	www.itsyournet.com	Not a broadband provider
140	YourT1Wifi.com	www.yourt1wifi.com/	Company does not provide broadband services in Michigan
141	Z-Comm, LLC	n/a	Company is no longer in business
142	ZOOM Internet Services, LLC	n/a	Acquired by another company

Broadband Provider Log

Complete	174
Non-Responsive/Refused	9
In Progress	10
Count of Datasets by Status	193
Total Unique Providers Represented	**140**

Provider Name	Platform	Status	NDA Execution Date	Notes
Ace Telephone Company of Michigan Inc.	DSL	Data Added to Statewide Inventory	1/12/2010	[JAN-30-12 Brian Dudek] Change: Provider slightly expanded DSL territory near Mesick and increased upload speed to tier 4 in Old Mission area.
Air Advantage, LLC	Fixed Wireless	Data Added to Statewide Inventory	3/15/2010	[FEB-29-12 Sarah Finne] Change and/or Correction: Possible service expansion or corrections to previous dataset; entirely new dataset provided for April 2012 submission.
AT&T Inc.	DSL	Data Added to Statewide Inventory	12/16/2009	[FEB-29-12 Sarah Finne] Change and/or Correction: Possible service expansion or corrections to previous dataset; entirely new dataset provided for April 2012 submission.
AT&T Inc.	Mobile Wireless	Data Added to Statewide Inventory	12/16/2009	[FEB-28-12 Brian Dudek] Change: Provider expanded mobile territory.
Barry County Telephone Company	Fixed Wireless	Data Added to Statewide Inventory		[FEB-29-12 Sarah Finne] Change: New fixed wireless towers in operation.
Block Communications, Inc.	Cable	Data Added to Statewide Inventory	4/12/2010	[JAN-17-12 Sarah Finne] Change: Provider upgraded infrastructure and can now offer speed tier 10 download speeds, with TechTrans 40 (DOCSIS 3.0).
Bloomingdale Telephone Company, Inc.	Fiber	Data Added to Statewide Inventory	1/25/2010	[JAN-20-11 Brian Dudek] Change and Correction: Provider expanded fiber territory northwest and east of Paw Paw. Provider upload speeds were reported at tier 5 when they should be tier 4.
Broadstripe LLC	Cable	Data Added to Statewide Inventory	3/5/2010	[JAN-17-12 Sarah Finne] Correction: Small area of coverage removed due to consumer broadband inquiry (approved by provider).
Camp Communication Services, Inc.	Fixed Wireless	Data Added to Statewide Inventory		[FEB-29-12 Sarah Finne] Change: New fixed wireless towers in operation, and provider decommissioned 3 tower sites (and upgraded infrastructure on a few sites to offer speed tier 4 and 5 download speeds).
CenturyLink	DSL	Data Added to Statewide Inventory	12/4/2009	[FEB-23-12 Brian Dudek] Change and/or Correction: Possible service expansion or corrections to previous dataset; entirely new dataset provided for April 2012 submission.
Charter Communications, Inc.	Cable	Data Added to Statewide Inventory	12/15/2009	[JAN-30-12 Brian Dudek] Change and/or Correction: Possible service expansion or corrections to previous dataset; entirely new dataset provided for April 2012 submission. Increased maximum advertised download speed to tier 10.
Cherry Capital Connection, LLC	Fixed Wireless	Data Added to Statewide Inventory	12/28/2009	[FEB-29-12 Sarah Finne] Change: New fixed wireless towers in operation.
Climax Telephone Company	Fiber	Data Added to Statewide Inventory	1/14/2010	[FEB-29-12 Sarah Finne] Change: Provider upgraded DSL area to FTTH.
Comcast Cable Communications, LLC	Cable	Data Added to Statewide Inventory	12/7/2009	[FEB-09-12 Brian Dudek] Change and/or Correction: Possible service expansion or corrections to previous dataset; entirely new dataset provided for April 2012 submission.
Crystal Automation Systems, Inc	Fixed Wireless	Data Added to Statewide Inventory	6/25/2010	[FEB-29-12 Sarah Finne] Change: New fixed wireless towers in operation.
CSInet Internet Access Corp.	Fixed Wireless	Data Added to Statewide Inventory	3/31/2010	[FEB-29-12 Sarah Finne] Change: New fixed wireless towers in operation.
Custom Software Inc.	Fixed Wireless	Data Added to Statewide Inventory	2/3/2010	[FEB-29-12 Sarah Finne] Change: Provider upgraded infrastructure and can now offer speed tier 3 download speeds, thus qualifying their fixed wireless platform as broadband.
D&P Communications, Inc.	Fixed Wireless	Data Added to Statewide Inventory	3/8/2011	[FEB-21-12 Brian Dudek] Change: New fixed wireless towers in operation.
FNW, LLC	Fixed Wireless	Data Added to Statewide Inventory	2/12/2010	[FEB-29-12 Sarah Finne] Change and/or Correction: Possible service expansion or corrections to previous dataset; entirely new dataset provided for April 2012 submission.
Frontier Communications Corporation	DSL	Data Added to Statewide Inventory	1/22/2010	[FEB-28-12 Brian Dudek] Change and Correction: Service expansion and corrections to previous dataset; entirely new dataset provided for April 2012 submission in Midstates and North provider areas.
Great Lakes High Speed, LLC	Fixed Wireless	Data Added to Statewide Inventory		[FEB-29-12 Sarah Finne] Change: New fixed wireless tower in operation, and one existing tower site was decommissioned.
Great Lakes Internet, Inc.	Fixed Wireless	Data Added to Statewide Inventory	3/11/2010	[JAN-17-12 Brian Dudek] Change: Provider expanded fixed wireless territory.
Internet 123, Inc.	Fixed Wireless	Data Added to Statewide Inventory		[FEB-22-12 Brian Dudek] Correction: New provider for April 2012 submission that was previously unresponsive.
Iron River Cooperative TV Antenna Corp	Cable	Data Added to Statewide Inventory	7/27/2010	[JAN-17-12 Sarah Finne] Change: Provider upgraded infrastructure and can now offer speed tier 6 download speeds and speed tier 4 upload speeds.
ISP Management, Inc.	Fixed Wireless	Data Added to Statewide Inventory	3/22/2010	[FEB-29-12 Sarah Finne] Change and/or Correction: Possible service expansion or corrections to previous dataset; entirely new dataset provided for April 2012 submission.
LakeNet LLC	Fixed Wireless	Data Added to Statewide Inventory	12/27/2011	[FEB-13-12 Brian Dudek] Change: New fixed wireless provider in the market.

Provider	Type	Status	Date	Notes
Leap Wireless International, Inc.	Mobile Wireless	Data Added to Statewide Inventory	4/5/2010	[FEB-23-12 Brian Dudek] Change and/or Correction: Possible service expansion or corrections to previous dataset; entirely new dataset provided for April 2012 submission.
Lennon Telephone Company	Cable	Data Added to Statewide Inventory	1/25/2010	[FEB-10-12 Brian Dudek] Change: Provider slightly increased cable territory. Increased maximum advertised download speed to tier 6.
MetroPCS Wireless, Inc.	Mobile Wireless	Data Added to Statewide Inventory	2/10/2012	[FEB-29-12 Sarah Finne] Change: New mobile wireless provider identified.
Parish Communications	Cable	Data Added to Statewide Inventory	7/1/2010	[JAN-25-12 Brian Dudek] Change: Provider reduced coverage by selling cable system in Berrien County (Bainbridge/Pipestone Twps) to SMR Communications.
RACC Enterprises, LLC	Fixed Wireless	Data Added to Statewide Inventory		[FEB-17-12 Brian Dudek] Change: New provider in service for April 2012 submission.
Scott Cook, Inc.	Fixed Wireless	Data Added to Statewide Inventory		[FEB-29-12 Sarah Finne] Change: New fixed wireless provider identified.
SMR Communications, Inc.	Fixed Wireless	Data Added to Statewide Inventory		[MAR-01-12 Sarah Finne] Correction:Michiana Supernet was previously non-responsive, but they provided data this round.
SMR Communications, Inc.	Cable	Data Added to Statewide Inventory		[JAN-25-12 Brian Dudek] Change: New cable provider in the market after purchase of cable system from Parish Communications.
SpeedNet, LLC	Fixed Wireless	Data Added to Statewide Inventory	1/7/2010	[FEB-29-12 Sarah Finne] Change and/or Correction: Possible service expansion or corrections to previous dataset; entirely new dataset provided for April 2012 submission.
Sprint Nextel Corporation	Mobile Wireless	Data Added to Statewide Inventory	1/14/2010	[JAN-30-12 Brian Dudek] Change and/or Correction: Possible service expansion or corrections to previous dataset; entirely new dataset provided for April 2012 submission.
T-Mobile USA, Inc.	Mobile Wireless	Data Added to Statewide Inventory	1/8/2010	[FEB-20-12 Brian Dudek] Change: Provider expanded mobile territory in UMTS and HSPA areas.
TDS Telecommunications Corporation	DSL	Data Added to Statewide Inventory	1/27/2010	[FEB-28-12 Brian Dudek] Change and/or Correction: Possible service expansion or corrections to previous dataset; entirely new dataset provided for April 2012 submission.
The Computer Care Company, Inc.	DSL	Data Added to Statewide Inventory	3/8/2011	[JAN-17-12 Sarah Finne] Change: Provider upgraded infrastructure and can now offer speed tier 7 download speeds.
The Computer Care Company, Inc.	Fixed Wireless	Data Added to Statewide Inventory	3/8/2011	[JAN-20-12 Brian Dudek] Change: New fixed wireless towers in operation.
Time Warner Cable LLC	Cable	Data Added to Statewide Inventory	12/21/2009	[FEB-21-12 Brian Dudek] Change: Provider increased download and upload speeds in their southern MI territory.
Tucker Communications, Inc	Fixed Wireless	Data Added to Statewide Inventory	2/17/2011	[FEB-29-12 Sarah Finne] Change: New fixed wireless towers in operation.
Upper Peninsula Telephone Company	DSL	Data Added to Statewide Inventory	1/11/2010	[FEB-10-12 Brian Dudek] Change: Provider increased maximum advertised download speed to tier 4 and upload to tier 3 in multiple areas.
Verizon North Inc.	Mobile Wireless	Data Added to Statewide Inventory	12/14/2009	[FEB-20-12 Brian Dudek] Change and Correction: Provider corrected their speed tiers and increased coverage areas in EVDO and LTE areas.
Waldron Communication Company	Fixed Wireless	Data Added to Statewide Inventory	1/12/2010	[JAN-19-12 Brian Dudek] Change: Provider added 3650 wireless spectrum to existing tower location and increased wireless speed infrastructure on 900 mhz spectrum to match 3650.
Winn Telephone Company	Fixed Wireless	Data Added to Statewide Inventory	6/28/2010	[FEB-29-12 Sarah Finne] Change: New fixed wireless towers in operation.
Zing Networks, Inc.	Fixed Wireless	Data Added to Statewide Inventory		[FEB-29-12 Sarah Finne] Correction: Zing Networks, Inc. was previously non-responsive, but they provided data this round.
Charter Communications, Inc.	Backhaul	Backhaul Provider Only Processing Complete	12/15/2009	
Conterra Ultra Broadband, LLC	Backhaul	Backhaul Provider Only Processing Complete		
Internet 123, Inc.	Backhaul	Backhaul Provider Only Processing Complete		
Sprint Nextel Corporation	Backhaul	Backhaul Provider Only Processing Complete	1/14/2010	
T-Mobile USA, Inc.	Backhaul	Backhaul Provider Only Processing Complete	1/8/2010	
TDS Telecommunications Corporation	Backhaul	Backhaul Provider Only Processing Complete	1/27/2010	
Zayo Bandwidth, LLC	Backhaul	Backhaul Provider Only Processing Complete		
Bitwise Wireless, LLC	Fixed Wireless	Estimated Coverage Submitted for Non-Participating Provider		[MAR-07-12 Sarah Finne] Correction: Estimated coverage created and submitted for non-responsive provider.
Tri-County Wireless, Inc.	Fixed Wireless	Estimated Coverage Submitted for Non-Participating Provider		[MAR-07-12 Sarah Finne] Correction: Estimated coverage created and submitted for non-responsive provider.
Vision Quest Technology Solutions	Fixed Wireless	Estimated Coverage Submitted for Non-Participating Provider		[MAR-07-12 Sarah Finne] Correction: Estimated coverage created and submitted for non-responsive provider.
2125 Cable Company, LLC	Cable	No Update to Provide	3/22/2010	
Agri-Valley Communications, Inc.	Fixed Wireless	No Update to Provide	1/22/2010	
Agri-Valley Communications, Inc.	DSL	No Update to Provide	1/22/2010	
Agri-Valley Communications, Inc.	Backhaul	No Update to Provide	1/22/2010	
Agri-Valley Communications, Inc.	Mobile Wireless	No Update to Provide	1/22/2010	
AIRGRANT.COM, INC.	Fixed Wireless	No Update to Provide		
AT&T Inc.	Backhaul	No Update to Provide	12/16/2009	
Azulstar, Inc.	Fixed Wireless	No Update to Provide	1/27/2010	[MAR-13-12 Sarah Finne] Correction: Provider MAD speed decreased from tier 6 to tier 5, per website information.
Baraga Telephone Company	DSL	No Update to Provide	1/14/2010	
Baraga Telephone Company	Fiber	No Update to Provide	1/14/2010	
Barry County Telephone Company	DSL	No Update to Provide		
Barry County Telephone Company	Fiber	No Update to Provide		
BigTube Wireless, LLC	Fixed Wireless	No Update to Provide	6/17/2010	
Blanchard Telephone Association, Inc.	DSL	No Update to Provide	6/17/2010	
Blanchard Telephone Association, Inc.	Backhaul	No Update to Provide	6/17/2010	
Bloomingdale Telephone Company, Inc.	DSL	No Update to Provide	1/25/2010	
Bloomingdale Telephone Company, Inc.	Fixed Wireless	No Update to Provide	1/25/2010	
Cable America Michigan, LLC	Cable	No Update to Provide	3/9/2011	

Carr Communications, Inc.	DSL	No Update to Provide	1/15/2010	
CCI Systems, Inc.	Cable	No Update to Provide	6/29/2010	
CenturyLink	Backhaul	No Update to Provide	12/4/2009	
City of Norway	Cable	No Update to Provide	3/14/2011	
Clearwire Corporation	Mobile Wireless	No Update to Provide	3/17/2011	[MAR-12-12 Terry Holmes] Provider supplied additional information on coverage for substantial service sites in October 2011, however requested that CN not submit or publish this coverage since they do not market to these areas.
Climax Telephone Company	Backhaul	No Update to Provide	1/14/2010	
Climax Telephone Company	DSL	No Update to Provide	1/14/2010	
Coldwater Board of Public Utilities	Cable	No Update to Provide	3/1/2010	
Crystal Automation Systems, Inc	Backhaul	No Update to Provide	6/25/2010	
Custom Software Inc.	DSL	No Update to Provide	2/3/2010	
D&P Communications, Inc.	Cable	No Update to Provide	3/8/2011	
D&P Communications, Inc.	Fiber	No Update to Provide	3/8/2011	
Daystarr Communications, LLC	Backhaul	No Update to Provide		
Daystarr Communications, LLC	DSL	No Update to Provide		
Daystarr Communications, LLC	Fiber	No Update to Provide		
DISH Network Corporation	Satellite	No Update to Provide	1/27/2010	
Farmers Mutual Telephone Company of Chapin, Inc.	DSL	No Update to Provide	10/26/2010	
Fast-Air Internet, Inc.	Fixed Wireless	No Update to Provide		
Frontier Communications Corporation	Backhaul	No Update to Provide	1/22/2010	
Great Lakes Comnet, Inc.	Backhaul	No Update to Provide		
Hiawatha Communications, Inc.	DSL	No Update to Provide	2/2/2010	
Hiawatha Communications, Inc.	Fiber	No Update to Provide	2/2/2010	
Hiawatha Communications, Inc.	DSL	No Update to Provide	2/2/2010	
Hiawatha Communications, Inc.	DSL	No Update to Provide	2/2/2010	
Hiawatha Communications, Inc.	DSL	No Update to Provide	2/2/2010	
Hidden Lake Wireless, Inc.	Fixed Wireless	No Update to Provide	3/12/2010	
Hughes Network Systems, LLC	Satellite	No Update to Provide	2/5/2010	
I-2000, Inc.	Fixed Wireless	No Update to Provide	3/7/2011	
Interlink Computers Technology, Inc.	Fixed Wireless	No Update to Provide	3/12/2010	
Iron Bay Computer & Design	Fixed Wireless	No Update to Provide	1/14/2010	
Kaltelco, LLC	DSL	No Update to Provide	3/5/2010	
Lennon Telephone Company	DSL	No Update to Provide	1/25/2010	
Ligonier Telephone Company, Inc.	Fixed Wireless	No Update to Provide	3/31/2010	
MegaPath Inc.	Backhaul	No Update to Provide	2/15/2010	
Mercury Network Corporation	Fixed Wireless	No Update to Provide	3/9/2011	
Mercury Network Corporation	Backhaul	No Update to Provide	3/9/2011	
Merit Network, Inc.	Backhaul	No Update to Provide	6/21/2010	
MetaLINK Technologies, Inc.	Fixed Wireless	No Update to Provide	3/22/2010	
Newaygo County Advanced Technology Services	Fixed Wireless	No Update to Provide		
Niagara Telephone Company	DSL	No Update to Provide	1/22/2010	
Niagara Telephone Company	Backhaul	No Update to Provide	1/22/2010	
Northside TV Corporation	Cable	No Update to Provide		
Ogden Communications, Inc.	DSL	No Update to Provide	1/19/2010	
Ogden Communications, Inc.	Fixed Wireless	No Update to Provide	1/19/2010	
Pasty.Net, Inc.	Fixed Wireless	No Update to Provide	1/6/2010	
Peninsula Fiber Network, LLC	Backhaul	No Update to Provide	1/14/2010	
Sand Creek Communications Company	DSL	No Update to Provide	3/2/2010	
Sand Creek Communications Company	Backhaul	No Update to Provide	3/2/2010	
Sister Lakes Cable TV	Cable	No Update to Provide		
Small Business Solutions Group L.L.C.	Fixed Wireless	No Update to Provide	7/20/2010	
SonicNet, Inc	Fixed Wireless	No Update to Provide	8/4/2011	
SpeedNet, LLC	Backhaul	No Update to Provide	1/7/2010	
Springcom, Inc.	Cable	No Update to Provide	2/25/2010	
Springcom, Inc.	DSL	No Update to Provide	2/25/2010	
The Computer Care Company, Inc.	Backhaul	No Update to Provide	3/8/2011	
The Iserv Company, LLC	DSL	No Update to Provide	6/21/2010	
The Iserv Company, LLC	Fiber	No Update to Provide	6/21/2010	
The Iserv Company, LLC	Backhaul	No Update to Provide	6/21/2010	
United States Cellular Corporation	Mobile Wireless	No Update to Provide	2/15/2011	
US Signal Company, LLC	Backhaul	No Update to Provide	2/25/2010	
ViaSat, Inc.	Satellite	No Update to Provide	1/8/2010	[MAR-06-12 Brian Dudek] Change: ViaSat has acquired Wildblue and coverage will be represented as ViaSat, Inc. starting with the April 2012 submission.
Waldron Communication Company	DSL	No Update to Provide	1/12/2010	
WideOpenWest Michigan, LLC	Cable	No Update to Provide		
Windstream Communications	Backhaul	No Update to Provide		
Windstream Communications	Backhaul	No Update to Provide		[MAR-08-12 Brian Dudek] Change: Windstream acquired Intellifiber Networks, Inc. (Talk America) and it is being submitted under the Windstream name.
Windstream Communications	DSL	No Update to Provide		[MAR-07-12 Sarah Finne] Change: Windstream acquired Talk America d/b/a Cavalier Telephone and the former Cavalier Telephone data is being submitted under the Windstream name.
Winn Telephone Company	Fiber	No Update to Provide	6/28/2010	
Winn Telephone Company	DSL	No Update to Provide	6/28/2010	[MAR-13-12 Sarah Finne] Correction: Provider download speed corrected to tier 6 in previously reported tier 7 areas, per website information.
Wyandotte Municipal Services	Cable	No Update to Provide	3/23/2010	
Allband Communications Cooperative	Fiber	No Update Provided - Use Last Submission Data	2/2/2010	
Allendale Telephone Company	DSL	No Update Provided - Use Last Submission Data	2/4/2010	
Allendale Telephone Company	Fiber	No Update Provided - Use Last Submission Data	2/4/2010	
Boardman River Communications, LLC	Cable	No Update Provided - Use Last Submission Data	2/10/2010	
Bright House Networks, LLC	Cable	No Update Provided - Use Last Submission Data	4/26/2010	
CMS Internet LLC	Fixed Wireless	No Update Provided - Use Last Submission Data	3/11/2010	
Cogent Communications, Inc.	Backhaul	No Update Provided - Use Last Submission Data		

COLI, Inc.	Fixed Wireless	No Update Provided - Use Last Submission Data		
DMCI Broadband, LLC	Fixed Wireless	No Update Provided - Use Last Submission Data	2/3/2010	
Drenthe Telephone Company	DSL	No Update Provided - Use Last Submission Data	2/4/2010	
Endless Journey, Inc.	Fixed Wireless	No Update Provided - Use Last Submission Data		
Fourway Computer Products, Inc.	Fixed Wireless	No Update Provided - Use Last Submission Data		
Ideal Wireless, Inc.	Fixed Wireless	No Update Provided - Use Last Submission Data		
Invisalink Wireless Enterprises LLC	Fixed Wireless	No Update Provided - Use Last Submission Data	4/13/2010	
KEPS Technologies, Inc.	DSL	No Update Provided - Use Last Submission Data		[MAR-13-12 Sarah Finne] Correction: Provider download speed changed to tier 7 and upload speed changed to tier 4, per advertised website information.
KEPS Technologies, Inc.	Fixed Wireless	No Update Provided - Use Last Submission Data		
Level 3 Communications, LLC	Backhaul	No Update Provided - Use Last Submission Data	12/14/2009	
Lighthouse Computers, Inc.	Fixed Wireless	No Update Provided - Use Last Submission Data	2/17/2011	
Michigan Cable Partners Inc.	Cable	No Update Provided - Use Last Submission Data	6/18/2010	
Michwave Technologies, Inc.	Fixed Wireless	No Update Provided - Use Last Submission Data	3/12/2010	
Nodin Communications, LLC	Fixed Wireless	No Update Provided - Use Last Submission Data	4/22/2010	
Summit Digital Holdings, Inc.	Cable	No Update Provided - Use Last Submission Data		
Summit Digital Holdings, Inc.	Fixed Wireless	No Update Provided - Use Last Submission Data		
T2 Communications, LLC	Backhaul	No Update Provided - Use Last Submission Data	3/10/2010	
Town & Country Cable and Telecommunications, LLC	Cable	No Update Provided - Use Last Submission Data	6/18/2010	
Verizon North Inc.	Backhaul	No Update Provided - Use Last Submission Data	12/14/2009	
West Michigan Broadband, LLC	Fixed Wireless	No Update Provided - Use Last Submission Data		
Westphalia Telephone Company	DSL	No Update Provided - Use Last Submission Data	1/20/2010	
XO Communications, LLC	Backhaul	No Update Provided - Use Last Submission Data	2/12/2010	
Xyotek, LLC	Fixed Wireless	No Update Provided - Use Last Submission Data		
Boardman River Communications, LLC	Fixed Wireless	Solicited Initial Data	2/10/2010	
Martell Cable Services, Inc.	Cable	Solicited Initial Data		
Microtech Services, Inc.	Fixed Wireless	Solicited Initial Data		
Network Computers, LLC	Fixed Wireless	Solicited Initial Data		
Niagara Wireless, LLC	Fixed Wireless	Solicited Initial Data		