

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



October 1, 2011

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ALASKA 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, in partnership with the Alaska Department of Commerce, Community, and Economic Development, please accept this submission from Connected Nation on behalf of the state of Alaska's State Broadband Initiative (SBI) Grant Program, known as Connect Alaska.

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, Connect Alaska: 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	Accuracy and Verification Report

n/a	DataPackage.xlsx	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 Connect Alaska 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 100 percent of the Alaska provider community, which is 22 total providers. Of the 22 participating providers, 10 supplied an update to their network or coverage area(s), while 12 have reported no change. A complete roster by provider depicting participation status and contact record is contained herein.

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

Connect Alaska has also continued to perform broadband verification activities through several means. In addition to confirmation of service area(s) by each provider, Connect Alaska conducts field validation efforts. To date, 15 (68.18 percent) providers have been validated through field verification activities. Additional details on verification activities are contained within the Field Validation Methodology.

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

As an indicator of stakeholder penetration, the Connect Alaska website encountered 4,370 unique visits during this reporting period (7,767 total to date for the life of the grant awarded on June 1, 2010). Additionally, this pronounced Web activity netted 8 broadband inquiries over this same reporting period (39 grant inception to date). The website also provides the BroadbandStat application, which allows the consumer to confirm or dispute the coverage represented on the broadband inventory map. These consumer-initiated actions are facilitated through the Connect Alaska website and the Connect Alaska interactive mapping tool (BroadbandStat) that offer the citizens the vehicles to provide information regarding availability in their respective service area, either in affirmation or contest of the reported data represented in the Connect Alaska 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

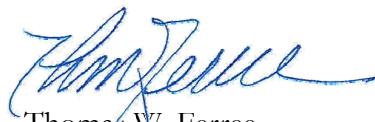
Connect Alaska has established an ongoing mechanism for gathering data on the location and broadband connectivity of Community Anchor Institutions (CAI), in accordance with the data requirements of the SBI NOFA Technical Appendix.

Outreach was conducted during this data update reporting period by Connect Alaska to continue identification of existing, centralized sources for CAI connectivity data. Additionally, outreach was coordinated to distribute a CAI survey to institutions throughout the state focusing on the education and higher education sectors through multiple methods including a customized online survey available on the Connect Alaska website. During this reporting period Connect Alaska has developed a number of new relationships with statewide associations such as the Alaska Department of Education & Early Development and Alaska's Vocational and Technical Education System to promote the importance of broadband connectivity at anchor institutions and participation in this data collection process. Connect Alaska 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.

Connect Alaska continues to work with the Alaska Broadband Task Force and utilize the inaugural issue of the Connect Alaska CAI newsletter to further outreach opportunities within the state. From our work in Alaska, 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 Connect Alaska 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 Connect Alaska 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 Alaska, as well as the United States through contribution to the National Broadband Map. We look forward to the continuing work ahead.

Respectfully submitted,



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

DATA ACQUISITION: ALASKA COMMUNITY ANCHOR INSTITUTIONS METHODOLOGY

In this fourth reporting period of the SBI, Connect Alaska, working in close coordination with the state of Alaska, 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 Connect Alaska has continued to focus efforts on conducting outreach and raising awareness of this important project.

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

Connect Alaska continues to utilize a customized online survey hosted through SurveyMonkey, with a landing page on the Connect Alaska website that was developed during the first reporting period. This survey, in combination with a customized data-gathering spreadsheet, was distributed to a targeted list of CAI throughout the state. Connect Alaska 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 using the following password:

http://connectak.org/mapping/Community_Anchor_Institution_Data_Collection.php

Password: CAI_AK_5852

During this reporting period Connect Alaska conducted research, specifically within the education sector, to identify existing, centralized sources for CAI connectivity data. Connect Alaska was unable to locate any additional centralized sources but established a new contact within the Alaska Department of Education & Early Development to distribute our CAI survey in conjunction with a yearly survey conducted by the Department during September and October 2011 to all public schools across the state. These results will be reported during the April 2012 submission.

In tandem with these efforts to identify existing data, Connect Alaska 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. Connect Alaska has formed a number of new relationships this reporting period with key CAI associations including the Alaska eHealth Network, Alaska's Vocational Technical Education Providers (VTEP), Alaska Pacific University, and the University of Alaska. Connect Alaska has requested participation by these groups to assist with gathering data within the state. Additionally Connect Alaska is working closely with members of the Alaska Broadband Task Force who represent key CAI sectors to assist with outreach and data-gathering efforts on behalf of the project. A key indicator of success from a recent meeting was attendance from a representative of the Division of Alaska State Troopers. They are interested in assisting us with collecting data from the public safety sector and we are now engaged in conducting a joint survey within the state.

Connect Alaska 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. Connect Alaska continues to utilize a CAI newsletter which was distributed in March 2011 and is available on the CAI page of the Connect Alaska website. The newsletter is currently being updated with plans to distribute an updated version in Q42011.

The greatest challenge with collecting this data continues to be the difficulty in securing CAI broadband connectivity data. Connect Alaska is overcoming this challenge through new relationships that are being formed, our work with the Connect Alaska Broadband Task Force and the upcoming release of an updated CAI newsletter. Connect Alaska expects noted progress to occur over the coming months leading up to the April 2012 submission and will continue to work in close coordination with the state of Alaska to raise awareness of this important project.

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	654	654	654	91	84	84
Libraries	131	131	131	46	44	44
Healthcare	89	89	89	5	3	3
Public Safety	323	312	323	3	3	3
Higher Ed Institutions	14	14	14	8	8	8
Other Government	565	565	565	22	18	18
Other Non-Government	440	440	440	3	3	3
Total	2,216	2,205	2,216	178	163	163

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 are 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 Alaska.

Inventory of Deliverables, Connect Alaska: October 1, 2011

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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.

The provider data collected by Connected Nation on behalf of the state of Alaska 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 Alaska 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

- Alaska Power & Telephone, Inc. (DSL): Provider upgraded infrastructure to higher speeds.
- AT&T Corp, Inc. (mobile wireless): Provider expanded mobile territory in old and new regions.
- Copper Valley Telephone Cooperative (DSL): Previously underserved area now meets speed requirements. The provider's entire infrastructure can now reach the top advertised speeds.
- Cooper Valley Telephone Cooperative (mobile wireless): Provider added three additional transmission points and removed one.
- Matanuska Telephone Association, Inc. (DSL): Provider upgraded speed capabilities.
- SPITwSPOTS LLC (fixed wireless): Provider added additional transmission points and upgraded infrastructure to higher speeds.
- Yukon Tech Inc. (cable): Provider upgraded some infrastructure to max download speed tier 3. Previously all cable was underserved.

Corrections

- Alaska Communications Systems Holding, Inc. (ACS) (DSL, mobile wireless): New provider for October 2011 submission that previously refused to participate.
- Alaska Power & Telephone, Inc. (fixed wireless): Provider indicated it does not meet broadband requirements in its five WiFi towns. Were previously stated as download speed tier 3, but in actuality are speed tier 2.
- Clearwire Corporation (fixed wireless): Provider service area is now a real-world propagation unlike prior submissions.
- 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.

- Ketchikan Public Utilities (fiber): Provider indicated it was incorrectly reporting its max download/upload business speed tier for the past submissions. Corrected this to speed tier 5 download and 3 upload.

ALASKA 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 Alaska on the following providers:

Ace Tekk Wireless Internet; AlasConnect, Inc.; AT&T, Inc.; Borealis Broadband; Clearwire Corporation; Copper Valley Telephone Cooperative, Inc.; Cordova Telephone Cooperative, Inc.; GCI Internet; Ketchikan Public Utilities; Matanuska Telephone Association, Inc.; SPITwSPOTS LLC; TelAlaska Long Distance, Inc.; Verizon; and Yukon Telephone Company.

From program initiation through this reporting period, Connected Nation has completed in-the-field validation testing against 15 companies (out of a universe of 22 viable providers) totaling 68.18 percent within the state of Alaska.

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.

SPITwSPOTS LLC

Issue: Fixed wireless platform with maximum advertised download speed in tier 7, higher than expected value range for the technology.

Resolution: Provider website advertises 12 Mbps service, screenshot available below.

<i>Internet Subscription Rates:</i>	
•	400k Service \$20 monthly
•	2Mb Service \$59 monthly
•	3Mb Service \$90 monthly
•	4Mb Service \$107 monthly
•	5Mb Service \$128 monthly
•	6Mb Service \$146 monthly
•	7Mb Service \$162 monthly
•	8Mb Service \$176 monthly
•	9Mb Service \$189 monthly
•	10Mb Service \$200 monthly
•	11Mb Service \$210 monthly
•	12Mb Service \$218 monthly

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 9.31 percent of Alaska households do not have terrestrial fixed broadband service available, and approximately 7.52 percent¹ of Alaska 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 19.51 percent of rural Alaska households do not have terrestrial fixed broadband service available, and approximately 16.14 percent³ of rural Alaska 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 updating 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 (HAA'T) 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 **COMmission REGistration System**

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 Connect Alaska 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 Connect Alaska project has received a total of 8 inquiries (39 grant inception to date). As more inquiries are submitted to Connect Alaska, a more thorough validation of the broadband landscape can be performed, while also allowing providers to see which areas have a high demand for broadband adoption.

BROADBANDSTAT METHODOLOGY

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

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

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

The Connect Alaska project launched BroadbandStat on September 1, 2010, and has received a total of 1,113 visits to date, of which 303 occurred this reporting period.

SPEED TEST METHODOLOGY

The 460 speed tests that are represented in the Connect Alaska Speed Test Report during this reporting period (1,269 grant inception to date) are the result of a partnership between Connected Nation and Ookla Net Metrics. Utilizing this relationship increases the level of confidence in the data being collected and provides for a far greater sample size than could be collected by a single testing site.

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

In an effort to validate broadband data from the Connect Alaska project, speed test information is collected throughout the state. Speed tests provide speed information on the path taken through all networks (a provider's network as well as additional networks) a local machine must connect to in order to reach the host test. The benefit of this collection of speed information is two-tiered. First, it allows for a comprehensive dataset of speeds, while also providing Connect Alaska 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 Alaska.



Broadband Provider Log

Complete	31
Non-Responsive/Refused	0
In Progress	0
Count of Datasets by Status	31
Total Unique Providers Represented	23

Provider Name	Platform	Status	NDA Execution Date	Notes
Alaska Communications Systems Holding, Inc. (A	DSL	Data Added to Statewide Inventory	6/2/2011	[SEP-1-11 Brian Dudek] Correction: New provider for October 2011 submission that previously refused to participate.
Alaska Communications Systems Holding, Inc. (A	Mobile Wireless	Data Added to Statewide Inventory	6/2/2011	[AUG-15-11 Brian Dudek] Correction: New provider for October 2011 submission that previously refused to participate.
Alaska Power & Telephone, Inc.	Fixed Wireless	Data Added to Statewide Inventory	2/26/2010	[AUG-17-11 Brian Dudek] Correction: Provider indicated they do not meet broadband requirements in their five WiFi towns. Were previously stated as download speed tier 3, but in actuality are speed tier 2.
Alaska Power & Telephone, Inc.	DSL	Data Added to Statewide Inventory	2/26/2010	[AUG-18-11 Brian Dudek] Change: Provider upgraded infrastructure to higher speeds.
AT&T Corp, Inc.	Mobile Wireless	Data Added to Statewide Inventory	12/16/2009	[AUG-30-11 Brian Dudek] Change: Provider expanded mobile territory in old and new regions.
Copper Valley Telephone Cooperative, Inc.	DSL	Data Added to Statewide Inventory	1/11/2010	[AUG-30-11 Brian Dudek] Change: Previously underserved area now meets speed requirements. The provider's entire infrastructure can now reach the top advertised speeds.
Copper Valley Telephone Cooperative, Inc.	Mobile Wireless	Data Added to Statewide Inventory	1/11/2010	[AUG-30-11 Brian Dudek] Change: Provider added three additional transmission points and removed one.
Ketchikan Public Utilities	Fiber	Data Added to Statewide Inventory	1/8/2010	[AUG-31-11 Brian Dudek] Correction: Provider indicated they were incorrectly reporting their max download/upload business speed tier for the past submissions. Corrected this speed tier 5 download and 3 upload.
Matanuska Telephone Association, Inc.	DSL	Data Added to Statewide Inventory	6/15/2010	[AUG-31-11 Brian Dudek] Change: Provider upgraded speed capabilities.
SPITwSPOTS LLC	Fixed Wireless	Data Added to Statewide Inventory		[AUG-18-11 Brian Dudek] Change: Provider added additional transmission points and upgraded infrastructure to higher speeds.
Yukon Tech Inc	Cable	Data Added to Statewide Inventory	6/23/2010	[AUG-16-11 Brian Dudek] Change: Provider upgraded some infrastructure to max download speed tier 3. Previously all cable was underserved.
Alaska Communications Systems Holding, Inc. (A	Backhaul	Backhaul Provider Only Processing Complete	6/2/2011	
ATCONTACT COMMUNICATIONS	Backhaul	Backhaul Provider Only Processing Complete		
GCI Internet	Backhaul	Backhaul Provider Only Processing Complete	2/25/2010	
Ace Tekk Wireless Internet	Fixed Wireless	No Update to Provide		
Adak Eagle Enterprises, LLC	DSL	No Update to Provide	12/22/2009	
AlasConnect, Inc.	Fixed Wireless	No Update to Provide		[SEP-7-11 Brian Dudek] Although generalized, according to provider representative, service area is derived from a real-world wireless propagation and real work combined.
American Broadband Communications	DSL	No Update to Provide	6/7/2010	
Borealis Broadband Inc.	Fixed Wireless	No Update to Provide	2/1/2010	
Borealis Broadband Inc.	Backhaul	No Update to Provide	2/1/2010	
Clearwire Corporation	Fixed Wireless	No Update to Provide	3/3/2010	[SEP-7-11 Brian Dudek] Correction: Provider service area is now a real-world propagation unlike prior submissions.
Cordova Telephone Cooperative, Inc.	DSL	No Update to Provide		
Craig Cable TV, Inc.	Cable	No Update to Provide	7/27/2010	
GCI Internet	Cable	No Update to Provide	2/25/2010	
GCI Internet	Mobile Wireless	No Update to Provide	2/25/2010	[SEP-6-11 Brian Dudek] Connected Nation was unable to acquire real-world wireless propagations or the needed data to develop them for this submission.
Hughes Network Systems, LLC	Satellite	No Update to Provide	2/5/2010	[SEP-16-11 Brian Dudek] 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.

Ketchikan Public Utilities	DSL	No Update to Provide	1/8/2010	
Kodiak Kenai Cable Company	Backhaul	No Update to Provide	2/7/2011	
MCI Communications Services, Inc.	Backhaul	No Update to Provide	12/14/2009	
OTZ Telephone Cooperative, Inc.	DSL	No Update to Provide		
Yukon Tech, Inc.	Fixed Wireless	No Update to Provide	6/23/2010	