Commonwealth of Virginia

Virginia Center for Innovative Technology

Virginia Information Technologies Agency

Virginia Information Technologies Agency
Virginia Geographic Information Network

Virginia Tech
Center for Geospatial Information Technology

NTIA STATE BROADBAND DATA DEVELOPMENT

ROUND 4 - FALL 2011 SUBMISSION

Summary of Virginia Submission

The Virginia Center for Innovative Technology (CIT) was designated by the Governor of Virginia as the primary point of contact for all Commonwealth of Virginia participation in the National Broadband Mapping Project. The CIT worked in conjunction with the Virginia Information Technologies Agency's (VITA) Virginia Geographic Information Network (VGIN) to review, process, normalize and submit the information outlined in the National Telecommunications and Information Administration's (NTIA) Notice of Funding Availability (NOFA) establishing a Virginia iteration of the National Broadband Map.

The fall 2011 submission is the fourth submission of data to the NTIA and the update includes data from 47 broadband service providers with unique federal identifications delivered in various formats ranging from GIS shape files to text files detailing broadband availability. Of the 47 broadband providers included, 28 submitted updated service information. To provide a complete snapshot of broadband availability in Virginia, the spring 2011 submission data was carried forward for several remaining broadband providers while some carry over providers were reworked for the 2010 census block request.

A summary of the fall 2011 submission data includes:

Census Block polygons provided with coverage information	359947
Address points provided with availability information	63497
Street Segments provided with availability information	54707
Wireless polygons with coverage	19
Middle Mile points with availability information	557
Community Anchor Institution points with availability information	3591

All broadband providers participating provided advertised speed information for wireless polygons, census block, road centerline segment, or addresses.

Base Map Data

VGIN maintains a series of statewide feature classes or partnerships with commercial entities which allow the granularity of data necessary to support the National Broadband Mapping Project. The following Virginia and Federal data sets were used in SBDD data processing.

Address Points - VGIN maintains a statewide address point feature class that is updated quarterly using locality address submissions. This statewide address point database is used to generate a Point Address Geocoding Service which is fed into the Virginia statewide composite geocoding web service.

Road Centerlines (RCL) – VGIN maintains a statewide road centerline feature class that is updated quarterly using locality centerline submissions. This road centerline database contains address range information when it is provided by the locality. The RCL database is used to generate a geocoding service which is an interpolated point along a centerline and this is fed into the Virginia statewide composite geocoding web service.

TIGER 2010 Census Blocks – 2010 Census geometry that is available to the broadband mapping project for location and presentation of broadband data.

Getting Started: Selection Set Feature Classes

Before any provider information was processed, a geodatabase of selection set feature classes was created and individual feature classes were created for use in the 2011 fall data submission. In order to support the processing of broadband data based on select by location, feature classes were set up into a selection feature database which allowed subsets of provider information to be joined spatially or by attributes and schema to be used seamlessly from the processing environment to the transfer data model. Each feature class of interest was an import of the most recent iteration the NTIA SBDD data model schema (June 2011). Features from Virginia base map data was ETL'd using appropriate field mapping. The following are layers used in the Selection Set geodatabase:

NTIA Roads Feature Class - Virginia RCL data has address ranges in the form of four fields; from left, to left, from right, & to right. Two fields were added in the VA State RCL output for address high and low and calculated based on several selection queries. A blank schema feature class of the roads was added and the field V_LEID (VA RCL unique ID) was added to the feature class. This customized statewide data set from the Virginia RCL Quarter 2 of 2011 was then loaded to a selection set feature class which cloned the schema of the NTIA SBDD model feature class called BB_Service_RoadSegment. Unique IDs from the VA centerline were loaded to the selection set road centerline feature class. All Broadband related fields (DBA, FRN, TransTech, etc.) assumed default values of the NITA data model and were <Null> or blank.

NTIA Addresses Feature Class - Statewide data from the Virginia AP Q2 of 2011 was loaded to a selection set feature class which cloned the schema of the NTIA SBDD model feature class called BB_Service_Address. A spatial join was performed to this data set to

the 2010 census blocks in order to apply block information to the point and the 2010 bock information available on the fly. The FULLFIPSID field inside the address points was then overwritten with the new spatially joined data based on the GEOID value from 2010. Latitude and Longitude values were also calculated in the selection set feature class. All Broadband related fields assumed default values of the NTIA data model and were <Null> or blank. These values were calculated individually for providers who submitted data relevant to address points.

NTIA_Blocks2000_Feature_Class - 2000 Tiger blocks were loaded into the NTIA model directly using the schema of the NTIA SBDD data model for the feature class named BB_Service_CensusBlock. FIPS values were matched up in the ETL and several other related block fields were loaded as well. Broadband related fields assumed default values of the NTIA data model. Values were calculated individually based on joins. This data was used solely to create a quick reference to confirm suspicions of whether a provider submitted data in 2000 census block geography or 2010.

NTIA_Blocks2010_Feature_Class - 2010 Tiger blocks were loaded into the NTIA model directly using the schema of the NTIA SBDD data model for the feature class name BB_Service_CensusBlock. GEOID values in the 2010 data were mapped to the FIPS values in the NTIA schema and other related block data was matched with its appropriate field name. Broadband related fields assumed default values of the NTIA data model. A separate field called SQ_MI_VA_LAMBERT was added to the selection set feature class and was created in the NAD_1983_Virginia_Lambert (Meters) projection and calculated to the WGS_84 data set. This was used in Square Mile QC.

Broadband Provider Processing Environment

To support the processing of broadband provider information separately, a broadband provider specific staging geodatabase was created. Each broadband provider participating in the fall 2011 had its own geodatabase and data was processed completely independent of all other broadband providers, allowing providers to move through the process at different rates. This also allowed the correction of any data problems specific to broadband providers without affecting the entire submission database.

A naming convention for each selection set feature class was used and called “NTIA_” and the feature class type. “NTIA_Roads” were loaded to the transfer data model feature class BB_Service_RoadSegment, “NTIA_Census_Blocks” were loaded to the transfer data model BB_Service_CensusBlock feature class, “NTIA_Addresses” were loaded to the transfer data model BB_Service_Address feature class, and depending on provider category “NTIA_Wireless” was loaded to the transfer data model BB_Service_Wireless. Once the broadband provider data was processed to a point in its native feature class in the staging geodatabase which fully conformed to the NTIA specifications, it was included in the Virginia submission for quality control and subsequent delivery.

Virginia Provider Data Submission Categorization

Between submissions from the spring 2011 and fall 2011, Virginia designed a nomenclature to use in referring to a provider based on the category of data which they provide to the CIT and VGIN. While it is apparent that the receipt of GIS data is the most desirable format when processing data sets, some providers may not be able to send this type of information based on the resources they have at hand. Provider data category generally dictates provider processing methodology.

Between submissions it was noted that some providers may actually change the type of data they submit to CIT and VGIN. Some providers may have the capability of storing or already storing their information in the most desirable format although not submitting data in this format.

Tracking what is sent and placing a category for the type of data received can be a good factor in analyzing deltas for feedback looping and can ultimately build provider communication and allow new standardization of data submitted. Virginia would like for providers to be consistent in the data they send to the CIT and VGIN and provider data category becomes a quick reference for this consistency.

The naming convention is only for providers who submit census blocks, addresses, address ranges, or wireless information. In the next submission, middle mile, pricing, and additional data sets may be used in the update to wireline provider type. The following are categories which refer to the data received by a provider for base data:

Wireline Providers:

Category 1
- Provider sent GIS census blocks (census)
- Provider sent GIS road centerlines (census)

Category 2
- Provider sent census block IDs in tabular form for blocks less than 2 square miles
- Provider sent address ranges in tabular form with TLID (Tiger GIS line ID)

Category 3
- Provider sent census block IDs in tabular form for blocks less than 2 square miles
- Provider sent customer address numbers in tabular form

Category 4
- Provider sent census block IDs in tabular form for blocks less than 2 square miles

- Provider sent address ranges in tabular form with no TLID

Category 5
- Provider sent census block IDs in tabular form
- Provider did not submit address level data

Category 6
- Provider did not send census block IDs
- Provider sent customer address numbers in tabular form OR provider sent address ranges

Wireless Providers:

Category 7
- Provider sent GIS shapefiles of coverage areas

Category 8
- Provider sent customer address numbers in tabular form which represented coverage (propagation model developed)

Generalized Broadband provider Data Processing

Broadband provider processing was accomplished in using selection set feature classes and the appropriate geometry supplied. Data was reported in many different categories and each of these reporting formats was handled differently. While there were other NTIA SBDD data sets that were provided differently from providers (pricing, speed by region), they were considered separate use cases than base layer data since the output of these secondary data sets was not primarily geospatial. The following are GIS data layers reported in the SBDD data model.

Wireless Service Area Polygon Reporting – Service Area Polygons were reported by Wireless Broadband providers and required little processing to be included in the NTIA SBDD data model. Typical inclusion processes included attribute validation and use of the ESRI Simple Data Loader or Copy and Paste.

Census Block Reporting – Broadband providers reporting broadband availability on a census block basis submitted it in list form a majority of the time. These lists came in the form of spreadsheets and text files. These lists were normalized into spreadsheets and then imported into a provider staging geodatabase table. Providers who submitted data for the fall 2011 release were then asked as a follow up by the CIT what census geography they reported their data in and a spreadsheet kept record of all new submissions and the geography used.

If data was submitted in 2010 census block geography, it was joined directly to the 2010 selection set block GIS data and checked to make sure reported provider values matched 100%. If the data did not match all records in the submitted table, data was inspected to see whether there was duplicate transmission technology or if the provider may have actually submitted in a different geography than requested. Attributes were joined to the 2010-2000 cross walk table by FIPS with only matching records being kept in the join. The data was then exported to a separate feature table and the new feature table was joined to 2010 selection set block data using the GEOID value.

Some anomalies were encountered about geometry and are documented in the individual provider processing section. Generally, these anomalies occurred in the conversion from 2000 where blocks were less than two square miles in census 2000 geography but the 2010 blocks were greater than two square miles. The resulting broadband provider specific staging database was validated and attribute anomalies were filtered into an error database.

Address Reporting - Providers reporting broadband availability on a service address basis submitted it in list form. These lists were either submitted in the form of spreadsheets or text files; no geospatial address data was received. Once the address number data was converted to spreadsheets from text files, the address lists were geocoded using VGINs three tiered geocoding process. Addresses were first geocoded against the statewide address point database. Any service addresses that were tied with the match threshold or unmatched on the first pass were rerun using the statewide road centerline geocoding web service. At this point, a majority of the addresses were located and unmatched addresses were then exported as a spreadsheet.

Road Segment Address Reporting – Broadband providers reporting broadband availability using road address ranges submitted the data in a non-spatial list in a majority of cases, although several providers did send in TIGER lines. These lists were normalized into a series of spreadsheets when processing the individual provider. The data was either used in joining to census features by Tiger Line ID (TLID) and then selecting by location from the selection set RCL data or used raw in geospatial format and selected. No providers from the fall 2011 processing were geocoded by address range. If data was not usable by this format, address data was requested from the provider and geocoded as a reported address.

Community Anchor Institutions – Virginia's CAI data has additional attribution to the NTIA data model due the source of the VA data set. In conjunction with Virginia Tech holding speed tests in 2009 to receive download and upload speeds for locations across Virginia, working with many statewide non spatial data sets, VGIN was able to geocode several sources into a singe CAI feature class. This aggregate feature class was loaded into the round 1 NTIA transfer data model. NTIA requested that the data model not be changed so unfortunately speed data was not reported since VT actual values for upload and download speeds populated as opposed to the requested advertised speeds.

In several joint efforts, CAI ID was added to the Virginia CAI data set by Virginia Tech and VGIN. For the spring 2011 SBDD submission, VT aided in the incorporation of additional unreported federal ID values in the data. VGIN received a CAI update from Virginia Tech in early September of 2011 which contained federal ID additions to the data for approximately 75 features which were not previously identified. Theses values were conflated to the VGIN SDE CAI feature class by the spatial adjustment toolbar in ArcMap. Attributes were mapped in for CAI ID, and edit dates as well as edit comments were updated in the VA CAI data. There were several hundred features in the VA Broadband SDE database which did not have appropriate latitude/longitude values so the data set was batch calculated with coordinate values for all features.

In order to represent the data with 2010 census geography as requested by the NTIA for the fall 2011 SBDD submission, data was spatially joined to the 2010 census block data and updated in the SDE layer. This was loaded to the transfer data model in the NTIA SBDD format.

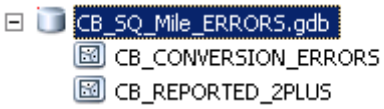
Middle Mile – The majority of providers do not send middle mile data. When it is received it is converted into a geodatabase table in the broadband provider's staging geodatabase. An add XY function was performed in ArcMap and XY events were exported as a new feature class. Inside the provider's staging geodatabase, the NTIA SBDD data model feature class named BB_ConnectionPoint_MiddleMile was imported and renamed NTIA_middle_mile. Data was either loaded to this feature class and all appropriate fields were calculated based on the XY event in order to load data spatially or if only a handful of points were provided the data was manually edited in an edit session. Census blocks for 2010 GEOID value were spatially joined to the middle mile points after all provider who submitted middle mile data and carry over middle mile points were loaded.

Pricing - If nominal weighted subscriber speed was available from a broadband provider, the data was placed into an excel spreadsheet for the fall 2011 submission which followed the format of requested text output information from NTIA. It was then output to a requested tab delimited text file for the release. All providers who had previously sent in pricing data but had not submitted an update for the fall 2011 release were carried over into the fall 2011 pricing spreadsheet.

Speed based on CMA/MSA/RSA - If speed was available by cellular market area or MSA/RSA and provided to CIT and VGIN, this information was placed into a newly created SDE feature class which tracked the most current speed from a provider. If the provider was a new or updated submission, the feature class was updated with the most recent speed data. All archive speed data was located and custom areas of interest were added as polygons in this feature class.

Processing QC, Batch Calculation, & Loading

While some provider data imported directly, where information for 2010 census geography was needed (Census Blocks, Middle Mile, Address Points) the feature of interest was imported and processed differently depending on the type of geography stored. A new geodatabase was created called CB_SQ_Mile_Errors and was necessary for the storage of census blocks which reported errors in the conversion from 2000 to 2010 census geography. Not all providers submitted census blocks to the NTIA but those who did were validated with a field in the selection set census block layer which contained square mileage calculated on the VA Custom Lambert projection. Another geodatabase was created called REPORTED_ERRORS_2010 and it tracked blocks sent by providers which were in fact greater than two square miles.



For data reported as service addresses, several fields were required that could be calculated in batch. The FULLFIPSID was calculated to the address points by spatially joining points to the census blocks. Latitude and Longitude were calculated in ArcCatalog using the calculate geometry function.

Only a few broadband providers who participated in the spring 2011 NTIA submittal provided Middle mile data. Resultantly, the processing and aggregation of a middle mile data set was done outside of standard broadband provider data processing.

Address Points, Road Centerlines, Census blocks, and Wireless Service polygons were processed as broadband provider data was received although middle mile information was a post processing step. To create middle mile event data, the broadband providers that provided the information to CIT and VGIN generally included latitude and longitude of the facility and these values were used in ArcGIS with the add XY function. After points were brought into ArcGIS, data was exported into a separate feature class and values were calculated based on information the broadband provider provided.

Specific Broadband Provider Processing Methodology

The following Broadband Providers submitted CIT data for the spring 2011 NTIA submission. It is assumed that the participating Broadband providers provided entire coverage as opposed to update only data sets unless otherwise noted. Included are the methods used in updating the Virginia Broadband map data:

Broadband Provider	FCC Registration Number
AT&T Wireless	0004979233
CenturyLink	0018626853
Charter Communications, Inc.	0017179383
Comcast	0004441663
Covad Communications Company	0003753753
Cox Communications	0001524461
Cricket Communications, Inc.	0002963528
Level 3 Communications, LLC	0003723822
Northern Neck Wireless Internet Services, LLC	0017338054
NTELOS Inc.	0005849518
NTELOS (Richmond 20 MHz LLC)	0001656180
NTELOS (Virginia PCS Alliance, L.C.)	0002051720
NTELOS (West Virginia PCS Alliance, L.C.)	0002049328
NTELOS Telephone Inc.	0002073138
NTELOS Network Inc.	0003742442
Roanoke and Botetourt Telephone Company	0003775244
R&B Network Inc.	0003775301
RCN	0003735016
Shentel Cable Company	0018024075
Shentel Service Company	0013393988
Sprint Nextel Corporation	0003774593
Sunset Digital Communications Inc.	0000826322
T-Mobile	0006945950
TDS Telecom (Amelia Telephone Corporation)	0002073526
TDS Telecom (New Castle Telephone Company)	0003767399
TDS Telecom (Virginia Telephone Company)	0002058261
Time Warner Cable	0013430244
Verizon Wireline	0002073203

AT&T Wireless

AT&T wireless provided geospatial data in the form of a coverage area shape file. Middle mile was included but the values reported were the same as reported in the spring 2011 submission. Weighted speed was included but the document provided was for the state of Mississippi so it could not be used.

Inside the shapefile provided by AT&T were over 1700 polygon records and every single record contained identical attribution. The data appeared to be gridded for internal use. The data was imported into the provider's staging geodatabase using the NTIA wireless schema. Polygons were merged into a single coverage polygon, and attributes were populated to match supporting documentation reported by AT&T. Upon reviewing the documentation, the polygon did have two spectrums so a second polygon was created

based on copy and paste and coded to match the appropriate transmission technology spectrum. After completion, the data was loaded into NTIA SBDD transfer data model reporting database.

Provider Name:	AT&T Mobility, LLC
DBA Name:	AT&T Mobility, LLC
FRN:	0004979233
Transmission Technology	80
VA Data Category:	7
Wireless Polygons:	2
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	1
Community Anchor Institutions reported:	0

Century Link

CenturyLink provided geospatial data in the form of road centerlines and census blocks and reported to CIT that the census Geography was in 2010. Middle mile and subscriber weighted speed were not included this round and were carried over from the most recent data submission into the speed SDE layer and pricing spreadsheet. A staging geodatabase was created using selection Set Feature Classes for Street Centerlines and Census blocks.

Census blocks less than two square miles were joined to the Selection Set Census block data using the FULLFIPSID text. Inspecting the join, all features seemed to successfully pass through, signifying that the provider did in fact submit data in 2010 geometry. The joined block data was output to new features. Since the data associated to the blocks were named similarly to the NITA model data, they were calculated in the selection set export and then loaded into the NTIA transfer data model.

In order to provide the Road Centerline data in Virginia's geometry (VBMP RCL Quarter 2, 2011), the road lines provided by Century Link were used in a select by location analysis. The Virginia Road Centerline Selection set was selected if the lines provided by CenturyLink were within 5 meters and then exported to a new feature class. All values inside the Century Link roads were then used in select by location queries to conflate attributes. This iteration of the roads was loaded into the NTIA transfer data model.

Provider Name:	CenturyTel, Inc.
DBA Name:	CenturyLink
FRN:	0018626853
Transmission Technology	10
VA Data Category:	1
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	28909
Address Point features:	0

Road Centerline features:	14807
Middle Mile features:	1
Community Anchor Institutions reported:	0

Charter

Charter provided Geospatial data in the form of road centerlines and census blocks and reported to CIT that the census Geography was in 2010. Subscriber weighted speed was not included this round and was carried over from the most recent data submission. To date, middle mile data has not been received from this provider. A new Personal geodatabase was created to represent the staging of this provider for the fall 2011 release. Selection Set Feature Classes for Street Centerlines and Census blocks were used.

In order to provide the Road Centerline data in Virginia's geometry (VBMP RCL Quarter 2, 2011), the road lines provided by Charter were used in a select by location analysis. The Virginia Road Centerline Selection Set was selected if the lines provided by Charter were within 5 meters and then exported to a new feature class. All values inside the Charter roads were then used in select by location queries to conflate attributes. This iteration of the roads was loaded into the reporting database.

Charter also provided geospatial data in the form of census blocks less than two square miles. These values were joined to the Selection Set Census block data by FULLFIPSID and after inspected, all features successfully joined signifying that Charter did report data in 2010 geography. The data was then output to a new feature class. Since the data associated to the blocks were named similarly to the NITA model data, they were calculated in the selection set export and then into the NTIA transfer data model.

Provider Name:	Charter Communications, Inc.
DBA Name:	Charter Communications, Inc.
FRN:	0017179383
Transmission Technology	41
VA Data Category:	1
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	4670
Address Point features:	0
Road Centerline features:	804
Middle Mile features:	0
Community Anchor Institutions reported:	0

Comcast

Comcast provided census block and address number spreadsheets and reported to CIT that the geography used was in Census 2010. Speed data was provided by region in a spreadsheet and the values inside were added to the Speed SDE feature class as regional

polygons. A staging file geodatabase was created for this provider and the census block spreadsheet information was imported as a table.

Comparing this submission to the last, there were several thousand blocks less in the data but over 35K records which was presumably the entire coverage data set and not an update of deltas only. This FGDB table was joined to the 2010 selection set census blocks directly and all blocks did successfully join from the table to the feature, signifying that Comcast did report features in 2010 geography. None of the census blocks reported were over two square miles. The joined data was then exported to a new feature class. The features in this new layer were selected by location to the SDE speed feature class in order to apply maximum down and upload speeds which were reported in the speed spreadsheet.

The address availability import table was geocoded using the VGIN address point geo-locator. Matched and Tied results were exported to a separate table and re-geocoded to the road centerline locator. All RCL locator points were spatially joined to the Virginia RCL selection set and output to a separate feature class. The address point and road centerline feature classes were then imported into the NTIA transfer data model.

Provider Name:	Comcast Cable Communications, LLC
DBA Name:	Comcast
FRN:	0004441663
Transmission Technology	40, 41
VA Data Category:	3
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	35719
Address Point features:	12860
Road Centerline features:	491
Middle Mile features:	0
Community Anchor Institutions reported:	0

Covad Communications Company

Covad provided Census Blocks, Address ranges, Middle Mile, subscriber pricing, and speed by region as text files. This data was normalized to spreadsheets. CIT confirmed with the provider that the census geography used was in 2010. A staging geodatabase was created and the spreadsheets were imported as feature class tables. The pricing information was added directly from the imported spreadsheet to the provider aggregate pricing spreadsheet while the Middle mile and speed data were checked and no updates were necessary to make in the Middle mile point and Speed polygon feature classes so values were carried over from the spring 2011 submission.

Covad provided different transmission technology speeds within the same geometric features so the output product need was stacked geometry. In order to geographically represent the data this way, for Census Block and Address Segment data, transmission type was selected and a separate geodatabase table was exported for each. There were

3 tables for Census Blocks created; 10, 20, & 30. There were 3 tables for address ranges created; 10, 20, & 30. Each of these were joined to the appropriate feature class individually, exported as a separate feature class, and then loaded to a single feature class per geometry.

The census block text file contained varying transmission technologies. There were more records than Microsoft excel 2003 could handle so the import procedure to normalize the data was directly into an Access database. To graphically represent the COVAD data, the imported Access table was added as a table in ArcMap and individual table selections were output for Transmission Technology type. There were three output tables created and each table was individually joined to the selection set census block layer to verify record number counts. The joins all were successful, signifying that the data was indeed in 2010 geography so they were exported to a separate feature class per table. Typical Download and Upload speeds were on the feature through the join but Advertised was located in the speed information which was applied to the SDE Speed polygon layer so layers were selected individually to conflate the advertised speeds based on select by location. The three populated feature classes were loaded into a single feature class to represent block geography and this was loaded to the NITA transfer data model.

Address Ranges did have TLID values inside of them so for each Address Table created, they were joined to the 2010 TIGER lines and then exported individually to a TIGER Feature class. Each Tiger feature class was used in select by location to be within 5 meters of the selection set Virginia Road Centerline data. Three selection set feature classes were then output and attributes were populated individually. The three line features were merged into a single feature of stacked geometries and this was loaded to the NTIA Transfer data model.

Provider Name:	DIECA Communications, Inc.
DBA Name:	Covad Communications Company
FRN:	0003753753
Transmission Technology	10, 20 , 30
VA Data Category:	2
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	123550
Address Point features:	0
Road Centerline features:	1769
Middle Mile features:	6
Community Anchor Institutions reported:	0

Cox

Cox provided text files of Address Availability, Census Blocks, Middle mile, weighted speeds, and speed by region. These files were normalized into spreadsheets and imported as tables into the provider staging geodatabase. Weighted speed information was placed into the pricing spreadsheet directly. Speed by region was used in creating

new polygons in the SDE speed layer. Middle mile had no changes so values were carried over from the spring 2011 submission.

Cox reported to CIT that their blocks were in 2010 census geography but when working with the census blocks first, the spreadsheet FIPS value was joined to the 2010 block feature class and only 13000 blocks achieved a result. In total, there were over 25K blocks which were preliminarily joined to feature layers of XREF to 2010 block features. After this viewing of the data, they were assumed 2000 and the geodatabase table was joined to the 2000-2010 XREF table in ArcMap and only matched values were kept. These values were exported into a new table and then joined to the 2010 block selection set by GEOID. The new feature class join was then exported to a new feature class and values were calculated based on joined features. Where information was not present, the Speed SDE feature class was used by select by location and calculations were performed based on block centroid location in provider speed area. Blocks were then exported to two feature classes based on the SQ_MI_VALAMBERT inside the selection set feature class; one which represented blocks less than two square miles and one which was blocks greater than two square miles. The feature class of blocks less than two square miles was loaded to the NTIA transfer data model and the feature class of blocks greater than two square miles was loaded to the reported_error block feature class.

The Cox address availability import table was geocoded to the VGIN address point geo-locator and the output data provided was the same XY as the address point. Matched points were spatially joined to the selection set address point data. Unmatched and Tied results were exported to a separate table and re-geocoded to the road centerline locator. All RCL locator points were spatially joined to the Virginia RCL selection set and output to a separate feature class. Using the speed SDE layer, missing values were calculated for both address points and road centerlines. The address point and road centerline feature classes were then imported into the NTIA transfer data model.

Provider Name:	CoxCom Inc.
DBA Name:	Cox Communications
FRN:	0001524461
Transmission Technology	40
VA Data Category:	1, 3
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	25140
Address Point features:	2558
Road Centerline features:	195
Middle Mile features:	4
Community Anchor Institutions reported:	0

Cricket

Cricket provided Geospatial data in the form of a coverage area shape file. Middle mile data was not included. The shape file had all of the fields needed to load into the NTIA model therefore no additional information was needed. The GIS shape file was copied and pasted into the provider staging geodatabase feature class and attributes were populated and checked against the source data. After completion, the data was loaded into NTIA SBDD transfer data model reporting database.

Provider Name:	Leap Wireless International, Inc.
DBA Name:	Cricket Communications, Inc.
FRN:	0002963528
Transmission Technology	80
VA Data Category:	7
Wireless Polygons:	1
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	0
Community Anchor Institutions reported:	0

Level 3

Level 3 provided text files of address availability and middle mile points for the fall 2011 submission. A staging geodatabase was created for the provider and both text files were imported for normalization. Address availability import table was geocoded to the VGIN address point geo-locator. Matched and Tied results were exported to a separate table and re-geocoded to the road centerline locator. All RCL locator points were spatially joined to the Virginia RCL selection set and output to a separate feature class. The address point and road centerline feature classes were then imported into the NTIA transfer data model.

Middle mile data was added as XY events and exported using the same coordinate system as the NTIA SBDD layers. It was then imported into a feature class which replicated the middle mile schema of the NTIA transfer data model and cleaned. This was then loaded into the NTIA Transfer data model.

Provider Name:	Level 3 Communications, LLC
DBA Name:	Level 3 Communications, LLC
FRN:	0003723822
Transmission Technology	50
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	581
Road Centerline features:	106

Middle Mile features:	436
Community Anchor Institutions reported:	0

Northern Neck Wi-Fi

Northern Neck Wireless provided its submission for the fall 2011 release in the form of address level data even though they are a wireline provider. Based on NTIA feedback and the transmission technology type of the provider, Virginia Tech developed a radio tower propagation model for the spring 2011 SBDD data release to be used in reporting instead of address level point or road centerline data. For detailed processing information, please review the spring 2011 SBDD reporting documentation. The address level data for the fall 2011 release was geocoded and points were used in verification of accuracy of the polygon data based on the centroid of the point.

Many addresses that were geocoded fell outside of the model generated for the previous release. All address and RCL point matches through the history of submission of Northern Neck Wi-Fi were merged together in a single point layer. Points were selected if their centroid fell within the propagation model polygon, and then results were switched to find all features outside of the polygon. Many customer addresses points were found outside of the tower extents (polygons). Buffers of 500 meters were created around the points since the original VA broadband map from 2008 was generated for statewide visualization of 500 meter buffers. The polygon buffers were all merged together in a single polygon and loaded to the SBDD wireless polygon feature class in the transfer data model. The carryover polygon information from spring 2011 was loaded into the transfer data model as well.

Provider Name:	Northern Neck Wireless Internet Services, LLC
DBA Name:	Northern Neck Wireless Internet Services, LLC
FRN:	0017338054
Transmission Technology	70
VA Data Category:	8
Wireless Polygons:	2
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	0
Community Anchor Institutions reported:	0

NTELOS Wireless

NTELOS and its numerous provider names submitted to Geospatial data in the form of a coverage area shape file. Middle mile data was not included. Inside the shapefile provided by NTELOS were four polygon records; one polygon for each different FRN. The

structure had all of the fields needed to load into the NTIA model therefore no additional information was needed. The NTELOS GIS shape file was copied and pasted into the provider staging geodatabase feature class and attributes were populated and checked against the source data. After completion, the data was loaded into NTIA SBDD transfer data model.

Provider Name:	NTELOS Inc.
DBA Name:	NTELOS
FRN:	0005849518
Transmission Technology	80
VA Data Category:	7
Wireless Polygons:	1
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	0
Community Anchor Institutions reported:	0

Provider Name:	Richmond 20 MHz LLC
DBA Name:	NTELOS
FRN:	0001656180
Transmission Technology	80
VA Data Category:	7
Wireless Polygons:	1
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	0
Community Anchor Institutions reported:	0

Provider Name:	Virginia PCS Alliance, L.C.
DBA Name:	NTELOS
FRN:	0002051720
Transmission Technology	80
VA Data Category:	7
Wireless Polygons:	1
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	0
Community Anchor Institutions reported:	0

Provider Name:	West Virginia PCS Alliance, L.C.
DBA Name:	NTELOS
FRN:	0002049328
Transmission Technology	80
VA Data Category:	7
Wireless Polygons:	1
2010 Census Blocks <2 Square miles:	0
Address Point features:	0

Road Centerline features:	0
Middle Mile features:	0
Community Anchor Institutions reported:	1

NTELOS Wireline

NTELOS provided text files of Address Availability, Census Blocks, and subscriber weighted speed for the Fall 2011 data inclusion. These files were normalized into spreadsheets for usage. The pricing information was directly placed into the pricing spreadsheet. The master address and census blocks spreadsheets were imported into the provider staging database as tables. While there were no updates for speed information by region, the speed SDE layer was updated with data from the spring 2011 submission to use in selections. Addresses that were reported appeared to be updates only so a master spreadsheet of this provider was carried over from the last submission to this new submission server directory and the updates were added to the master address spreadsheet. Middle mile information was carried over from the spring 2011 submission.

NTELOS reported to CIT that their blocks were in 2010 census geography but when working with the census blocks first, the spreadsheet FIPS value was joined to the 2010 block feature class and approximately 1000 blocks were unmatched. This signified that the blocks reported may have been sent in 2000 geography or a geography different than 2010. Due to the unmatched joins, NTELOS blocks were assumed 2000 geography and the geodatabase table was joined to the 2000-2010 XREF table in ArcMap and only matched values were kept. These values were exported into a new table and then joined to the 2010 block selection set by GEOID. The new feature class join was then exported to a new feature class and values were calculated based on joined features. Where information was not present, the Speed SDE feature class was used by select by location and calculations were performed based on block centroid location in provider speed area. Blocks were then exported to two feature classes based on the SQ_MI_VALAMBERT inside the selection set feature class; one which represented blocks less than two square miles and one which contained a small subset of blocks greater than two square miles. The feature class of blocks less than two square miles was loaded to the NTIA transfer data model and the feature class of blocks greater than two square miles was loaded to the reported_error block feature class.

The address availability import table was updates only so a master spreadsheet carried over from the last submission of NTELOS addresses was updated with the changes which were provided. This was geocoded to the VGIN address point geo-locator and the output data provided was the same XY as the address point. Matched and Tied results were exported to a separate table and re-geocoded to the road centerline locator. All RCL locator points were spatially joined to the Virginia RCL selection set and output to a separate feature class. Using the speed SDE layer, missing values were calculated for

both address points and road centerlines. The address point and road centerline feature classes were then imported into the NTIA transfer data model.

Provider Name:	NTELOS Inc.
DBA Name:	NTELOS Telephone Inc.
FRN:	0002073138
Transmission Technology	10, 50
VA Data Category:	3
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	3260
Address Point features:	6462
Road Centerline features:	1263
Middle Mile features:	2
Community Anchor Institutions reported:	0

Provider Name:	NTELOS Inc.
DBA Name:	NTELOS Network Inc.
FRN:	0003742442
Transmission Technology	10, 50
VA Data Category:	3
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	1946
Address Point features:	1768
Road Centerline features:	295
Middle Mile features:	50
Community Anchor Institutions reported:	0

Provider Name:	NTELOS Inc.
DBA Name:	Roanoke and Botetourt Telephone Company
FRN:	0003775244
Transmission Technology	10, 50
VA Data Category:	3
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	1297
Address Point features:	3508
Road Centerline features:	121
Middle Mile features:	1
Community Anchor Institutions reported:	0

Provider Name:	NTELOS Inc.
DBA Name:	R&B Network Inc.
FRN:	0003775301
Transmission Technology	10
VA Data Category:	3
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	1019
Address Point features:	469
Road Centerline features:	171
Middle Mile features:	13
Community Anchor Institutions reported:	0

RCN

RCN provided a spreadsheet of address availability and middle mile points for the fall 2011 submission. A provider staging geodatabase was created and both files were imported as tables for normalization. The Address availability import table was geocoded to the VGIN address point geo-locator. Matched and Tied results were kept, while unmatched results were exported to a separate table in the geodatabase. All RCL locator points were spatially joined to the Virginia RCL selection set and output to a separate feature class. The address point and road centerline feature classes were then imported into the NTIA transfer data model.

Middle mile data was added as XY events and exported using the same coordinate system as the NTIA SBDD layers. After viewing the data, it appeared the points were not valid coordinates so addresses were geocoded and XY points were created and checked to the source. The middle mile data extracted from addresses was then imported into a feature class which replicated the middle mile schema of the NTIA transfer data model while data was cleaned and calculated. This was then loaded into the NTIA Transfer data model.

Provider Name:	Starpower Communications, LLC
DBA Name:	RCN
FRN:	0003735016
Transmission Technology	40
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	2038
Road Centerline features:	0
Middle Mile features:	2
Community Anchor Institutions reported:	0

Shentel

Shentel provided a spreadsheet for Shentel Cable Company and Shentel Service Company and within each spreadsheet was a tab for address availability, a tab for census block availability, and a tab for Speed information. Middle mile and pricing was not submitted at this point in time. The speed information provided was used in updating the SDE speed layer. Two new staging geodatabases were created for both Shentel FRNs and tables were imported into the geodatabase of interest from the original excel tab.

Census block information was reported in 2000 geography to CIT so the imported block data was joined the 2000-2010 XREF table in ArcMap and only matched values were kept. These values were exported into a new table and then joined to the 2010 block selection set by GEOID. The new feature class join was then exported to a new feature class and values were calculated based on joined features. Blocks were then verified for appropriate square mileage in the geography conversion and exported to two feature classes based on the SQ_MI_VALAMBERT inside the selection set feature class; one which

represented blocks less than two square miles and one which was blocks greater than two square miles. The feature class of blocks less than two square miles was loaded to the NTIA transfer data model and the feature class of blocks greater than two square miles was loaded to the Conversion_Error block feature class.

The address import data did have TLID available as a column Shentel's data. In order to provide the Road Centerline data in Virginia's geometry (VBMP RCL Quarter 2, 2011), the imported tables for address ranges based on Shentel FRN numbers were joined to the 2009 tiger lines since it was presumed they were not using 2010 geography for lines. The joins were output to new feature classes and they were used in a select by location analysis. The Virginia Road Centerline Selection set was selected if the lines provided by Shentel TLID lines were within 5 meters and then exported to a new feature class. All values inside the Shentel roads were then used in select by location queries to conflate attributes. This iteration of the roads was loaded into the reporting database.

Provider Name:	Shentel Cable Company
DBA Name:	Shentel
FRN:	0018024075
Transmission Technology	40
VA Data Category:	2
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	11209
Address Point features:	0
Road Centerline features:	3587
Middle Mile features:	0
Community Anchor Institutions reported:	0

Provider Name:	Shentel Service Company
DBA Name:	Shentel
FRN:	0013393988
Transmission Technology	10
VA Data Category:	2
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	2153
Address Point features:	0
Road Centerline features:	1188
Middle Mile features:	0
Community Anchor Institutions reported:	0

Sprint

Sprint provided Geospatial data in the form of a coverage area shape file. Middle mile was included. The shapefile contained two records and the structure had all of the fields needed to load into the NTIA model therefore no additional information was needed.

The GIS shape file was loaded into the provider staging geodatabase feature class and FRN information was scrubbed to match the NTIA number reporting format. The data

was then loaded into the Transfer Data Model. Middle mile information did not appear to change any attribution so it was loaded from the spring 2011 transfer data model.

Provider Name:	Sprint Nextel Corporation
DBA Name:	Sprint
FRN:	0003774593
Transmission Technology	80
VA Data Category:	7
Wireless Polygons:	2
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	2
Community Anchor Institutions reported:	0

Sunset Digital

Sunset Digital was a first time provider for the fall 2011 SBDD submission and provided Geospatial data in the form of road centerlines and census blocks. The provider reported to CIT that the census Geography was in 2010 and VGIN provided them a road centerline data set for usage in reporting. Middle mile was included this round as text files although there may be potential to receive future middle mile submissions in a geospatial format. A new personal geodatabase was created to represent the staging of this provider for the fall 2011 release. Selection Set Feature Classes for Street Centerlines and Census blocks were used.

Census blocks less than two square miles were joined to the Selection Set Census block data using the FULLFIPSID text. Inspecting the join, all features seemed to successfully pass through, signifying that the provider did in fact submit data in 2010 geometry. The joined block data was output to new features. Since the data associated to the blocks were named similarly to the NITA model data, they were calculated in the selection set export and then into the NTIA transfer data model directly.

Sunset Digital provided road centerline segments to CIT and VGIN in the Virginia Road Centerline geometry. The submission data included the VA unique ID for road segments. The V_LEID was joined to the selection set road centerline data V_LEID and only matching records were used. After records were verified, a 100% match rate between the two data sets was achieved. Road centerlines were then output to a staging feature class and then calculated. The staging feature class was then loaded to the transfer data model.

Provider Name:	Sunset Digital Communications Inc.
DBA Name:	Sunset Digital Communications Inc.
FRN:	0000826322
Transmission Technology	50
VA Data Category:	1
Wireless Polygons:	0

2010 Census Blocks <2 Square miles:	1522
Address Point features:	0
Road Centerline features:	778
Middle Mile features:	20
Community Anchor Institutions reported:	0

T-Mobile

T-mobile provided geospatial data in the form of three coverage area shapefiles. In the supporting documentation, T-mobile explained attribute values for each polygon feature class. Middle mile and pricing information was included but the values reported were the same as reported in the spring 2011 submission and were carried over into the new transfer model.

The shapefiles provided by T-mobile were named UMTS, HSPA 21, & HSP 42 and inside each shapefile were several thousand records with every single record in each feature class containing identical attribution. The data appeared to be gridded for internal use. The three shapefiles were imported into the provider's staging geodatabase. The polygons were merged into a single coverage polygon in the individual staging feature class, and attributes were populated to match supporting documentation provided by T-mobile. After completion, each feature class was loaded into the NTIA transfer data model.

Provider Name:	T-Mobile USA, Inc.
DBA Name:	T-Mobile
FRN:	0006945950
Transmission Technology	80
VA Data Category:	7
Wireless Polygons:	3
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	1
Community Anchor Institutions reported:	0

TDS Telecom

TDS Telecom provided text files of Address Availability, Middle mile, and weighted speeds. These files were normalized into spreadsheets. The master address and middle mile spreadsheets were imported into the provider staging geodatabase as tables. The weighted speed information was placed into the pricing spreadsheet directly. Comparison of the middle mile data to the spring 2011 release, revealed no changes so values were carried over from the spring data set. Review of the address level data

revealed there were transmission technologies reported for 10 and 50. Each of these technologies was exported into a separate table to geocode.

The address availability import tables for each technology were geocoded to the VGIN address point geo-locator and the output data provided is the same XY as the address point. Matched and Tied results were exported to a separate table and re-geocoded to the road centerline locator. All RCL locator points were spatially joined to the Virginia RCL selection set and output to a separate feature class. When previewing the source TDS Telecom data, there were many values where max advertised and typical down and up were significantly lower than max and typical up so values were standardized based on average values. In the TDS Telecom data, Max advertized seemed to be equal to typical up and down so both typical values were calculated based on max advertised. Data for points and address ranges were loaded to the transfer data model.

Provider Name:	Amelia Telephone Corporation
DBA Name:	TDS Telecom
FRN:	0002073526
Transmission Technology	10, 50
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	568
Middle Mile features:	1
Community Anchor Institutions reported:	0

Provider Name:	New Castle Telephone Company
DBA Name:	TDS Telecom
FRN:	0003767399
Transmission Technology	10
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	1349
Road Centerline features:	97
Middle Mile features:	1
Community Anchor Institutions reported:	0

Provider Name:	Virginia Telephone Company
DBA Name:	TDS Telecom
FRN:	0002058261
Transmission Technology	10, 50
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	997
Road Centerline features:	72
Middle Mile features:	1
Community Anchor Institutions reported:	0

Time Warner Cable

Time Warner provided Geospatial data in the form of road centerlines and census blocks and reported to CIT that the census Geography was in 2010. Middle mile and subscriber weighted speed were not included this round.

Working in the provider staging database, census blocks less than two square miles were joined to the Selection Set Census block data using the FIPS number text fields. Inspecting the join, all features seemed to successfully pass through, signifying that the provider did in fact submit data in 2010 geometry. None of the blocks provided were over two square miles. The joined block data was output to a new feature class. Fields were calculated in the selection set export to match Time Warner fields and then the feature class was loaded into the NTIA transfer data model.

In order to provide the Road Centerline data in Virginia's geometry (VBMP RCL Quarter 2, 2011), the road lines provided by Time Warner were used in a select by location analysis. The Virginia Road Centerline Selection set was selected if the lines provided by Time Warner were within 5 meters and then exported to a new feature class. The values for all road segments were the same so values from the selection road centerline set were manually calculated to match the provided roads. This iteration of the roads was loaded into the reporting database.

Provider Name:	Time Warner Cable
DBA Name:	Time Warner Cable
FRN:	0013430244
Transmission Technology	41
VA Data Category:	1
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	3282
Address Point features:	0
Road Centerline features:	2126
Middle Mile features:	0
Community Anchor Institutions reported:	0

Verizon Wireline

Verizon Wireline provided text files for census block availability, address range availability with TLID, and a spreadsheet of Middle Mile information by addresses. The text files were exported to excel files and loaded into the provider staging geodatabase as tables. The middle mile information was geocoded to the state address point locator and output to a feature class, and then loaded into the transfer data model middle mile feature class. Speed data was not reported this round but the SDE speed feature class was updated with Verizon's speed data from the spring 2011 submission.

Census block information was reported in 2010 geography to CIT and a Verizon reported dual transmission technology types. An initial join of the Verizon census block table to the 2010 blocks showed that several thousand records were filtered out by the join. A frequency was performed on the provided census block FIPS id to see if any duplicate records were present signifying potential transmission technology overlap and there were several thousand. Block information was then exported to two Transmission technology type tables; one for DLS and one for FIOS. These tables were individually joined to the 2010 census blocks in order to achieve exact record matches. The joins were exported to new feature classes and values were calculated based on joined features. Blocks were then verified for appropriate square mileage in the geography conversion and exported to two feature classes per transmission technology type based on the SQ_MI_VALAMBERT inside the selection set feature class. Blocks greater than two square miles that were erroneously reported were exported and loaded to the reported error feature class. The remaining blocks less than two square miles was loaded to the NTIA transfer data model.

The address import data did have TLID available as a column Verizon's data. Since census block transmission technology represented multiple areas, the Transmission Technology type for addresses reported was separated into two geodatabase tables for DSL and for FIOS. In order to provide the Road Centerline data in Virginia's geometry (VBMP RCL Quarter 2, 2011), individual transmission technology tables were joined to the 2010 tiger lines since Verizon reported 2010 data. The joins were output to new feature classes and they were used in a select by location analysis. The Virginia Road Centerline Selection set was selected if the lines provided by Verizon TLID joined lines were within 5 meters and then exported to a new feature class. All values inside the Verizon roads were then used in select by location queries to conflate attributes. This iteration of the roads was loaded into the reporting database.

Provider Name:	Verizon Virginia Inc.
DBA Name:	Verizon Virginia Inc.
FRN:	0002073203
Transmission Technology	10, 50
VA Data Category:	2
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	110765
Address Point features:	0
Road Centerline features:	15635
Middle Mile features:	12
Community Anchor Institutions reported:	0

Many providers did not submit updates for the fall 2011 so their data from the spring 2011 SBDD transfer model was carried over. A new staging geodatabase was created which represented providers who did not send updates and the schema matched the transfer data model. Providers who did not submit an update were selected by FRN from the spring 2011 NTIA SBDD submittal. The following broadband providers are participants in the VA SBDD project but did not indicate having updates and were loaded

into the address point, road centerline, and middle mile carryover feature classes directly without the need of a data rework:

Broadband Provider	FCC Registration Number
BVU OptiNet	0006823991
Burkes Garden Telephone Company	0004942819
Citizens Cablevision Inc.	0009485343
Citizens Telephone Cooperative	0004381422
Highland Telephone Cooperative	0004318846
FairPoint Communications	0002071116
MGWnet	0019225366
Midatlantic Broadband Cooperative	0019765304
New Hope Telephone Cooperative	0002071579
Roadstar Internet, Inc.	0013445358
Scott County Telephone Cooperative	0002069862
Verizon Wireless	0003290673
Virginia Mountain Micro	0018713800

BVU OptiNet

Provider Name:	BVU
DBA Name:	OptiNet
FRN:	0006823991
Transmission Technology	50
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	2313
Road Centerline features:	1813
Middle Mile features:	0
Community Anchor Institutions reported:	0

Burkes Garden Telephone Company

Provider Name:	Burke's Garden Telephone Company, Inc.
DBA Name:	Burke's Garden Telephone Company, Inc.
FRN:	0004942819
Transmission Technology	10
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	107
Road Centerline features:	68
Middle Mile features:	1
Community Anchor Institutions reported:	0

Citizens

Provider Name:	Citizens Cablevision, Inc.
DBA Name:	Citizens
FRN:	0009485343

Transmission Technology	41
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	525
Road Centerline features:	245
Middle Mile features:	0
Community Anchor Institutions reported:	0

Provider Name:	Citizens Telephone Cooperative
DBA Name:	Citizens
FRN:	0004381422
Transmission Technology	10, 41
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	6081
Road Centerline features:	2408
Middle Mile features:	0
Community Anchor Institutions reported:	0

Highland Telephone Cooperative

Provider Name:	Highland Telephone Cooperative
DBA Name:	Highland Telephone Cooperative
FRN:	0004318846
Transmission Technology	10
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	1049
Road Centerline features:	306
Middle Mile features:	0
Community Anchor Institutions reported:	0

FairPoint Communications

Provider Name:	Peoples Mutual Telephone Company
DBA Name:	FairPoint Communications
FRN:	0002071116
Transmission Technology	10
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	6360
Road Centerline features:	969
Middle Mile features:	0
Community Anchor Institutions reported:	0

MGW Networks

Provider Name:	MGW Networks, LLC
DBA Name:	MGW Networks, LLC
FRN:	0019225366

Transmission Technology	10
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	375
Road Centerline features:	21
Middle Mile features:	0
Community Anchor Institutions reported:	0

MidAtlantic Broadband Cooperative

Provider Name:	Mid-Atlantic Broadband Cooperative
DBA Name:	MBC
FRN:	0019765304
Transmission Technology	50
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	77
Road Centerline features:	75
Middle Mile features:	0
Community Anchor Institutions reported:	0

New Hope Telephone Cooperative

Provider Name:	New Hope Telephone Cooperative
DBA Name:	New Hope Telephone Cooperative
FRN:	0002071579
Transmission Technology	10
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	1210
Middle Mile features:	0
Community Anchor Institutions reported:	0

Roadstar Internet, Inc.

Provider Name:	Roadstar Internet Inc.
DBA Name:	Roadstar Internet Inc.
FRN:	0013445358
Transmission Technology	71
VA Data Category:	8
Wireless Polygons:	1
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	0
Community Anchor Institutions reported:	0

Scott County Telephone Cooperative

Provider Name:	Scott County Telephone Cooperative
DBA Name:	SCTC

FRN:	0002069862
Transmission Technology	10, 50
VA Data Category:	6
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	0
Address Point features:	8583
Road Centerline features:	1847
Middle Mile features:	0
Community Anchor Institutions reported:	0

Verizon Wireless

Provider Name:	Cellco Partnership and its Affiliated Entities
DBA Name:	Verizon Wireless
FRN:	0003290673
Transmission Technology	80
VA Data Category:	7
Wireless Polygons:	2
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	0
Community Anchor Institutions reported:	0

Virginia Mountain Micro

Provider Name:	Virginia Mountain Micro
DBA Name:	VMMicro
FRN:	0018713800
Transmission Technology	71
VA Data Category:	7
Wireless Polygons:	1
2010 Census Blocks <2 Square miles:	0
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	0
Community Anchor Institutions reported:	0

The provider information was seamlessly added although with the 2010 census block request from the NTIA, several steps were needed to update point data with the GEOID values of 2010 blocks.

To populate the appropriate data with 2010 census block information, carryover address point and middle mile point data for theses providers was spatially joined to the 2010 census block polygons and the FIPS code of the block added to each point was calculated with the 2010 GEOID value for the block.

In general, census blocks from carry over providers were assumed to be delivered in 2000 geography since the 2010 TIGER data was unavailable before these providers would have sent data to CIT so they were joined to the 2000 XREF table and output non-spatially.

This non-spatial table was joined to the 2010 Selection Set and fields were populated for the model.

The following providers were reprocessed using the source data and 2010 block conversion methodology or a separate effort to rework their information. Specific processing details are included by provider:

Broadband Provider	FCC Registration Number
Buggs Island	0002031698
Metrocast Communications	0018547471
Nelson Cable	0000900287
Nextlink Wireless, Inc.	0014286934
The Wired Road	0020153854
XO Communications, LLC	0006275945

BIT Communications

BIT Communications' had only submitted one piece of data and the receipt was for the round 1, spring 2010, submission to the NTIA. The provider sent an excel spreadsheet with census blocks. Although blocks were included in the original submission to CIT and VGIN, they had not been included in previous submissions to the NTIA. The original methodology for providing BIT Communications data was selecting all address points and road centerlines that fell within the blocks and then send to NTIA. With some additional validation, this provider's data was worked and submitted in a presumably more accurate format. A new BIT Communications geodatabase was created in a carryover directory for providers who needed census block conversion.

The spreadsheet BIT communications submitted was in 2000 geography. This data was joined to the 2010 XREF table by FIPS and then exported to a new table. The new table was joined to the 2010 census blocks by GEOID and the resulting join was exported to a new feature class. There were many blocks included that were greater than two square miles so everything greater than two was removed from the feature class based on the SQ_MI_VALAMBERT field and loaded to the CB_SQ_MI_Error geodatabase for conversions. Roads that and address points that were carried over from the spring submission were selected by location to the new census blocks less than two square miles. If the address point or road centerline's centroid fell within the feature, it was removed completely. Three feature types were loaded to the carryover geodatabase.

Provider Name:	Buggs Island Telephone Cooperative
DBA Name:	BIT Communications
FRN:	0002031698
Transmission Technology	10
VA Data Category:	5
Wireless Polygons:	0

2010 Census Blocks <2 Square miles:	2290
Address Point features:	807
Road Centerline features:	191
Middle Mile features:	0
Community Anchor Institutions reported:	0

MetroCast

MetroCast had only submitted one piece of data and the receipt was for the round 1, spring 2010, submission to the NTIA. In the preliminary mapping from 2008-2009, the provider sent a hard copy map which showed road centerline coverage. The block spreadsheet showed no information so address point and road centerline data was initially converted to match coverage area. This resulted in census blocks less than two square miles reporting additional features erroneously

In order to present this provider in census blocks with 2010 geography, the selection set census blocks were selected within 1 meter of address points. These blocks were exported to a feature class and all blocks greater than two square miles were filtered out based on attribute selection. Address points and road centerlines were used with the blocks less than two square miles. If a point centroid fell within a block less than two square miles, it was removed. Centerline centroids that fell within a block less than two square miles were removed as well. All new points, roads, and census block features were loaded to the carryover geodatabase.

Provider Name:	Gans Communications, LP
DBA Name:	MetroCast Communications
FRN:	0018547471
Transmission Technology	41
VA Data Category:	4
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	368
Address Point features:	1782
Road Centerline features:	546
Middle Mile features:	0
Community Anchor Institutions reported:	0

Nelson Cable

Nelson Cable originally submitted census block data via e-mail for the spring 2010 release and also provided actual addresses for where service was provided, duplicating coverage efforts. The original processed submission from Virginia to the NTIA was in address points and road centerlines only since these were the most granular data sets although the features covered areas where census blocks were less than two square miles. In order to provide data to the NTIA more along the lines of geometric format, the data was reworked with 2010 blocks to match coverage area. A new Nelson Cable geodatabase was created in a carryover directory for providers who needed census block conversion.

Blocks provided by Nelson Cable from the spring 2010 submission were selected and joined to the 2000 census blocks. These blocks were joined to the 2000-2010 XREF table and only matching records were kept. These matches were exported to a new table and the joined directly to the 2010 census blocks. All blocks greater than two square miles were filtered and exported to the conversion error feature class. Address points and road centerlines were used with the blocks less than two square miles. If a point centroid fell within a block less than two square miles, it was removed. Centerline centroids that fell within a block less than two square miles were removed as well. All new points, roads, and census block features were loaded to the carryover geodatabase.

Provider Name:	Wintergreen Community CableVision
DBA Name:	Nelson Cable Inc.
FRN:	0000900287
Transmission Technology	41
VA Data Category:	3
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	66
Address Point features:	1318
Road Centerline features:	64
Middle Mile features:	0
Community Anchor Institutions reported:	0

Nextlink Wireless, Inc.

NextLink's original data submission was for the spring 2010 release. The provider originally sent CIT and VGIN a spreadsheet of census block numbers only. A staging geodatabase for this provider was created in the carryover provider directory and the original spreadsheet was imported as a table. The table was joined to the 2000-2010 cross reference table in ArcMap and results were exported a new table. The new table was joined to the 2010 census block data and exported to a new feature class. Fields in the data were calculated based on previous NTIA submissions. No reported blocks were greater than two square miles so the data was loaded to the provider carryover geodatabase.

Provider Name:	Nextlink Wireless, Inc.
DBA Name:	Nextlink Wireless, Inc.
FRN:	0014286934
Transmission Technology	30
VA Data Category:	5
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	29
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	0
Community Anchor Institutions reported:	0

The Wired Road

The Wired Road's provided updates for the fall 2010 release to replace their original data submission in the NTIA SBDD transfer data model. The provider sent a spreadsheet of census block numbers as well as addresses outside blocks greater than two square miles although the addresses did not need any work for the geometry conversion. A staging geodatabase for this provider was created in the carryover provider directory for the fall 2011 release and the original spreadsheet was imported as a table.

The table was joined to the 2000-2010 cross reference table in ArcMap and results were exported a new table. The new table was joined to the 2010 census block data and exported to a new feature class. Fields in the data were calculated based on previous NTIA submissions. Several blocks were filtered when selecting on square mileage and were exported to the census block conversion error feature class. The original address point and road centerlines were loaded to the carryover database as well ad the newly converted blocks less than two square miles.

Provider Name:	The Wired Road
DBA Name:	The Wired Road
FRN:	0020153854
Transmission Technology	50, 70
VA Data Category:	3,7
Wireless Polygons:	1
2010 Census Blocks <2 Square miles:	1199
Address Point features:	1530
Road Centerline features:	871
Middle Mile features:	1
Community Anchor Institutions reported:	0

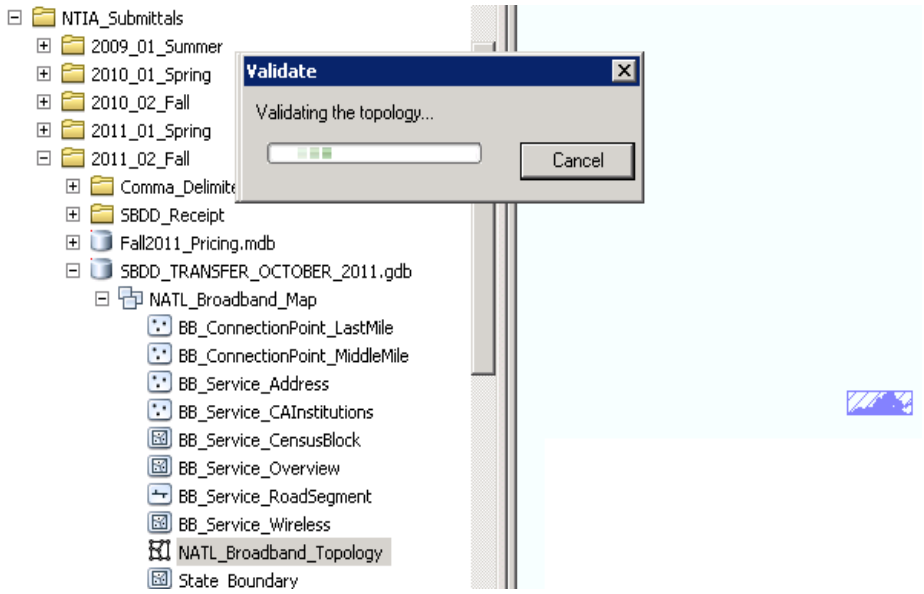
XO Communications

XO Communications' original data submission was for the spring 2011 release. The provider originally sent a spreadsheet of census block numbers only. This original spreadsheet was imported into the provider staging database as a table. The table was joined to the 2000-2010 cross reference table in ArcMap and results were exported a new table. The new table was joined to the 2010 census block data and exported to a new feature class. Fields in the data were calculated based on previous NTIA submissions. No reported blocks were greater than two square miles so the data was loaded to the provider carryover geodatabase.

Provider Name:	XO Communications, LLC
DBA Name:	*DBA Name:* XO Communications Services, Inc. (Affiliated Entity)
FRN:	0006275945
Transmission Technology	10, 20, 30
VA Data Category:	5
Wireless Polygons:	0
2010 Census Blocks <2 Square miles:	1206
Address Point features:	0
Road Centerline features:	0
Middle Mile features:	0
Community Anchor Institutions reported:	0

Post Processing Validation and Quality Control

The data included in the NTIA SBDD data model was quality controlled using the topology included in the model as well as the python script provided by NTIA. The topology was validated using ESRI ArcGIS Topology validation tools within ArcCatalog.

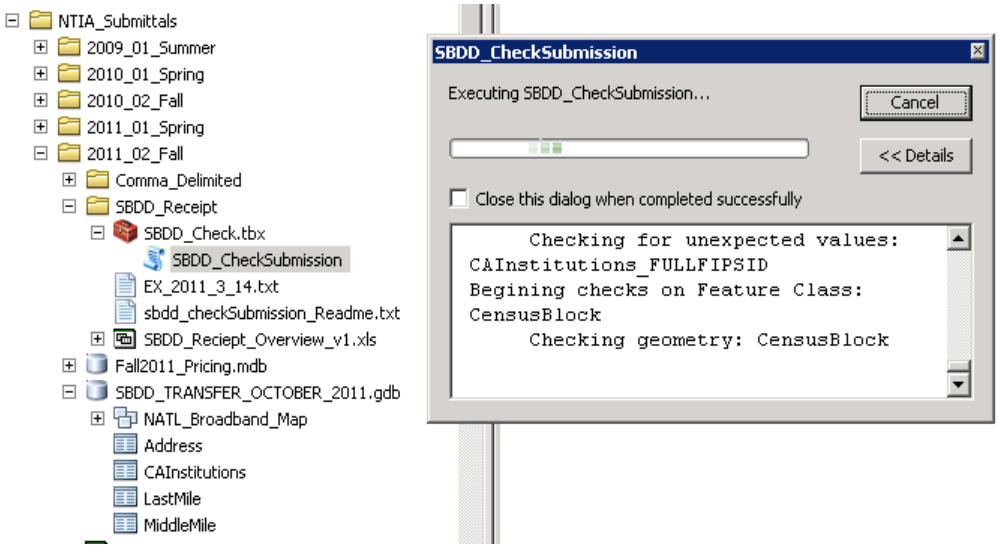


The following is the exported topology summary log:

Class1	Rule	Class2	Errors	Exceptions
	Must Be Larger Than Cluster Tolerance		0	0
BB_Service_CAInstitutions	Must Be Properly Inside	State_Boundary	0	0
BB_ConnectionPoint_MiddleMile	Must Be Properly Inside	State_Boundary	0	0
BB_ConnectionPoint_LastMile	Must Be Properly Inside	State_Boundary	0	0
BB_Service_Address	Must Be Properly Inside	State_Boundary	0	0
BB_Service_RoadSegment	Must Not Self-Overlap		0	0
BB_Service_RoadSegment	Must Not Self-Intersect		0	0

The spring 2011 SBDD data submission was quality controlled using the available python script since VGIN's ArcGIS environment was not at v10. In the time gap between the spring and fall of 2011, VGIN upgraded its ArcGIS software and service packs and was able to use the included ArcGIS geoprocessing model. The attribution included in the Virginia submission was validated using the NTIA provided model and the model interface was run repeatedly against the data sets until all attribute errors were identified and corrected.

The python script imbedded in the model was altered by VGIN to limit each run to only one feature class to speed processing. Once each feature class was run successfully, the entire script was enabled and run in its entirety against the Virginia submission.



The output of the preliminary run is shown below:

```
* ---------------------------------------------------------------------------
* Data Submission Receipt
* CheckSBDDSubmission.py
* Created on: 9/21/2011
* Created by: VA
* State Broadband Data Development Program
* NTIA / FCC
* ---------------------------------------------------------------------------

*********************************************************************************
*****                                          *****
*****                                          *****
*****              Submission Receipt File - version 1.2       *****
*****            Check below for any FAILED Statements          *****
*****                                          *****
*****                                          *****
*********************************************************************************

*Check Layer: LastMile
    Geometry PASSED:  Layer has 0 records.
    Field Check:    passed    LastMile_PROVNAME values are good
    Field Check:    passed    LastMile_DBANAME values are good
    Field Check:    passed    LastMile_FRN values are good
    Field Check:    passed    LastMile_OWNERSHIP values are good
    Field Check:    passed    LastMile_BHCAPACITY values are good
    Field Check:    passed    LastMile_BHTYPE values are good
    Field Check:    passed    LastMile_LATITUDE values are good
    Field Check:    passed    LastMile_LONGITUDE values are good
    Field Check:    passed    LastMile_STATEABBR values are good
    Field Check:    passed    LastMile_FULLFIPSID values are good

*Check Layer: MiddleMile
    Geometry PASSED:  Layer has 557 records.
    Field Check:    passed    MiddleMile_PROVNAME values are good
    Field Check:    passed    MiddleMile_DBANAME values are good
    Field Check:    passed    MiddleMile_FRN values are good
    Field Check:    FAILED    MiddleMile_OWNERSHIP has UNEXPECTED VALUES
    Field Check:    passed    MiddleMile_BHCAPACITY values are good
    Field Check:    passed    MiddleMile_BHTYPE values are good
    Field Check:    passed    MiddleMile_LATITUDE values are good
    Field Check:    passed    MiddleMile_LONGITUDE values are good
    Field Check:    passed    MiddleMile_STATEABBR values are good
    Field Check:    passed    MiddleMile_FULLFIPSID values are good

*Check Layer: Address
    Geometry PASSED:  Layer has 63497 records.
    Field Check:    passed    Address_PROVNAME values are good
    Field Check:    passed    Address_DBANAME values are good
    Field Check:    FAILED    Address_PROVIDER_TYPE has UNEXPECTED VALUES
    Field Check:    passed    Address_FRN values are good
    Field Check:    passed    Address_ADDRESS values are good
    Field Check:    passed    Address_BLDGNBR values are good
    Field Check:    passed    Address_STREETNAME values are good
    Field Check:    passed    Address_CITY values are good
    Field Check:    passed    Address_STATECODE values are good
    Field Check:    passed    Address_ZIP5 values are good
    Field Check:    passed    Address_LATITUDE values are good
    Field Check:    passed    Address_LONGITUDE values are good
    Field Check:    FAILED    Address_ENDUSERCAT has UNEXPECTED VALUES
    Field Check:    passed    Address_TRANSTECH values are good
    Field Check:    passed    Address_MAXADDOWN values are good
    Field Check:    passed    Address_MAXADUP values are good
    Field Check:    passed    Address_SpeedNotBB values are good
    Field Check:    passed    Address_OneSpeedAndNotTheOther values are good
```

Field Check: passed Address_FULLFIPSID values are good

**Check Layer: CAInstitutions*
Geometry PASSED: Layer has 3591 records.
Field Check: passed CAInstitutions_ANCHORNAME values are good
Field Check: FAILED CAInstitutions_ADDRESS has UNEXPECTED VALUES
Field Check: FAILED CAInstitutions_BLDGNBR has UNEXPECTED VALUES
Field Check: FAILED CAInstitutions_STREETNAME has UNEXPECTED VALUES
Field Check: passed CAInstitutions_CITY values are good
Field Check: FAILED CAInstitutions_STATECODE has UNEXPECTED VALUES
Field Check: FAILED CAInstitutions_ZIP5 has UNEXPECTED VALUES
Field Check: passed CAInstitutions_CAICAT values are good
Field Check: passed CAInstitutions_BBSERVICE values are good
Field Check: FAILED CAInstitutions_TRANSTECH has UNEXPECTED VALUES
Field Check: passed CAInstitutions_MAXADDOWN values are good
Field Check: passed CAInstitutions_MAXADUP values are good
Field Check: passed CAInstitutions_SpeedNotBB values are good
Field Check: passed CAInstitutions_OneSpeedAndNotTheOther values are good
Field Check: passed CAInstitutions_FULLFIPSID values are good

**Check Layer: CensusBlock*
Geometry PASSED: Layer has 359947 records.
Field Check: passed CensusBlock_PROVNAME values are good
Field Check: passed CensusBlock_DBANAME values are good
Field Check: passed CensusBlock_PROVIDER_TYPE values are good
Field Check: passed CensusBlock_FRN values are good
Field Check: passed CensusBlock_STATEFIPS values are good
Field Check: passed CensusBlock_COUNTYFIPS values are good
Field Check: passed CensusBlock_TRACT values are good
Field Check: passed CensusBlock_BLOCKID values are good
Field Check: passed CensusBlock_FULLFIPSID values are good
Field Check: passed CensusBlock_TRANSTECH values are good
Field Check: passed CensusBlock_MAXADDOWN values are good
Field Check: passed CensusBlock_MAXADUP values are good
Field Check: FAILED CensusBlock_SpeedNotBB has UNEXPECTED VALUES
Field Check: passed CensusBlock_OneSpeedAndNotTheOther values are good
Speed Tier Record Check PASSED

**Check Layer: Overview*
Geometry PASSED: Layer has 0 records.
Field Check: passed Overview_PROVNAME values are good
Field Check: passed Overview_DBANAME values are good
Field Check: passed Overview_FRN values are good
Field Check: passed Overview_GEOUNITTYPE values are good
Field Check: passed Overview_STATECOUNTYFIPS values are good
Field Check: passed Overview_TRANSTECH values are good
Field Check: passed Overview_STATEABBR values are good

**Check Layer: RoadSegment*
Geometry PASSED: Layer has 54707 records.
Field Check: passed RoadSegment_PROVNAME values are good
Field Check: passed RoadSegment_DBANAME values are good
Field Check: FAILED RoadSegment_PROVIDER_TYPE has UNEXPECTED VALUES
Field Check: passed RoadSegment_FRN values are good
Field Check: passed RoadSegment_STATE values are good
Field Check: passed RoadSegment_TRANSTECH values are good
Field Check: passed RoadSegment_MAXADDOWN values are good
Field Check: passed RoadSegment_MAXADUP values are good
Field Check: passed RoadSegment_SpeedNotBB values are good
Field Check: passed RoadSegment_OneSpeedAndNotTheOther values are good

**Check Layer: Wireless*
Geometry FAILED and fixed: Layer now has 19 records.
Field Check: passed Wireless_PROVNAME values are good
Field Check: passed Wireless_DBANAME values are good
Field Check: passed Wireless_FRN values are good

Field Check: passed Wireless_TRANSTECH values are good
Field Check: passed Wireless_MAXADDOWN values are good
Field Check: passed Wireless_MAXADUP values are good
Field Check: passed Wireless_SpeedNotBB values are good
Field Check: passed Wireless_OneSpeedAndNotTheOther values are good
Field Check: passed Wireless_STATEABBR values are good

There were several areas which yielded errors. These check failures may have resulted due to source data issues, processing issues, or loading to the transfer model from disparate locations based on individual providers. In an ArcMap session, the feature classes in the transfer data model were edited in conjunction with the NTIA provided SBDD_Receipt_Overview.xls check matrix. Values were calculated to match default values in the model. The following were errors that were located and fixed based on the geoprocessing model:

BB_Service_MiddleMile:

Field Check: FAILED MiddleMile_OWNERSHIP has UNEXPECTED VALUES
Error source: NTIA QC GP model not recognizing -9999 as valid value
Resolution: None. NTIA needs to alter model in order for this to be unflagged.

BB_Service_Address:

Field Check: FAILED Address_PROVIDER_TYPE has UNEXPECTED VALUES
Error source: 0 values present
Resolution: All '0' values were calculated '1' since there is not currently an 'unavailable' domain value

Field Check: FAILED Address_ENDUSERCAT has UNEXPECTED VALUES
Error source: "", " ", and <NULL> values present
Resolution: 58876 of 63472 values calculated to NTIA default of "ZZ"

BB_Service_CAInstitutions:

Field Check: FAILED CAInstitutions_ADDRESS has UNEXPECTED VALUES
Error source: 4 records contained "", " ", and <NULL> values
Resolution: values calculated as "N/A". This issue will be followed up between NTIA releases.

Field Check: FAILED CAInstitutions_BLDGNBR has UNEXPECTED VALUES
Error source: 11 records contained 0, "", " ", and <NULL> values
Resolution: 4 values calculated as "N/A". This issue will be followed up between NTIA releases.

Field Check: FAILED CAInstitutions_STREETNAME has UNEXPECTED VALUES
Error source: 142 records contained " " values
Resolution: values calculated as "N/A". This issue will be followed up between NTIA releases.

Field Check: FAILED CAInstitutions_STATECODE has UNEXPECTED VALUES
Error source: 1 record contained "" value
Resolution: value calculated as "VA"

Field Check: FAILED CAInstitutions_ZIP5 has UNEXPECTED VALUES
Error source: 7 records contained " " values
Resolution: values calculated as "N/A". This issue will be followed up between NTIA releases.

Field Check: FAILED CAInstitutions_TRANSTECH has UNEXPECTED VALUES
Error source: NTIA QC GP model not recognizing -9999 as valid value
Resolution: None. NTIA needs to alter model in order for this to be unflagged.

BB_Service_CensusBlock:

Field Check: FAILED CensusBlock_SpeedNotBB has UNEXPECTED VALUES
Error source: "MAXADDOWN" = '2' OR "MAXADDOWN" IS NULL, "MAXADUP" = "1"
Covad = 14 <Null> Values, calculated = Typical up/down values
XO = 72 (all values of download/2 = 2), calculated minimum download (3) and minimum upload (2)
Resolution: Recalculated erroneously entered or missed values
Covad = Calculated Max Advertised Down/Up as Typical Down/Up values for the 14 records
XO = Calculated as minimum download (3) and minimum upload (2) for the 72 records

BB_Service_RoadSegment:

Field Check: FAILED RoadSegment_PROVIDER_TYPE has UNEXPECTED VALUES
Error source: 10851 records = 0
Resolution: values calculated as "1". This issue will be followed up between NTIA releases based on feedback looping with provdiers.

All failed checks were corrected to valid values and the geoprocessing model was rerun with success. The following results output to text file:

```
**************************************************
**********CONGRATULATIONS*****************
      It appears you have NO data inegrity issues
        this file is ready to submit to the FCC
**********CONGRATULATIONS*****************
**************************************************
Completed script SBDDCheckSubmission...
Succeeded at Thu Sep 22 13:11:36 2011 (Elapsed Time: 40 minutes 17 seconds)
```

Upon examining the .txt output file there were several items that should have not resorted in errors but failed due to the NTIA model yielding errors with default values. To examine these issues directly, please review the text file entitled VA_2011_9_22.txt which is included with Virginia's submission package. Several items were noted and skipped due to inconsistencies in the NTIA GP check model. There have been several posts on the PB works site and it is assumed that for future releases, particularly round 5, this issue will be corrected.

Data Issues/Considerations

Broadband providers who only reported address level data did not have any additions or subtractions done to their reported data unless they needed to be converted to 2010 census blocks. The data from previous submission for these carry over providers was generally geocoded directly from one of the 3 previous submissions and results were loaded into the master data set wholesale. One thing that may be done or at least need to be looked at for the next submission is where these 13 broadband providers report addresses that fall in blocks less than two square miles. There may be many cases where these broadband providers actually need a block placed in the report instead of centerlines and points. This may reduce the amount of total address points and road segments submitted as well as increase the individual coverage area for a broadband provider if we do leave out features that sit on top of these polygons. There were 6

providers that were reworked for 2010 blocks and the reduction of address points from the spring 2011 NTIA SBDD submission can be directly attributed to this type of processing.

Another major issue with Virginia Broadband data is notable in the QC output script and that is the Community Anchor Institution data. VGIN plans to do a full analysis of this data set between NTIA submissions which will correct many attribute issues. The addition of this feature class to the VA SDE database

Feedback looping will hopefully allow providers to conform more to the most desirable provider data category as outlined in a previous section. The most desirable format to receive data in from a provider is GIS format and working with the CIT and providers in general, there may be many ways to receive the data from all or most providers who are a category 2 or category 3 solely in GIS format since these category providers appear to have data initially stored geospatially.