

OFFICIAL OCTOBER 2011 UPDATE SUBMISSION TO
THE NATIONAL TELECOMMUNICATIONS AND INFORMATION
ADMINISTRATION UNDER THE
STATE BROADBAND INITIATIVE GRANT PROGRAM FOR THE
STATE OF TENNESSEE



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October 1, 2011

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TENNESSEE COVER LETTER

October 1, 2011

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

Dear Ms. Neville:

As the State Broadband Designated Entity, Connected Tennessee, in partnership with the Department of Finance and Administration's Office of Information Resources and the Department of Economic and Community Development among other agencies, please accept this submission from Connected Tennessee on behalf of the State of Tennessee's State Broadband Initiative (SBI) Grant Program, known as Connected Tennessee.

These artifacts should be found to be compliant with the October 1, 2011, deadline for the semi-annual data update and in accordance with the terms of the July 1, 2009, Notice of Funds Availability (NOFA) and all subsequent clarifications pertaining to delivery of state-level mapping of broadband service availability. This packet includes:

Inventory of Deliverables, Connected Tennessee: October 1, 2011

<u>NOFA Requirement</u>	<u>Data Transfer Model</u>	<u>Data Description</u>
Appendix A: 1(a)(i)	BB_Service_CensusBlock	Broadband Service Availability of Facilities-Based Providers in Census Blocks of No Greater Than Two Square Miles in Area
Appendix A: 1(a)(ii)	BB_Service_RoadSegment	Broadband Service Availability of Facilities-Based Providers by Road Segment in Census Blocks Larger in Area Than Two Square Miles
Appendix A: 1(b)	BB_Service_Wireless	Broadband Service Availability of Wireless Services Not Provided to a Specific Address
Appendix A: 3(b)	BB_ConnectionPoint_MiddleMile	Broadband Service Infrastructure Middle-Mile and Backbone Interconnection Points

Appendix A: 4	BB_Service_CAInstitutions	Community Anchor Institutions-Listing
Appendix A: 4	n/a	Community Anchor Institutions-Narratives
VII.A.1(a) n/a	n/a DataPackage.xlsx	Accuracy and Verification Report Worksheets of Contact Information, Record Count, and Provider Summary Table
n/a	n/a	List of Changes and Corrections to the Dataset
n/a	n/a	Non-Participating Provider Narratives
n/a	n/a	Broadband Provider Roster and Participation Status

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

SBI Data Transfer Model

The submission of the broadband dataset for October 1, 2011, is contained within the SBI Data Transfer Model as released on the Grantee Workspace on June 30, 2011. All efforts have been made to comply with formatting, domain, and metadata requirements to include as much information on each provider as possible.

Additional Submission Guidance

This submission also includes a list of changes and corrections made to the dataset between the April 2011 submission and the October 2011 submission. This represents a summary of why data displays and/or supplied speeds, etc. are different from the previous submission. Changes can include upgrades to infrastructure to allow for higher throughput speeds for customers, an expansion of the service area (e.g. additional fixed wireless towers, recently activated DSLAMs, etc.), or a new provider in the marketplace. Corrections can include revisions to speed tier information that was previously reported incorrectly or the addition of a previously existing provider that has not yet been submitted in a semi-annual dataset.

This October 2011 semi-annual data update under the State Broadband Initiative Grant Program continues to demonstrate our dedication to implementing the joint purposes of the Recovery Act and the Broadband Data Improvement Act (BDIA) by gathering comprehensive and accurate state-level broadband mapping data, developing state-level broadband maps, aiding in the development and maintenance of the National Broadband Map, and undertaking statewide initiatives for broadband planning.

Broadband Service Availability — Provider Outreach and Verification

This data update submission under the SBI program includes datasets for 90 percent of the Tennessee provider community, or 81 of 90 total providers. Of the 81 participating providers, 30 supplied an update to their network or coverage area(s), while 47 have reported no change. The remaining 4 represent providers who previously supplied data but were non-responsive in the October 2011 update effort; therefore, their previous dataset is being put forward as part of this compilation. A complete roster by provider depicting participation status and contact record is contained herein. Of the 9 providers that are not represented in the attached datasets, 5 have refused to participate in the voluntary program or were non-responsive to multiple contact attempts, and 4 providers are currently in some form of progress toward data submission but were not able to submit coverage areas at the time of this submission.

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

Connected Tennessee has also continued to perform broadband verification activities through several means. In addition to confirmation of service area(s) by each provider, Connected Tennessee conducts field validation efforts. To date, 42 (46.67 percent) providers have been validated through field verification activities. Additional details on verification activities are contained within the Field Validation Methodology.

The Connected Tennessee website, www.connectedtennessee.org, continues to serve a prominent role in the outreach and data collection effort. This program asset provides a way for the general public to participate in the process by offering interactive tools for users to test their connection speed, submit broadband inquiries, or contact a program representative.

As an indicator of stakeholder penetration, the Connected Tennessee website encountered 6,774 unique visits during this reporting period (33,845 total to date for the life of the grant awarded on December 20, 2009). Additionally, this pronounced Web activity netted 74 broadband inquiries over this same reporting period (1,331 grant inception to date). The website also provides the BroadbandStat application, which allows the consumer to confirm or dispute the coverage represented on the broadband inventory map. These consumer-initiated actions are facilitated through the Connected Tennessee website and the Connected Tennessee interactive mapping tool (BroadbandStat) that offer the citizens the vehicles to provide information regarding availability in their respective service area, either in affirmation or contest of the reported data represented in the Connected Tennessee mapping artifacts. Since the initial data collection and release of corresponding maps, feedback in the form of broadband inquiries has allowed Connected Nation to identify additional areas that are in need of field validation, which is scheduled as soon as possible.

Community Anchor Institutions

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

Outreach was conducted during this data update reporting period by Connected Tennessee to continue identification of existing, centralized sources for CAI connectivity data. Additionally, a CAI survey continues to be made available for all institutions on the Connected Tennessee website. During this reporting period Connected Tennessee has continued developing relationships with statewide associations to promote the importance of broadband connectivity at anchor institutions and participation in this data collection process. Connected Tennessee will continue to build upon these new relationships over the coming months and utilize its contacts throughout the state to collect data and raise awareness of this project.

During this reporting period a Connected Tennessee CAI newsletter has been drafted to assist with outreach and highlight the Stewart County Library which serves as a broadband cornerstone for its community. From our work in Tennessee, as well as other states, we recognize the great value of this data to future collaboration efforts within the state as well as its value to the National Broadband Map. We plan to continue to bring best practices to the Connected Tennessee efforts, along with an investment of both human and technical resources required to reach our goal of increasing the data that is secured and reported as part of this process.

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

Respectfully submitted,



Michael L. Ramage
Executive Director
Connected Tennessee



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

DATA ACQUISITION: TENNESSEE COMMUNITY ANCHOR INSTITUTIONS METHODOLOGY

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

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

Connected Tennessee continues to utilize a customized online survey with a landing page on the Connected Tennessee website that was developed during the first reporting period. This survey, in combination with a customized data-gathering spreadsheet, was distributed to a targeted list of CAI throughout the state. Connected Tennessee will continue to use these data-gathering tools for future targeted outreach efforts throughout the coming months leading up to the next reporting period. These materials are customized to fit the CAI categories as defined in the SBI NOFA.

The survey can be accessed at this link:

http://www.connectedtennessee.org/broadband_landscape/community_anchor_institution_survey.php

During this reporting period Connected Tennessee conducted research to identify existing, centralized sources for CAI connectivity data. In tandem with these efforts to identify existing data, Connected Tennessee continues to identify key CAI contacts in an effort to distribute and promote the online survey and raise awareness of the importance of CAI broadband connectivity.

Connected Tennessee has an ongoing mission to educate CAI throughout the state on the importance of participating in the project. Participation by these institutions will raise awareness about the importance of broadband connectivity and the need to report the requested data for inclusion on the National Broadband Map. During this reporting period Connected Tennessee developed and distributed a CAI newsletter to CAI contacts throughout the state. This newsletter highlights the Stewart County Tennessee Library and encourages institutions to share their data by participating in the CAI online survey. This newsletter will continue to be utilized for outreach, will be made available on the CAI page of the Connected Tennessee website, and it will be updated over the next reporting period.

The greatest challenge with collecting this data continues to be the difficulty in securing CAI broadband connectivity data. Connected Tennessee is overcoming this challenge through new relationships that are being formed, coordination with existing broadband projects within the state, and the release of a CAI newsletter. A specific focus during this reporting period was identifying

broadband speeds for K-12 schools across Tennessee. Speeds at more than 700 schools were identified, which are reflected in the summary table below.

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

CAI Type	Total	Physical Address	Lat/Long	Technology of Transmission	Download Speed	Upload Speed
K-12	2,442	2,442	2,442	1,168	1,168	1,165
Libraries	258	258	258	230	230	230
Healthcare	825	825	825	115	114	114
Public Safety	742	742	742	260	105	105
Higher Ed Institutions	316	316	316	158	161	105
Other Government	1,262	1,262	1,262	1,180	1,141	1,140
Other Non-Government	163	163	163	72	68	68
Total	6,008	6,008	6,008	3,183	2,987	2,927

SBI DATA SUBMISSION METHODOLOGY

The submission of the broadband dataset for October 1, 2011, is contained within the SBI Data Transfer Model and additional components as released on the Grantee Workspace on June 30, 2011. Connected Nation has reviewed all literature that relates to the release and use of this data transfer model and recognizes that it does not replace or dictate how data is stored, processed, or displayed for the state, as it is meant primarily as a means to transfer the broadband data from all states and territories and populate the National Broadband Map in a seamless fashion. Guidance from the Technical Mapping Guide, as released on the Grantee Workspace on March 24, 2011, was also followed to ensure the completeness and validity of the submission through completion steps and checklists, completing the DataPackage spreadsheet, uploading broadband datasets into the Data Transfer Model, and checking the dataset using the SBDD_CheckSubmission receipt process.

As part of the ongoing review and analysis process, NTIA has requested further information in the submission of the DataPackage spreadsheet. In addition to the information on providers whose coverage and accompanying attributes is submitted in the SBI Data Transfer Model, information on other providers that are considered to be non-viable is also included in the DataPackage. Providers deemed non-viable that have been excluded from continued outreach may have been eliminated for reasons such as (i) the company offers Internet service but at speeds below the current definition of broadband; (ii) the company was listed in advertisements as a broadband provider, but is actually a network solution or consulting firm, etc.; (iii) the company may build or install network infrastructure, but does not actually provide the broadband service to consumers; and (iv) the company has gone out of business. The submitted DataPackage includes any relevant information that has been obtained through the course of due diligence and/or direct provider outreach, such as

a Federal Registration Number (if applicable), the company’s URL, the existence of an executed Nondisclosure Agreement, and brief notations regarding the status of the company.

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

Inventory of Deliverables, Connected Tennessee: October 1, 2011

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Appendix A: 4	BB_Service_CAIstitutions	Community Anchor Institutions-Listing.

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

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

PROVIDER CHANGES AND CORRECTIONS FOR OCTOBER 2011

As requested by the SBI Program Office, a listing of the changes and/or corrections to the datasets between the April 2011 and October 2011 submissions is included in this narrative. This information is presented in this section as well as in the Broadband Provider Log. Changes to the data include expansion of service area(s), activation of new wireless towers, and upgrades to the network to provide higher download speeds to consumers. Corrections to the dataset include the addition of previously existing providers whose coverage has never been submitted, revision of coverage or speed information that was incorrect, and any other items that were misrepresented in the April 2011 dataset.

Changes

- Comcast Cable Communications, LLC (cable): Speed and technology of transmission information was updated using the previous spatial coverage converted to 2010 Census data. Additional, more current spatial information could not be provided, verified, and approved in the necessary time frame.
- ECSIS.NET (fixed wireless): Provider added three new fixed wireless towers into service.
- ETC Communications, LLC (cable): Speed tier upgrades from download 7 to 9 and upload 3 to 5; technology also upgraded to DOCSIS 3.0.
- Frontier Communications Corporation (DSL): Three DSLAMs added to previous coverage areas.
- Jackson Energy Authority (fiber): Provider upgraded from download speed tier 9 to tier 10.
- Ken-Tenn Wireless, L.L.C. (fixed wireless): Provider added four new fixed wireless towers into service.
- Millington CATV, Inc. (DSL): Provider expanded service into additional areas.
- Monster Broadband (fixed wireless): Provider added four new fixed wireless towers into service.
- Morristown Utilities Commission (fiber): Provider expanded service into additional area.

Corrections

- DISH Network Corporation (satellite): Satellite data is being submitted and was not included in the April 2011 submission. While coverage is currently the entire state boundary, work continues on having more granular data available.
- Electric Power Board for the City of Chattanooga (fiber): Speed fields revised from tier 10 to tier 11 to reflect 1 Gbps symmetrical service available.
- Hughes Network Systems (satellite): Satellite data is being submitted and was not included in the April 2011 submission. While coverage is currently the entire state boundary, work continues on having more granular data available.

- Knology of Tennessee, Inc. (cable): First time coverage has been submitted for this provider, which previously offered broadband service in the state.
- OnWav, Inc. (fixed wireless): Previously submitted coverage was a generalized polygon of service; it has been replaced with modeled propagation.
- TDS Telecommunications Corporation (fiber): Provider expanded service into additional areas.
- TEC of Jackson, Inc. (d.b.a. People's Telephone and West Tennessee Telephone) (DSL): Provider corrected coverage based on where its franchise boundaries are located.
- United Telephone Company, Inc. (fiber): First time coverage has been submitted for this provider, which previously offered fiber broadband service in the state.
- TELE-PAGE Inc. (fixed wireless): Previously submitted coverage was a generalized polygon of service; it has been replaced with modeled propagation.
- WildBlue Communications, Inc. (satellite): Satellite data is being submitted and was not included in the April 2011 submission. While coverage is currently the entire state boundary, work continues on having more granular data available.

Changes and/or Corrections – Entirely New Dataset Submitted

- AT&T Inc. (DSL and mobile wireless)
- Cable ONE Inc. (cable): Also, download speeds upgraded to speed tier 9.
- CenturyLink (DSL)
- Charter Communications Inc. (cable)
- Clearwire Corporation (mobile wireless)
- Leap Wireless International, Inc. (mobile wireless)
- Millington CATV, Inc. (cable)
- Sprint Nextel Corporation (mobile wireless)
- T-Mobile USA, Inc. (mobile wireless)
- TDS Telecommunications Corporation (DSL)
- TEC of Jackson, Inc. (d.b.a. Crockett Telephone) (DSL)
- United States Cellular Corporation (mobile wireless)
- Verizon Communications, Inc. (mobile wireless)

TENNESSEE FIELD VALIDATION METHODOLOGY

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

- conducting random spectrum analysis studies throughout the state using an Avcom PSA-37-XP spectrum analyzer;

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

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

To date, Connected Nation's staff conducted on-site validation tests in Tennessee on the following providers: Ardmore Telephone Company, Inc.; AT&T, Inc.; Aurora Cable TV; Beasley Wireless; Ben Lombard Rural Telephone Cooperative, Inc.; Big River; Cable ONE, Inc.; Cellular South, Inc.; Charter Communications; Clarksville Department of Electricity (d.b.a. CDE Lightband); Clearwire Corporation; Columbia Power & Water Systems; Comcast; CRU Enterprises; DotSpot Wireless; ECSIS.NET; Frontier Communications Corporation; High Country Online; Infostructure Cable; Jackson Energy Authority; Ken-Tenn Wireless LLC; Leap Wireless International (d.b.a. Cricket Communications, Inc.); Mediacom Southwest LLC (d.b.a. Mediacom Communications Corporation; Rapid Communications LLC and Mediacom); Millington Telephone Company; NetEase; NewWave Communications; OrbWireless.net; Planet Connect Internet; QuickRelay Wireless Communications; Rural Tennessee Wireless Broadband; Sprint Nextel Corporation; SurfMore; TDS Telecom; TEC of Jackson, Inc.; T-Mobile USA, Inc.; Trenton TV Cable Company; U.S. Cellular; UltraNet; United Telephone Company; Verizon Communications, Inc.; West Kentucky Rural Telephone; and Xpansion Networks.

From program initiation through this reporting period, Connected Nation has completed in-the-field validation testing against 42 companies (out of a universe of 90 viable providers) totaling 46.67 percent within the State of Tennessee.

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

CenturyLink

Issue: DSL platform with a maximum advertised download speed in tier 9.

Resolution: Provider representative indicated that tier 9 DSL service is indeed available, but to less than 10% of its customers, which is why it is not widely advertised.

ECSIS.NET

Issue: Fixed wireless platform with maximum advertised download speed in tier 7.

Resolution: Provider website advertises service at 10 Mbps; screenshot available below.

Wireless access speeds start at 512x256k through 10MB

OnWav, Inc.

Issue: Fixed wireless platform with maximum advertised download speed in tier 7.

Resolution: Provider representative confirmed that 10 Mbps download and upload speeds are available to residential customers, but it is not readily advertised.

ACCURACY AND VERIFICATION: PROVIDER VALIDATION METHODOLOGY

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

the review process has been completed and final approval of the data is provided, the data is deemed ready for NTIA submission.

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

Estimates derived from provider-validated data indicate that approximately 5.05 percent of Tennessee households do not have terrestrial fixed broadband service available, and approximately 0.38 percent¹ of Tennessee households have neither mobile nor fixed broadband service available.²

Within rural areas of the state, results derived from provider-validated data indicate that approximately 9.49 percent of rural Tennessee households do not have terrestrial fixed broadband service available, and approximately 0.75 percent³ of rural Tennessee households have neither mobile nor fixed broadband service available.⁴ Please note that the availability estimates presented are based on Census 2000 household information; these figures will be updated in the near future with Census 2010 household information.

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

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

³ See footnote 1.

⁴ See footnote 2.

WIRELESS METHODOLOGY

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

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

1. The name of the structure
2. Whether the transmitting device is operational or proposed
3. The maximum advertised downstream speed, the maximum advertised upstream speed
4. The typical downstream speed, the typical upstream speed (peak periods for both)
5. The frequency range of spectrum being used (as prescribed by NTIA)
6. The primary population center(s) being served (for geopolitical boundary reference)
7. The physical address of the transmit site (in the event latitude/longitude is unavailable from the provider this allows a quick reference point for geocoding)
8. Latitude in either Degrees, Minutes and Seconds and/or in Decimal Degrees (typically received as NAD 27 or NAD 83)
9. Longitude in either Degrees, Minutes and Seconds and/or in Decimal Degrees (typically received as NAD 27 or NAD 83)
10. Antenna pattern (e.g. omni-directional, 180°, 120°, 90°, etc.)
11. Azimuth of antenna (e.g. 360° with magnetic declination if known)
12. Approximate transmit radius (in feet, miles, or kilometers)
13. Polarity of transmit antenna (Vertical or Horizontal)
14. Transmit antenna gain (in dBi)
15. Line loss (applicable only to providers using coax, heliax, waveguide or other forms of cabling – excludes power-over-Ethernet devices)
16. Mechanical and/or Electrical beam tilt (if applicable)
17. Equipment Manufacturer (allows easy cross-reference against manufacturer's specification sheet)
18. Power output of the transmitting device (if unknown, FCC standards or manufacturer specifications are applied)
19. AMSL at base of tower site
20. Antenna centerline AGL (height of antenna above ground level measured at the centerline of the actual antenna)
21. Foliage factors (Evergreens/Deciduous and percent of ground cover)
22. Ground Clutter (primarily used in rural areas to account for foliage and in metropolitan areas to account for types and heights of buildings if known)
23. Average gain of receive antenna

24. Receive antenna is estimated at height above average terrain (HAAT) of 6.2 meters/20 feet
25. Federal Registration Numbers (if applicable) which may allow opportunities to cross-reference and/or obtain additional data from the Federal Communications Commission Universal Licensing System and the **CO**mmission **RE**gistration **S**ystem

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

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

BROADBAND INQUIRIES METHODOLOGY

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

have broadband but want a different provider; and 3) residents who do not have broadband, but the broadband inventory maps indicate that they do.

BBIs are submitted frequently by consumers via the Connected Tennessee website. Inquiries often seek help to identify local broadband provider options, or to learn when a specific provider may be able to provide service to that consumer. Consumer comments also provide information which may help modify maps with actual service area information. The primary objectives of Connected Nation regarding these inquiries are 1) to improve the accuracy of the state maps with submitted consumer information and follow-up field research; 2) to provide broadband options to consumers through cooperation with mapped providers and by facilitating new broadband service options; and 3) to map and analyze information from consumers about areas of unmet broadband demand and alternatives to currently mapped services.

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

The broadband inquiry process has been implemented in each of the Connected Nation state programs with successful results. Altogether Connected Nation has received over 17,000 broadband inquiries since 2007, allowing the state programs to evaluate each inquiry for broadband demand and data verification. These inquiries are continuously examined against current broadband availability, updated every six months, to determine if previously unserved households have been expanded to and can now receive broadband at their residence. This database of broadband inquiries has also allowed the Connected Nation state programs to aggregate demand in concentrated areas to show providers the exact locations where the population has made it clear that they would purchase broadband if it was made available to them. Providers in the states have responded to this process and have expanded to areas knowing that their investment will be worthwhile. Data verification methods have also proven successful, as the state programs have been able to show those inquiries that indicate the broadband service areas are misrepresented on the map to providers, who then verify where service cannot reach in regard to that residence(s). The broadband coverage in these states has been altered to create a more accurate map based on the inquiries submitted by the public.

During this reporting period, the Connected Tennessee project has received a total of 74 inquiries (1,331 grant inception to date). As more inquiries are submitted to Connected Tennessee, a more thorough validation of the broadband landscape can be performed, while also allowing providers to see which areas have a high demand for broadband adoption.

BROADBANDSTAT METHODOLOGY

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

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

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

The Connected Tennessee project launched BroadbandStat on February 10, 2010, and has received a total of 6,623 visits to date, of which 894 occurred this reporting period.

SPEED TEST METHODOLOGY

The 2,514 speed tests that are represented in the Connected Tennessee Speed Test Report during this reporting period (9,620 grant inception to date) are the result of a partnership between Connected Nation and Ookla Net Metrics. Utilizing this relationship increases the level of confidence in the data being collected and provides for a far greater sample size than could be collected by a single testing site.

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

In an effort to validate broadband data from the Connected Tennessee project, speed test information is collected throughout the state. Speed tests provide speed information on the path taken through all networks (a provider's network as well as additional networks) a local machine must connect to in order to reach the host test. The benefit of this collection of speed information is two-tiered. First, it allows for a comprehensive dataset of speeds, while also providing Connected Tennessee with the information on where broadband services are available. Second, unlike theoretical speed information which was received through the data collection process, the use of speed tests provide real-world information on the speeds that currently exist within the State of Tennessee.



Broadband Provider Log

Complete	96
Non-Responsive/Refused	6
In Progress	10
Count of Datasets by Status	112
Total Unique Providers Represented	90

Provider Name	Platform	Status	NDA Execution Date	Notes
AT&T Inc.	DSL	Data Added to Statewide Inventory	12/16/2009	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
AT&T Inc.	Mobile Wireless	Data Added to Statewide Inventory	12/16/2009	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
Cable ONE Inc.	Cable	Data Added to Statewide Inventory	12/7/2009	[AUG-25-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission. Download speeds upgraded to speed tier 9.
CenturyLink	DSL	Data Added to Statewide Inventory	12/4/2009	[AUG-25-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
Charter Communications, Inc.	Cable	Data Added to Statewide Inventory	12/15/2009	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
Clearwire Corporation	Mobile Wireless	Data Added to Statewide Inventory	3/3/2010	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
Comcast Cable Communications, LLC	Cable	Data Added to Statewide Inventory	12/7/2009	[SEP-14-11 Ashley Littell] Changes and/or Corrections: speed and technology of transmission information was updated using the previous spatial coverage converted to 2010 Census data. Additional, more current spatial information could not be provided, verified, and approved in the necessary time frame.
ECSIS.NET	Fixed Wireless	Data Added to Statewide Inventory	10/29/2009	[SEP-08-11 Ashley Littell] Change: provider added three new fixed wireless towers into service.
Electric Power Board for the City of Chattanooga	Fiber	Data Added to Statewide Inventory		[AUG-25-11 Ashley Littell] Correction: Speed fields revised from tier 10 to tier 11 to reflect 1 Gbps symmetrical service is available.
ETC Communications, LLC	Cable	Data Added to Statewide Inventory	10/14/2009	[AUG-25-11 Ashley Littell] Change: Speed tier upgrades from download 7 to 9 and upload 3 to 5; technology also upgraded to DOCSIS 3.0.
Frontier Communications Corporation	DSL	Data Added to Statewide Inventory	1/22/2010	[SEP-08-11 Ashley Littell] Change: Three DSLAMs added to previous coverage areas.
Jackson Energy Authority	Fiber	Data Added to Statewide Inventory	3/17/2010	[SEP-08-11 Ashley Littell] Change: Provider upgraded from download speed tier 9 to tier 10.
Ken-Tenn Wireless, L.L.C.	Fixed Wireless	Data Added to Statewide Inventory	1/25/2010	[SEP-08-11 Ashley Littell] Change: provider added four new fixed wireless towers into service.
Knology of Tennessee, Inc.	Cable	Data Added to Statewide Inventory	7/13/2011	[SEP-08-11 Ashley Littell] Correction: First time coverage has been submitted for this provider, which previously offered broadband service in the state.
Leap Wireless International, Inc.	Mobile Wireless	Data Added to Statewide Inventory	4/6/2010	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
Millington CATV, Inc.	Cable	Data Added to Statewide Inventory	10/19/2009	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
Millington CATV, Inc.	DSL	Data Added to Statewide Inventory	10/19/2009	[SEP-08-11 Ashley Littell] Change: provider expanded service into additional areas.
Monster Broadband, Inc.	Fixed Wireless	Data Added to Statewide Inventory	11/6/2009	[SEP-08-11 Ashley Littell] Change: provider added four new fixed wireless towers into service.
Morristown Utilities Commission	Fiber	Data Added to Statewide Inventory	3/25/2010	[SEP-08-11 Ashley Littell] Change: provider expanded service into additional area.

OnWav, Inc.	Fixed Wireless	Data Added to Statewide Inventory	3/15/2010	[SEP-08-11 Ashley Littell] Correction: previously submitted coverage was a generalized polygon of service; it has been replaced with modeled propagation.
Sprint Nextel Corporation	Mobile Wireless	Data Added to Statewide Inventory	1/14/2010	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
T-Mobile USA, Inc.	Mobile Wireless	Data Added to Statewide Inventory	1/8/2010	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
TDS Telecommunications Corporation	DSL	Data Added to Statewide Inventory	1/27/2010	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
TDS Telecommunications Corporation	Fiber	Data Added to Statewide Inventory	1/27/2010	[SEP-08-11 Ashley Littell] Change: provider expanded service into additional areas.
TEC of Jackson, Inc.	DSL	Data Added to Statewide Inventory	7/29/2010	[SEP-08-11 Ashley Littell] Correction: provider corrected coverage based on where their franchise boundaries are located.
TEC of Jackson, Inc.	DSL	Data Added to Statewide Inventory	7/29/2010	[SEP-08-11 Ashley Littell] Correction: provider corrected service area based on where franchise boundaries are located.
TEC of Jackson, Inc.	DSL	Data Added to Statewide Inventory	7/29/2010	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
United States Cellular Corporation	Mobile Wireless	Data Added to Statewide Inventory	2/15/2011	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
United Telephone Company, Inc.	Fiber	Data Added to Statewide Inventory	2/25/2010	[SEP-08-11 Ashley Littell] Correction: First time coverage has been submitted for this provider, which previously offered fiber broadband service in the state.
Verizon Communications, Inc.	Mobile Wireless	Data Added to Statewide Inventory	12/14/2009	[SEP-08-11 Ashley Littell] Changes and/or Corrections: possible service expansion or corrections to previous dataset; entirely new dataset provided for October 2011 submission.
DeltaCom, Inc.	Backhaul	Backhaul Provider Only Processing Complete	2/16/2010	
Level 3 Communications, LLC	Backhaul	Backhaul Provider Only Processing Complete	12/14/2009	
Sprint Nextel Corporation	Backhaul	Backhaul Provider Only Processing Complete	1/14/2010	
T-Mobile USA, Inc.	Backhaul	Backhaul Provider Only Processing Complete	1/8/2010	
Windstream Communications	Backhaul	Backhaul Provider Only Processing Complete		
Zayo Group, LLC	Backhaul	Backhaul Provider Only Processing Complete		
TELE-PAGE Inc.	Fixed Wireless	Approval for Update Not Received – Data Still Submitted	1/26/2010	[SEP-12-11 Ashley Littell] Correction: previously submitted coverage was a generalized polygon of service; it has been replaced with modeled propagation.
Access Cable Television, Inc.	Cable	No Update to Provide		
Ardmore Telephone Company Inc.	DSL	No Update to Provide	2/16/2010	
AT&T Inc.	Backhaul	No Update to Provide	12/16/2009	
Beasley Wireless	Fixed Wireless	No Update to Provide	1/19/2010	
Ben Lomand Rural Telephone Coop., Inc.	DSL	No Update to Provide	10/21/2009	
Ben Lomand Rural Telephone Coop., Inc.	Fiber	No Update to Provide	10/21/2009	
Bledsoe Telephone Cooperative Inc.	DSL	No Update to Provide	1/20/2010	
BreezeAir.net	Fixed Wireless	No Update to Provide	8/17/2010	
Bristol Tennessee Essential Services	Fiber	No Update to Provide	9/1/2010	
Celina Cable Communications, Inc.	Cable	No Update to Provide	1/15/2010	
Cellular South, Inc.	Mobile Wireless	No Update to Provide	4/12/2010	
CenturyLink	Backhaul	No Update to Provide	12/4/2009	
Clarksville Department of Electricity	Fiber	No Update to Provide		
Columbia Power & Water Systems	Cable	No Update to Provide		
CRU Enterprises, Inc.	Fixed Wireless	No Update to Provide	2/4/2010	
DeKalb Telephone Cooperative, Inc.	DSL	No Update to Provide	2/24/2010	
DISH Network Corporation	Satellite	No Update to Provide	1/27/2010	[SEP-16-11 Ashley Littell] Correction: Satellite data is being submitted and was not included in the April 2011 submission. While coverage is currently the entire state boundary, work continues on having more granular data available.
Fayetteville Public Utilities	Cable	No Update to Provide		
High Country Online LLC	Fixed Wireless	No Update to Provide	3/4/2010	
Highland Telephone Cooperative, Inc.	DSL	No Update to Provide	3/14/2010	
Hughes Network Systems, LLC	Satellite	No Update to Provide	2/5/2010	[SEP-16-11 Ashley Littell] Correction: Satellite data is being submitted and was not included in the April 2011 submission. While coverage is currently the entire state boundary, work continues on having more granular data available.
iGiles.net	Fixed Wireless	No Update to Provide	2/25/2010	
Info-Ed Inc	Fixed Wireless	No Update to Provide	2/9/2010	
InfoStructure Inc.	Cable	No Update to Provide	10/2/2009	
James Cable LLC	Cable	No Update to Provide	1/11/2010	
Loretto Telephone Company, Inc.	DSL	No Update to Provide	3/16/2010	
Mediacom Southeast LLC	Cable	No Update to Provide	1/12/2010	
MegaPath Inc.	Backhaul	No Update to Provide	2/15/2010	

MidSouth Satellite, LLC	Fixed Wireless	No Update to Provide	7/7/2010	
MidSouth Satellite, LLC	Backhaul	No Update to Provide	7/7/2010	
NetEase	Fixed Wireless	No Update to Provide	2/3/2010	
NewWave Communications	Cable	No Update to Provide	10/13/2009	
North Central Communications	DSL	No Update to Provide	2/5/2010	
OrbWireless.net	Fixed Wireless	No Update to Provide		
Pickwick Cablevision, Inc.	Cable	No Update to Provide		
Planet Connect Internet	Fixed Wireless	No Update to Provide		
Pulaski Electric System	Fiber	No Update to Provide	12/30/2009	
Rural Tennessee Wireless Broadband (RTWB)	Fixed Wireless	No Update to Provide	2/15/2011	
Skyline Telephone Membership Corporation	DSL	No Update to Provide	2/2/2010	
Skyline Telephone Membership Corporation	Backhaul	No Update to Provide	2/2/2010	
Softek, Inc.	Fixed Wireless	No Update to Provide	1/14/2010	
Spirit Broadband	Cable	No Update to Provide	3/29/2010	
Surfmore.Net, Inc.	Fixed Wireless	No Update to Provide	1/25/2010	
TDS Telecommunications Corporation	Backhaul	No Update to Provide	1/27/2010	
TEC of Jackson, Inc.	Backhaul	No Update to Provide	7/29/2010	
Tullahoma Utilities Board	Fiber	No Update to Provide		
tw telecom of tennessee, llc	Backhaul	No Update to Provide	3/31/2010	
Twin Lakes Telephone Cooperative Corporation	DSL	No Update to Provide	1/14/2010	
Ultrahnet High-Speed Internet	Fixed Wireless	No Update to Provide	2/23/2010	
United Telephone Company, Inc.	DSL	No Update to Provide	2/25/2010	
Verizon Communications, Inc.	Backhaul	No Update to Provide	12/14/2009	
Wave2Wave Communications Inc.	Backhaul	No Update to Provide	4/28/2010	
West Kentucky Rural Telephone Coop Corp Inc.	DSL	No Update to Provide	1/7/2010	
				[SEP-16-11 Ashley Littell] Correction: Satellite data is being submitted and was not included in the April 2011 submission. While coverage is currently the entire state boundary, work continues on having more granular data available.
WildBlue Communications, Inc.	Satellite	No Update to Provide	1/8/2010	
XO Communications, LLC	Backhaul	No Update to Provide	2/12/2010	
Zito Midwest, LLC	Cable	No Update to Provide	2/17/2011	
Aurora Cable TV	Cable	No Update Provided - Use Last Submission Data	3/12/2010	
Iris Networks	Backhaul	No Update Provided - Use Last Submission Data	1/5/2010	
QuickRelay Wireless Communications	Fixed Wireless	No Update Provided - Use Last Submission Data		
Trenton TV Cable Company	Cable	No Update Provided - Use Last Submission Data		
ABG Wireless, LLC	Fixed Wireless	Provider Gathering Data		
TNets Internet	Fixed Wireless	Solicited Initial Data		
Wisper, LLC	Fixed Wireless	Solicited Initial Data	2/22/2011	
DeKalb Telephone Cooperative, Inc.	Fiber	Other	2/24/2010	[AUG-16-11 Ashley Littell] While provider is in the process of building out fiber, they do not have any in service as of June 30, 2011.
Highland Telephone Cooperative, Inc.	Fiber	Other	3/14/2010	[AUG-16-11 Ashley Littell] While provider is in the process of building out fiber, they do not have any in service as of June 30, 2011.
North Central Communications	Fiber	Other	2/5/2010	[AUG-16-11 Ashley Littell] While provider is in the process of building out fiber, they do not have any in service as of June 30, 2011.
PAETEC Communications, Inc.	Backhaul	Other		[SEP-08-11 Wes Kerr] Multiple outreach attempts were conducted but no response was received. PAETEC was bought out during the collection phase of this round by Windstream and we intend to be able to include the PAETEC coverage as a part of the Windstream footprint during the next round.
Skyline Telephone Membership Corporation	Fiber	Other	2/2/2010	[SEP-13-11 Ashley Littell] Provider is in the process of constructing fiber network and anticipates that the project will be completed in early 2012.
Twin Lakes Telephone Cooperative Corporation	Fiber	Other	1/14/2010	[SEP-01-11 Ashley Littell] Coverage maps were sent for review, but approval and additional information on the network was not received. Since data was created from scanned document, the accuracy is in question. Build-out of fiber continues and may not be completely active yet. Data will be submitted in April 2012.
West Kentucky Rural Telephone Coop Corp Inc.	Fiber	Other	1/7/2010	[AUG-16-11 Ashley Littell] While provider is in the process of building out fiber, they do not have any in service as of June 30, 2011.
Birch Communications, Inc.	DSL	Refused to Participate		[JUN-22-11 Daryl Coffey] a company representative sent an e-mail stating they are still not interested in participating.
Birch Communications, Inc.	Backhaul	Refused to Participate		[JUN-22-11 Daryl Coffey] a company representative sent an e-mail stating they are still not interested in participating.
Global Crossing Telecommunications, Inc.	Backhaul	Non-Responsive to Multiple Attempts		In addition to contact attempts made between July 1, 2010 and February 17, 2011, 3 additional attempts were made this period.

Trinity Communications LLC	Cable	Non-Responsive to Multiple Attempts	In addition to contact attempts made between July 1, 2010 and February 16, 2011, 5 additional attempts were made this period.
Utopian Wireless Corporation	Fixed Wireless	Non-Responsive to Multiple Attempts	In addition to contact attempts made between August 9, 2010 and January 4, 2011, 4 additional attempts were made this period.
TNWEB, LLC	Fixed Wireless	Slated Field Audit for Estimated Coverage Analysis	[AUG-17-11 Ashley Littell] While provider has refused to participate, we discovered that the fixed wireless service is limited to Lewisburg. Chip Spann will schedule a trip to estimate service area for the next submission.