

**OFFICIAL OCTOBER 2010 UPDATE SUBMISSION TO
THE NATIONAL TELECOMMUNICATIONS AND INFORMATION
ADMINISTRATION UNDER THE
STATE BROADBAND DATA AND DEVELOPMENT GRANT PROGRAM
FOR THE STATE OF TENNESSEE**



CONNECTED
Tennessee
THE TRAIL TO INNOVATION®

October 1, 2010

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COVER LETTER

September 28, 2010

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

Dear Ms. Neville:

As the Designated Entity for the State of Tennessee, and in cooperation with the Department of Finance and Administration and the Department of Economic and Community Development, please accept this submission from Connected Tennessee, a subsidiary of Connected Nation, for the State of Tennessee’s State Broadband Data and Development (SBDD) Grant Program.

These artifacts should be found to be compliant with the October 1, 2010, 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, 2010

<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	Accuracy and Verification Report
n/a	DataPackage.xls	Worksheets of Contact
		Information, Data Dictionary, and
		Provider Summary Table
n/a	n/a	Broadband Provider Roster and
		Participation Status

In addition, this data update submission should be found to be compliant with the additional program requirements instituted by the National Telecommunications and Information Administration since the time of the initial SBDD data submission for the Connected Tennessee program, on March 31, 2010. Specifically, these new requirements are:

Census Blocks

This dataset should be found to be in full compliance with the request to use Census 2000 geography with the availability of wireline broadband services in census blocks with an area of no greater than two square miles.

SBDD Data Transfer Model

The submission of the broadband dataset for October 1, 2010, is contained within the SBDD Data Transfer Model as released on the Grantee Workspace on September 9, 2010. All efforts have been made to comply with formatting, domain, and metadata requirements to include as much information on each provider as possible.

It is therefore with great pleasure that the Connected Tennessee program submits this first, semi-annual data update under the State Broadband Data and Development Grant Program. We will continue in our endeavor to implement the joint purposes of the Recovery Act and the BDIA by the gathering of comprehensive and accurate state-level broadband mapping data, developing state-level broadband maps, aiding in the development and maintenance of a national broadband map, and undertaking statewide initiatives for broadband planning.

As the submission of this semi-annual data update is concentrated on the delivery of Broadband Service Availability and Community Anchor Institutions (CAI) data, we provide the following insight into the compilation of these datasets contained herein.

Broadband Service Availability — Provider Outreach

This data update submission under the SBDD includes the participation of 80% of the Tennessee provider community, or 72 of 90 total providers. Of the 72 participating providers, 19 supplied an update to their network or coverage area(s), while 42 have reported no change. The remaining 11 represents providers who supplied initial submission data but were non-responsive in the October 2010 update effort or could not verify coverage areas at the time of this submission; therefore their initial dataset is being put forward as part of this compilation. A complete roster by provider depicting participation status and contact record is contained herein. Of the 18 providers that are not represented in the attached datasets, 5 have either refused to participate in the voluntary program or have remained unresponsive to the numerous attempts at contact by Connected Tennessee. The remaining 13 providers are currently in some form of progress toward data

submission but were not able to either submit or verify coverage areas at the time of this submission.

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

At the program's inception, Connected Tennessee launched a website to create awareness about the initiative. 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. These program stakeholders are an essential component in the larger Connected Tennessee data validation methodology.

As an indicator of stakeholder penetration, the Connected Tennessee website encountered 10,910 unique visits during this reporting period (20,834 total to date for the life of the grant which was awarded December 20, 2009). Additionally, this pronounced Web activity netted 324 broadband inquiries over this same reporting period (889 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 offer the citizens a vehicle 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 Tennessee, in cooperation with Connected Nation, to identify additional areas that are in need of field validation, which is scheduled as soon as possible. Additional information on field validation can be found in the Field Validation Narrative.

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 SBDD NOFA Technical Appendix.

In partnership with the State of Tennessee, Connected Tennessee conducted significant additional research and outreach during this data update reporting period to continue identification of existing, centralized sources for CAI connectivity data. Outreach was coordinated with the State of Tennessee to distribute the CAI survey to institutions throughout the state. The State of Tennessee assisted in the outreach effort by providing their contact information for their CAI partners. Connected Tennessee has identified and processed a list of CAI through a combination of publicly available and privately held datasets from online sources, including:

- Tennessee Department of Education
www.tn.gov/education/
- Tennessee Department of Labor and Workforce Development
www.state.tn.us/labor-wfd/cc/

- Tennessee State Library and Archives
- www.state.tn.us/tsla/
- Knox County Schools
www.knoxschools.org

As of this semi-annual reporting period, a total of 99.9% Tennessee CAI were identified, addressed, and geocoded. As is evident in the datasets being conveyed, while we were able to document institutions and the related addresses, the connectivity data collected in most categories remains less than complete. 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, and to the accomplishment of the purposes in the recently released National Broadband Plan. We plan to continue to bring best practices to the Tennessee efforts, along with an investment of both human and technical resources required to reach these goals in advance of the submission of the semi-annual update of this data due in April 2011.

In acquiring both broadband availability and CAI data within the State of Tennessee, Connected Tennessee made special effort to engage all federally recognized tribal lands in the area covered by the Tennessee SBDD grant. According to the U.S. Department of the Interior — Bureau of Indian Affairs, there are no federally recognized tribal lands in this area.

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 remaining work ahead.

Respectfully submitted,



Michael Ramage
Executive Director
Connected Tennessee



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

DATA ACQUISITION: TENNESSEE COMMUNITY ANCHOR INSTITUTIONS

In this second reporting period of the SBDD, 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 SBDD NOFA Technical Appendix.

In conjunction with the State of Tennessee, Connected Tennessee has identified and processed a list of CAI through publicly available and privately held online sources, including:

- Knox County Schools
www.knoxschools.org
- Tennessee Department of Education
www.tn.gov/education/
- Tennessee Department of Labor and Workforce Development
www.state.tn.us/labor-wfd/cc/
- Tennessee State Library and Archives
www.state.tn.us/tsla/

Additional information was collected from Internet searches and research of several local department and agency websites.

Physical address information from the databases listed above was augmented through manual sourcing and geocoded by Connected Tennessee through a combination of ESRI ArcGIS software and Google batch geocoding systems.

Connected Tennessee developed a customized online survey that was distributed via e-mail to key Tennessee CAI contacts by Connected Tennessee staff. In several instances these contacts served as distribution points for disseminating the online survey to thousands more CAI throughout the state. The online survey is hosted through SurveyMonkey with a landing page on the Connected Tennessee website.

Survey Link:

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

In addition, customized data collection worksheets were distributed in tandem with the online survey link in an effort to offer multiple data collection options, with particular sensitivity given to those CAI with multiple broadband connections. These surveys were conducted in an effort to gather broadband connectivity information and to confirm address information. In most cases, multiple attempts were made to reach CAI contacts.

Significant research and outreach was conducted during this second reporting period by Connected Tennessee to identify existing, centralized sources for CAI connectivity data. The process was very beneficial in locating key CAI contacts in Tennessee but only resulted in identifying existing CAI connectivity data for career centers and libraries throughout the state.

The greatest challenge faced in the second reporting round has been the difficulty in securing CAI broadband connectivity data. In the third round of reporting, Connected Tennessee will work in coordination with Tennessee’s key CAI contacts that have been identified during the first and second rounds in an effort to raise awareness of the online survey among Tennessee CAI. Future efforts will involve focused planning with representatives from each of the CAI categories, as well as a structured outreach to each category, supported by messaging and meetings, showcasing the value of these data for planning and collaboration purposes. Targeted outreach efforts will be conducted through phone calls and industry/trade association meetings and newsletters, among other methods.

SBDD DATA TRANSFER MODEL METHODOLOGY

The submission of the broadband dataset for October 1, 2010, is contained within the SBDD Data Transfer Model as released on the Grantee Workspace on September 9, 2010. 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.

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

Inventory of Deliverables, Connected Tennessee: October 1, 2010

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Appendix A: 4	BB_Service_CAInstitutions	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 SBDD Data Transfer Model. Wireline availability is contained within census blocks and road

segments, wireless availability is contained as polygons of coverage areas, middle-mile connections and community anchor institutions are contained as point data, and the subscriber weighted nominal speed (if available) is contained within the overview feature class. 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.

TENNESSEE FIELD VALIDATION NARRATIVE

Tennessee is bordered by eight other states, none of which are included in the portfolio of Connected Nation's mapping states. On a clear day, seven other states are visible from atop Lookout Mountain (Chattanooga area) and it plays home to the Great Smokey Mountains (one of the few places, other than Canada, where Conifer forests are plentiful at the higher mountain elevations).

There are 90 distinctive broadband providers (WiMAX, fixed wireless, mobile wireless, ILEC, cable modem and FTTx) servicing this diversely unique state and, during the first 9 months of 2010, Deanna Ward, Layne Wagner, Terry Holmes, Jill Lindgren, and Chip Spann field tested and validated 25.56% of those companies.

Site validation visits occurred in Knoxville, Nashville, Mountain City, Lawrenceburg, Morristown, Bristol, Johnson City, Elizabethtown, Parsons, Greenfield, Newport, Kingsport, Sevierville, Gatlinburg, Dresden, Sharon, Paris, Union City, and Pigeon Forge.

To date, Connected Nation has completed 56 in-the-field validation tests at randomly selected test points. Twenty-three companies (25.56% of the broadband provider universe) were subjected to a stringent series of data verification test methodologies to ensure the integrity and accuracy of the data submitted to NTIA. The results of these tests yielded the following results:

- 100% of the wireless frequencies reported (both licensed and unlicensed) tested positively;
- 100% of speed tests conducted (non-mobile platforms) yielded results verifying minimum speeds of 768 kbps x 200 kbps;
- 98.5% of all mobile speed tests were within the speed tiers reported and spectrum analysis testing confirmed both the service borders and the coverage areas within the state; and
- 98.4% of the coordinates submitted for physical plant and/or transmit tower locations were accurate (2 locations were off by less than 100');
 - Providers subjected to testing during 2010 included:
 - Fixed Wireless: QuickRelay, High Country Online, Ken-Tenn Wireless, Beasley Wireless, CRU Enterprises, Net Ease, Dot Spot Wireless, Planet Connect, UltraNet, Xpansion Networks, and ECSIS
 - Mobile: AT&T, Verizon, Leap Wireless International (d/b/a Cricket), Sprint Nextel Corporation, and T-Mobile USA, Inc.
 - Cable Modem: Trenton Cable TV, XIPLine, and Millington CATV, Inc.

- WiMAX: Clearwire
- DSL: Big River, AT&T, Frontier Communications, TEC, and Millington Telephone Company
- FTTx: Jackson Energy Authority

ACCURACY AND VERIFICATION: METHODOLOGY - PROVIDER VALIDATION

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

Once the data collection has been aggregated to 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.

DATA VALIDATION: SURVEY RESEARCH

In January 2010, Connected Tennessee conducted a statistically significant telephone survey of 803 businesses, to offer as a comparison against the provider-validated statewide broadband inventory. The survey provides an estimate of the percentage of all Tennessee businesses and a subset percentage of all *rural* Tennessee businesses that report that they are unaware of available broadband service at their location. These figures are then compared against broadband availability estimates derived from provider-supplied data to offer a macro level comparison to the provider-validated data. This test measures how state businesses' awareness of broadband availability compares to provider-validated availability information. Results are reported below.

DATA VALIDATION: METHODOLOGY

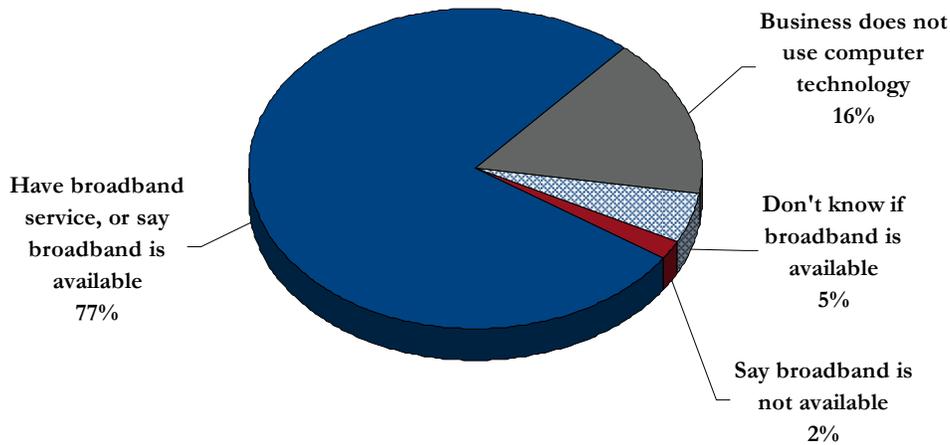
Connected Tennessee conducted a random digit dial (RDD) phone survey of 803 businesses contacted between January 4 and January 27, 2010. This business survey was conducted in January 2010 because Connected Tennessee felt it beneficial to provide the State of Tennessee data that highlighted trends in business technology adoption. To provide the most accurately trended data, this business survey was conducted during a similar timeframe as previous annual business surveys to reduce any bias that may be introduced through seasonal differences. In addition, survey questions were asked using the same wording as surveys conducted in previous years to ensure accurate data trending over time. As a result, some questions pertaining to broadband availability were asked to respondents in a way that may not represent the entire universe of all Tennessee businesses, and the share of businesses that reported that broadband is available to them may be artificially low. Starting in 2011, Connected Tennessee intends to conduct its business surveys during Q3, with questions designed to better measure Tennessee businesses' awareness of broadband availability at their location.

Data were collected by telephone through live, computer-assisted interviews, with quotas set by industry sector to ensure adequate representation of all businesses across the state. Weights were applied to correct for minor variations and ensure that the sample matched U.S. Census estimates of the state's business establishments, as reported in their County Business Patterns Report. The statewide full sample (n=803) provides a margin of error of $\pm 4.9\%$ at the 95% level of confidence. The full sample of rural businesses (n=232 businesses located in rural counties) provides a margin of error of $\pm 8.8\%$ at the 95% level of confidence. These sample errors account for sample weighting, using the effective sample size. For the purposes of this survey, broadband is defined as "an Internet connection with speeds of 768 kilobits per second or higher in at least one direction."

Results

Statewide, 2% of businesses report that broadband service is not available at their location, 5% don't know if broadband is available, and 77% report with certainty that broadband is available (Figure 1).¹

Figure 1.
Awareness of broadband availability among Tennessee businesses



Taking into account the survey's margin of error, the results estimate that between 0% and 6.9% of Tennessee businesses do not have broadband service available.

Estimates derived from provider-validated data indicate that approximately 5.87% of Tennessee households do not have terrestrial fixed broadband service available, and approximately 0.52%² of Tennessee households have neither mobile nor fixed broadband service available.³

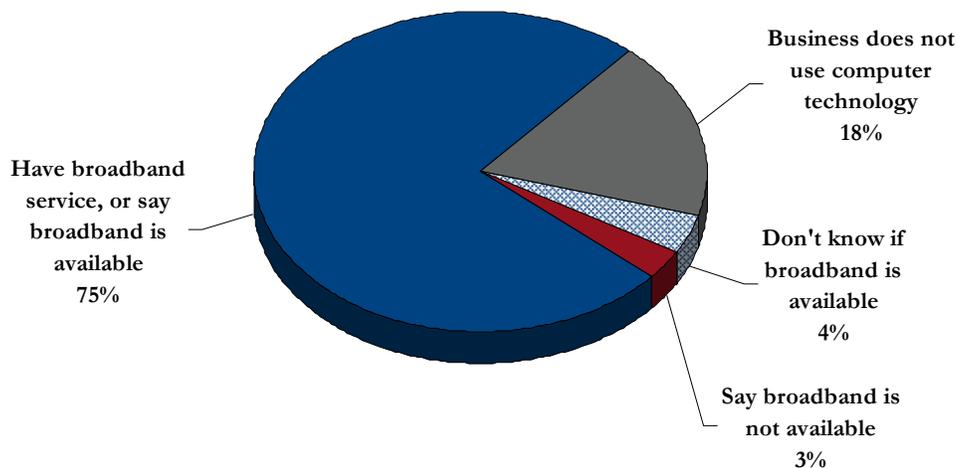
¹ In this survey, businesses that do not use computer technology were not asked whether they were aware of available broadband service. This represents 16% of all Tennessee businesses statewide.

² In accordance with NTIA's definition of available broadband service as specified in the SBDD NOFA, this estimate includes both terrestrial fixed *and* mobile broadband service, if the service offers download speeds of at least 768 Kbps and upload speeds greater than 200 Kbps.

³ Due to the nature of the SBDD data collection methodology as defined by the NTIA and based on both census block geographic units and street segment data, the estimates of broadband availability derived from provider-validated data may include an overstatement of the actual number of households with broadband availability. Under the census block-based data collection method, a provider will typically report broadband availability for an entire census block 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.

Among rural businesses, 3% of respondents report that broadband service is not available to them, 4% do not know if broadband is available, and 75% report with certainty that broadband is available (Figure 2).⁴

Figure 2.
Awareness of broadband availability among *rural* Tennessee businesses



Taking into account the survey’s margin of error, the results estimate that between 0% and 11.8% of rural Tennessee businesses do not have broadband service available.

Results derived from provider-validated data indicate that approximately 10.87% of rural Tennessee households do not have terrestrial fixed broadband service available, and approximately 1.03%⁵ of rural Tennessee households have neither mobile nor fixed broadband service available.⁶

WIRELESS METHODOLOGY

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

Data is solicited from the wireless provider to include, but is not limited to:

1. The name of the structure
2. Whether the transmitting device is operational or proposed
3. The maximum advertised downstream speed and the maximum advertised upstream speed

⁴In this survey, businesses that do not use computer technology were not asked whether they were aware of available broadband service. This represents 18% of rural Tennessee businesses.

⁵ See note 3.

⁶ Ibid.

4. The typical downstream speed and 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. Latitude in either Degrees, Minutes and Seconds and/or in Decimal Degrees (typically received as NAD 27 or NAD 83)
8. Longitude in either Degrees, Minutes and Seconds and/or in Decimal Degrees (typically received as NAD 27 or NAD 83)
9. 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)
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 manufacturers' specification sheet)
18. Power output of the transmitting device (if unknown FCC standards 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 only in metropolitan areas – accounts for types and heights of buildings)

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 typically uses 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, which accounts for predicting the behavior of cellular transmissions in areas where buildings are the primary obstructions.

The resulting product from either model depicts a graphical illustration of the theoretical propagation characteristics of a selected frequency range based on defined variables (receiver sensitivity of the home/mobile device, foliage factor, and digital elevation terrain input).

BROADBAND INQUIRIES METHODOLOGY

Connected Nation collects consumer feedback in the form of broadband inquiries. These inquiries represent any type of communication received from the public regarding broadband service. Once broadband inquiries are received across the state, this information is overlaid with the broadband

availability information which was collected through the SBDD program. This allows for a real-world comparison of the broadband landscape to the information received from broadband inquiries. Broadband inquiries are able to provide three types of information: 1) Residents who do not have broadband but want it. 2) Residents who have broadband but want a different provider. 3) Residents who do not have broadband, but the broadband inventory maps indicate that they do.

Through the collection of broadband inquiries, a visual demand for broadband is presented. This visualization allows Connected Nation the ability to validate broadband availability maps for accuracy. If residents within a region state that they are without broadband, but the broadband inventory maps show otherwise, this allows Connected Nation to approach the providers within that area in an effort to trim down their coverage to more accurately represent real-world availability on the ground. On the other hand, if there is a region in the state in which broadband is not available, broadband inquiries allow providers close to that region to see where they can successfully expand their broadband networks, leading to a high return on investment. In short, the higher number of inquiries leads to a higher level of certainty in regard to the broadband availability maps. Since the initial data collection and release of corresponding maps, feedback in the form of broadband inquiries has allowed Connected Nation to identify additional areas that are in need of field validation, which are scheduled as soon as possible. Additional information on field validation can be found in the Field Validation Narrative.

The broadband inquiry process has been implemented in several other Connected Nation state programs with successful results. Citizens in the State of Tennessee have submitted over 10,000 broadband inquiries since 2007, allowing the Connected Tennessee program to evaluate each inquiry for broadband demand and data verification. These inquiries are continuously examined against current broadband availability, updated every three months, to determine if previously unserved households have been expanded to and can now receive broadband access at their residence. This database of broadband inquiries has also allowed Connected Tennessee 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 state 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 Connected Tennessee has 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 Tennessee 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 324 inquiries (889 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.

The Connected Tennessee project launched BroadbandStat on February 10, 2010, and has received a total of 4,393 visits to date.

SPEED TEST METHODOLOGY

The 2,686 speed tests that are represented in the Connected Tennessee Speed Test Report during this reporting period (4,916 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 their 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. 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	81
Non-Responsive/Refused	5
In Progress	13
Count of Datasets by Status	99
Total Unique Providers Represented	90

Provider Name	Platform	Status	NDA Execution Date	Notes
AT&T Inc.	Mobile Wireless	Data Added to Statewide Inventory	12/16/2009	
AT&T Inc.	ILEC/CLEC	Data Added to Statewide Inventory	12/16/2009	
BreezeAir.net	Fixed Wireless	Data Added to Statewide Inventory	8/17/2010	
Cellular South, Inc.	Mobile Wireless	Data Added to Statewide Inventory	4/12/2010	
CenturyLink	ILEC/CLEC	Data Added to Statewide Inventory	12/4/2009	
Comcast Cable Communications, Inc.	Cable	Data Added to Statewide Inventory	12/7/2009	
Frontier Communications Corporation	ILEC/CLEC	Data Added to Statewide Inventory	1/22/2010	
Leap Wireless International, Inc.	Mobile Wireless	Data Added to Statewide Inventory	4/6/2010	
MidSouth Satellite, LLC	Fixed Wireless	Data Added to Statewide Inventory	7/7/2010	
Pulaski Electric System	Fiber	Data Added to Statewide Inventory	12/30/2009	
Sprint Nextel Corporation	Mobile Wireless	Data Added to Statewide Inventory	1/14/2010	
Surfmore.Net, Inc.	Fixed Wireless	Data Added to Statewide Inventory	1/25/2010	
T-Mobile USA, Inc.	Mobile Wireless	Data Added to Statewide Inventory	1/8/2010	
TDS Telecommunications Corporation	ILEC/CLEC	Data Added to Statewide Inventory	1/27/2010	
TDS Telecommunications Corporation	Fiber	Data Added to Statewide Inventory	1/27/2010	
Verizon Communications, Inc.	Mobile Wireless	Data Added to Statewide Inventory	12/14/2009	
AT&T Inc.	Backhaul	Backhaul Provider Only Processing Complete	12/16/2009	
CenturyLink	Backhaul	Backhaul Provider Only Processing Complete	12/4/2009	
DIECA Communications, Inc.	Backhaul	Backhaul Provider Only Processing Complete	1/19/2010	
Iris Networks	Backhaul	Backhaul Provider Only Processing Complete	1/5/2010	
Sprint Nextel Corporation	Backhaul	Backhaul Provider Only Processing Complete	1/14/2010	
T-Mobile USA, Inc.	Backhaul	Backhaul Provider Only Processing Complete	1/8/2010	
TDS Telecommunications Corporation	Backhaul	Backhaul Provider Only Processing Complete	1/27/2010	
tw telecom of Tennessee, LLC	Backhaul	Backhaul Provider Only Processing Complete	3/31/2010	
Verizon Communications, Inc.	Backhaul	Backhaul Provider Only Processing Complete	12/14/2009	
Wave2Wave Communications Inc.	Backhaul	Backhaul Provider Only Processing Complete	4/28/2010	
Zayo Group, LLC	Backhaul	Backhaul Provider Only Processing Complete		
Electric Power Board for the City of Chattanooga	Fiber	Data Processing		
TELE-PAGE Inc.	Fixed Wireless	Partial Data Received	1/26/2010	
Access Cable Television, Inc.		No Update to Provide		
Beasley Wireless		No Update to Provide	1/19/2010	
Ben Lomand Rural Telephone Coop., Inc.		No Update to Provide	10/21/2009	
Bledsoe Telephone Cooperative Inc		No Update to Provide	1/20/2010	
Bristol Tennessee Essential Services		No Update to Provide	9/1/2010	
Cable ONE Inc.		No Update to Provide	12/7/2009	
Celina Cable Communications, Inc.		No Update to Provide	1/15/2010	
Charter Communications		No Update to Provide	12/15/2009	
Clarksville Department of Electricity		No Update to Provide		
Clearwire Corporation		No Update to Provide	3/3/2010	
Columbia Power & Water Systems		No Update to Provide		
CRU Enterprises, Inc.		No Update to Provide	2/4/2010	
DeKalb Telephone Cooperative, Inc.		No Update to Provide	2/24/2010	
DeltaCom, Inc.		No Update to Provide	2/16/2010	
ECSIS.NET		No Update to Provide	10/29/2009	
ETC Communications, LLC		No Update to Provide	10/14/2009	
Fayetteville Public Utilities		No Update to Provide		
High Country Online LLC		No Update to Provide	3/4/2010	
Highland Telephone Cooperative, Inc.		No Update to Provide	3/14/2010	
iGiles/DotSpot.Net		No Update to Provide	2/25/2010	
Info-Ed Inc		No Update to Provide	2/9/2010	
InfoStructure Inc.		No Update to Provide	10/2/2009	
Jackson Energy Authority		No Update to Provide	3/17/2010	
James Cable LLC		No Update to Provide	1/11/2010	
Ken-Tenn Wireless, L.L.C.		No Update to Provide	1/25/2010	
Loretto Telephone Company, Inc.		No Update to Provide	3/16/2010	
Mediacom Southeast LLC		No Update to Provide	1/12/2010	
Monster Broadband, Inc.		No Update to Provide	11/6/2009	
Morristown Utilities Commission		No Update to Provide	3/25/2010	
NetEase		No Update to Provide	2/3/2010	
NewWave Communications		No Update to Provide	10/13/2009	
North Central Communications		No Update to Provide	2/5/2010	
OnWav, Inc.		No Update to Provide	3/15/2010	
Pickwick Cablevision, Inc.		No Update to Provide		
Planet Connect Internet		No Update to Provide		
Skyline Telephone Membership Corporation		No Update to Provide	2/2/2010	
Softek, Inc.		No Update to Provide	1/14/2010	
TEC of Jackson, Inc		No Update to Provide	7/29/2010	
Twin Lakes Telephone Cooperative Corporation		No Update to Provide	1/14/2010	
Twin Lakes Telephone Cooperative Corporation		No Update to Provide	1/14/2010	
Ultrant High-Speed Internet		No Update to Provide	2/23/2010	
West Kentucky Rural Telephone Coop Corp Inc		No Update to Provide	1/7/2010	

XO Communications, LLC		No Update to Provide	2/12/2010	
Ardmore Telephone Company Inc		No Update Provided - Use Initial Data	2/16/2010	
Aurora Cable TV		No Update Provided - Use Initial Data	3/12/2010	
Galaxy Cable Inc.		No Update Provided - Use Initial Data	2/10/2010	
Level 3 Communications, LLC		No Update Provided - Use Initial Data	12/14/2009	
Millington CATV, Inc.		No Update Provided - Use Initial Data	10/19/2009	
OrbWireless.net		No Update Provided - Use Initial Data		
QuickRelay Wireless Communications		No Update Provided - Use Initial Data		
Spirit Broadband		No Update Provided - Use Initial Data	3/29/2010	
Trenton TV Cable Company		No Update Provided - Use Initial Data		
Tulahoma Utilities Board		No Update Provided - Use Initial Data		
United Telephone Company, Inc. - TN		No Update Provided - Use Initial Data	2/25/2010	
ABG Wireless, LLC		Solicited Initial Data		
Birch Communications, Inc.		Solicited Initial Data		
Endless Sphere Technology		Solicited Initial Data	2/17/2010	
TNets Internet		Solicited Initial Data		
Trinity Communications LLC		Solicited Initial Data		
US LEC of Tennessee Inc.		Solicited Initial Data		
Cinergy Communications Company		Refused to Participate		[JUL-22-10 Ira Dye] Company representative replied back and stated that they are "electing not to contribute at this time."
Knology of Tennessee, Inc.		Refused to Participate		[May-11-10 Wes Kerr] Response received from company representative said: "appreciate the follow-up. Unfortunately Knology will not be able to participate at this time. We are staffed very thinly and, at this time, we just don't have the resources to gather and report this information. I apologize for not getting back to you sooner."
Worldspice.net		Refused to Participate		[AUG-10-10 Alyson Sumerford] Received e-mail from provider regarding participation stating, "We have decided to decline."
MYWEBSTAR		Non-Responsive to Multiple Attempts		In addition to multiple attempts made between February 8 and March 16, three attempts were made between August 10 and August 18.
TNWEB, LLC		Non-Responsive to Multiple Attempts		In addition to multiple attempts made between January 7 and March 15, three attempts were made between August 10 and August 18.
DISH Network Corporation		Other	1/27/2010	[SEPT-16-10 Ashley Littell] Satellite data will not be submitted due to additional information being necessary to show where service is available in the state, rather than submitting the entire state boundary as serviceable area.
Global Crossing Telecommunications, Inc.		Other		[JUL-26-10 Ira Dye] Global Crossing responded to follow-up and, due to legal constraints, they are unable to participate at this time.
Hughes Network Systems, LLC		Other	2/5/2010	[SEPT-16-10 Ashley Littell] Satellite data will not be submitted due to additional information being necessary to show where service is available in the state, rather than submitting the entire state boundary as serviceable area.
Utopian Wireless Coporation		Other		[AUG-12-10 Wes Kerr] Utopian confirmed that they do not yet offer any services however will begin offering services in Quarter 4 of 2010.
WildBlue Communications, Inc.		Other	1/8/2010	[SEPT-16-10 Ashley Littell] Satellite data will not be submitted due to additional information being necessary to show where service is available in the state, rather than submitting the entire state boundary as serviceable area.