



**BROADMAP**<sup>SM</sup>  
Beyond The Boundaries

# Mississippi Broadband Mapping Project: Product Release White Paper

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# Table of Contents

<b>OVERVIEW .....</b>	<b>3</b>
<b>SUBMISSION SUMMARY .....</b>	<b>3</b>
<b>PROVIDER DETAILS .....</b>	<b>3</b>
PROVIDER PARTICIPATION .....	3
COVERAGE AREA CHANGES .....	5
DATA CORRECTIONS.....	5
<b>COMMUNITY ANCHOR INSTITUTION (CAI) DETIALS .....</b>	<b>6</b>
OVERALL STATISTICS .....	6
CAI CHANGES .....	6
<b>SUBMISSION RECEIPT .....</b>	<b>7</b>
SUBMISSION RECEIPT RESULTS .....	7
<b>HIGH-LEVEL SUMMARY .....</b>	<b>8</b>
<b>DATA GATHERING .....</b>	<b>8</b>
BROADBAND SERVICE AREAS, MIDDLE MILE AGGREGATION POINTS AND BROADBAND SERVICE OVERVIEW .....	8
COMMUNITY ANCHOR INSTITUTION (CAI) .....	11
<b>DATA INTEGRATION PROCESS .....</b>	<b>11</b>
<b>DATA VALIDATION AND VERIFICATION.....</b>	<b>14</b>
BROADBAND PROVIDER VALIDATION—PROVIDER PORTAL APPLICATION .....	14
THIRD-PARTY DATA VERIFICATION .....	15
PUBLIC VERIFICATION – CROWD SOURCING.....	16
CONFIDENCE VALUES .....	16
<b>QUALITY CONTROL .....</b>	<b>16</b>
<b>DETAILED PROCESS REVIEW .....</b>	<b>17</b>
<b>PROVIDERS RESEARCHED .....</b>	<b>17</b>



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## OVERVIEW

This white paper highlights the **Submission Summary** for this deliverable, as well as describes the **Data Gathering**, **Data Integration**, **Data Validation and Verification** and **Quality Control** processes used to create the Broadband Mapping Project's April 1, 2012 data submission. To support varying levels of technical and program knowledge, both a **high-level summary** and a **detailed process review** are supplied.

## SUBMISSION SUMMARY

### PROVIDER DETAILS

#### PROVIDER PARTICIPATION

- Provider Participation Statistics Summary

Summary	Count
Total Providers Researched/Contacted (Includes Resellers)	222
Total Valid Broadband Providers	43
Non-Responsive Providers	0
Non-Cooperative Providers	0
Number of Providers – Represented in Data Submission	43
Number of Providers - Supplied Updates for this Submission	26
Number of Providers - Confirmed No Updates	17

- New Providers Since Last Data Submission
  - WildBlue Communications, Inc.
- Existing Providers – No Updates
  - Bruce Telephone Co. Inc.
  - DeltaCom, Inc.
  - Dixie Net Communications, Inc.
  - Frontier Communications of Miss. LLC
  - Fulton Telephone Co. Inc.
  - Georgetown Telephone Company Inc.
  - Lakeside Telephone Company Inc.
  - Level 3 Communications, LLC
  - Megagate Broadband, Inc.
  - Mound Bayou Telephone & Communications, Inc.
  - NetWireless Solutions, LLC
  - Sledge Telephone Co. Inc.



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- Southern Light, L.L.C.
- StarBand Communications Inc.
- TEC of Jackson, Inc.
- Telepak Networks, Inc.
- Windstream Mississippi LLC

- Providers Included (listed by Provider and Holding Company name)

Bay Springs Telephone Co. Inc.
BellSouth Telecommunications, Inc. d/b/a AT&T Mississippi
BPM Inc. (Noxapater Telephone Company)
Bruce Telephone Co. Inc.
Cable One, Inc.
Cellular South Licenses, Inc. (C Spire Wireless)
CenturyTel Of North MS. Inc.
Charter Fiberlink MS - CCVI, LLC
Comcast Phone of Mississippi, LLC
Contact Network, Inc. (Inline)
Covad Communication
Cricket Communications of MS
Decatur Telephone Co. Inc.
Delta Telephone Co. Inc.
DeltaCom, Inc.
Dixie Net Communications, Inc.
Franklin Telephone Co. Inc.
Frontier Communications of Miss. LLC
Fulton Telephone Co. Inc.
Georgetown Telephone Company Inc.
GulfPines Communications, LLC
Lakeside Telephone Company Inc.

Level 3 Communications, LLC
Megagate Broadband, Inc.
MetroCast of MS, LLC
Mound Bayou Telephone & Communications, Inc.
NetWireless Solutions, LLC
Verizon Wireless
Sledge Telephone Co. Inc.
Smithville Telephone Co. Inc.
Southern Light, L.L.C.
Sprint PCS
StarBand Communications Inc.
TDS Telecommunications Corporation
TEC of Jackson, Inc.
Telepak Networks, Inc.
Trust Communications
tw telecom of mississippi llc
Windstream Mississippi LLC
XFone USA, Inc.
T-Mobile USA, Inc.
Delta Link LLC.
WildBlue Communications, Inc.

- Non-Responsive/Non-Cooperative Providers
  - None
- Providers researched and identified as non-broadband providers can be viewed within the table at the end of this document.



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## **COVERAGE AREA CHANGES**

- Coverage Footprint Reductions/Map Refinement –
  - Delta Telephone Co. Inc. (TT-10)
  - BellSouth Telecommunications, Inc. (TT-10)
  - Charter Communications, Inc. (TT-41)
  - tw telecom of mississippi llc (TT-30)
  - Myrtle Telephone Company, Inc. (TT-10)
- Technology Changes –
  - Comcast Cable Communications, LLC. - TT41 decreased and was replaced with TT-40.
- Coverage Footprint Expansion –
  - Contact Network, Inc. (TT-50)
  - Southeast Mississippi Telephone Company, Inc. (TT-10)
  - tw telecom of mississippi llc (TT-50)
  - T-Mobile USA, Inc. (TT-80)
  - Delta Telephone Co. Inc. (TT-50)
  - Leap Wireless International, Inc. (TT-80)
  - AT&T Mobility LLC (TT-80)
  - Sprint Nextel Corporation (TT-80)
  - Cable One (TT-40)
  - C Spire Wireless (TT-80)
  - Bay Springs Telephone (TT-10)
  - Decatur Telephone Co. Inc. (TT-10)
  - Verizon Wireless (TT-80)

## **DATA CORRECTIONS**

- Per NTIA's guidance on 02/21/12, we updated all Verizon speed data to support the business rules they laid out.

~~

All grantees should then apply the following business rule, as some of the speed ranges fall into two tiers:

3G Speeds:

Maximum and Typical download speed: 600 kbps to 1.4 Mbps (Speed Tier 3: 768 kbps – 1.5 Mbps)

Maximum and Typical upload speed: 500 kbps to 800 kbps (Speed Tier 2: 200 – 768 kbps)

4G LTE Speeds:

Max Adv Download Speed: 12 Mbps (Speed Tier 7: 10 Mbps – 25 Mbps)

Max Adv Upload Speed: 5 Mbps (Speed Tier 5: 3 Mbps – 6 Mbps)

Typical download speed: 8.5 Mbps (Speed Tier 6: 6 Mbps – 10 Mbps)

Typical upload speed: 2 Mbps to 5 Mbps (Speed Tier 5: 3 Mbps – 6 Mbps)



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- The NTIA 3<sup>rd</sup> Party data review and summary were also compared to the product prior data submission and no changes were required. The Technology/Speed tier differences highlighted were reviewed with the providers and corrected, where needed.

## COMMUNITY ANCHOR INSTITUTION (CAI) DETAILS

### OVERALL STATISTICS

Community Anchor Institution - Categories	Overall Count	Broadband Subscriber (1 or 2)	Trans Tech	Advertised Speed Down	Advertised Speed Up
Category 1 - School K through 12	697	502	502	502	56
Category 2 - Library	278	197	197	197	37
Category 3 - Medical/Healthcare	437	243	243	243	136
Category 4 - Public Safety	869	136	136	136	93
Category 5 - Universities/Colleges	40	0	0	0	0
Category 6 - Other: Government	409	335	335	335	142
Category 7 - Other: Non-Government	0	0	0	0	0
<b>Total</b>	<b>2730</b>	<b>1413</b>	<b>1413</b>	<b>1413</b>	<b>464</b>

### CAI CHANGES

- No significant changes for the CAI layer this round.
- The CAI inventory was reviewed again against the database mentioned below for the following categories: Category 1: K-12 Schools, Category 2: Libraries and Category 5: Colleges  
These databases are as follows:
  - For K-12 institutions (CAI type 1) please add the NCES ID CCD ID value found here:  
<http://nces.ed.gov/ccd/bat/>
  - For Higher Education (CAI type 5) please add the NCES IPEDS ID value found here:  
<http://nces.ed.gov/ipeds/datacenter/>
  - For Libraries (CAI type 2) please. Combine (do not add) "FSCSKey" and "FSCs\_SEQ" from the "puout08av2000" file and place them here:  
<http://harvester.census.gov/imls/data/pls/index.asp> (FYI the LIBID is your state's unique ID for libraries)



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## **SUBMISSION RECEIPT**

### **SUBMISSION RECEIPT RESULTS**

- Attached are the results from the NTIA data submission receipt quality script.



MS\_2012\_3\_29.txt

- Error Report  
All items flagged within the submission receipt were confirmed with either the provider or with NTIA that the values are valid. We called each provider that was identified in the warnings due to Technology/Speed matches, and validated again that they were accurate.
- The exceptions also NTIA noted during the 03/27/12 webinar are as follows:
  - Middle Mile Elevation Fails
  - Middle Mile Latitude/Longitude Fails
  - Middle Mile Ownership Fails
  - Address SpeetTier Fails
  - CAI Transtech Fails

Hyperlinks to Grantee Workspace in which the same issues were identified by other Grantees:

<https://sbdd-granteeworkspace.pbworks.com/w/page/50162555/December%202011%20Data%20Package%20Issues>

<https://sbdd-granteeworkspace.pbworks.com/w/file/49939449/December%202011%20Submission.zip>



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## HIGH-LEVEL SUMMARY

### DATA GATHERING

#### BROADBAND SERVICE AREAS, MIDDLE MILE AGGREGATION POINTS AND BROADBAND SERVICE OVERVIEW

The collection of Broadband Service Areas, Middle Mile Aggregation Points and Broadband Service Overview information is handled through the following Provider Outreach Process:

- Build and maintain an inventory of Broadband providers through currently known providers and research.
- The inventory and everyday interaction with providers is tracked using the Provider Catalog (PCat). Below are some examples of the web application, which has a shared access between our team and mapping partner (BroadMap).

Company Information		Edit	Clone	History	AAD
Provider Name	acmetech (All)	Source Name	acmetech		
Company Address		Source Description			
Company PO Box		Layer Name	TBD		
Company House Number	12345	Source Usage Type	Tracking		
Company Street Name	Acme Avenue	Source Provider Type	BroadMap		
Company City Name	Portland	Source Content Type			
Company Suite		Source Restrictions	<input type="checkbox"/>		
Company Postal Boundary		Source Restriction Description			
Company State		TT Types	--None-- Asymmetric xDSL Symmetric xDSL Other Copper Wireline Cable Modem-DOCSIS 3.0 Cable Modem-Other Optical Carrier/Fiber to the End User Satellite		
Company Website	http://www.acmebroadband.com	Addr Level Data Provided	<input type="checkbox"/>		
Source ID	4999	Preferred Contact Method			
Child Source	<input type="checkbox"/>				
Parent URL					
Parent Source ID	0				
User Name					
Password					
Form 477 Interest	<input type="checkbox"/>				
Provider Portal Trained	<input checked="" type="checkbox"/>				

Contacts							New
Type	Name	Preferred	Phone 1	Phone 2	Email	Position	
P	Sourcing						

FRN Info	
Provider Name	DBA
	FRN Number

Confidence		New
TT Type	Confidence	Last Modified
Status Tracking		
Non Facilities Based Provider	<input type="checkbox"/>	
Business Only Provider	<input type="checkbox"/>	
Reseller	<input type="checkbox"/>	
NDA Review - Internal	<input type="checkbox"/>	Non Responsive Provider <input type="checkbox"/>
NDA Review - External	<input type="checkbox"/>	Non Cooperative Provider <input type="checkbox"/>
		Source Closed <input type="checkbox"/>
Service Provider Details		
BroadMapper	--None--	BroadMap Status
Initial State Outreach Date		Unassigned
Provider Origin		Initial Contact Vehicle
		Member Association
		Initial State Outreach <input type="checkbox"/>
		NDA Status
		--None--
		NDA Not Required <input type="checkbox"/>
Provider Packet Exchanged	<input type="checkbox"/>	NDA Requested <input type="checkbox"/>
Provider Packet Info Sent		NDA Exchanged <input type="checkbox"/>
Provider Meeting Status	--None--	NDA Exchange Date
Technical Meeting Requested	<input type="checkbox"/>	NDA Signed <input type="checkbox"/>
Technical Meeting Scheduled	<input type="checkbox"/>	NDA Signed Date
Number of Subscribers		
		Date Loaded
		Source Closed Date





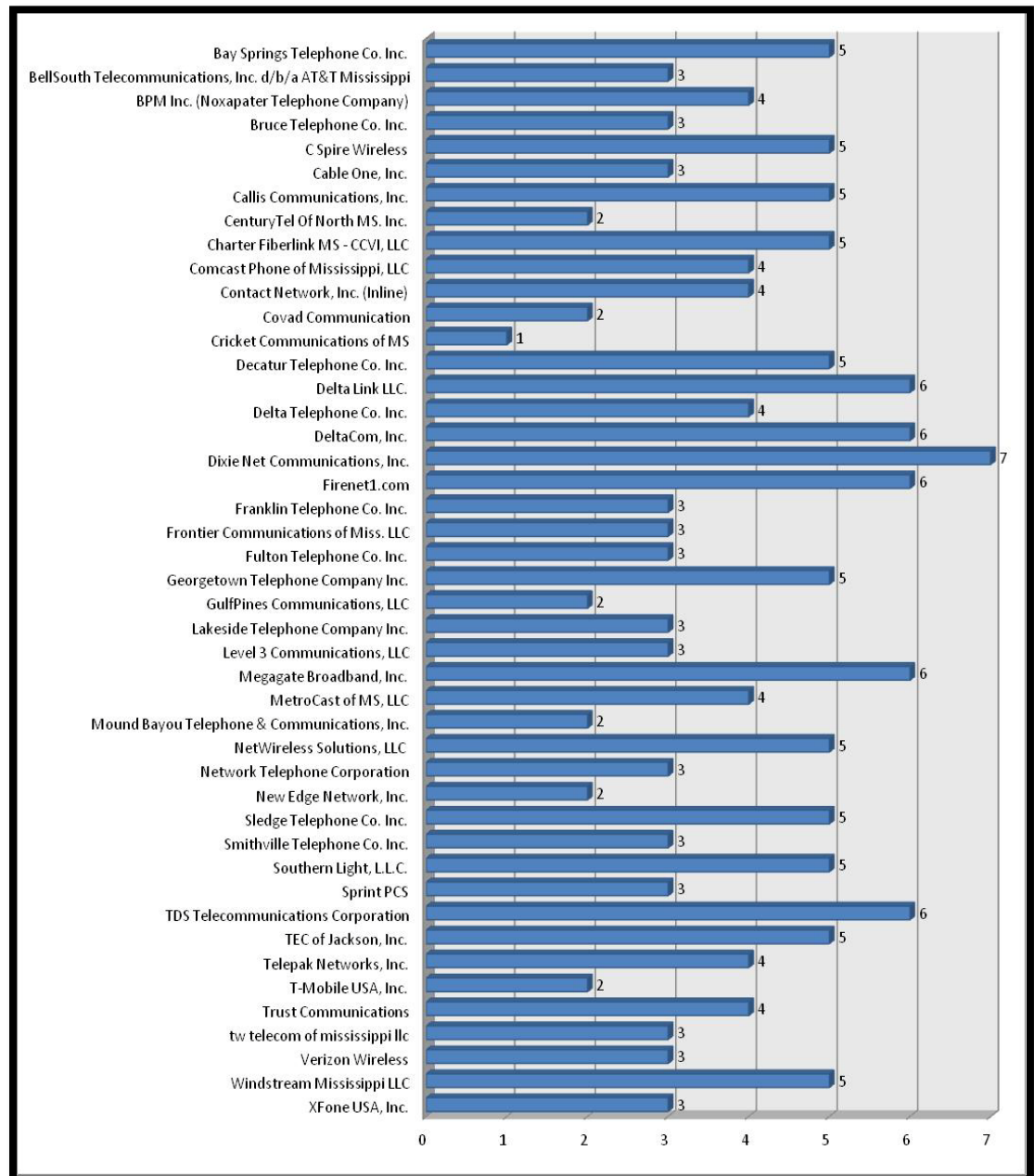
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BDIA Delivery 0412		Edit
Status	--None--	Provider Data Reviewed <input type="checkbox"/>
Outreach Date		Provider Data Reviewed Date
Initial Response		FootPrint
Meeting Date		MiddleMile
No Update Date		Subscriber
Waiting For Data Date		Provider Login <input type="checkbox"/>
Data Received Date		Provider Login Date
Data Accepted Date		
Source Ingested		Source Ingested Date
<b>Additional Data</b>		
Notes		
Next Steps		
Inactive	<input type="checkbox"/>	Owner briordan
Created By briordan 2011-06-13 12:06:35		Last Modified By krousseau 2012-03-16 13:41:58



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- In order to encourage participation throughout the life of the program, we feel it's important to foster relationships with the providers and encourage a collaborative team effort between all parties for each data submission. The chart below represents that interaction count with each provider.



- Update provider material that describes the data requirements and logistics for data transfer.
- Update Non-Disclosure Agreement (NDA) for use in the project, where applicable.
- Maintain multiple protocols for the provider to submit data, including Secure File Transfer Protocol (SFTP) technology when desired.
- Conduct one-on-one informational discussions with each provider to communicate the following:



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- Requirements of this project;
- Broadband data required to support the product data model;
- Submission protocols available;
- Capability to validate how the supplied data is aggregated.
- Download/receive provider data.
- Establish a repeatable process with provider. Maintain provider communication, transaction and data handling records throughout the project (dates contacted, data received, etc.).

### **COMMUNITY ANCHOR INSTITUTION (CAI)**

The collection of CAI information is handled through the following CAI Collection Process:

- Collect and maintain inventory of CAIs through currently known CAIs, data mining, and research.
- Maintain web-based CAI portal for institutions to add or confirm attribution, location and enter broadband-specific information.
- Upload web-based data to Core Database for standardization.
- Perform internal cleansing, such as removing duplicate records, identifying gaps in broadband attribution and verifying category.
- Geocode CAI locations.
- Translate Core Database data to deliverable-ready format.
- Continue engagement with non-responsive institutions.

### **DATA INTEGRATION PROCESS**

The data integration and processing mechanisms currently used allows for multiple types of inputs and result in a standardized output that meets the NTIA deliverable requirements. This flexible process supports data model changes and project-requested enhancements.

- Receive inputs from providers via submission protocols; upload into Sourcing Database and catalog with provider information.
- Review provider-supplied data for completeness and for potential discrepancies that require resolution prior to processing and flag as necessary.
- Categorize input into data-type category (addresses, block lists, paper maps, etc.).
- Standardize input based on data type within Staging Database.
- Create Compact Polygons (CP)—(internal methodology for generating area-based feature for coverage in Staging Database).
- Apply broadband attribution to CP; apply metadata to CP.
- Perform quality analysis of the CP against the source supplied to identify any completeness or accuracy issues.
- Request additional information from the provider if elements of coverage are missing or contain discrepancies. This is a second manual quality check to ensure data is complete.
  - Process coverage area to build the required NTIA data model layers.

With the deployment of the Provider Portal this round, the data collection and later validation process was streamlined allowing both activities to occur within a secure web application. The majority of the providers used this methodology as it supplies them with more visibility into how their data is being represented and gives them knowledge and ownership of their coverage representation. Below are some bullet points and supporting screen shots on how the portal is used.



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- Each provider is assigned credentials with a strong password to ensure security measures are taken into consideration

Login

Username

Password

Login

- Collection and confirmation our contact, as well as the company's DBA Name and FRN accuracy

Contact and Provider Information

Please enter contact information and change provider information if incorrect:

Contact name: \* Kristin Rousseau

Contact E-mail: \* kris.rousseau@broadmap.com

Contact Phone: \* 603-448-4475

Doing Business As (DBA) Name: \* acmetech

FCC Registration Number (FRN): \* 22222222

Please note the following:

- Contact info will only be stored when a record is saved
- Provider info will be applied to all service areas

- Capability to review and request changes to the coverage footprint

Broadband Provider Portal

Service Area Legend

- Service Area
- Selected Service Area
- Provider Added Area
- Provider Removed Area
- Provider Replaced Area

50 km  
30 mi

26 97

Lake McGinnis

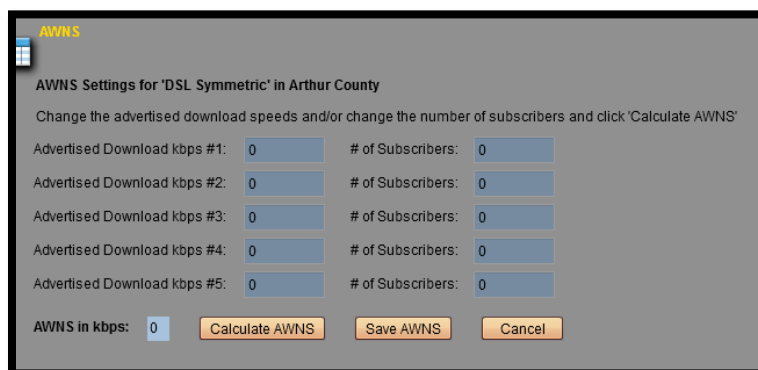
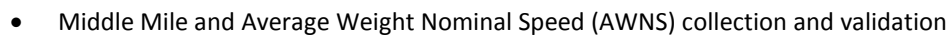
Circle Rd

Log Out  
Web Application Support  
Provider Support

Select All Zoom to Selected Clear Selection Valid Add Remove Replace Delete Save Edits

Print	Service Area	Transmission Technology	Spectrum	Max Adv Download Speed	Max Adv Upload Speed	Typical Download Speed	Typical Upload Speed	Ph
	Arthur	DSL Asymmetric	not applicable	>= 3 mbps and < 6 mbps	>= 1.5 mbps and < 3 mbps	>= 3 mbps and < 6 mbps	> 200 kbps and < 768 kbps	Broad

- The provider can Add/Remove portions, or all, of the footprint requesting that their footprint be increased or refined.



- File upload functionality to support providers that would prefer a shapefile, spreadsheet, PDF, KMZ/KML file be used to reflect changes for the data round





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- Once the provider has review completed changes to their coverage, middle mile and AWNS, then can validate them all by signing off that everything is accurate.

## **DATA VALIDATION AND VERIFICATION**

Following the creation of the product, process steps within Data Validation and Verification occur. To ensure the data collected and processed is as accurate and comprehensive as possible, provider validation and internal verification activities are employed. After the initial mapping of providers' coverage areas and serviceability claims, additional reviews are performed using the methods described in the subsections below in order of action (**Broadband Provider Validation, Third-Party Data Verification, Public Verification, and Confidence Values**).

### **BROADBAND PROVIDER VALIDATION—PROVIDER PORTAL APPLICATION**

Providers are trained on and requested to use a secure interactive web application to review their current coverage area(s) and supporting broadband attribution and validate their data or submit change requests to update their data. All provider change requests go through the **Data Integration Process** and are reviewed with the provider to complete validation.

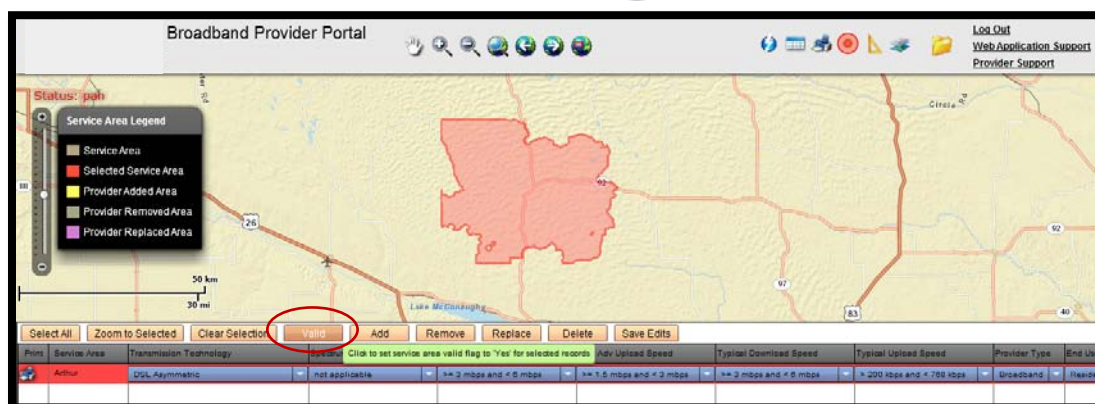
With the latest released of the Provider Portal, validation on the coverage area, middle mile and average could be completed individually. Validation examples are as follows:

- Coverage validation can be done on one record/footprint at a time or by selecting footprints and selecting the 'Valid' button. The provider could also print off or download their coverage for their own tracking purposes.

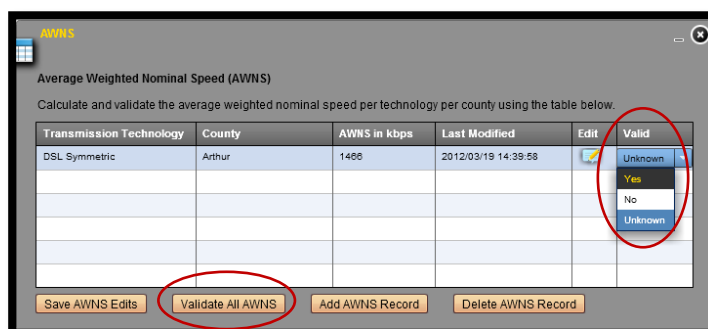
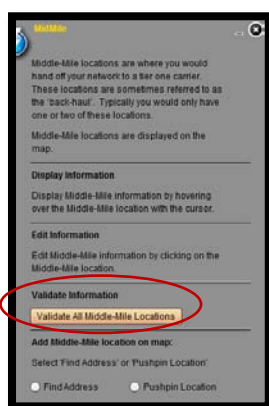




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- Middle Mile & AWNS Validation



All validation results are tracked internally through our Validation Table, which also improves the overall **Confidence Value** as mentioned below.

### THIRD-PARTY DATA VERIFICATION

The coverage is visually and programmatically compared against third-party data as new or updated coverage area information is received and ingested from providers. All anomalies identified during this analysis are reviewed with the providers.

3 <sup>rd</sup> Party Source Name	Source Type	Verification Type
Pitney Bowes (PBBi)	Exchange Info Plus (Central Office Locations)	Exchange datasets are used to verify the following Transmission Technologies (TT): Asymmetric xDSL (10), Symmetric xDSL (20), Other Copper Wireline (30), and Optical Carrier/Fiber to the End User (50).
Media Prints	Cable Boundaries	Used to verify the following TT: Cable Modem—DOCSIS 3.0 (40) and Cable Modem—Other (41)
American Roamer	Wireless Coverage	Used to verify the following TT:



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	Patterns (EVDO, GPRS, WISP, HSPA)	Terrestrial Fixed Wireless—Unlicensed (70), Terrestrial Fixed Wireless—Licensed (71) and Terrestrial Mobile Wireless (80)
Comsearch	Wireless Spectrum Holdings and Tower Data	Used to verify the following TT: Terrestrial Fixed Wireless—Unlicensed (70), Terrestrial Fixed Wireless—Licensed (71) and Terrestrial Mobile Wireless (80)

## **PUBLIC VERIFICATION – CROWD SOURCING**

Since the last data submission, we have improved the public website - interactive map to collect more detailed feedback on the represented broadband coverage areas. This data had been reviewed with providers during the outreach phase and during one-on-one provider meetings.

The State website can be reviewed at the following hyperlink:

<http://msbb.broadmap.com/StateMap/>

## **CONFIDENCE VALUES**

All verification, validation and manual quality review results are tracked by provider/technology type and stored and maintained within a **Validation table**. A confidence value is assigned, based on internal assessments of the collected information, to highlight the provider coverage areas and/or attributions that would benefit from further investigation and/or enhancements.

With the continued efforts on provider validation, 3<sup>rd</sup> party verification and the release of the public interactive map with feedback collection functionality, the confidence values will be utilized further to identify specific areas in need of attention. We're currently at the initial stages of this initiative, but will have a more complete picture in time for the next data submission.

## **QUALITY CONTROL**

Following collection, processing and analysis of the provider and CAI data, the product is checked manually and algorithmically against the NTIA data model. Some of the items included within these checks are:

- Format correctness;
- Table and field structure;
- Valid values, including default values, where applicable;
- Geographic extent and topology errors.

Prior to data submission, another quality control script supplied by NTIA is run. This script, SBDD\_CheckSubmission.py, creates an output in text form that is required to be submitted along with the final deliverable. All errors must come up clean, unless otherwise specified by NTIA.

List of errors within the script, which will be listed as exceptions, can be found on PB Works – Grantee Workspace at the following links:

<https://sbdd-granteeworkspace.pbworks.com/w/page/50162555/December%202011%20Data%20Package%20Issues>  
<https://sbdd-granteeworkspace.pbworks.com/w/file/49939449/December%202011%20Submission.zip>





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## DETAILED PROCESS REVIEW

To review the detailed process, please review the attached object:



BMap\_ProcessDetails  
\_2012\_04\_01.docx

## PROVIDERS RESEARCHED

Below is a list of providers that were researched and contacted, but identified as non-broadband providers and didn't require inclusion within the data submission. Some may be due to different naming conventions or inaccurate FRN/DBA names and were therefore considered a closed source.

1-800-RECONEX, INC. -- TC-123-1525-01
5LINX Enterprises Inc. DBA Globalinx
8x8, Inc.
Access Point Inc.
Access Point, Inc. -- TC-123-1518-00
Accessline Communications Corporation
AccuTel of Texas, Inc. -- TC-123-1851-01
ACN Communication Services, Inc. -- TC-123-1793-00
ACN Digital Phone Service, LLC
Airespring, Inc.
Airespring, Inc. -- TC-123-2068-00
ALEC, Inc.
Alternative Phone, Inc.
Alternative Phone, Inc.
American Fiber Network, Inc. -- TC-123-2213-01
Apptix, Inc.
Aptela, Inc.
AT&T Communications of the South
Baldwin County Internet/DSSI Serv., LLC -- TC-123-2091-01
Bandwidth.com CLEC, LLC -- TC-123-2262-01
BANDWIDTH.COM, INC.
Bay Springs Communications, Inc. -- TC-123-2147-01
BellSouth Long Distance, Inc. -- TC-123-1530-00
Benchmark Communications, L.L.C. -- TC-123-2185-01
Benchmark Communications, LLC d/b/a Com One
Big River Telephone Company, LLC
Big River Telephone Company, LLC -- TC-123-1923-00
Birch Communications, Inc.
Birch Telecom of the South, Inc.
BLC Management LLC
BLC Management LLC -- TC-123-2110-00
Broadstar, LLC
Broadview Networks, Inc. -- TC-123-2263-00

iNetworks Group, Inc. -- TC-123-2297-01
Infinity Networks, Inc. -- TC-123-1984-01
InPhonex.com, LLC
Intellicall Operator Services Inc. -- TC-123-1143-00
Interface Security Systems, LLC
Intrado Communications, Inc.
IP Communications, LLC.
IP Networked Services, Inc.
Kentucky Data Link, Inc. -- TC-123-2123-01
Kosmaz Technologies LLC
Level 3 Communications, LLC -- TC-123-1655-00
LightSquared LP
Lightyear Network Solutions, LLC
M5 Networks, Inc.
Madison River Communications, LLC -- TC-123-1835-01
Matrix Telecom Inc. -- TC-123-1045-00
Matrix Telecom, Inc.
MCC Telephony of the South, LLC
MCImetro Access Transmission Serv., LLC
McLeodUSA Telecomm. Services, Inc. -- TC-123-1452-00
Mediacom Southeast LLC
Megagate Broadband, Inc. -- TC-123-1058-02
Metropolitan Telecommun. of MS, Inc. -- TC-123-2174-00
Metropolitan Telecommunications Holding Company
Micro-Comm, Inc. -- TC-123-2084-01
Midwestern Telecommunications, Inc
Millicorp
Mitel NetSolutions, Inc. -- TC-123-2020-00
Momentum Telecom, Inc
Momentum Telecom, Inc. -- TC-123-1927-01
Navigator Telecommunications LLC
Network Telephone Corporation -- TC-123-1609-00
Network USA, LLC



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Broadvox-CLEC, LLC -- TC-123-2299-00	Neutral Tandem-Mississippi, LLC -- TC-123-2236-00
BroadvoxGo!, LLC	New Edge Network, Inc.
Broadwing Communications, LLC	Nextg Networks of Illinois, Inc.
Broadwing Communications, LLC -- TC-123-2047-00	NextGen Communications, Inc.
Budget Prepay, Inc. -- TC-123-1668-01	Nexus Communication, Inc. dba TSI
Budget PrePay, Inc. d/b/a Budget Phone	Nexus Communications, Inc.
BullsEye Telecom, Inc.	nexVortex, Inc.
Business Telecom Inc. -- TC-123-1152-00	Norlight, Inc. -- TC-123-2247-01
Cable tv of Belzoni Inc.	Norris Telecom, LLC -- TC-123-2056-01
Call Catchers Inc.	NOS Communications Inc. -- TC-123-1316-00
Callis Communications, Inc.	NOS Communications, Inc.
Callis Communications, Inc. -- TC-123-2227-01	Ojo Service LLC
Cause Based Commerce Incorporated	OnWav, Inc
Cellco Partnership	Phone.com, LLC
Cellular South, Inc. -- TC-123-0900-04	PNG Telecommunications, Inc. -- TC-123-1716-00
CenturyTel Acquisition LLC	Proximiti Technologies, Inc.
Centurytel Fiber Company, II, LLC -- TC-123-2155-01	Quality Telephone, Inc.
CenturyTel Solutions, LLC -- TC-123-1748-01	QuantumShift Communications, Inc.
Charter Fiberlink MS - CCVI, LLC	Qwest Communications Company, LLC
Cincinnati Bell Any Distance, Inc. -- TC-123-2094-00	Razorline LLC
Columbia Telecommunications, Inc.	RING CONNECTION, INC.
Comcast Phone of Mississippi, LLC -- TC-123-2196-01	Ring Connection, Inc. -- TC-123-1995-01
CommPartners, LLC	Ripley Video Cable, Inc.
Communication Lines, Inc.	RNK, Inc.
ConnectMe, L.L.C.	Rosebud Telephone, LLC
Contact Network, Inc. -- TC-123-1993-01	Select Connect Communications, LLC -- TC-123-1986-00
Covista, Inc. -- TC-123-1646-00	SinglePipe Communications
Credit Loans, Inc. -- TC-123-1742-01	Smartresort Co, LLC dba Beyond Communications
Crexendo Business Solutions, Inc. -- TC-123-2329-00	Southern Communications Services, Inc., d/b/a Southern LINC
Cypress Communications, Inc.	Southern Light, L.L.C. -- TC-123-2118-00
DAVCO, INC. -- TC-123-1449-01	Southern Telecommunications Co. LLC -- TC-123-1600-01
DeltaCom, Inc. -- TC-123-1076-00	Spectrotel, Inc. -- TC-123-2159-01
Dialog Telecommunications Inc.	Sprint Communications Company L.P.
Dialog Telecommunications, Inc. -- TC-123-2070-01	Stratos Offshore Services Company
Diamond Telephone Services, Inc.	Suddenlink
DIECA Communications, Inc. -- TC-123-1775-01	Suddenlink Communications
Dixie Net Communications, Inc. -- TC-123-1634-01	Talk America Inc.
Dixie-Net Fiber, Inc. -- TC-123-2026-01	TC Systems, Inc.
dPI Teleconnect, L.L.C.	TEC of Jackson, Inc. -- TC-123-0820-00
DSLnet Communications, LLC -- TC-123-1679-01	TecInfo Communications, LLC -- TC-123-2050-01
ECR Voice, LLC	TecInfo, Inc
EnTelegent Solutions, Inc.	TelCove Operations, LLC
Equinox, Inc.	Telepak Networks, Inc. -- TC-123-1741-01
Ernest Communications, Inc.	Telesphere Networks Ltd.
Etan Industries	Tellan Network Technologies, Inc. DBA: VoIPnet Technologies
EveryCall Communications, Inc.	Tennessee Telephone Service, LLC -- TC-123-2125-01
EveryCall Communications, Inc. -- TC-123-2131-01	Tennessee Telephone Service, LLC d/b/a Freedom Communications USA, LLC
Evolve IP, LLC	The Other Phone Company, Inc. -- TC-123-1612-01
Excel Home Phone, Inc.	Thinking Phone Networks, LLC
Express Phone Service, Inc.	Trans National Commun. Internat'l, Inc. -- TC-123-1750-00
Fast Phones, Inc.	Trans National Communications International, Inc.
Fionda VOIP, LLC	tw telecom of mississippi llc -- TC-123-1991-01
Florida Multi-Media Services, Inc	UCN, Inc. -- TC-123-2052-00
Four Star Marketing, LLC -- TC-123-2324-00	Universal Telecom, Inc.
France Telecom Corporate Solutions, LLC	US LEC of Tennessee Inc., d/b/a PAETEC Business Services
Frontier Communications of America, Inc. -- TC-123-1853-01	US LEC of Tennessee Inc. -- TC-123-1720-00
Global Capacity Direct, LLC -- TC-123-2188-01	Velocity Networks Inc



**BROADMAP**<sup>SM</sup>  
Beyond The Boundaries

Global Capacity Group, Inc. -- TC-123-2259-01
Global Connection Inc. of America
GLOBAL CROSSING TELECOMMUNICATIONS, INC.
Go-Tel, LLC
GRANITE TELECOMMUNICATIONS LLC
Granite Telecommunications, LLC -- TC-123-2000-01
GreatCall, Inc.
GulfPines Communications, LLC -- TC-123-1664-01
Hypercube Telecom, LLC -- TC-123-1921-01
iCore Networks, Inc.
IDT America Corporation -- TC-123-1253-00
IDT Corporation
Image Access, Inc. -- TC-123-1638-01
iNETWORKS GROUP, INC

Velocity The Greatest Phone Co. Ever Inc -- TC-123-2312-00
VoIPStreet, Inc.
Vonage Holdings Corp.
Wave2Wave Communications Inc.
WEHCO Video, Inc.
Wholesale Carrier Services, Inc. -- TC-123-1992-00
WiMacTel, Inc.
Windstream NuVox, Inc. -- TC-123-1606-00
WirelessLand Technologies, Inc.
XFone USA, Inc. -- TC-123-2121-01
XO Communications, LLC
YMax Communications Corp. -- TC-123-2203-01
Zayo Enterprise Networks, LLC