

Submitted to:

**National Telecommunications and Information
Administration**

Data Collection and Processing

**Missouri
Broadband Data and Development**

Submitted by:



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1 Introduction

This document provides background for the data collection and processing phases of the Missouri Broadband Data and Development Project. It covers the initial processing of data to meet specific requirements defined by the National Telecommunications and Information Administration (NTIA), governed by the Notice of Funds Availability (NOFA) first published in volume 74, number 129, at page 32545 of the Federal Register and subsequently clarified in volume 74, number 154, at page 40569 of the Federal Register. It also covers the quality control aspects of the project, including back lab, field, and independent verification.

2 Non-Disclosure Agreement Development Process

The State Parties to the Non-Disclosure Agreement (NDA) process include the State of Missouri, the University of Missouri, GeoDecisions, and CBG Communications. Each party, along with the individual broadband service provider, is a signatory of each NDA.

A standard NDA was developed using an initial template provided by CBG, existing templates from providers, and was subsequently edited with inputs from all state parties. This NDA was then vetted with representatives from the Missouri broadband provider community in order to develop a data sharing document that reflected the concerns of both the state and industry.

The state drafted, signed, and distributed an initial letter to providers; including data collection guidelines and a draft of the standard NDA (see Attachment A). This letter was initially sent to 129 providers initially in late March 2010. Most partners to the NDA signed this initial NDA as provided. Some providers have asked for some changes to this NDA which then require legal review by all 5 parties to the agreement. These negotiations have taken some time to complete for individual providers.

We have also found that having a signed NDA does not ensure the State that data will be forthcoming as we have at least five providers with signed NDAs that we have not received data for. These are still being pursued.

3 Identifying Providers

The state parties used multiple methodologies to: a) identify broadband providers potentially offering service in the State of Missouri, and b) to acquire contact information for each of the providers.

Identification of providers began by accessing the FCC's Form 477 publically available data. This data provides the Holding Company Name, the FCC Registration number (FRN), and the filing company name of all broadband providers in the state that completed the Form 477. We began with this information and performed research tasks, including internet research of each of the companies to obtain a high-level contact within the company, as well as their phone and e-mail contact information. If some of this information was not obtainable via Internet research, CBG made initial contact with the company, primarily through phone, to further explore the most pertinent contact.



In addition, we performed research of various websites to determine if there are providers that had not filed a Form 477 with the FCC that should be included in the data collection process. We researched these companies again for the best contact information through various public records including, but not limited to, Missouri Public Service Commission databases, State Telecommunications Industry Association memberships, FCC Cable TV Community Unit and Physical System ID databases, FCC telephone company databases, business licenses, state and local tax records, etc., as well as various state, local and other departments and agencies, including Division of Corporations, Division of Revenue, Local Franchise Authorities, Chambers of Commerce, etc.

We also continue to identify additional potential providers during our field verification processes. This list of potential providers is comprised of business names advertised (signage/trucks etc.), labeled infrastructure observed, or are mentioned by Missouri citizens through an interview.

As new providers are identified, the contact information is given to MU for delivery of initial contact letters to identified providers. These documents are mailed out by MU via e-mail, in order to expedite the process, and through the USPS as a formal notification. Based on input from providers in other states, these documents were sent by the State in order to show the importance that the State places on the project. All correspondence with the providers, including clarification of the NDA or Data Request, data formatting issues, and data submission by the providers, was then handled by GeoDecisions and CBG personnel unless the provider required interaction with state personnel (ie. negotiation of NDA).

Due to the initial timeframe for completion (May 31, 2010) for Missouri's first version of the statewide map of broadband provision, the providers were requested to return the signed NDAs within five (5) business days of receipt and submit their data, in as usable a format as possible, by April 15, 2010.

The state parties performed follow-up with the providers on an as-needed basis. This included making contact with a provider if we did not hear from them after sending out the NDA and Data Request, following up to receive initial data sets, clarification regarding data sets, etc. Contact with the providers included phone calls, voicemail, and e-mail. In the case where a provider did not respond after numerous attempts, we also followed up with USPS mail as well as through their affiliated associations.

A spreadsheet was utilized to keep track of all contact information that was developed and contacts that were made to ensure the accuracy of each provider's pertinent contacts for the statewide project. These have been maintained as contacts and personnel change within the provider's industry.

4 Requested Data Format

The overarching goal of the data collection was to satisfy the requirements of the State Broadband Data and Development (SBDD) grant program, which is governed by the Notice of Funds Availability (NOFA) first published in volume 74, number 129, at page 32545 of the Federal Register and subsequently clarified in volume 74, number 154, at page 40569 of the Federal Register. Both the NOFA and subsequent discussions with the NTIA have indicated that time is of the essence, and strict deadlines are in place for the delivery of data to the NTIA. As such, timely,



accurate data collection was of primary concern. GeoDecisions requested that broadband providers submit data in a timely manner in whatever format the information was currently available to eliminate the lag that can be expected with the providers attempting to meet NOFA formatting compliance themselves; however, it was determined that many national providers, having gone through this process in other states, could deliver NOFA compliant data as part of their data submittal.

To assist in the NDA execution process and to further facilitate the timely delivery of data from the providers, GeoDecisions and CBG reviewed the State's NOFA cover letter. The cover letter provided background on the project and the contacts to project team members from the State, GeoDecisions, and CBG. The cover letter stressed the incredibly short initial project timeline and specified the requirement to collect this data on an ongoing basis – every 6 months.

In addition to the cover letter, GeoDecisions and CBG developed a separate attachment to the NDAs. This [Data Collection Guidelines](#) was reviewed by the State and provided further background and project goals associated with Missouri's State Broadband Data and Development project. The document also specified the guidelines to which the project would abide. The [Data Collection Guidelines](#) informed providers of the intended use of the data that they would be submitting. The intended uses included delivery of NOFA-compliant data to the NTIA, data dictionary, the intention of generating static maps, as well as the creation of a Missouri-specific interactive broadband mapping website. Finally, the [Data Collection Guidelines](#) specified the NOFA data and format standards that were required of the State for delivery to the NTIA.

GeoDecisions also developed a provider data request spreadsheet template document that was distributed upon request and allowed the providers to enter NOFA compliant data as they chose to do so. It included mock-up sample data as reference for their own data entry. GeoDecisions, under the guidance of the State, also developed a preliminary Missouri-centric web site that displayed census blocks, census tracts, counties, and major roads in order to assist providers in correlating their service areas to census blocks. Providers could access this site and zoom, pan and print census block maps as needed.

Spatial data was requested from the providers in the following hierarchy of data format preferences.

- 1) Shapefiles or Geodatabase (personal or file)
- 2) CAD files with embedded attributes included
- 3) Text-based data (MS Access, spreadsheets, comma-delimited files, etc.)
- 4) Paper maps
- 5) Any method in which the provider could readily submit the required data

5 Data Processing

Because of the variety of ways providers could submit their data, one of the major challenges of this project was to consolidate and then integrate this data into a common model. For each provider, the work was divided into three main steps:

1. Capture the supplied data into a provider-specific staging geodatabase



2. Process and QA features in the provider's staging geodatabase
3. Move the data from the provider's staging geodatabase into the final deliverable geodatabase model.
4. Final QA of all features and associated attribute data.

The first step was the most involved and time consuming. Regardless of the type of data provided, the base-level data (the 2010 census blocks, the 2010 TIGER street segments, and the county boundaries), all came from a single source, so are therefore consistent across all providers. A number of different processes were developed for loading the staging geodatabase, depending on the type and form of data supplied. Each process was extensively documented through a process checklist to ensure accuracy and consistency. A description of these different processes used to load data into the provider specific staging geodatabase follows:

Availability Area

If a provider supplied their availability area as a single boundary or multiple boundaries drawn on a paper map or image file, those area(s) were geo-referenced and digitized into a shape file. If the boundary was provided as a CAD drawing or arose from another GIS system, it was also converted to a shape file format. Some wireless providers defined their area of availability as their wireless coverage area. This may be a supplied boundary, but it may also have been defined using the location of the wireless tower, the angle of coverage, and the coverage distance. This would result in a sector of a circle, which was then used as the availability area.

Once a shape file of the boundary was created, interpreted, and available, all census blocks intersecting that boundary were collected. Those census blocks less than two square miles were assembled into one feature class. For census blocks greater than two square miles, all street segments that overlapped both the census blocks and the availability area were collected into another feature class. Along with the availability area, the providers were also to supply the technology of transmission and speed information. These attributes were assigned to either the census blocks or street segments. Additional provider information including Name, DBA, and FRN, were also added as attributes.

Census Blocks

Some providers submitted a list of census blocks for their area of availability, along with technology of transmission and speed information specified for each census block. In these cases, the census block polygon was selected for each listed census block. If the census block's area was less than two square miles, it was added to the census block feature class and the technology of transmission and speed information were assigned from the provided list. If the census block's area was greater than two square miles, all street segments that overlapped it were added to the street segment feature class and the technology of transmission and speed information were assigned from the associated census block on the list.

The 2010 census block dataset was used for our data processing however a few providers submitted data using 2000 or 2009 vintage census blocks. When a provider submitted in a vintage other than 2010, the 2010 census blocks for the corresponding availability area were



coded for that provider. Thus the true coverage of the census blocks were maintained and consistent with the provider's list but represented in the 2010 block structure.

Address Information

If a list of addresses was provided as the availability area, the first step was to obtain the coordinates of these addresses. When geocoded successfully, this resulted in a point for each address located. The census blocks intersecting all the points were collected. If the block's area was greater than two square miles it was treated separately. If a census block contained address locations with different technologies of transmission, the census block was duplicated, and a distinct technology of transmission assigned to each duplicated census block. For different locations in a census block with the same technology of transmission, the maximum value for each speed was obtained and that maximum assigned to the census block.

If the geocoded point lay within a census block with an area greater than two square miles, the nearest street segment was located and the technology of transmission and speed assigned to that segment. As with census blocks, if there were several locations with different technologies of transmission along the same street segment, the street segment was duplicated and each segment assigned a different technology of transmission. The speed assigned to that segment was the maximum speed for all locations along the segment sharing that segment's technology of transmission.

Wireless Boundary

In most cases, wireless providers supplied a boundary, either in electronic format or as a paper map. These were converted to a shape file either by digitizing or by performing a data conversion as appropriate. Some providers supplied tower locations, the angle of coverage, and the distance. In these cases the wireless boundary was constructed from this. Finally, some providers defined their wireless boundary using an exchange boundary or as an aggregate of their customers. Although these boundaries may not accurately represent the wireless availability area, they were initially included in the dataset in order for the providers to submit feedback and more accurately specify boundaries of availability in future iterations.

Middle Mile Points

If middle mile points were supplied on a hardcopy or image file map, the point was digitized. Usually these points were provided with latitude and longitude, so it was a simple matter to add them to the feature class. The elevation data was not always supplied due to the provider not having this information available, but when it was, it was often given as feet above sea level. The model requires elevation to be feet above (or below) grade. In these cases, a digital terrain model was used to obtain the ground elevation at the middle mile structure location, which was subtracted from the height above sea level to obtain the height above grade.

The above processes were used to capture the provider-supplied data into provider-specific individual staging geodatabases using the common National States Geographic information Council (NSGIC) data model suggested for use by the NTIA. Once this was completed, the data could be updated or modified and Quality Checked (QC) using the same processes regardless of how it was originally submitted.



One such process was the creation of overview areas. The census blocks and street segments for a provider were collected and grouped by technology of transmission. County boundaries that overlapped each of these groups were then collected. The technology of transmission of all census blocks and street segments for the group was then assigned to the county. *The assignment of maximum speed within the group to the county has been discontinued per NTIA's request.*

At this point the dataset for a particular provider was complete. An extensive QC checklist was used to examine the dataset, verify consistency, and ensure that it matched the data submitted by the provider. Once the dataset was passed the quality check, the features were appended into final database model along with all data from other completed providers. Both the *Validate Topology* and *Validate Features* ESRI tools were run, any corrections necessary were made, and the Tools were re-run until they processed without error. As individual provider data sets were appended into the master database and again when all data sets were appended, the NTIA supplied 'SBDD Check Submission' tool was also run against the data. Any errors detected were corrected and the tool re-run. A final manual QC review was performed to ensure that all the provider data is present and consistent. This was then followed by a final run of the SBDD Check Submission tool against the master data model to determine if any further corrections / changes were necessary.

Public Data Sources

The University of Missouri (UM) was in charge of the process to obtain and compile cable strand maps, as well as maps of service / coverage areas obtained from the service provider's public offices directly or from their Web sites and advertising materials. This was particularly true in cases where no other authoritative source was available for the given provider. Websites were collected and inventoried through the use of a 'surveymonkey' instrument to standardize and assemble the database from the webcrawling activities. All files and maps found through the webcrawling were then either imported, scanned, or screen-captured to create a digital representation or image of the associated service area. These files were then georeferenced to a common Missouri base map. The spatial transformation methodology used was determined by the image type, confidence in a real representation, and scale of source materials. In addition, maps of telephone company exchange areas and cable franchise areas from their respective associations were digitized and attributed to provide additional points of reference as well. These files were then held as elements of independent validation for the GeoDecision/CBG files created from Provider sources.

Community Anchor Institutions

The University of Missouri (UM) was lead on the development of the Community Anchor Institution database. Many elements of the Community Anchor Points were initially compiled by the UM in coordination with the Department of Public Safety (SEMA and OHS) providing a starting point for this data collection. The list of Anchor Institutions inventoried and monitored in this project include: Police, Fire, Hospitals, EOC, PSAPs, Municipal Courthouses, Libraries, K-12, Higher Education, Extension Offices, Correctional Facilities, Government Buildings, Community Centers, County Courthouses, and Armories.

The community anchor attribute information was gathered by the University through phone calling and site visits by UM students and staff. These efforts were coordinated with respective state agencies / associations with jurisdiction over these sites. For example, the State Fire Marshall's Office sent out a memo under their letterhead informing their constituency of the inventory and assessment so that the student callers and those conducting site visits would be received positively. UM also used



their ongoing local data review, validation, and verification processes in partnership with Regional Planning Councils, Regional Homeland Security Oversight Committees, and associated local governments to assemble and verify data for some counties within Missouri. This process of data development had already been deployed in some areas of Missouri in association with the development and review of public safety structure-based information and has proven to work well.

6 Data Accuracy – Back Lab Verification Methods

Throughout the project, GeoDecisions and CBG performed numerous verification tasks to determine the level of accuracy of the information gathered from the broadband providers in the State. The initial verification methods were called back lab verification tasks by the NTIA. Unlike the field verification processes (described below), these tasks were performed in a lab or office setting. Each of the following GeoDecisions/CBG back lab processes was utilized to validate the data collected from some or all of the providers:

After the data from a given provider was captured into the geodatabase, the mapped data was then compared against information gleaned from various sources. The FCC had documentation that was used such as the Form 320 (Basic Signal Leakage Performance Report), which is filled out by cable television providers on an annual basis, and Cable TV Community Unit and Physical System databases. These information databases provided high-level information of geographic areas served by cable TV and other broadband providers. This information alerted our team to areas not included in gathered data from a broadband provider.

Additional sources of information utilized during the back lab verification process included franchise and exchange boundaries, cable strand maps, media prints, as well as business and taxation licenses. These sources varied in value to the project, depending on the level of information gathered and maintained by local franchising authorities and state agencies such as the PSC. Telecommunications associations were also queried for information regarding providers and system boundaries or areas of the state where specific providers offer service.

The above processes primarily relate to wireline broadband providers. For wireless broadband providers, we compared information gathered from the providers against FCC and FAA tower databases and private tower databases, as needed.

Independent Validation and Assessment: The UM also performed similar verification tasks as listed above to determine the level of accuracy and confidence in the information delivered by GeoDecisions/CBG as assembled from the broadband providers in the State. Again, these verification methods were called back lab verification tasks by the NTIA as these tasks were performed in a lab or office setting.

In addition to the above, the UM back lab processes took the assembled public sourced data for all providers (where this type of information could be found) and intersected it with the supplied GeoDecisions / CBG provider service areas. As well, Ookla site data, survey data, and presence/absence data assembled were also used to assess these data. From these data, additional analyses were performed to create measures of agreement, confidence indexes, spatial confidence indexes, and to visualize patterns of service and gaps in service.



These gaps and patterns of service are currently being examined to determine common threads for the State of Missouri across socio-economic, demographic, density of CAI, and other measurable elements of this mapping. We hope to use these data to inform the Regional Technology Planning Teams of opportunities and impediments.

The results of the independent assessment and validation were then combined with findings from GeoDecisions/CBG to form a report that then was delivered back to the provider to initiate the 'provider feedback' element (see Section 19 of this report) of the assessment and to validate/verify the assessments of these data and their extents by both UM and GeoDecisions/CBG with the respective provider.

7 Development/Implementation of a field verification guide and checklist

Prior to beginning field verification activities, CBG Communications, Inc. (CBG) developed a field verification guide for use by each member of the field verification team. The guide included systematic instructions and a checklist related to verification of each broadband system and service type. The guide and checklist were drafted, reviewed and finalized prior to the beginning of field verification activities.

As we continue to move forward with each submission, our field verification efforts continue to advance. Provider data is used to determine higher success areas having overlapping or common areas as well as including providers not able to be thoroughly verified from prior rounds. Those areas are the initial focus, medium priority areas are determined using similar stepped-down criteria. Lower priority areas are for providers thoroughly verified in past rounds but current data is needed. This also includes locations in between the higher and medium priority areas. Provider data is loaded on laptops or Garmin units for use by field verification personnel.

8 Field verification team training

To ensure uniformity of the team's approach to field verification, field team training was held immediately prior to the beginning of field verification activities. Training was conducted for GeoDecisions, CBG, and University students and staff. The training covered all field verification activities, including:

- Use of the guide, instructions and checklist
- Understanding of each system and service types
- Understanding of coverage characteristics
- Understanding of service attributes, including system technology type, upstream and downstream connection speeds, and other attributes required (by the NTIA) to be documented and verified
- Use of the equipment needed for field verification activities
- Proper documentation of field verification activities



The office tutorial lasted ½ day. An additional field-based ½ day session was utilized for actual demonstration of field verification activities.

9 Team Assignments

Two person teams were utilized the next 2 days after office and field training in order to work together and become more comfortable with the process. Eventually, field verification team members were expected to perform field verification activities on their own, with the exception of University student teams, who continued to participate in pairs of two for safety and security reasons. The State was divided into five (5) large areas encompassing Northwest, Northeast, Southwest, Southeast and Central Missouri. The contractor assembled ten (10) team members, and assigned two for each area. Initially the UM team assembled eight (8) team members to form four (4) teams, and assigned them to certain counties and particular census blocks within those counties. In subsequent iterations the UM team assembled 6 team members to form two (2) 2-3 person teams that reviewed targeted areas within counties and larger census blocks. As well, these teams conducted the surveys and interaction at the Missouri State Fair and other regional fairs as discussed in Section 13 of this report.

Each team member was provided an official-looking ID card and a letter of certification on Missouri State letterhead in order to mitigate findings early-on that residents were suspicious of individuals asking unsolicited questions. These two items proved very effective in minimizing these concerns.

10 Verifying Coverage

Broadband system coverage was verified by sampling whether services were available at various locations shown on the providers' system coverage maps randomly chosen from all of the census blocks that are at the ends of the providers' systems. The random sample was developed separately by the UM and contractor teams.

The contractor team initially verified availability by looking for a mixture of large and small providers across the state, being sure to hit each of the 19 Regions which would form the basis for the Regional Technology Planning Teams involved in the state broadband planning process. Efforts were made to locate and verify all providers that had submitted data. Verifying the large providers, especially, in each of these regions was a priority. Each contractor team member collected field gathered data in an MS Access database. The data included: Lat/Lon of verification point, provider name, technology type, speed test results if available, customer comments and notes from team member. All data was compiled and used to not only validate provider submitted data as mapped, but for providing feedback to the providers.

As a cross check, the UM team sampled a selection of counties, looking for more detailed coverage in a subset of the state's counties.

As we continue to move forward with each submission, our field verification efforts, as with all other aspects of the project, continue to advance. Providers are now categorized from prior verification rounds as unverified, high, medium or low priority. Unverified are new providers or one not able to be verified in previous attempts. High are providers with minimal verification in previous attempts. Medium are providers fairly thoroughly verified in previous verification and low are providers heavily



verified in prior verification. Provider data is also used to determine highest provider concentration areas having overlapping or common areas. Those areas are the initial focus for unverified and high priority providers. Medium and lower priority providers and areas are secondary and may include locations between the unverified and high priority areas. Provider data is loaded on laptops or Garmin units for use by field verification personnel.

11 Ookla Speed Test Web Site

As part of the field verification process, State residents and businesses interviewed or visited were given a card briefly explaining the project and directed them to the State's designed speed test website. These cards were broadly distributed at the State Fair and other regional fairs as well. This has led to more responses on the Speed Test. This project specific Ookla speed test web site was set up to collect information on providers, users, as well as the upstream and downstream speeds associated with their broadband connection.

Figure 1: Depiction of Ookla Speed Test Site

12 Equipment Utilized for Field Verification Activities

Each team member carried the following equipment in order to perform field verification activities for the various types of services:

- Laptop with Wi-Fi capability and provider GIS data installed
- Cellular 3G/4G and WiMAX aircards (independent card for each provider) for use with laptop
- Binoculars



- d. GPS for verifying and documenting exact locations
- e. Hardcopy forms and electronic database for documenting verification data
- f. Cell phone with 3G or 4G used in lieu of laptop for certain types of wireless broadband services
- g. Digital recorder for aural field notes, as needed
- h. Identification documents (business cards, State or other ID badges, letter from the State acknowledging that the team member is part of the verification team, for those with questions)
- i. Car chargers and/or DC to AC Inverters for equipment chargers
- j. Census block maps (boundary details shown) and other maps as needed
- k. Garmin GPS unit.
- l. Postcards advertising the Ookla web site for distribution, as shown below



Figure 2: Postcards Distributed to Residents

13 Other Verification Methods

In addition to utilizing the above mentioned equipment and the methodologies listed below for verifying coverage and characteristics, team members entered into discussions with residents in the various areas. Residents were asked questions such as: Do they currently have broadband service?, Who their provider is?, If they know what speeds they could achieve, and if they knew of other provider's services being available in the area. This information needed to be confirmed by multiple



residents before being considered accurate. Residents often did not know what their service level was nor what their speed of service was. Questions such as how much were they paying for the service led to a better understanding of their service level. Residents were encouraged to visit the Ookla speed test site to assist in gathering actual speed data. To date, nearly 6500 results have been received.

Missouri State Fair: In order to collect a large amount of information from Missouri residents for verification, the Broadband Mapping Team (BB Team) visited the Missouri State Fair in Sedalia, Missouri. The 2010 Missouri State Fair had an estimated attendance of over 330,000 people. With such a high attendance, it was determined that this event would be useful for data collection. For the 2011 Missouri State Fair, attendance exceeded that of the previous year, estimated at 330,000 to 350,000 attendees. The BB Team had two locations at the fair. The first was in the Mizzou Central Building in the MO-AG Theater organized by the College of Agriculture, Food and Natural Resources. This was the main location for the BB Team, where an informational slide show continuously played and signage was displayed throughout the booth area. At this location, Missouri residents were asked to fill out a survey regarding their internet service. A total of 699 surveys were completed at the 2011 Missouri State Fair, an increase of 117 surveys from the previous year, and were later geocoded to be used as verification and validation for UMs independent assessments.

The second BB Team location was on the lawn outside of the MO-AG Theater, where a Mizzou Tent was assembled daily and tables were set displaying a large Missouri map divided into four quadrants. Each of the four quadrants represented different regions of Missouri, northwest, northeast, southwest and southeast. At this station, Missouri residents were able to physically place a colored pin on their home location. The color of the pins was used to differentiate whether or not broadband was available. A total of 320 pins were placed by Missouri residents, denoting presence or absence of broadband. The 2010 Missouri State Fair pin total was 880, a difference of 560 pins down from the previous year due to severe weather that occurred two out of the four days the team was present at the fair.

In addition to the 2011 Missouri State Fair, the BB Team also visited three regional fairs and an extra state fair, the Boone County Regional Fair, Phelps County Regional Fair, the Shelby County Regional Fair and the Southeast Missouri District Fair in the city of Cape Girardeau. The three regional fairs, all located near the University, were chosen specifically to increase the amount of broadband data for the Mid-Missouri region. The Southeast Missouri District Fair was selected because the 2010 Missouri State Fair results displayed little or no data in the southeast Missouri region. In total, 1053 surveys were completed and approximately 390 pins were placed during this verification phase.

At all of the fairs, the broadband speed test cards for the Missouri Ookla site were handed out to residents after filling out a survey or placing a pin on one of the four maps. The BB Team also distributed drinking cups, refrigerator magnets, and pens with the State Broadband speedtest site on them.

In terms of verifying provider coverage, the state and regional fairs have provided valuable data that could not have been otherwise obtained. The color-coded push pin maps have been converted to point-based shape files. Combined with additional information collected from the fair attendees while interacting with the push pin maps, the resulting shape file has provided a statewide, grassroots survey of internet service provider, type of internet service (broadband, dial-up, etc.), technology of



transmission, subscribed speed, and customer satisfaction. This data has been used in the verification process as a visual comparison to census block provider footprints. The results, so far, have been very positive and the fair points have displayed a high spatial correlation with the census blocks. More data collection will be required before this verification method can be formalized, but the results are very promising.

14 Verifying Wireline Broadband Coverage Characteristics

Using the specified random sampling technique, field team members searched for the physical endpoints of cable systems, telephone/DSL and fiber optic infrastructure and noted when additional infrastructure was not seen moving outward from the core either in an aerial (overhead) or underground manner. These areas were targeted for discussions with residents and to perform speed tests. Observations and findings were documented accordingly.

15 Wireless Broadband Coverage

Verification team members reviewed the provider's information and looked for network availability near the antenna site or in the middle of the provider's service area to confirm network and test equipment compatibility. Using the specified random sampling technique, the team member tested with pertinent gear to determine when service could and couldn't be achieved by the laptop, cell phone, or other wireless broadband-enabled device. These locations were documented accordingly.

16 Upstream and Downstream Connection Speeds for Wireline Providers

The field verification team member:

- a. *For cable modem* – Upstream and downstream connection speeds were verified using the Ookla speed test at locations within the providers' coverage area using the specified random sampling technique. An already installed cable modem connection was utilized, as available. These included both preselected points with arrangements made for testing (such as at local libraries or at public facilities utilizing cable modem service) and at randomly chosen business and homeowner locations where the business or homeowner consented to test the service. Findings were documented accordingly on electronic or paper forms. In addition, the speed test was documented via the Ookla site.
- b. *For DSL connection speed testing* – The same procedures were used as for cable modem testing. Findings were documented accordingly on paper or electronic forms.
- c. *For fiber optic connection speeds* – For services to homes and small businesses the same procedures were used as above for cable modem and DSL. For higher speed services to larger businesses, institutional network connections, enterprise/wide area network connections, etc., the team member worked with the business or institutions' IT group to perform connection speed testing. If actual testing could not be performed, team members attempted to gain existing end user documentation tests and performance



documentation related to speeds of the network. Findings were documented accordingly on paper or electronic reports.

17 Wireless Broadband Service Connection Speed Testing

For cellular broadband 3G and 4G testing – A provider specific air card was needed in order to enable the laptop to access the Ookla speed test to determine the speed of connection. Some service providers provided air cards to conduct this testing. All teams also used both personal and corporate cards to assist in the testing. The speed of connection was tested at randomly selected points beginning close to the providers' tower/antenna infrastructure, at a mid-point and then at the ends of the verified coverage area. Findings were documented accordingly on paper or electronic reports. Documentation was uploaded daily by the team members to ensure timely and uniform oversight and modifications of the processes.

The MU BB team also conducted a more detailed test of fixed mobile wireless coverage areas throughout Boone County using high-speed wireless broadband air cards. For wireless broadband testing purposes, the top five providers, AT&T, US Cellular, T-Mobile, Sprint/Virgin Mobile and Verizon were tested to understand how mobile broadband varies in different locations by collecting information such as: signal strength, speed, as well as the latitude and longitude coordinates of where the test was performed.

To gather upload and download speed information for each air card, the team members used the MOBroadbandNow Speed Test website on Ookla. During the speed testing it was not uncommon that the speeds varied at a specific point for each air card, therefore the air card was tested a total of three times for analysis and comparison. The signal strength was determined by how many "bars" were displayed for each provider. The bars would vary depending on if the team was in a mobile coverage area or not. The latitude and longitude coordinates were recorded using a GPS unit. The speed, signal strength, and coordinates were tested and recorded in ½ mile increments along selected urban and/or rural routes throughout Boone County.

Additional air card testing and verification was completed over this past May-July in various counties such as: Howard, Callaway, Cooper, Moniteau, Cole, Morgan, Miller and Camden using specific provider footprints. For this testing method, random locations were chosen within the provider footprint and air cards were tested to see how each provider varied in strength and signal.



18 Coordination of Contractor and State Parties' Field Verification

The state and contractor utilized the process in the diagrams below to coordinate field verification activities:

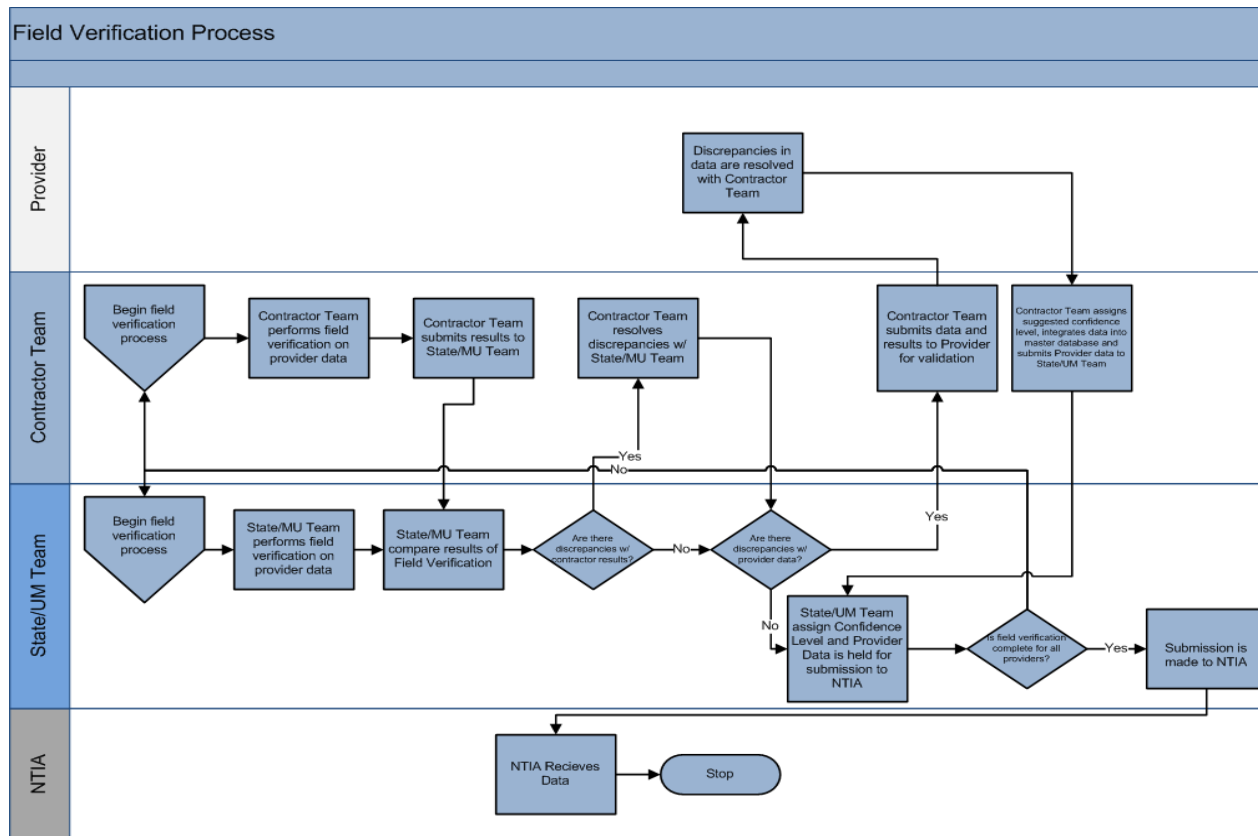


Figure 3: Field Verification Coordination Process

19 Provider Feedback Reporting

Upon completion of the provider submitted data, feedback information was supplied to each of the 91 providers that had submitted data. This feedback was presented in the following forms:

1. A detailed Data Review Report in MS Word format,
2. All provider attribute data exported into MS Excel format, and
3. Multiple Overview, Wired and Wireless GIS exported image files in pdf format.

This information would allow each provider to review our validation findings, as well as check their submitted data as depicted in the GIS data model, both in a graphical and tabular form.



The Data Review Report detailed the usability and completeness of their submitted data as well as an estimate of our confidence in their submitted data based on field verification efforts and back lab verification steps as detailed above. The report also requested feedback on the accuracy of how we characterized their availability areas, technologies, speeds etc. Based on the provider's feedback, the data was adjusted and refined accordingly.

Field verification and back lab verification processes and procedures were utilized, as available and as needed, to ensure the highest level of confidence that the information gleaned from the providers was as accurate as possible. During this process, GeoDecisions contacted providers when we found instances that appeared to conflict with the information they initially provided and worked with the providers to adjust the maps accordingly.

20 Statistics

File Type	Number of Records
<i>Total Records in all Files</i>	717,930
Census Block < 2 sq. miles	518,849
Address-Level	Not Required
Street Segment	190,678
Wireless Shape File	63
BB Service Overview	587
Community Anchor Institution	6,917
Middle Mile	835
State Boundary	1
Metadata Provided for Geospatial Data	YES
Number of ISP's Provided in Submission	101

Providers Completed	101
Pending Additional Data	15
Non-Responsive/Refused	22
Researching	56
Non-Facilities Based	84
Out of Business	8
TOTAL	286



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Data Collection and Processing

Provider Name	Status	FRN	NDA Execution Date	Notes/Comments
Adams Networks	Data Included in Missouri State Submission	0011616356	5/18/2010	No updates submitted in third data call response.
Alma Communications Company	Data Included in Missouri State Submission	0007196207	5/18/2010	No updates submitted in third data call response.
Alsat Wireless	Data Included in Missouri State Submission	0021067509	8/3/11	New provider from Data Call 4
Holway Telephone Company	Data Included in Missouri State Submission	0004746863	4/5/2010	Forth data call updates included.
KLM Telephone Company	Data Included in Missouri State Submission	0003772274	4/5/2010	Forth data call updates included.
N. W. Communications	Data Included in Missouri State Submission	0003772290	4/5/2010	Forth data call updates included.
American Fiber Systems, Inc. – Zayo Group	Data Included in Missouri State Submission	0006651202	4/27/2010	Forth data call updates included.
AT&T Corp.	Data Included in Missouri State Submission	0004496774	4/7/2010	Forth data call updates included.
AT&T Mobility, LLC.	Data Included in Missouri State Submission	0004979233	4/7/2010	Forth data call updates included.
AT&T Southwest	Data Included in Missouri State Submission	0016657918	4/7/2010	Forth data call updates included.
Bay's Internet	Data Included in Missouri State Submission	0018912576	Not Req'd by Provider	No updates submitted in forth data call response.
Big River Telephone, LLC	Data Included in Missouri State Submission	0018520320	Not Req'd by Provider	Forth data call updates included.
BlueBird Network, LLC.	Data Included in Missouri State Submission	0018995944	Not Req'd by Provider	New provider from Data Call 4
Boycom Cablevision, Inc.	Data Included in Missouri State Submission	0007630791	Not Req'd by Provider	New provider from Data Call 4
Boycom Cablevision, Inc. – Partel Broadband Telecom Inc.	Data Included in Missouri State Submission	0020795449	Not Req'd by Provider	New provider from Data Call 4
Cable One, Inc.	Data Included in Missouri State Submission	0003474327	4/5/2010	Forth data call updates included.
Cable America Missouri, LLC	Data Included in Missouri State Submission	0015466766	6/10/2010	No updates submitted in forth data call response.
Carthage Water & Electric	Data Included in Missouri State Submission	0007147143	Not Req'd by Provider	No updates submitted in forth data call response.
Suddenlink Communications – Cebridge	Data Included in Missouri State Submission	0014367650	6/12/2010	Forth data call updates included.
Suddenlink Communications – Friendship Cable	Data Included in Missouri State Submission	0004999025	6/12/2010	Forth data call updates included.
Suddenlink Communications – Cequel III Communications II	Data Included in Missouri State Submission	0009725870	6/12/2010	Forth data call updates included.
CenturyLink	Data Included in Missouri State Submission	0018626853	4/20/2010	Forth data call updates included.
Chariton Valley Telephone Corporation	Data Included in Missouri State Submission	0002549392	5/26/2010	Forth data call updates included.
Chariton Valley Telecom Corporation	Data Included in Missouri State Submission	0008437147	5/26/2010	Forth data call updates included.
Charter Communications	Data Included in Missouri State Submission	0017179383	6/10/2010	Forth data call updates included.
Citizens Telephone Company of Higginsville Missouri	Data Included in Missouri State Submission	0002504298	4/5/2010	No updates submitted in forth data call response.
LINKCity	Data Included in Missouri State Submission	0016051450	Not Req'd by Provider	No updates submitted in forth data call response.
City Utilities Springfield (SpringNet)	Data Included in Missouri State Submission	0004759411	3/23/2011	No updates submitted in forth data call response.
Cogent Communications, Inc.	Data Included in Missouri State Submission	0019898303	Not Req'd by Provider	No updates submitted in forth data call response.
Comcast	Data Included in Missouri State Submission	0004441663	5/27/2010	Forth data call updates included.
Covad Communications Company	Data Included in Missouri State Submission	0003753753	5/18/2010	Forth data call updates included.
Craw-Kan Telephone	Data Included in Missouri State Submission	0002334225	4/5/2010	No updates submitted in forth data call response.
T-Mobile	Data Included in Missouri State Submission	0006945950	5/4/2010	Forth data call updates included.
Ellington Telephone Company	Data Included in Missouri State Submission	0003741956	4/5/2010	No updates submitted in forth data call response.
FairPoint Communications Missouri, Inc.	Data Included in Missouri State Submission	0014710388	9/1/2010	Forth data call updates included.
ExOp of Missouri Inc.	Data Included in Missouri State Submission	0004969697	9/1/2010	New provider from Data Call 4
Farber Telephone Company	Data Included in Missouri State Submission	0003748043	4/5/2010	No updates submitted in forth data call response.
BPS Telephone Company	Data Included in Missouri State Submission	0003730835	4/5/2010	Forth data call updates included.
BPS Networks	Data Included in Missouri State Submission	0016026965	4/5/2010	Forth data call updates included.
Brown Dog Networks	Data Included in Missouri State Submission	0009254095	Not Req'd by Provider	New provider from Data Call 4
Fidelity Cablevision, Inc.	Data Included in Missouri State Submission	0000013326	4/5/2010	Forth data call updates included.
Fidelity Communications Services I, Inc.	Data Included in Missouri State Submission	0004351722	4/5/2010	Forth data call updates included.
Fidelity Telephone Company	Data Included in Missouri State Submission	0002550309	4/5/2010	Forth data call updates included.
Granby Telephone Company	Data Included in Missouri State Submission	0005061189	4/5/2010	Forth data call updates included.
Grand River Mutual Telephone Corp.	Data Included in Missouri State Submission	0002505519	4/7/2010	Forth data call updates included.
Green Hills Technologies	Data Included in Missouri State Submission	0003736246	4/5/2010	Forth data call updates included.
Green Hills Telephone ILEC	Data Included in Missouri State Submission	0003736238	4/5/2010	No updates submitted in forth data call response.
Green Hills Telecommunications Services	Data Included in Missouri State Submission	0003736253	4/5/2010	No updates submitted in forth data call response.
Hughes Network Systems, LLC	Data Included in Missouri State Submission	0017434911	Not Req'd by Provider	No updates submitted in forth data call response.
KC Coyote – Isotech	Data Included in Missouri State Submission	0014669097	Not Req'd by Provider	New provider from Data Call 4
KTIS (Kingdom Telephone Company)	Data Included in Missouri State Submission	0002212314	4/5/2010	Forth data call updates included.
Cricket Communications, Inc. (Leap Wireless International)	Data Included in Missouri State Submission	0002963528	4/20/2010	Forth data call updates included.
Le-Ru Telephone Co.	Data Included in Missouri State Submission	0002490472	4/7/2010	No updates submitted in forth data call response.
Level 3 Communications, LLC	Data Included in Missouri State Submission	0003723822	4/27/2010	Forth data call updates included.
LTO Communications, LLC	Data Included in Missouri State Submission	0019008036	Not Req'd by Provider	No updates submitted in forth data call response.
Mark Twain Communications Company	Data Included in Missouri State Submission	0002531879	4/5/2010	No updates submitted in forth data call response.
Mark Twain Rural Telephone Co	Data Included in Missouri State Submission	0002549228	4/5/2010	No updates submitted in forth data call response.
McDonald County Telephone Co	Data Included in Missouri State Submission	0002504058	4/5/2010	Forth data call updates included.
MCC Missouri LLC (Mediacom)	Data Included in Missouri State Submission	0005184247	9/1/2010	No updates submitted in forth data call response.
Mid States Services, LLC.	Data Included in Missouri State Submission	0018511303	5/26/2010	Forth data call updates included.
MyChoice Network LLC	Data Included in Missouri State Submission	0000000000	Not Req'd by Provider	New provider from Data Call 4 / FRN not provided.
New Florence Telephone Company, Inc.	Data Included in Missouri State Submission	0004374047	4/5/2010	Forth data call updates included.
Northeast Missouri Rural Telephone Company	Data Included in Missouri State Submission	0004337044	4/20/2010	No updates submitted in forth data call response.
Northwest Missouri Cellular	Data Included in Missouri State Submission	0002534618	Not Req'd by Provider	No updates submitted in forth data call response.
Oregon Farmers Mutual Telephone Company	Data Included in Missouri State Submission	0003733847	4/5/2010	Forth data call updates included.
New Wave Communications	Data Included in Missouri State Submission	0001202938	Not Req'd by Provider	No updates submitted in forth data call response.
Iland Internet Services	Data Included in Missouri State Submission	0017606898	Not Req'd by Provider	Forth data call updates included.
Mid Missouri Telephone Co.	Data Included in Missouri State Submission	0002509040	4/5/2010	No updates submitted in forth data call response.
Ozark Computers	Data Included in Missouri State Submission	0018658179	Not Req'd by Provider	Forth data call updates included.
Peace Valley Telephone Co., Inc.	Data Included in Missouri State Submission	0018539742	4/5/2010	No updates submitted in forth data call response.
Poplar Bluff, City of	Data Included in Missouri State Submission	0002514529	Not Req'd by Provider	No updates submitted in forth data call response.
ProTronics Technologies, Inc.	Data Included in Missouri State Submission	0010790061	Not Req'd by Provider	New provider from Data Call 4
Radio Wire, Inc.	Data Included in Missouri State Submission	0018912626	Not Req'd by Provider	No updates submitted in forth data call response.
Ralls Technologies (Ralls County Electric Cooperative)	Data Included in Missouri State Submission	0018539916	Not Req'd by Provider	New provider from Data Call 4
Midwest Data Center – Subsidiary of Rock Port Telephone	Data Included in Missouri State Submission	0004362505	4/7/2010	No updates submitted in forth data call response.
Rock Port Cablevision	Data Included in Missouri State Submission	0004362505	4/7/2010	New provider from Data Call 4



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Goodman Telephone Company, Inc.	Data Included in Missouri State Submission	0004269775	4/12/2010	No updates submitted in forth data call response.
Ozark Telephone Company	Data Included in Missouri State Submission	0004269817	4/12/2010	No updates submitted in forth data call response.
Seneca Telephone Company	Data Included in Missouri State Submission	0004269809	4/12/2010	No updates submitted in forth data call response.
Sho-Me Technologies, LLC	Data Included in Missouri State Submission	0008875890	Not Req'd by Provider	No updates submitted in forth data call response.
Sprint Nextel Corporation	Data Included in Missouri State Submission	0003774593	6/11/2010	Forth data call updates included.
StarBand Communications Inc.	Data Included in Missouri State Submission	0005087457	4/5/2010	No updates submitted in forth data call response.
Steelville Telephone Exchange Inc	Data Included in Missouri State Submission	0002549665	4/5/2010	Forth data call updates included.
Miller Telephone Company	Data Included in Missouri State Submission	0004269528	4/5/2010	Forth data call updates included.
TDS Telecommunications Corporation – Stoutland	Data Included in Missouri State Submission	0002502243	4/26/2010	Forth data call updates included.
TDS Telecommunications Corporation – New London	Data Included in Missouri State Submission	0002529733	4/26/2010	Forth data call updates included.
TDS Telecommunications Corporation – Orchard Farm	Data Included in Missouri State Submission	0003767340	4/26/2010	Forth data call updates included.
Time Warner Cable	Data Included in Missouri State Submission	0013430244	6/21/2010	Forth data call updates included.
Total Highspeed Internet Service	Data Included in Missouri State Submission	0017633405	Not Req'd by Provider	New provider from Data Call 4
Townes Tele-Comm, Inc. – Choctaw Telephone Company	Data Included in Missouri State Submission	0004928792	Not Req'd by Provider	Forth data call updates included.
Townes Tele-Comm, Inc. – MoKan Dial, Inc.	Data Included in Missouri State Submission	0004928750	Not Req'd by Provider	Forth data call updates included.
Tw telecom	Data Included in Missouri State Submission	0017348061	4/27/2010	No updates submitted in forth data call response.
United Services, Inc. (United Sky Wireless)	Data Included in Missouri State Submission	0016087876	4/5/2010	No updates submitted in forth data call response.
Verizon Wireless – Cellico Partnership	Data Included in Missouri State Submission	0003290673	5/26/2010	Forth data call updates included.
WildBlue Communications, Inc.	Data Included in Missouri State Submission	0007843766	5/4/2010	No updates submitted in forth data call response.
Windjammer Communications LLC	Data Included in Missouri State Submission	0017915182	Not Req'd by Provider	No updates submitted in forth data call response.
Windstream Corporation	Data Included in Missouri State Submission	0014400220	6/10/2010	No updates submitted in forth data call response.
YHTI	Data Included in Missouri State Submission	0014205504	4/5/2010	Forth data call updates included.
Lathrop Telephone Company	Data Included in Missouri State Submission	0003737376	4/7/2010	Forth data call updates included.
NPQ Cable, Inc. (St. Joseph Cablevision)	Data Included in Missouri State Submission	0002508687	Not Req'd by Provider	Forth data call updates included.
United States Cellular Corporation	Data Included in Missouri State Submission	0004372322	8/21/2010	Forth data call updates included.
KC Web Internet Services, LLC	Compiling Data – No Data Submitted	0011513751	Not Req'd by Provider	No source data received to date.
KEI Internet Service	Compiling Data – No Data Submitted	0000000000	Not Req'd by Provider	No source data received to date.
Wisper ISP, INC	Compiling Data – No Data Submitted	0016278970	Not Req'd by Provider	No source data received to date.
AccuBak Data Systems, Inc.	Data Compiled But Not Submitted By Provider	0018543744	Not Req'd by Provider	Owner still having trouble seeing the benefit to submitting data.
Ritter Cable Corporation	NDA Fully Executed – No Data Submitted	0014054449	4/20/2010	No source data received to date.
IAMO Telephone Company	NDA Fully Executed – No Data Submitted	0014067565	4/7/2010	No source data received to date.
SureWest Kansas, LLC – Everest Midwest LLC	NDA Fully Executed – No Data Submitted	0004069035	4/12/2010	No source data received to date.
Blue Mule Wireless	Data Not Submitted By Provider	0000000000	Not Req'd by Provider	No source data received to date.
TA Highspeed	Data Not Submitted By Provider	0000000000	Not Req'd by Provider	No source data received to date.
Tower Internet	Data Not Submitted By Provider	0000000000	Not Req'd by Provider	No source data received to date.
US Cable of Coastal-Texas, L.P.	Data Not Submitted By Provider	0000000000	Not Req'd by Provider	No source data received to date.
Crystal Broadband	Data Not Submitted By Provider	0000000000	Not Req'd by Provider	No source data received to date.
Socket Telecom, LLC	Working Toward Signed NDA	0008515595	NA	Reseller currently. Becoming facilities based provider
Haug Communications, Inc.	Working Toward Signed NDA	0004711735		NDA Sent – Speeds currently below Broadband.
Finally Broadband, LLC.	Working Toward Signed NDA			Not fully operational as of 8/31/11
Iowa Telecommunications Services, Inc.	Non-Responsive	0003911385		
Mo-Ark Communications – (Wasp Wireless)	Non-Responsive	0004376919		NDA Sent
CorpraNet	Non-Responsive			NDA Sent
Cox Communications	Non-Responsive			NDA Sent
True Broadband Networks	Non-Responsive			No answer at phone numbers and e-mails kick-back
Enventis Telecom Inc.	Non-Responsive	0008394322		NDA Sent
Dexter Broadband	Non-Responsive		NA	Phones disconnected and e-mails are unanswered
St Joe Wireless	Non-Responsive	0002545929		Attempting to make initial contact.
First Cable of MO (Mississippi Valley)	Non-Responsive			
Galactic Broadband	Non-Responsive			No contact information found
SES Americom	Non-Responsive			Attempting to make initial contact.
Verizon Business Global LLC dba Verizon Business	Non-Responsive	0010856284		Submitted data with wireless company only.
Momentum	Non-Responsive			
Mid Missouri Broadband & Cable LLC	Non-Responsive			
St Louis Broadband	Refused to participate at this time			Does not see benefit
Birch Telecom of Missouri, Inc.	Refused to Participate	0003732294	NA	Refuse to sign NDA or participate
Ionex Communications, Inc.	Refused to Participate	0005027453	NA	Refuse to sign NDA or participate - Birch Communications
Pixius Communications	Refused to Participate	0010480176	NA	Refuse to sign NDA or participate at this time
Poplar Bluff Internet, Inc (SEMO)	Refused to Participate	0013662408	NA	Refuse to sign NDA or participate at this time
Semo Communications Inc.	Refused to Participate	0003788775	NA	Poplar Bluff Internet - refuse to sign NDA or participate at this time
NuVox, Inc.	Researching - Acquired By Windstream	0004319414	6/10/2010	No source data received to date.
Stouffer Communications	Researching - Included as Granby Telephone	0005061189		
CenturyTel Fiber Co. II, LLC dba LightCore, a CenturyTel Co	Researching Included in CenturyLink submission	0008612293	4/20/2010	
Falcon Cablevision	Researching Acquired By Charter Comm		NA	Data included in Charter submission.
New Cingular Wireless Services, Inc.	Researching – Purchased by AT&T	0003766532	4/7/2010	Included in AT&T submissions
City Light Gas & Water Office – City of Kennett	Researching To Determine If Broadband Provider			
City of Marshall	Researching To Determine If Broadband Provider			
Fidelity Communication Services II, Inc.	Researching To Determine If Broadband Provider	0005918503	4/5/2010	Researching inclusion with other Fidelity Provider submissions.
Fidelity Networks, Inc.	Researching To Determine If Broadband Provider	0004312963	4/5/2010	Researching inclusion with other Fidelity Provider submissions.
Excel Telecommunications – SureWest	Researching To Determine If Broadband Provider		4/12/2010	
TDS Metrocom	Researching To Determine If Broadband Provider		4/26/2010	Researching inclusion with other TDS Provider submissions.
TDS Missouri	Researching To Determine If Broadband Provider		4/26/2010	Researching inclusion with other TDS Provider submissions.
Telephone and Data Systems	Researching To Determine If Broadband Provider		4/26/2010	Researching inclusion with other TDS Provider submissions.
Aurora Communications, Inc.	Researching To Determine If Broadband Provider	0015696180	4/5/2010	Researching inclusion with other YHTI Provider submissions.
Full Stream Wireless	Researching To Determine If Broadband Provider			
Broadview Networks Holdings, Inc.	Researching To Determine If Broadband Provider	0010296853		
Broadwing Communications, LLC	Researching To Determine If Broadband Provider	0008599706	4/27/2010	Researching inclusion with other Level 3 Provider submission
WiTel Communications, LLC.	Researching To Determine If Broadband Provider	0003716511	4/27/2010	Researching inclusion with other Level 3 Provider submission
AT&T Services, Inc.	Researching To Determine If Broadband Provider	0008644056	4/7/2010	Researching inclusion with other AT&T Provider submission.



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Advanced Digital LLC	Researching To Determine If Broadband Provider			
BMU Internet	Researching To Determine If Broadband Provider			
Co-Mo Electric	Researching To Determine If Broadband Provider			
Computer Magic Internet LLC	Researching To Determine If Broadband Provider			
DNG Electronics	Researching To Determine If Broadband Provider			
Extreme	Researching To Determine If Broadband Provider			
Green City Electric Utility	Researching To Determine If Broadband Provider			
Human Span	Researching To Determine If Broadband Provider			
Insight Cable	Researching To Determine If Broadband Provider			
Jaguar Technologies Inc (JagTec)	Researching To Determine If Broadband Provider			
Jobe Internet Services	Researching To Determine If Broadband Provider			
Keno Telephone	Researching To Determine If Broadband Provider			
LocalNet	Researching To Determine If Broadband Provider			
MCM System Wireless	Researching To Determine If Broadband Provider			
MHE Net	Researching To Determine If Broadband Provider			
Midwest Internet Technologies (MITI)	Researching To Determine If Broadband Provider			
Midwest Telecommunications	Researching To Determine If Broadband Provider			
Mist Valley	Researching To Determine If Broadband Provider			
Momentum	Researching To Determine If Broadband Provider			
MoreNet	Researching To Determine If Broadband Provider			
NetZero	Researching To Determine If Broadband Provider			
North Missouri Internet Services	Researching To Determine If Broadband Provider			
Optimum Cablevision	Researching To Determine If Broadband Provider	0003301363		
Pacific Wireless Internet	Researching To Determine If Broadband Provider	0018044297		
PIP Internet	Researching To Determine If Broadband Provider			
Primary Networks	Researching To Determine If Broadband Provider			
Regis	Researching To Determine If Broadband Provider			
Sikeston Internet	Researching To Determine If Broadband Provider	0018375808		
Suddenlink Communications - Cequel Communications	Researching To Determine If Broadband Provider	0015784663	6/12/2010	
Superior Cable	Researching To Determine If Broadband Provider			
Tri-Lakes Internet	Researching To Determine If Broadband Provider			
Turbo Net	Researching To Determine If Broadband Provider			
Utopian Wireless Corporation	Researching To Determine If Broadband Provider			
United Electric	Researching To Determine If Broadband Provider			
Vaughn's Computer Central	Researching To Determine If Broadband Provider	0019846674		
Wave Internet Technologies LLC	Researching To Determine If Broadband Provider	0020090023		
Access US	Not Facilities Based			
Board of Municipal Utilities	Not Facilities Based	0016073389		Discontinued offering service
McLeodUSA Telecommunications Services, Inc. (PaeTec)	Not Facilities Based	0003716073	NA	
XO Communications, LLC	Not Facilities Based	0006275945	NA	
Telnet Worldwide	Not Facilities Based		NA	
Terre Star	Not Facilities Based		NA	
TMC Communications	Not Facilities Based		NA	
TracFone	Not Facilities Based		NA	
Sofnet	Not Facilities Based		NA	
Clear Communications, Inc.	Not Facilities Based			Equipment seller
Superfone Inc.	Not Facilities Based	0008402202		
Tritel	Not Facilities Based		NA	
Missouri Broadband	Not Facilities Based		NA	
Mobilcom Pittsburg, Inc.	Not Facilities Based	0002324465	NA	
PneumaTek	Not Facilities Based		NA	Not responding to email
City of Newburg	Not Facilities Based		NA	
Qwest Communications Company, LLC	Not Facilities Based	0003605953	NA	
South Holt Cablevision	Not Facilities Based		NA	Offer Internet through Oregon Farmers Mutual Telephone Co
ADC	Not Facilities Based		NA	
Adva Optical Networking North America, Inc.	Not Facilities Based		NA	
AFL Communications	Not Facilities Based		NA	
Aircell	Not Facilities Based		NA	
Airdis Telecom	Not Facilities Based		NA	
Airespring, Inc.	Not Facilities Based	0006875322	NA	
ANPI	Not Facilities Based		NA	
Arch Communications	Not Facilities Based		NA	
Atlantis Holdings LLC	Not Facilities Based	0018587402	NA	
Bluegrass Cellular	Not Facilities Based		NA	
Boost Mobile	Not Facilities Based		NA	
Broadband National	Not Facilities Based		NA	
BullsEye Telecom, Inc.	Not Facilities Based	0004350930	NA	
Cellular one	Not Facilities Based		NA	
CHR Solutions	Not Facilities Based		NA	
Charles Industries	Not Facilities Based		NA	
Chillicothe Municipal Utilities	Not Facilities Based	0004192225	NA	
City of Newburg	Not Facilities Based		NA	
Cooperative Communications, Inc.	Not Facilities Based		NA	
Curt's Custom Cable	Not Facilities Based		NA	
DeSoto ISP	Not Facilities Based		NA	
Digital Landing	Not Facilities Based		NA	
DirecTV	Not Facilities Based		NA	
DSL_net, Inc. (Megapath)	Not Facilities Based	0004324851	NA	
Earthlink	Not Facilities Based		NA	



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Extel	Not Facilities Based		NA	
Freedom Communications	Not Facilities Based		NA	
GlobalNet	Not Facilities Based		NA	
Golden State Cellular	Not Facilities Based		NA	
Granite Telecommunications	Not Facilities Based		NA	
Illinois Valley Cellular	Not Facilities Based		NA	
Innovative Systems	Not Facilities Based		NA	
Interglobe Communications, Inc.	Not Facilities Based	0005156229	NA	
Inter-Linc	Not Facilities Based		NA	
Jitterbug	Not Facilities Based		NA	
LightEdge Solutions, Inc.	Not Facilities Based	0015546443	NA	
Logix Communications	Not Facilities Based		NA	
Metropolitan Telecommunications Holding Company	Not Facilities Based	0009806019	NA	
Mid America Computer Corporation	Not Facilities Based		NA	
Mohave Wireless	Not Facilities Based		NA	
Netlogic, Inc.	Not Facilities Based	0006825954	NA	
New Edge Holding Company	Not Facilities Based	0003720471	NA	
Nex-Tech Wireless	Not Facilities Based		NA	
Nortel Solutions	Not Facilities Based		NA	
Open Range	Not Facilities Based		NA	
OFS	Not Facilities Based		NA	
Pacific Wireless	Not Facilities Based		NA	
Preferred Long Distance	Not Facilities Based		NA	
Protel	Not Facilities Based		NA	
Pulse Broadband	Not Facilities Based		NA	Reseller for Ralls Tech.
Ralls Technologies, LLC	Not Facilities Based	0018539916	NA	Becoming facilities based in the near future
SkyTerra Communications	Not Facilities Based		NA	
SkyWay USA	Not Facilities Based		NA	
Spirit Telecom	Not Facilities Based		NA	
Stutler Technologies Corp	Not Facilities Based		NA	
Tablerock Net	Not Facilities Based		NA	
TCO Network, Inc.	Not Facilities Based		NA	
TCS Telecom, Inc.	Not Facilities Based		NA	
Telefonica Data Corp SA	Not Facilities Based	0018547828	NA	
Tellabs	Not Facilities Based		NA	
Toast.Net	Not Facilities Based		NA	
Tranquility Internet	Not Facilities Based		NA	
Video Direct	Not Facilities Based		NA	
Vonage	Not Facilities Based		NA	
Zone Telecom, Inc.	Not Facilities Based		NA	
WestLink	Not Facilities Based		NA	
Aero-Surf Wireless Internet	Out of Business			Appear to be out of business
Almega Cable	Out of Business		Not Req'd by Provider	Phone number no longer in service. Out of business?
Longview Cable and Data, LLC.	Out of Business	0013948609	NA	Sold off Assets
Total Wireless Communications	Out of Business	0018726729	Not Req'd by Provider	Acquired by Total Highspeed Internet Services
Missouri Network Alliance	Out of Business	0015540669	Not Req'd by Provider	Acquired by BlueBird Network
Worldcom Broadband Solutions	Out of Business		NA	
Global Crossing Telecommunications, Inc.	Out of Business	0002850519	NA	
Sikeston Board of Municipal Utilities	Out of Business	0016073389	NA	



Attachment A

NONDISCLOSURE AGREEMENT

THIS NONDISCLOSURE AGREEMENT ("Agreement"), dated and effective as of _____, 2010, is made by and among the Parties to this Agreement, which are _____ including its affiliates (collectively referred to hereinafter as "the Company"), and the State of Missouri, Office of Administration ("OA"), The Curators of the University of Missouri on behalf of the University of Missouri - Columbia ("MU"), GeoDecisions, a Division of Gannett Fleming, Inc. ("GeoDecisions"), and CBG Communications, Inc. ("CBG") (collectively referred to hereinafter as "the State Parties," except where otherwise indicated.)

WHEREAS:

- I. The National Telecommunications and Information Administration (NTIA) has made available a grant program to fund broadband mapping known as the State Broadband Data and Development (SBDD) grant program, which is governed by the Notice of Funds Availability (NOFA) first published in volume 74, number 129, at page 32545 of the Federal Register and subsequently clarified in volume 74, number 154, at page 40569 of the Federal Register, both of which are incorporated fully herein; and
- II. Both OA and MU have partnered with the mapping entities, GeoDecisions and CBG, to implement the SBDD grant program; and
- III. The Company possesses confidential and proprietary information necessary to such implementation and acknowledges that it desires to share certain of that information with the State Parties and with the NTIA; and
- IV. When the Company shares that information with the State Parties, the confidential and limited use conditions of this Agreement shall apply; and
- V. Missouri law allows governmental entities to close records that: 1) relate to scientific and technological innovations in which the owner has a proprietary interest pursuant to §610.021(15); and 2) fall within the definition of "trade secret" pursuant to the Uniform Trade Secrets Act, §417.450, RSMo.; and 3) have been submitted to an institution of higher education in connection with a proposal to license intellectual property or perform sponsored research and which contains sales projections or other business plan information the disclosure of which may endanger the competitiveness of a business, §610.021(22); and

NOW THEREFORE, the Parties agree as follows:

TERMS:

- a) "Confidential Information" shall be defined in identical terms to the SBDD NOFA and any subsequent SBDD NOFA Clarification(s).
- b) All Confidential Information received by the State Parties from the Company may be used as follows:
 - i) The State Parties may use the Company's information to derive maps, interactive websites and tabular data representations of the Company's broadband coverage area, network information, coverage attributes, and such other uses as may be required to implement the SBDD, referred to as the State Parties' Work Product; and
 - ii) The State Parties may, at a given location, estimate broadband coverage and identify broadband providers within the associated census block or estimated area, including Company, if applicable; and
 - iii) That State Parties may provide the NTIA with any such State Works as may be reasonably required by the terms and conditions as outlined in any applicable NOFA. The Company acknowledges that such provision may likely result in the disclosure of Confidential Information to governmental authorities and that, once such disclosures are made by the State Parties as required by a Project, the State Parties

Figure 4: Standard NDA pg 1



are fully released from any liability for the actions of the third party governmental authority regarding the disclosure, sharing or use of such Confidential Information; and,

- iv) The State Parties may use the Confidential Information in any other way to the extent such use is consistent with this Agreement and the SBDD program, that does not result in disclosing it, and
- v) The Company waives any claims of ownership to the State Parties' Work Products.
- c) Per the terms of this Agreement, the State Parties will protect Confidential Information provided to it from any use, distribution or disclosure pursuant to §610.021 (14), (15) and (22) and §417.450, RSMo, except as permitted herein.
- d) Confidential Information provided to Recipient in written or other tangible or electronic form shall be marked by Company with a confidential and proprietary notice prior to receipt by the State Parties.
- e) Parties acknowledge that any discrepancy between the SBDD NOFA and the terms provided for herein shall be resolved in favor of the SBDD NOFA. Nothing contained herein shall be construed to limit the State Parties' reporting and data sharing obligations under the SBDD NOFA, including sharing of Company's Confidential Information with NTIA pursuant to the terms of the SBDD NOFA and Clarification.
- f) The State Parties may provide Confidential Information only to those employees, consultants, independent contractors and agents who:
 - i) Have a substantive need to know such Confidential Information in connection with the State Parties' Work Product;
 - ii) Have been advised of the confidential and proprietary nature of such Confidential Information; and
 - iii) Have agreed in writing prior to disclosure to protect from unauthorized disclosure all confidential and proprietary information to which they have access in the course of their participation in the creation of the State Parties' Work Product in accordance with all the terms of this Agreement.
- g) Confidential Information does not include information the State Parties lawfully obtain from any source other than Company, provided that such source lawfully disclosed such information.
- h) If the State Parties are required to provide Confidential Information to any court, government agency or third party pursuant to written court order, subpoena, Missouri Sunshine Law request, or other process of law, they must provide the Company with prompt written notice of such requirement or request and cooperate with the Company to protect against or limit the scope of the disclosure.
- i) All Confidential Information remains at all times the Company's property. Any State Party Recipient may make tangible or electronic copies and notes of Confidential Information only as necessary for use as authorized herein. All such copies or notes must be marked with the same confidential and proprietary notice as appears on the original. All such copies will be destroyed when the State Parties' Work Product is fully completed and finally approved, and all originals shall be either destroyed or returned to the Company, at the Company's option.
- j) The State Parties may publicly identify the Company as a contributing broadband service provider, provided no information covered by this Agreement is revealed. No license for use, beyond that provided for herein, under any trademark, patent, copyright, trade secret or other intellectual property right is either granted or implied by disclosure of Confidential Information to the State Parties.
- k) If and to the extent any provision of this Agreement is held invalid or unenforceable, all other provisions of this Agreement shall remain in full force and effect to the fullest extent permitted by law.

Figure 5: Standard NDA pg 2



l) This Agreement is binding upon and inures to the benefit of the Parties and their heirs, executors, legal and personal representatives, successors and assigns, as the case may be.

m) This Agreement is the entire agreement between the Parties hereunder and may not be modified or amended except by a written instrument signed by all Parties. Each Party has read this Agreement, understands it and agrees to be bound by its terms and conditions. There are no understandings or representations with respect to the subject matter hereof, express or implied, that are not stated herein. This Agreement may be executed in counterparts, and signatures exchanged by facsimile or other electronic means are effective for all purposes hereunder to the same extent as original signatures.

n) This Agreement shall be governed, construed, and enforced in accordance with the laws of the State of Missouri, without regard to its principles of conflict of law.

IN WITNESS WHEREOF, the Parties have read and agreed to this Nondisclosure Agreement as evidenced by the signatures of the Parties' authorized representatives below:

<u>Company:</u>	<u>GeoDecisions, a Division of Gannett Fleming, Inc.:</u>
By: _____ (Authorized Signature)	By: _____ (Authorized Signature)
Name: _____	Name: _____
Title: _____	Title: _____
 <u>State of Missouri, Office of Administration, Information Technology and Services Division:</u>	
By: _____ (Authorized Signature)	
Name: _____	
Title: _____	
 <u>The Curators of the University of Missouri:</u>	
By: _____ (Authorized Signature)	
Name: _____	
Title: _____	
 <u>CBG Communications, Inc.:</u>	
By: _____ (Authorized Signature)	
Name: _____	
Title: _____	

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Figure 6: Standard NDA pg 3