

**OFFICIAL APRIL 2011 UPDATE SUBMISSION TO  
THE NATIONAL TELECOMMUNICATIONS AND INFORMATION  
ADMINISTRATION UNDER THE  
STATE BROADBAND DATA AND DEVELOPMENT GRANT PROGRAM  
FOR THE STATE OF MICHIGAN**

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April 1, 2011

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## MICHIGAN COVER LETTER

April 1, 2011

Ms. Anne W. Neville  
SBDD 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:

It is with highest regard that the collective stakeholders of Connect Michigan offer congratulations to the U.S. Department of Commerce's National Telecommunications & Information Administration (NTIA) on the recent release of the National Broadband Map. This extraordinary milestone demonstrates the intense and joint effort of the NTIA, Federal Communications Commission (FCC), state governments, industry, and non-profits like Connected Nation and will 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 such a powerful tool that will surely benefit not just Michiganders but consumers and businesses nationwide.

Therefore, as the State Broadband Designated Entity, in partnership with the Michigan Public Service Commission, we are pleased to present this submittal of the state of Michigan's State Broadband Data and Development (SBDD) Grant Program, known as Connect Michigan.

These artifacts should be found to be compliant with the April 1, 2011, 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, 2011***

<u>NOFA Requirement</u>	<u>Data Transfer Model</u>	<u>Data Description</u>
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	n/a DataPackage.xlsx	Accuracy and Verification Report Worksheets of Contact Information, Data Dictionary, and Provider Summary Table
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 2010 SBDD data submission for the Connect Michigan program. Specifically, these new requirements are:

**SBDD Data Transfer Model**

The submission of the broadband dataset for April 1, 2011, is contained within the SBDD Data Transfer Model as released on the Grantee Workspace on January 14, 2011. 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 also includes the updated DataPackage spreadsheet with enhanced provider listings as well as satisfactory outputs from the SBDD\_Check toolbox to ensure fewer unexpected values with the submitted broadband datasets prior to federal processing for the National Broadband Map update.

It is therefore with great pleasure that the Connect Michigan program submits this April 2011 semi-annual data update under the State Broadband Data and Development Grant Program. We will continue to implement 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 SBDD includes the participation of approximately 85.48% of the Michigan provider community, or 106 of 124 total providers. Of the 106 participating providers, 49 supplied an update to their network or coverage area(s), while 47 have reported no change. The remaining 10 represent providers who previously supplied data but were non-

responsive in the April 2011 update effort or could not verify coverage areas at the time of this submission; 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 18 providers that are not represented in the attached datasets, 5 have either refused to participate in the voluntary program or have remained unresponsive to the numerous attempts at contact by Connect Michigan. The remaining 13 providers are currently in some form of progress toward data submission but were not able to either submit or verify 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% 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, 43 (34.68%) providers have been validated through field verification activities. Additional details on verification activities are contained within the Field Validation Narrative.

At the program's inception, Connect Michigan launched a website to create awareness about the initiative. 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.

As an indicator of stakeholder penetration, the Connect Michigan website encountered 4,804 unique visits during this reporting period (15,523 total to date for the life of the grant awarded on December 20, 2009). Additionally, this pronounced Web activity netted 257 broadband inquiries over this same reporting period (1,021 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 SBDD NOFA Technical Appendix.

In conjunction with the Michigan Public Service Commission, research and outreach was conducted during this data update reporting period by Connect Michigan to continue identification of existing, centralized sources for CAI connectivity data. 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 continues to work in close coordination with statewide associations such as the Michigan State Police, Michigan Townships Association, and Michigan Municipal League to promote the importance of broadband connectivity at anchor institutions and participation in this data collection process.

While we continue to document institutions and the related addresses, the connectivity data collected in most categories remains incomplete at this time. Connect Michigan will be implementing a number of new processes to increase participation including launching a CAI newsletter to connect communities across the state, increasing industry-specific planning with our state partner to target new community contacts, and revising the CAI portion of our website to increase visibility and content. From our work in Connect Michigan, as well as other states, we recognize the great value of this data to future collaboration efforts within the state and its value to the recently released 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.

In acquiring both broadband availability and CAI data within the state of Michigan, Connect Michigan has previously engaged all federally recognized tribal lands in the area covered by the Connect Michigan SBDD grant and reported that outreach as part of past submissions. Following the last submission, Connect Michigan met with the Native American Institute, which facilitated an opportunity for outreach and awareness at a United Tribes of Michigan Meeting. Throughout the next reporting period Connect Michigan plans to engage directly with these tribal communities and will also conduct affirmative outreach with Native American tribal organizations that are active within the area. Connect Michigan understands the connectivity challenges facing these tribes, and we have identified a need to include their data as part of our upcoming submissions.

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  
Chief Operating Officer  
Connected Nation, Inc.

## **DATA ACQUISITION: MICHIGAN COMMUNITY ANCHOR INSTITUTIONS**

In this third reporting period of the SBDD, Connect Michigan, working in close coordination with Michigan Public Service Commission, 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 SBDD 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 to a targeted list of CAI throughout the state. 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 SBDD NOFA.

The survey can be accessed at this link using the following password:

[http://connectmi.org/mapping/Community\\_Anchor\\_Institution\\_Data\\_Collection.php](http://connectmi.org/mapping/Community_Anchor_Institution_Data_Collection.php)

Password: CAI\_MI\_9124

Connect Michigan and the Michigan Public Service Commission have worked closely together during this reporting period to conduct research as part of an ongoing process to identify existing, centralized sources for CAI connectivity data. Locating centralized data sources in Michigan continues to be a challenge, but efforts continue to be made to ensure all potential sources are being explored in the state.

In tandem with these efforts to identify existing data, Connect Michigan continues to identify key CAI contacts among all CAI categories in an effort to distribute and promote the online survey and raise awareness of the importance of CAI broadband connectivity.

Survey results during this reporting period have been slow, therefore targeted planning will occur during the coming months with key institution contacts to ensure that CAI throughout the state are aware of the importance of participating in this process and reporting data for their institutions.

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. To assist with our data collection efforts, Connect Michigan is developing a CAI newsletter to be distributed quarterly beginning in April 2011. The newsletter will

highlight a CAI in Michigan, encourage institutions to share their data, and highlight the National Broadband Map.

The greatest challenge with collecting this data continues to be the difficulty in securing CAI broadband connectivity data. Connect Michigan will continue its ongoing work with the Michigan Public Service Commission and key organization contacts in an effort to raise awareness of this project among CAI. Coordination with statewide contacts such as the Michigan Department of Education, Michigan State Police, and State Library of Michigan will be key in the coming months to increase survey results. These institutions have been very helpful with past outreach attempts, and Connect Michigan will continue to rely upon them to assist with our efforts in the state.

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	4,553	4,553	4,553	229	218	218
Libraries	2,286	2,286	2,285	830	851	31
Healthcare	262	262	262	2	2	2
Public Safety	959	959	958	18	17	17
Higher Ed Institutions	148	148	148	27	26	26
Other Government	85	85	85	21	18	18
Other Non-Government	515	515	515	49	2	2
<b>Total</b>	<b>8,808</b>	<b>8,808</b>	<b>8,806</b>	<b>1,176</b>	<b>1,134</b>	<b>314</b>

## SBDD DATA SUBMISSION METHODOLOGY

The submission of the broadband dataset for April 1, 2011, is contained within the SBDD Data Transfer Model and additional components as released on the Grantee Workspace on January 14, 2011. Connected Nation 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 or territory, 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 narratives and 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 SBDD Data Transfer Model for the state of Michigan.

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***Inventory of Deliverables, Connect Michigan: April 1, 2011***

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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_CAIstitutions	Community Anchor Institutions-Listing.

The provider data collected by Connected Nation on behalf of the state of Michigan have been formatted per the given specifications and uploaded into the appropriate feature classes of the SBDD 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 it is not included in this submission dataset. Additional information is necessary to be able to show where service satisfactorily exists in the state, rather than submitting the entire boundary of the state as the serviceable area. Analysis information distributed and discussed with the satellite providers, as well as any additional guidance from the Program Office on the desired analysis for satellite-serviceable areas, will be implemented for the October 2011 data submission.

## **MICHIGAN FIELD VALIDATION NARRATIVE**

Connected Nation 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 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 Connected Nation's state specific websites.

Additionally, Connected Nation cross-referenced numerous public documents in order to ensure that all known broadband providers were located and contacted. This included searching membership logs from the 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: 2125 Cable Company LLC, ACD Net, Ace Telephone Company of Michigan Inc., Agri-Valley Communications Inc., Allendale Telephone Company, AT&T, Azulstar Inc., Bloomingdale Communications Inc., Boardman River Communications LLC, CenturyLink, Charter Communications, Cherry Capital Connection LLC, Clearwire Corporation, COLI Inc., Comcast Cable Communications LLC, Custom Software Inc., D&P Communications Inc., Frontier Communications Corporation, Hidden Lake Wireless Inc., I-2000 Inc., KEPS Technologies Inc., Leap Wireless International Inc., Merit Network, MetaLINK Technologies Inc., Michwave Technologies Inc., Microtech Services Inc., Mutual Data Services, Ogden Communications Inc., Parish Communications, Pasty.Net Inc., Peninsula Telephone Company, Pigeon Telephone, Sister Lakes Cable TV, SpeedNet LLC, Sprint, Talk America Inc., TDS Telecommunications Corporation, T-Mobile, Town & Country CATV, Verizon North Inc., Waldron Telephone Company, Winn Telephone Company, and Wyandotte Municipal Services.

During this reporting period, Connected Nation conducted 29 additional on-site validation tests with Merit Network, Clearwire, MicroTech Services, Mutual Data Services, AT&T, Charter, Chain of Lakes Internet Inc. (COLI), Leap Wireless, SpeedNet, Sprint, T-Mobile, and Verizon.

From program initiation through this reporting period, Connected Nation has completed in-the-field validation testing against 43 companies (out of a universe of 124 viable providers) totaling 34.68% within the state of Michigan.

## ACCURACY AND VERIFICATION: METHODOLOGY - PROVIDER VALIDATION

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, Connected Nation 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 Connected Nation, 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; Connected Nation 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 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 Connected Nation 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 Connected Nation 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 Connected Nation to resolve inaccuracies as they are identified to ensure that only the highest quality information is provided to stakeholders.

Estimates derived from provider-validated data indicate that approximately 2.32% of Michigan households do not have terrestrial fixed broadband service available, and approximately 0.22%<sup>1</sup> of Michigan households have neither mobile nor fixed broadband service available.<sup>2</sup>

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<sup>1</sup> In accordance with NTIA's definition of available broadband service as specified in the SBDD 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.

<sup>2</sup> Due to the nature of the SBDD 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

Within rural areas of the state, results derived from provider-validated data indicate that approximately 4.71% of rural Michigan households do not have terrestrial fixed broadband service available, and approximately 0.45%<sup>3</sup> of rural Michigan households have neither mobile nor fixed broadband service available.<sup>4</sup>

## 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)
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)

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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.

<sup>3</sup> See footnote 1.

<sup>4</sup> See footnote 2.

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 Federal Communications Commission Universal Licensing System and the **CO**mmission **RE**gistration **S**ystem

Propagation modeling is an 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).

## **BROADBAND INQUIRIES METHODOLOGY**

Connected Nation collects consumer feedback in the form of broadband inquiries. These inquiries represent any type of communication received from the public regarding broadband service. Once broadband inquiries are received across the state, this information is overlaid with the broadband availability information which was collected through the SBDD program. This allows for a real-world comparison of the broadband landscape to the information received from broadband inquiries. Broadband inquiries are able to provide three types of information: 1) Residents who do not have broadband but want it. 2) Residents who have broadband but want a different provider. 3) Residents who do not have broadband, but the broadband inventory maps indicate that they do.

Through the collection of broadband inquiries, a visual demand for broadband is presented. This visualization allows Connected Nation the ability to validate broadband availability maps for accuracy. If residents within a region state that they are without broadband, but the broadband inventory maps show otherwise, this allows Connected Nation 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. On the other hand, if there is a region in the territory in which broadband is not available, the broadband inquiries allow providers close to that region to see where they can successfully expand their broadband networks, leading to a high return on investment. In short, the higher number of inquiries leads to a higher level of certainty in regard to the broadband availability

maps. Since the initial data collection and release of corresponding maps, feedback in the form of broadband inquiries has allowed Connected Nation to identify additional areas that are in need of field validation, which are scheduled as soon as possible. Additional information on field validation can be found in the Field Validation Narrative.

The broadband inquiry process has been implemented in each of the Connected Nation state programs with successful results. Altogether Connected Nation has received over 16,000 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 Connected Nation 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 257 inquiries (1,021 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 Connected Nation 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 Connected Nation 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 4,791 visits to date, of which 1,598 occurred this reporting period.

## **SPEED TEST METHODOLOGY**

The 1,764 speed tests that are represented in the Connect Michigan Speed Test Report during this reporting period (4,055 grant inception to date) are the result of a partnership between Connected Nation 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.



## Broadband Provider Log

Complete	151
Non-Responsive/Refused	5
In Progress	23
Count of Datasets by Viable Status	179
Total Unique Providers Represented	124

Provider Name	Platform	Status	NDA Execution Date	Notes
Ace Telephone Company of Michigan Inc.	ILEC/CLEC	Data Added to Statewide Inventory	1/12/2010	
Agri-Valley Communications, Inc.	Mobile Wireless	Data Added to Statewide Inventory	1/22/2010	
Air Advantage, LLC	Fixed Wireless	Data Added to Statewide Inventory	3/15/2010	
AT&T Inc.	ILEC/CLEC	Data Added to Statewide Inventory	12/16/2009	
AT&T Inc.	Mobile Wireless	Data Added to Statewide Inventory	12/16/2009	
Baraga Telephone Company	ILEC/CLEC	Data Added to Statewide Inventory	1/14/2010	
Barry County Telephone Company	Fixed Wireless	Data Added to Statewide Inventory		
Bright House Networks, LLC	Cable	Data Added to Statewide Inventory	4/26/2010	
Buckeye Cablevision, Inc.	Cable	Data Added to Statewide Inventory	4/12/2010	
Camp Communication Services, Inc.	Fixed Wireless	Data Added to Statewide Inventory		
CenturyLink	ILEC/CLEC	Data Added to Statewide Inventory	12/4/2009	
Charter Communications	Cable	Data Added to Statewide Inventory	12/15/2009	
Cherry Capital Connection, LLC	Fixed Wireless	Data Added to Statewide Inventory	12/28/2009	
Clearwire Corporation	Mobile Wireless	Data Added to Statewide Inventory		
CMS Inter.net LLC	Fixed Wireless	Data Added to Statewide Inventory	3/11/2010	
Comcast Cable Communications, LLC	Cable	Data Added to Statewide Inventory	12/7/2009	
Crystal Automation Systems, Inc	Fixed Wireless	Data Added to Statewide Inventory	6/25/2010	
DMCI Broadband, LLC	Fixed Wireless	Data Added to Statewide Inventory	2/3/2010	
Drenthe Telephone Company	ILEC/CLEC	Data Added to Statewide Inventory	2/4/2010	
Endless Journey, Inc.	Fixed Wireless	Data Added to Statewide Inventory		
FNW, LLC	Fixed Wireless	Data Added to Statewide Inventory	2/12/2010	
Frontier Communications Corporation	ILEC/CLEC	Data Added to Statewide Inventory	1/22/2010	
Hiawatha Communications, Inc.	ILEC/CLEC	Data Added to Statewide Inventory	2/2/2010	
Hiawatha Communications, Inc.	Fiber	Data Added to Statewide Inventory	2/2/2010	
Hiawatha Communications, Inc.	ILEC/CLEC	Data Added to Statewide Inventory	2/2/2010	
I-2000, Inc.	ILEC/CLEC	Data Added to Statewide Inventory	3/7/2011	
Iron Bay Computer & Design	Fixed Wireless	Data Added to Statewide Inventory	1/14/2010	
Leap Wireless International, Inc.	Mobile Wireless	Data Added to Statewide Inventory	4/5/2010	
Lighthouse Computers, Inc.	Fixed Wireless	Data Added to Statewide Inventory	2/17/2011	
Michwave Technologies, Inc.	Fixed Wireless	Data Added to Statewide Inventory	3/12/2010	
Ogden Communications Inc.	ILEC/CLEC	Data Added to Statewide Inventory	1/19/2010	
Parish Communications	Cable	Data Added to Statewide Inventory	7/1/2010	
Pasty.Net, Inc.	Fixed Wireless	Data Added to Statewide Inventory	1/6/2010	
Sand Creek Communications Company	ILEC/CLEC	Data Added to Statewide Inventory	3/2/2010	
Sister Lakes Cable TV	Cable	Data Added to Statewide Inventory		
Small Business Solutions Group L.L.C.	Fixed Wireless	Data Added to Statewide Inventory	7/20/2010	
Sprint Nextel Corporation	Mobile Wireless	Data Added to Statewide Inventory	1/14/2010	
Summit Digital Holdings, Inc.	Cable	Data Added to Statewide Inventory		
T-Mobile USA, Inc.	Mobile Wireless	Data Added to Statewide Inventory	1/8/2010	
TDS Telecommunications Corporation	ILEC/CLEC	Data Added to Statewide Inventory	1/27/2010	
The Computer Care Company, Inc.	Fixed Wireless	Data Added to Statewide Inventory	3/8/2011	
Time Warner Cable LLC.	Cable	Data Added to Statewide Inventory	12/21/2009	
Tucker Communications, Inc	Fixed Wireless	Data Added to Statewide Inventory	2/17/2011	
United States Cellular Corporation	Mobile Wireless	Data Added to Statewide Inventory	2/15/2011	
Verizon North Inc.	Mobile Wireless	Data Added to Statewide Inventory	12/14/2009	
Westphalia Telephone Company	ILEC/CLEC	Data Added to Statewide Inventory	1/20/2010	
DIECA Communications, Inc.	Backhaul	Backhaul Provider Only Processing Complete	1/19/2010	
Great Lakes Comnet, Inc.	Backhaul	Backhaul Provider Only Processing Complete		
Level 3 Communications, LLC	Backhaul	Backhaul Provider Only Processing Complete	12/14/2009	
Peninsula Fiber Network, LLC	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	
US Signal	Backhaul	Backhaul Provider Only Processing Complete	2/25/2010	
Zayo Bandwidth, LLC	Backhaul	Backhaul Provider Only Processing Complete		
I-2000, Inc.	Fixed Wireless	Approval for Update Not Received - Use Last Submission Data	3/7/2011	
McLeodUSA Telecommunications Services, Inc.	ILEC/CLEC	Provider Approval Solicited		
2125 Cable Company, LLC	Cable	No Update to Provide	3/22/2010	
Agri-Valley Communications, Inc.	ILEC/CLEC	No Update to Provide	1/22/2010	
Agri-Valley Communications, Inc.	Fixed Wireless	No Update to Provide	1/22/2010	
Agri-Valley Communications, Inc.	Backhaul	No Update to Provide	1/22/2010	
Allband Communications Cooperative	Fiber	No Update to Provide	2/2/2010	
Allendale Telephone Company	Fiber	No Update to Provide	2/4/2010	
Allendale Telephone Company	ILEC/CLEC	No Update to Provide	2/4/2010	
AT&T Inc.	Backhaul	No Update to Provide	12/16/2009	
Azulstar, Inc.	Fixed Wireless	No Update to Provide	1/27/2010	
Baraga Telephone Company	Fiber	No Update to Provide	1/14/2010	
Barry County Telephone Company	ILEC/CLEC	No Update to Provide		
Barry County Telephone Company	Fiber	No Update to Provide		
BigTube Wireless	Fixed Wireless	No Update to Provide	6/17/2010	
Blanchard Telephone Association, Inc.	ILEC/CLEC	No Update to Provide	6/17/2010	
Blanchard Telephone Association, Inc.	Backhaul	No Update to Provide	6/17/2010	
Bloomington Communications, Inc.,	Fixed Wireless	No Update to Provide	1/25/2010	
Bloomington Communications, Inc.,	ILEC/CLEC	No Update to Provide	1/25/2010	
Bloomington Communications, Inc.,	Fiber	No Update to Provide	1/25/2010	
Borderland Communications, LLC	ILEC/CLEC	No Update to Provide	1/22/2010	
Borderland Communications, LLC	Backhaul	No Update to Provide	1/22/2010	
Broadstripe LLC	Cable	No Update to Provide	3/5/2010	
Cable America Michigan, LLC	Cable	No Update to Provide	3/9/2011	
Carr Telephone Company	ILEC/CLEC	No Update to Provide	1/15/2010	
CCI Systems	Cable	No Update to Provide	6/29/2010	

CenturyLink	Backhaul	No Update to Provide	12/4/2009
Charter Communications	Backhaul	No Update to Provide	12/15/2009
City of Norway	Cable	No Update to Provide	
Climax Telephone Company	Backhaul	No Update to Provide	1/14/2010
Climax Telephone Company	ILEC/CLEC	No Update to Provide	1/14/2010
Cogent Communications, Inc.	Backhaul	No Update to Provide	
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
D & P Communications, Inc.	Cable	No Update to Provide	3/8/2011
D & P Communications, Inc.	Fiber	No Update to Provide	3/8/2011
Farmers Mutual Telephone Company	ILEC/CLEC	No Update to Provide	10/26/2010
Fourway Computer Products, Inc.	Fixed Wireless	No Update to Provide	
Frontier Communications Corporation	Backhaul	No Update to Provide	1/22/2010
Hiawatha Communications, Inc.	ILEC/CLEC	No Update to Provide	2/2/2010
Hiawatha Communications, Inc.	ILEC/CLEC	No Update to Provide	2/2/2010
Hidden Lake Wireless, Inc.	Fixed Wireless	No Update to Provide	3/12/2010
Interlink Computers Technology, Inc.	Fixed Wireless	No Update to Provide	3/12/2010
Iron River Cooperative TV Antenna Corp	Cable	No Update to Provide	7/27/2010
ISP Management, Inc.	Fixed Wireless	No Update to Provide	3/22/2010
Kaltelco, LLC	ILEC/CLEC	No Update to Provide	3/5/2010
LigTel Communications	Fixed Wireless	No Update to Provide	3/31/2010
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
Michigan Cable Partners Inc.	Cable	No Update to Provide	6/18/2010
Michigan Online Group, Inc.	ILEC/CLEC	No Update to Provide	
Michigan Online Group, Inc.	Backhaul	No Update to Provide	
Michigan Online Group, Inc.	Fiber	No Update to Provide	
Newaygo County Advanced Technology Services	Fixed Wireless	No Update to Provide	
Northside TV Corporation	Cable	No Update to Provide	
Ogden Communications Inc.	Fixed Wireless	No Update to Provide	1/19/2010
One Communications Corporation	Backhaul	No Update to Provide	3/18/2010
Sand Creek Communications Company	Backhaul	No Update to Provide	3/2/2010
SpeedNet, LLC	Fixed Wireless	No Update to Provide	1/7/2010
SpeedNet, LLC	Backhaul	No Update to Provide	1/7/2010
Springcom Inc.	Cable	No Update to Provide	2/25/2010
Springcom Inc.	ILEC/CLEC	No Update to Provide	2/25/2010
Sprint Nextel Corporation	Backhaul	No Update to Provide	1/14/2010
Summit Digital Holdings, Inc.	Fixed Wireless	No Update to Provide	
T2 Communications, LLC	Fiber	No Update to Provide	3/10/2010
T2 Communications, LLC	Backhaul	No Update to Provide	3/10/2010
Talk America Inc.	ILEC/CLEC	No Update to Provide	
Talk America Inc.	Backhaul	No Update to Provide	
The Computer Care Company, Inc.	ILEC/CLEC	No Update to Provide	3/8/2011
The Computer Care Company, Inc.	Backhaul	No Update to Provide	3/8/2011
The Iserv Company, LLC	ILEC/CLEC	No Update to Provide	6/21/2010
The Iserv Company, LLC	Fiber	No Update to Provide	6/21/2010
The Iserv Company, LLC	ILEC/CLEC	No Update to Provide	6/21/2010
The Iserv Company, LLC	Backhaul	No Update to Provide	6/21/2010
Town & Country Cable and Telecommunications, LLC	Cable	No Update to Provide	6/18/2010
Upper Peninsula Telephone Company	ILEC/CLEC	No Update to Provide	1/11/2010
Verizon North Inc.	Backhaul	No Update to Provide	12/14/2009
Waldron Telephone Company	Fixed Wireless	No Update to Provide	1/12/2010
Waldron Telephone Company	ILEC/CLEC	No Update to Provide	1/12/2010
Winn Telephone Company	ILEC/CLEC	No Update to Provide	6/28/2010
Winn Telephone Company	Fiber	No Update to Provide	6/28/2010
Winn Telephone Company	Fixed Wireless	No Update to Provide	6/28/2010
Wyandotte Municipal Services	Cable	No Update to Provide	3/23/2010
XO Communications, LLC	Backhaul	No Update to Provide	2/12/2010
Boardman River Communications, LLC	Cable	No Update Provided - Use Last Submission Data	2/10/2010
COLI, Inc.	Fixed Wireless	No Update Provided - Use Last Submission Data	
CSInet Internet Access Corp.	Fixed Wireless	No Update Provided - Use Last Submission Data	3/31/2010
Custom Software Inc.	ILEC/CLEC	No Update Provided - Use Last Submission Data	2/3/2010
Great Lakes Internet, Inc.	Fixed Wireless	No Update Provided - Use Last Submission Data	3/11/2010
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.	ILEC/CLEC	No Update Provided - Use Last Submission Data	
KEPS Technologies, Inc.	Fixed Wireless	No Update Provided - Use Last Submission Data	
Lennon Telephone Company	ILEC/CLEC	No Update Provided - Use Last Submission Data	1/25/2010
Lennon Telephone Company	Cable	No Update Provided - Use Last Submission Data	1/25/2010
Nodin Communications, LLC	Fixed Wireless	No Update Provided - Use Last Submission Data	4/22/2010
Arialink Telecom LLC	Fiber	Solicited Initial Data	
Arialink Telecom LLC	Fixed Wireless	Solicited Initial Data	
Arialink Telecom LLC	ILEC/CLEC	Solicited Initial Data	
Banyan OnLine Services, LLC.	Fixed Wireless	Solicited Initial Data	
Boardman River Communications, LLC	Fixed Wireless	Solicited Initial Data	2/10/2010
Endless Journey, Inc.	ILEC/CLEC	Solicited Initial Data	
Great Lakes Satellite Group	Fixed Wireless	Solicited Initial Data	
Lewiston Communications	Cable	Solicited Initial Data	
M55 WiFi Wireless Internet Service	Fixed Wireless	Solicited Initial Data	
Microtech Services, Inc.	Fixed Wireless	Solicited Initial Data	
Mutual Data Services, Inc.	Fixed Wireless	Solicited Initial Data	
Sky Web Network, Inc	Fixed Wireless	Solicited Initial Data	
SkyWay USA, LLC	Satellite	Solicited Initial Data	
Tri-County Wireless, Inc.	Fixed Wireless	Solicited Initial Data	

West Michigan Broadband	Fixed Wireless	Solicited Initial Data		
M3 Wireless	Fixed Wireless	Refused to Participate		[JAN-10-11 Terry Holmes] Spoke with company representative who advised that they do not want to participate in the mapping program.
WideOpenWest Michigan, LLC	Cable	Refused to Participate		[MAR-11-10 Terry Holmes] Received voice message from company executive stating, "I spoke with my counterparts and we will not share information as requested by CN, so you will not be receiving information from WOW." Subsequent attempts to contact this provider have resulted in no response.
Reliable Internet, LLC	Fixed Wireless	Non-Responsive to Multiple Attempts		[JAN-14-10 Terry Holmes] Left voicemail messages and sent e-mails to this provider multiple times over the past year and have not received one response. They have an active website and the owner's name is identified on the voicemail leading me to believe the company is active, though I have never been able to talk with anyone at this company.
Rural Communications, Inc.	Fixed Wireless	Non-Responsive to Multiple Attempts		In addition to multiple contact attempts made between January 26, 2010 and September 8, 2010, seven attempts have been made during this submission period.
Wireless Technology Solutions	Fixed Wireless	Non-Responsive to Multiple Attempts		In addition to multiple contact attempts made between December 30, 2009 and July 28, 2010, seven attempts have been made during this submission period.
DIECA Communications, Inc.	ILEC/CLEC	Other	1/19/2010	[FEB-18-11 Sarah Finne] Provider does not offer residential DSL. They submitted business data, so we will only submit their backhaul data to NTIA.
DISH Network Corporation	Satellite	Other	1/27/2010	[MAR-09-11 Sarah Finne] Satellite data will not be submitted due to additional information being necessary to show where service is available in the state, rather than submitting the entire state boundary as serviceable area.
Global Crossing Telecommunications, Inc.	Backhaul	Other		[FEB-17-11 Wes Kerr] Received word from a provider representative that they still have a Network Security agreement with several Federal agencies and cannot provide data at this time.
Hughes Network Systems, LLC	Satellite	Other	2/5/2010	[MAR-09-11 Sarah Finne] Satellite data will not be submitted due to additional information being necessary to show where service is available in the state, rather than submitting the entire state boundary as serviceable area.
Michigan Online Group, Inc.	Fiber	Other		[MAR-10-11 Dawn Clark] Per Sarah Finne they don't offer fiber under Michigan Online Group.
Time Warner Cable LLC.	Backhaul	Other	12/21/2009	[MAR-24-11 Dawn Clark] Provider does not offer backhaul in the state.
WildBlue Communications, Inc.	Satellite	Other	1/8/2010	[MAR-09-11 Sarah Finne] Satellite data will not be submitted due to additional information being necessary to show where service is available in the state, rather than submitting the entire state boundary as serviceable area.