Rhode Island
Broadband Mapping Project
September 2011 Data Submission - Summary and Processes

Prepared By:

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BBRI Broadband Rhode Island
An initiative of the RIEDC

RECOVERY.GOV

EA Engineering, Science, and Technology, Inc.

Section A: The Broadband Rhode Island Mapping Team Overview

In support of the national broadband initiatives being undertaken by President Obama and the Federal Government through the American Recovery & Reinvestment Act of 2009 (Recovery Act), Public Law No. 111-5, and the Broadband Data Improvement Act (BDIA), title I of Public Law No. 110-385, 122 Stat. 4096, the Rhode Island Economic Development Corporation (RIEDC), as the entity assigned by Governor Donald Carcieri, has filed to the United States Department of Commerce – National Telecommunications and Information Administration (NTIA) a request for grant funds from the State Broadband Data and Development Grant Program.

Project Description

EA Engineering, Science, and Technology, Inc. (EA), has been selected by RIEDC for the through their Broadband Initiative for Rhode Island (BBRI) to provide a data management and retrieval system for RIEDC. RIEDC and EA entered into a contractual agreement on January 15, 2010 for a base period of 2 (two) years with 3 (three) option years. The work assignment consists of negotiating non disclosure agreements (NDA) with the State's broadband providers, collecting provider broadband data, verifying data submitted, combining and updating data collected, developing and implementing a broadband website with mapping application, and reporting findings to RIEDC and the NTIA.

This program will create a statewide broadband map which will be maintained for five (5) years, that assesses broadband infrastructure in Rhode Island and distinguishes between served, underserved and un-served communities as per the definition specified by NTIA. The data will be made available to the public, with certain restrictions to account for confidentiality of supplier information, through a state website and will also be linked to a Federal Department of Commerce webpage. The goal of this project is to meet the RIEDC's broadband mapping needs and in doing so provide maps and information that will be used to lend guidance and assistance in the planning of future broadband infrastructure development, as well as provide numerous broadband options to the end users.

The BBRI is a comprehensive effort aimed at producing a high level of detailed inventory of broadband services provided to residential, government and business consumers within the State of Rhode Island. The project is not only a Geographical Information Systems (GIS) mission but a project that needs expertise in GIS, contracting and legal issues, Quality Assurance/Quality Control (QAQC), and project management. In order to acquire, collect, process, analyze and display the data that represents these services it was necessary to combine the resources of several professional firms. Each team member provides unique set of strengths and capabilities needed to create the system that is in place. The team is made up of Rhode Island Economic Development Corporation (RIEDC), EA Engineering (EA), University of Rhode Island (URI), Adler Pollock & Sheehan P.C. (AP&S), Eastern Shore Regional GIS Cooperative (ESRGC), and Mapping

& Planning Services (M&PS). The following paragraphs provide information on each team member and their role the project.

The RIEDC is leading the project efforts for the State of Rhode Island (RI). Led by Mr. Stuart Freiman, they oversee all facets of the project and teams involved. The RIEDC coordinates schedules, communicates directly with the National Telecommunications Information Agency (NTIA), reviews and approves all project deliverables, and ensure all project deadlines are met. With their high visibility in the RI business community they are instrumental in arranging meetings between broadband providers and BBRI Team members. The relationship and communication RIEDC has with the State's providers was and continues to be instrumental in making the process of collecting and verifying information from the providers as effortless as possible.

EA is the prime contractor selected to lead the State's data collection, verification, reporting, and mapping efforts. EA has been providing scientific and engineering technical solutions to a wide range of government and industrial clients since 1973. Serving IT and GIS solutions via the web has become a standard business solution for EA's clients. As the prime contractor EA works closely with the RIEDC on all phase of the BBRI project. Included in the work EA has done to date, is the creation of the State's broadband website and mapping application (Digital Atlas). The website provides information on the project, links to related sites, custom mapping capabilities, and user speed test and feedback forms. The site can be viewed at the following address; http://broadband.ri.gov/.

M&PS has been providing GIS consulting services in RI for over 20 years. For the RI Broadband Mapping project, M&PS assisted in the development of a verification and analysis process which is used to perform the QA/QC of the data prior to submitting to the NTIA. Prior to each bi-annual NTIA submittal M&PS uses this process to review and check the data. During this process MP&S checks for positional and attribute accuracy of the data by using a random sampling methodology. The service MP&S provides insures data going to the NTIA is of the highest accuracy and precision. Additional M&PS provides data analysis and static maps displaying the data status at each delivery date.

The GIS laboratory in the URI's Department of Natural Resources is the center of technical expertise in the GIS field for the State of RI. On this project URI manages all GIS data report by EA to the RIEDC. They also serve as an additional tier of QA/QC on the data that is collected and submitted to the NTIA. URI provides technical input to the data processes and the types of maps and data to be displayed on the website. Additionally, several data layers including Community Anchor Institute locations and base map layers being used on the Digital Atlas are provided by URI.

The Eastern Shore Regional GIS Cooperative (ESRGC) is an organization that provides technical support, training, and GIS services to local governments on the Eastern Shore

of Maryland. In addition to supporting the BBRI project, ESRGC is leading the broadband mapping efforts for the state of Maryland. For the BBRI project, the ESRGC's provides the project team technical advisor support. They provide guidance on the project's technical approach and peer review support based on knowledge gained from their work in Maryland. ESRGC provided assistance in defining requirements for the QA/QC process, database design, and data verification tasks. The ESRGC provides the Team with a "lessons learned" from the Maryland Broadband project which guided the BBRI Team around common mistakes made on broadband mapping projects.

AP&S is a local RI law firm providing legal advice and representation and has been servicing RI residents and firms for 50 years. The role AP&S plays on this project is providing the necessary legal advice and contracting that is necessary between the RIEDC and the broadband providers. To date, AP&S has brokered the Non-Disclosure Agreements (NDA's) between the RIEDC and 16 broadband providers. These agreements were imperative and had to be in place before any data was submitted by the broadband providers. All provider broadband information that is made public is based on what the NDAs state. AP&S became the State's expert as to what information was legal for the team to make available to the public and modeled the NDAs off of the guidance provided in the NOFA.

Project Contacts

Contact	Project Role	Phone	Email
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Mapping & Planning Services (M&PS)			
Mary Hutchinson., GISP	Verification Analyst	401-423-3841	mhutch@mappingplanning.com
Eastern Shore Regional GIS Cooperative (ESRGC)			
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BROADBAND PROVIDER DATA VERIFICATION REPORT
RHODE ISLAND DATA SUBMITTAL #3
SEPTEMBER 30, 2011

General Findings:

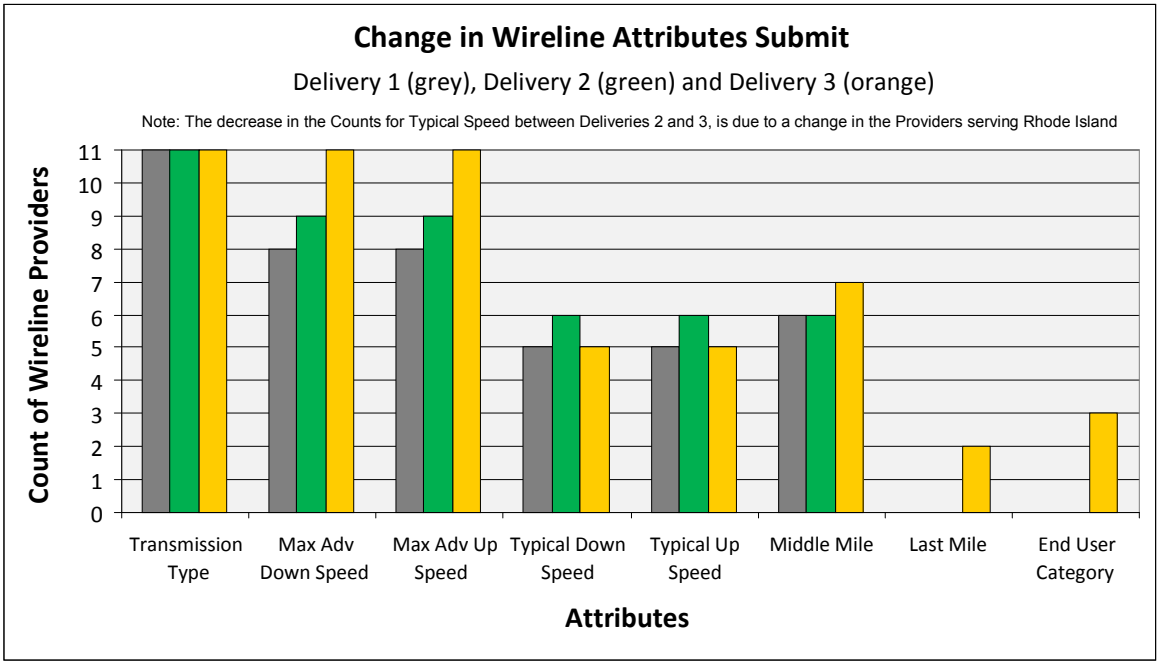
- Rhode Island has extensive broadband coverage from 19 providers. Collectively, these 19 providers offer broadband coverage for the entire state of Rhode Island.

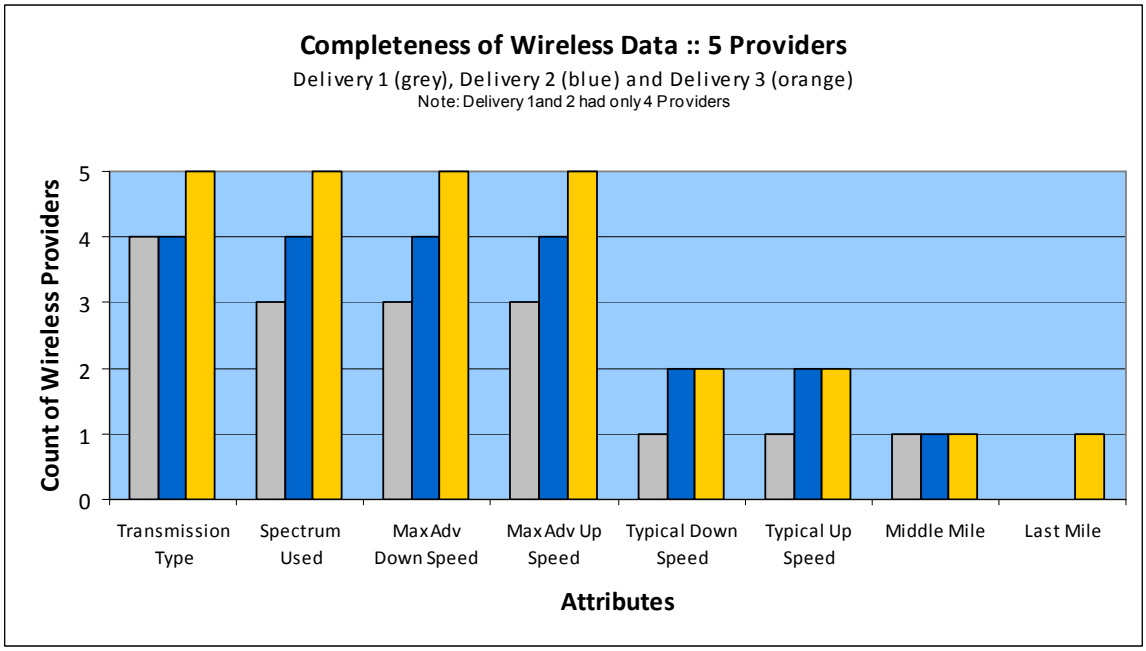
- Broadband availability on a census block basis is summarized in the Figure below:

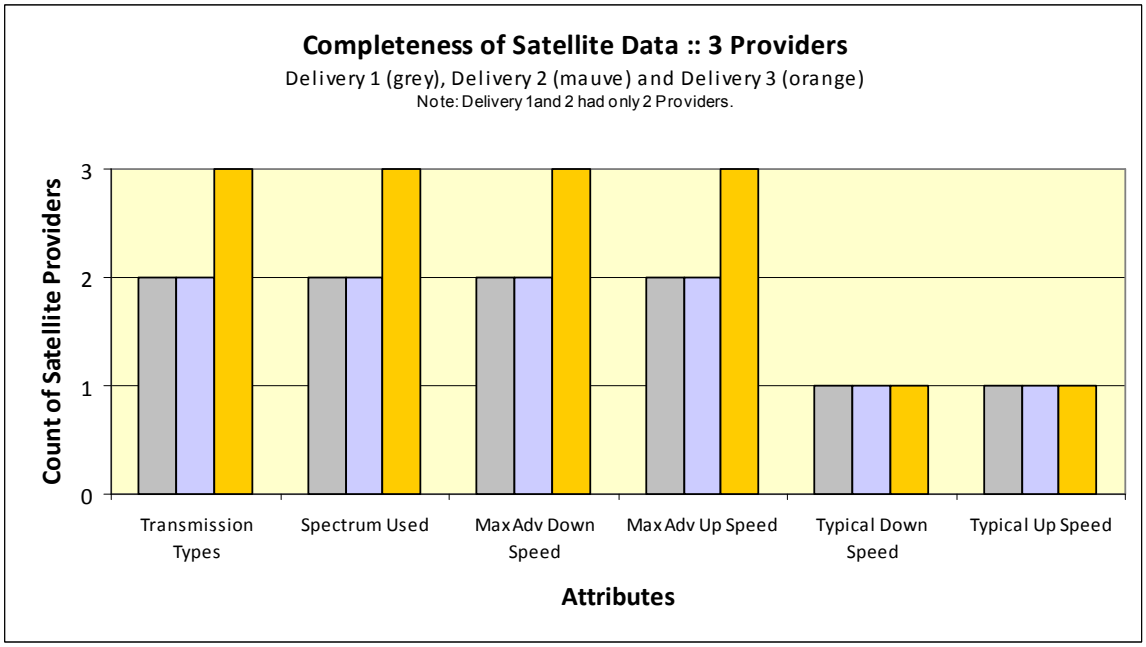
Broadband Availability	Census Blocks	% of Total
Unserved; census block has no access to broadband	0	0
Underserved: One to Two broadband providers	28	<1
Competitive: Three to Four broadband providers	127	<1
Five to Nine broadband providers	9,789	39
Ten to Thirteen broadband providers	15,013	60
Fourteen to Sixteen broadband providers	224	<1
Total	**25,181**	**100**

Note: Several of the Provider datasets do not show coverage of some census blocks in Rhode Island coastal waters (for example, the satellite providers). This results in some over-reporting of the availability results at the low end, in particular, the underserved figures. Broadband is defined as being wireline, wireless and satellite service for this table.

- A total of 19 broadband Providers submitted data; 11 wireline, 5 wireless, and 3 satellite. The completeness of the attributes in the 19 providers' datasets is summarized in the Figures below. (Statistics for NTIA Delivery 1 and 2 are included for comparison purposes).







- Middle Mile data was provided by 8 broadband providers. There were a total of 40 facilities (16 owned and 24 leased).
- Last Mile data was provided by 2 broadband providers.

- A total of 984 Community Anchor Institutions (CAIs) are identified. These were verified with available Rhode Island Geographic Information System (RIGIS) datasets and 529 RIEDC and FCC speed tests.

- The RIEDC has collected 4,385 speed tests in 1,403 (5.6%) of the census blocks within the State. These tests are for the period 3/23/10 to 9/5/11. There is a continued growth both in the number and distribution of the RIEDC speed tests.

- A total 1,904 wireline speed tests from FCC are used for the verification. These tests are for the period 3/11/10 to 6/30/11 and cover 948 (4%) of the census blocks within the State. Tests were collected by OOKLA and MLAB.

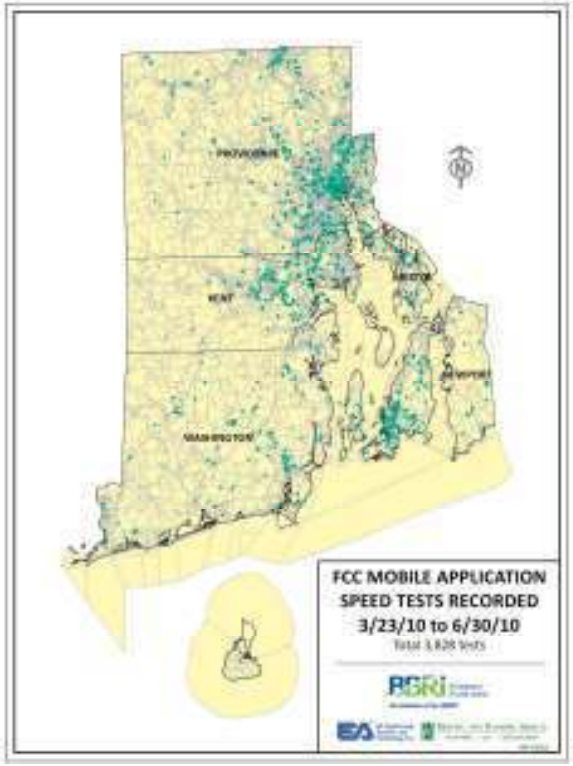
- FCC tests for Mobile Applications (accessing Cellular and Wi-Fi) are also used for the verification. These 3,828 speed tests are recorded for the period 3/11/10 to 6/30/11 and cover 1,036 (4%) of the census blocks within the State. These tests were all collected by OOKLA.

- A total of 10,117 speed tests (RIEDC, FCC, and FCC Mobile Applications) were used for verification purposes. These were distributed within 2,910 (12%) of the 2010 US Census Bureau's 25,181 census blocks in the state. The distribution of each of these sources/types of tests is similar and follows population and household patterns across the State. The distribution of the speed tests are shown in the Figures on the following page.

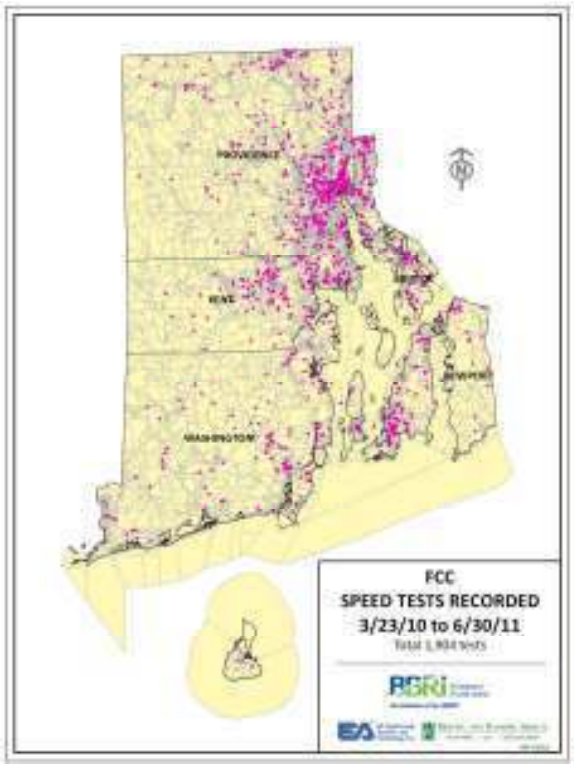
- A total of 56 census blocks are greater than 2 sq. miles, with 28 over land and 28 over open water. Road Segment data was provided by 1 provider. Service Address data was provided by 1 provider. There was one census block (greater than 2 sq miles) with no road segment or service address data (440070133003013 in Foster, RI).

The Figures below show the distribution of speed tests used for verification purposes.

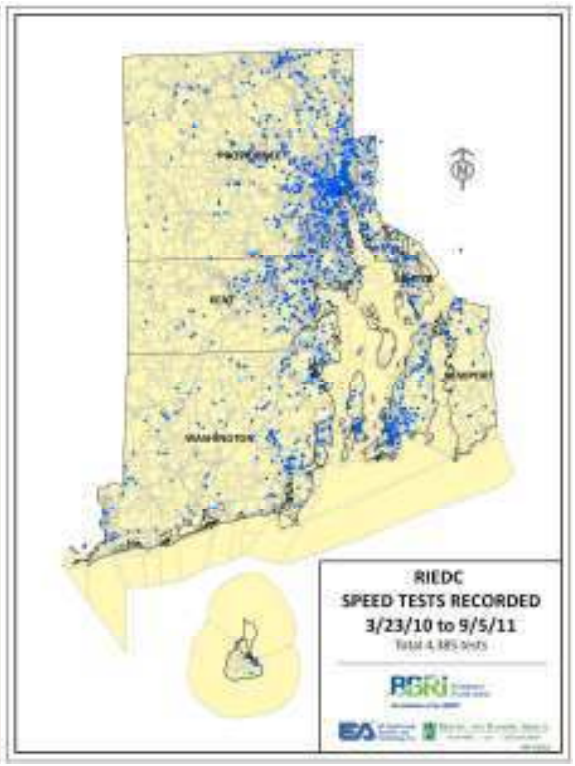
FCC Collected Speed Test - Mobile



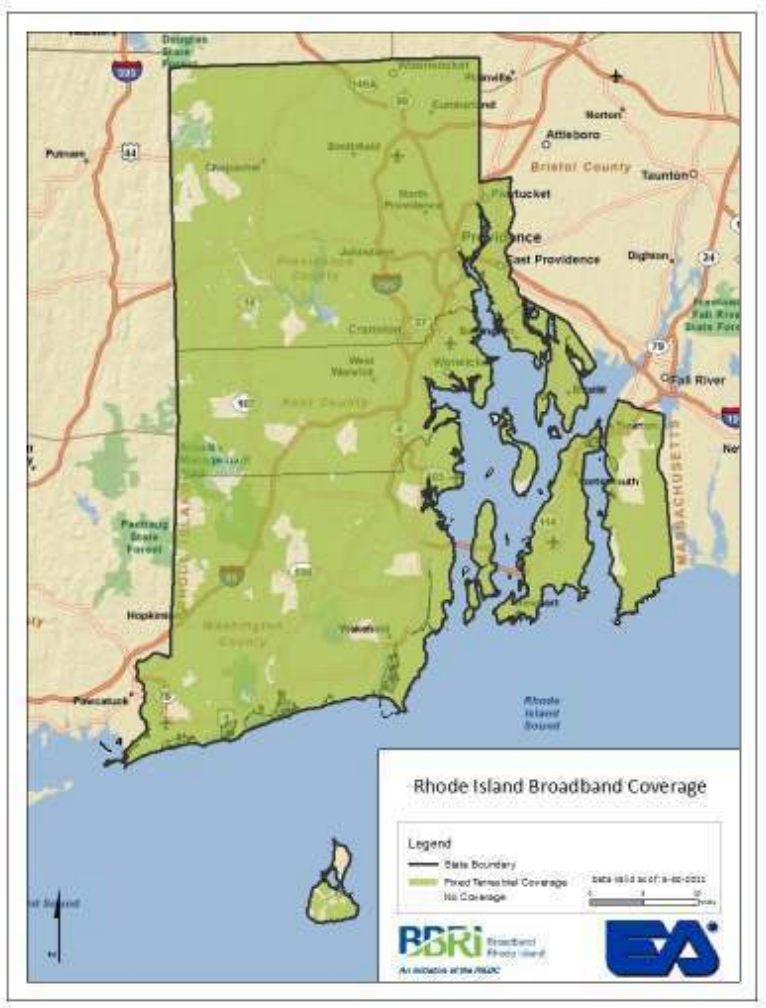
FCC Collected Speed Test - Wireline



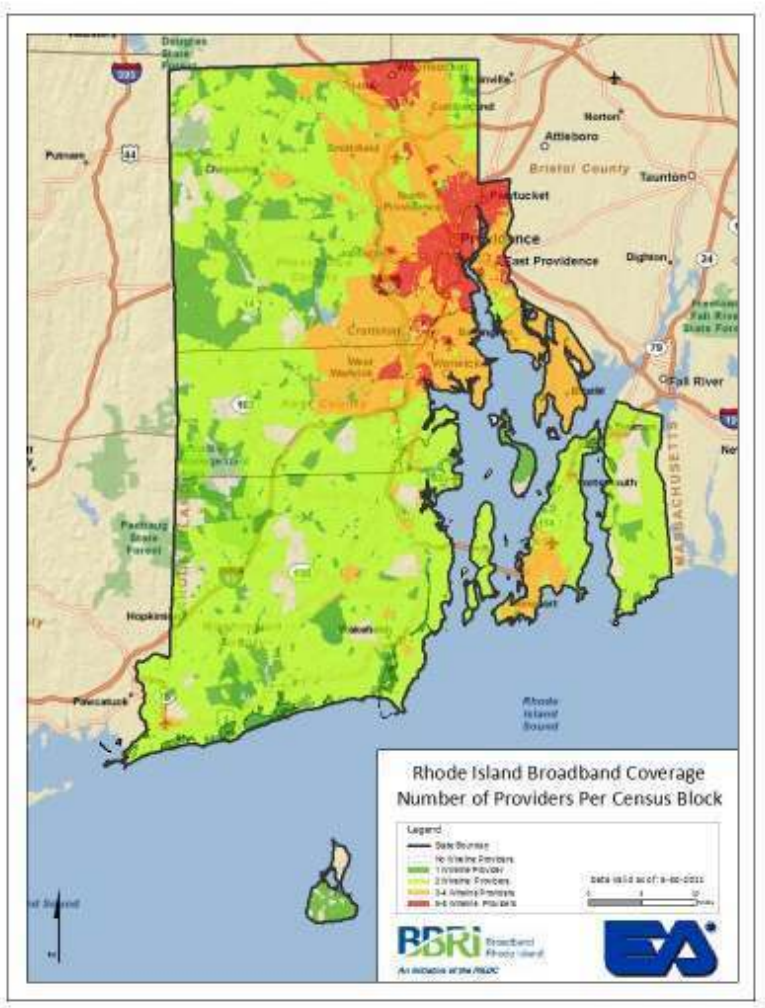
RIEDC Collected Speed Test



The Figures below display the wireline and wireless coverage areas reported in Rhode Island and the number of providers available per census block.



Rhode Island Broadband Coverage Map



Number of Providers Available Per Census Block

The Figures below display the availability of each technology types offered in Rhode Island.

Satellite Coverage

Copper Wireline Coverage

Cable Coverage

The Figures below display the availability of each technology types offered in Rhode Island.

Fiber Optic Coverage

Wireless Coverage

DSL Coverage

Provider Name: Above Net Communications Inc.
DBA: AboveNet

Data Characteristics

FRN:	0000820598
Type of Data Submitted:	Census Blocks
Census Block Count (unique):	2
Provided Technology of Transmission:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	NO
Provided Typical Upload Speed:	NO
Provided Middle Mile:	YES
Provided Last Mile:	YES
Provided End User Category:	YES

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category
11	11

Typical down/upload speeds reported by provider: Not provided

Number of technology transmission types reported by provider: 1

Count of Middle Mile Facilities: 1

Count and Capacity of Last Mile Facilities: 1, 9

End user Category: 2

Data Verification:

Counties served by provider and number of census blocks with service. A total of 2 census blocks are served.

County	Census Block per County
Bristol	0
Kent	0
Newport	0
Providence	2
Washington	0

Greatest down/upload speed from Historical [1] speed tests: No speed tests were taken
Greatest down/upload speed from RIEDC [2] speed tests: No speed tests were taken
Greatest down/upload speed from FCC [3] speed tests: No speed tests were taken
Greatest down/upload speed from FCC Mobile Application speed tests: No speed tests were taken

Count of Historical speed tests: 0
Count of RIEDC [2] speed tests: 0
Count of FCC [3] speed tests: 0
Count of FCC Mobile Application [4] speed tests: 0

RIEDC and FCC speed tests outside of reported service area: 0

Middle Mile facilities outside of reported service area: Facility is located within the reported service area.

Last Mile facilities outside of reported service area: Facility is located within the reported service area.

%/# of census blocks verified by RIEDC & FCC speed tests:

Confirmation of census block served	0
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	2
% of served census blocks confirmed by speed test	0

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: AT&T Mobility LLC
DBA: AT&T Mobility LLC

Data Characteristics

FRN:	0004979233
Type of Data Submitted:	Wireless
Census Block Count (unique):	N/A
Provided Technology of Transmission:	YES
Provided Spectrum Used:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	NO
Provided Typical Upload Speed:	NO
Provided Middle Mile:	NO
Provided Last Mile:	NO

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category
4	3

Typical down/upload speeds reported by provider: Not provided

Number of technology of transmission types and spectrums reported by provider: 1, with 2 spectrums

Data Verification:

Counties served by provider and number of census blocks with service. A total of 24,993 census blocks are served.

County	Census Blocks per County
Bristol	1,087
Kent	4,177
Newport	2,343
Providence	13,148
Washington	4,238

Greatest down/upload speed from Historical [1] speed tests: 9, 8
Greatest down/upload speed from RIEDC [2] speed tests: 9,8
Greatest down/upload speed from FCC [3] speed tests: No FCC speed tests were taken
Greatest down/upload speed from FCC [4] Mobile Application speed tests: 7, 7

Count of Historical speed tests: 1,010
Count of RIEDC speed tests: 8
Count of FCC speed tests: 0
Count of FCC Mobile Application speed tests: 51

Speed tests outside of reported service area: 0

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census blocks served	23
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	24,993
% of served census blocks confirmed by speed test	<1%

Middle mile facilities outside of reported service area: No middle mile facilities.

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: Broadview Networks, Inc.
DBA: Broadview Networks, Inc.

Data Characteristics

FRN:	0003775285
Type of Data Submitted:	Census Blocks
Census Block Count (unique):	9,952
Provided Technology of Transmission:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	YES
Provided Typical Upload Speed:	YES
Provided Middle Mile:	YES
Provided Last Mile:	NO
Provided Road Segments for census blocks greater than 2 sq miles:	NO
Provided Address Points for census block greater than 2 sq miles:	NO
Provided End User Category:	NO

Maximum advertised down/upload speeds reported by provider:

Technology	Max Download Category	Max Upload Category	Count
10	5	5	3
20	5	5	7
30	10	10	7,149
50	11	11	4,755

Typical down/upload speeds reported by provider:

Technology	Max Download Category	Max Upload Category	Count
10	4	2	3
20	4	4	1
30	N/A	N/A	7,149
50	5	5	11

Number of technology transmission types reported by provider: 4

Count of Middle Mile Facilities: 8

End user Category: Not provided

Data Verification:

Counties served by provider and number of census blocks with service. A total of 9,952 census blocks are served.

County	Census Block per County
Bristol	4
Kent	1,110
Newport	959
Providence	7,872
Washington	7

Greatest down/upload speed from Historical [1] speed tests: 4, 4
Greatest down/upload speed from RIEDC [2] speed tests: 4, 4
Greatest down/upload speed from FCC [3] speed tests: 4, 4
Greatest down/upload speed from FCC Mobile Application speed tests: No FCC Mobile speed tests were taken

Count of Historical speed tests: 64
Count of RIEDC [2] speed tests: 5
Count of FCC [3] speed tests: 2
Count of FCC Mobile Application [4] speed tests: 0

RIEDC and FCC speed tests outside of reported service area: 0

Middle mile facilities outside of reported service area: All are centrally located within the reported census blocks.

%/# of census blocks verified by RIEDC & FCC speed tests:

Confirmation of census block served	7
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	9,952
% of served census blocks confirmed by speed test	<1%

Footnotes:

5 Historical Date Range: 3/23/2009 to 3/22/2010
6 RIEDC Date Range: 3/23/2010 to 9/5/2011
7 FCC Date Range: 3/11/2010 to 6/30/2011
8 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: Cellco Partnership
DBA: Verizon Wireless

Data Characteristics

FRN:	0003290673
Type of Data Submitted:	Wireless
Census Block Count:	N/A
Provided Technology of Transmission:	YES
Provided Spectrum Used:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	YES
Provided Typical Upload Speed:	YES
Provided Middle Mile:	NO
Provided Last Mile:	NO

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category
5	4

Typical down/upload speeds reported by provider: 3, 3

Number of technology of transmission types and spectrums reported by provider: 1, with 3 spectrums

Data Verification:

Counties served by provider and number of census blocks with service. A total of 24,929 census blocks are served.

County	Census Blocks per County
Bristol	1,088
Kent	4,150
Newport	2,318
Providence	13,145
Washington	4,228

Greatest down/upload speed from Historical [1] speed tests: No Historical speed tests were reported
Greatest down/upload speed from RIEDC [2] speed tests: 3, 2
Greatest down/upload speed from FCC [3] speed tests: 4,2 and 3, 3
Greatest down/upload speed from FCC Mobile Application [4] speed tests: 7,4 and 6,5

Count of Historical speed tests: 0
Count of RIEDC [2] speed tests: 10
Count of FCC [3] speed tests: 10
Count of FCC Mobile Applications [4] speed tests: 334

RIEDC and FCC speed tests outside of reported service area: 0

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census blocks served	76
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	24,929
% of served census blocks confirmed by speed test	<1%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: Clearwire
DBA: Clearwire

Data Characteristics

FRN:	0017775628
Type of Data Submitted:	Wireless
Census Block Count:	N/A
Provided Technology of Transmission:	YES
Provided Spectrum Used:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	YES
Provided Typical Upload Speed:	YES
Provided Middle Mile:	NO
Provided Last Mile:	NO

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category
5	3

Typical down/upload speeds reported by provider: Not provided

Number of technology of transmission types and spectrums reported by provider: 1, with 1 spectrum

Data Verification:

Counties served by provider and number of census blocks with service. A total of 11,670 census blocks are served.

County	Census Blocks per County
Bristol	136
Kent	3,018
Newport	7
Providence	8,427
Washington	82

Greatest down/upload speed from Historical [1] speed tests: No Historical speed tests were reported
Greatest down/upload speed from RIEDC [2] speed tests: 5, 3
Greatest down/upload speed from FCC [3] speed tests: No FCC speed tests were taken
Greatest down/upload speed from FCC Mobile Application [4] speed tests: 6, 3

Count of Historical speed tests: 0
Count of RIEDC [2] speed tests: 2
Count of FCC [3] speed tests: 0
Count of FCC Mobile Applications [4] speed tests: 1

RIEDC and FCC speed tests outside of reported service area: 0

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census blocks served	3
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	11,670
% of served census blocks confirmed by speed test	<1%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: Cogent Communication, Inc.
DBA: Cogent Communication

Data Characteristics

FRN:	0004654042
Type of Data Submitted:	Census Blocks
Census Block Count (unique):	2
Provided Technology of Transmission:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	NO
Provided Typical Upload Speed:	NO
Provided Middle Mile:	YES
Provided Last Mile:	NO
Provided Road Segments for census blocks greater than 2 sq miles:	NO
Provided Address Points for census block greater than 2 sq miles:	NO
Provided End User Category:	YES

Maximum down/upload speeds reported by provider:

Max Download Category	Count	Max Upload Category	Count
11	2	11	2

Typical down/upload speeds reported by provider: Not Provided

Number of technology of transmission types reported by provider: 1

Count of Middle Mile Facilities: 1

End User Category: 2

Data Verification:

Counties served by provider and number of census blocks with service. A total of 2 census blocks are served.

County	Census Blocks per County
Bristol	0
Kent	0
Newport	0
Providence	2
Washington	0

Greatest down/upload speed from Historical [1] speed tests: No speed tests were taken
Greatest down/upload speed from RIEDC [2] speed tests: No speed tests were taken
Greatest down/upload speed from FCC [3] speed tests: No speed tests were taken
Greatest down/upload speed from FCC Mobile Applications [4] speed tests: No speed tests were taken

Count of Historical speed tests: 0
Count of RIEDC [2] Speed tests: 0
Count of FCC [3] speed tests: 0
Count of FCC Mobile Applications [4] speed tests: 0

RIEDC and FCC speed tests outside of reported service area: No speed tests were taken

Middle mile facilities outside of reported service area: Facility is within the reported census blocks.

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census block served	0
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	2
% of served census blocks confirmed by speed test	0%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: CoxCom, Inc.
DBA: Cox Communications, Inc.

Data Characteristics

FRN:	0001524461
Type of Data Submitted:	Census Blocks, Address Points
Census Block Count (unique):	24,424
Service Address Point Count (unique):	2,267
Provided Technology of Transmission:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	NO
Provided Typical Upload Speed:	NO
Provided Middle Mile:	YES
Provided Last Mile:	NO
Provided Road Segments for census blocks greater than 2 sq miles:	NO
Provided Address Points for census block greater than 2 sq miles:	YES
Provided End user Category:	NO

Maximum advertised down/upload speeds reported by provider:

Data Type	Max Download Category	Max Upload Category	Count
Census Blocks	9	5	24,424
Service Address Points	9	5	2,267

Typical down/upload speeds reported by provider: Not provided

Number of technology of transmission types reported by provider: 1

Count of Middle Mile Facilities: 1

End User Category: Not provided

Data Verification:

Counties served by provider and number of census blocks with service. A total of 24,447 census blocks are served (24,424 by census block data and 23 by service address data).

County	Census Blocks per County
Bristol	1,086
Kent	4,113
Newport	2,285
Providence	12,885
Washington	4,055

Greatest down/upload speed from Historical [1] speed tests: 9, 9 and 10, 6
Greatest down/upload speed from RIEDC [2] speed tests: 10, 4 and 9, 9
Greatest down/upload speed from FCC [3] speed tests: 9, 8
Greatest down/upload speed from FCC Mobile Applications [4] speed tests: 7, 6

Count of Historical speed tests: 98,305
Count of RIEDC [2] speed tests: 2,597
Count of FCC [3] speed tests: 928
Count of FCC Mobile Applications [4] speed tests: 1,286

RIEDC and FCC speed tests outside of reported service area: 2 of 4,811 speed tests were recorded outside of the coverage area reported by provider.

Middle mile facilities outside of reported service area: All are located within the reported census blocks.

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census block served	1,707
Census blocks served, not reported by provider	2
Total number of served census blocks reported by provider	24,447
% of served census blocks confirmed by speed test	7%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: DIECA Communications, Inc.
DBA: Covad Communications Company

Data Characteristics

FRN:	0003753753
Type of Data Submitted:	Census Blocks
Census Block Count: (unique)	10,610
Provided Technology of Transmission:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	YES
Provided Typical Upload Speed:	YES
Provided Middle Mile:	NO
Provided Last Mile:	NO
Provided Road Segments for census blocks greater than 2 sq miles:	NO
Provided Address Points for census block greater than 2 sq miles:	NO
Provided End User Category:	NO

Maximum advertised down/upload speeds reported by provider:

Technology	Max Download Category	Max Upload Category	Count
10	6	3	2,554
20	5	5	1,582
30	5	5	6,028

Typical down/upload speeds reported by provider:

Technology	Max Download Category	Max Upload Category	Count
10	5	3	3,628
20	4	4	2,879
30	5	5	6,016

Number of technology of transmission types reported by provider: 3

Count of Middle Mile Facilities: 0

End User Category: Not provided

Data Verification:

Counties served by provider and number of census blocks with service. A total of 10,610 census blocks are served.

County	Census Blocks per County
Bristol	2
Kent	2,606
Newport	2
Providence	8,000
Washington	0

Greatest down/upload speed from Historical [1] speed tests: 9, 3
Greatest down/upload speed from RIEDC [2] speed tests: No speed tests were taken
Greatest down/upload speed from FCC [3] speed tests: No speed tests were taken
Greatest down/upload speed from FCC Mobile Applications [4] speed tests: No speed tests were taken

Count of Historical speed tests: 57
Count of RIEDC [2] speed tests: 0
Count of FCC [3] speed tests: 0
Count of FCC Mobile Applications [4] speed tests: 0

RIEDC and FCC speed tests outside of reported service area: No speed tests were taken

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census block served	0
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	10,610
% of served census blocks confirmed by speed test	0%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: Fiber Technologies Networks, LLC.
DBA: FiberTech

Data Characteristics

FRN:	0006797849
Type of Data Submitted:	Census Blocks
Census Block Count (unique):	11
Provided Technology of Transmission:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	NO
Provided Typical Upload Speed:	NO
Provided Middle Mile:	NO
Provided Last Mile:	NO
Provided Road Segments for census blocks greater than 2 sq miles:	NO
Provided Address Points for census block greater than 2 sq miles:	NO
Provided End User Category:	YES

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category	Count
10	10	7

Typical down/upload speeds reported by provider: Not provided

Number of technology of transmission types reported by provider: 1

Count of Middle Mile Facilities: 0

End User Category: 4

Data Verification:

Counties served by provider and number of census blocks with service. A total of 11 census blocks are served.

County	Census Block s per County
Bristol	0
Kent	2
Newport	0
Providence	9
Washington	0

Greatest down/upload speed from Historical [1] speed tests: 7, 5
Greatest down/upload speed from RIEDC [2] speed tests: 8,6
Greatest down/upload speed from FCC [3] speed tests: No FCC speed tests were taken
Greatest down/upload speed from FCC Mobile Applications [4] speed tests: No FCC speed tests were taken

Count of Historical speed tests: 3
Count of RIEDC [2] speed tests: 1
Count of FCC [3] speed tests: 0
Count of FCC Mobile Applications [4] speed tests: 0

RIEDC and FCC speed tests outside of reported service area: 0

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census block served	1
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	11
% of served census blocks confirmed by speed test	9%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: Full Channel TV, Inc.
DBA: Full Channel

Data Characteristics

FRN:	0004973731
Type of Data Submitted:	Census Blocks
Census Block Count (unique):	1,089
Provided Technology of Transmission:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	YES
Provided Typical Upload Speed:	YES
Provided Middle Mile:	YES
Provided Last Mile:	NO
Provided Road Segments for census blocks greater than 2 sq miles:	NO
Provided Address Points for census block greater than 2 sq miles:	NO
Provided End User Category:	NO

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category	Count
6	4	1,089

Typical down/upload speeds reported by provider: 6, 4

Number of technology of transmission types reported by provider: 1

Count of Middle Mile Facilities: 1

End User Category: Not provided

Data Verification:

Counties served by provider and number of census blocks with service. A total of 1,089 census blocks are served.

County	Census Blocks per County
Bristol	1,089
Kent	0
Newport	0
Providence	0
Washington	0

Greatest down/upload speed from Historical [1] speed tests: 10, 3 and 9, 9
Greatest down/upload speed from RIEDC 2010 [2] speed tests: 6, 4
Greatest down/upload speed from FCC 2010 [3] speed tests: 6, 4
Greatest down/upload speed from FCC 2010 [4] Mobile Applications speed tests: 6, 4

Count of Historical speed tests: 1,819
Count of RIEDC [2] speed tests: 17
Count of FCC [3] speed tests: 11
Count of FCC Mobile Applications [4] speed tests: 17

RIEDC and FCC speed tests outside of reported service area: 1

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census block served	26
Census blocks served, not reported by provider	1
Total number of served census blocks reported by provider	1,089
% of served census blocks confirmed by speed test	2%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: Hughes Network Systems, LLC
DBA: Hughes

Data Characteristics

FRN:	0009559881
Type of Data Submitted:	Satellite
Census Block Count (unique):	N/A
Provided Technology of Transmission:	YES
Provided Spectrum Used:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	YES
Provided Typical Upload Speed:	YES

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category
5	2

Typical down/upload speeds reported by provider: 5, 1

Number of technology of transmission types reported by provider: 1, with 1 spectrum

Data Verification:

Counties served by provider and number of census blocks with service. A total of 24,999 census blocks are served.

County	Census Blocks per County
Bristol	1,087
Kent	4,180
Newport	2,342
Providence	13,150
Washington	4,240

Greatest down/upload speed from Historical [1] speed tests: No speed tests were taken
Greatest down/upload speed from RIEDC [2] speed tests: No speed tests were taken
Greatest down/upload speed from FCC [3] speed tests: No speed tests were taken
Greatest down/upload speed from FCC Mobile Application [4] speed tests: 3, 2

Count of Historical speed tests: 0
Count of RIEDC [2] speed tests: 0
Count of FCC [3] speed tests: 0
Count of FCC Mobile Applications [4] speed tests: 3

RIEDC and FCC speed tests outside of reported service area: 0

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census block served	3
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	24,999
% of served census blocks confirmed by speed test	<1%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: Level 3 Communications, LLC
DBA: Broadwing

Data Characteristics

FRN:	0003723822
Type of Data Submitted:	Census Blocks
Census Block Count (unique):	6
Provided Technology of Transmission:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	YES
Provided Typical Upload Speed:	YES
Provided Typical Download Speed:	YES
Provided Middle Mile:	YES
Provided Last Mile:	NO
Provided Road Segments for census blocks greater than 2 sq miles:	NO
Provided Address Points for census block greater than 2 sq miles:	NO
Provided End User Category:	NO

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category	Count
11	11	6

Typical down/upload speeds reported by provider: 11, 11

Number of technology of transmission types reported by provider: 1

Count of Middle Mile Facilities: 8

End User Category: Not provided

Data Verification:

Counties served by provider and number of census blocks with service. A total of 6 census blocks are served.

County	Census Block s per County
Bristol	0
Kent	0
Newport	0
Providence	6
Washington	0

Greatest down/upload speed from Historical [1] speed tests: 4, 4
Greatest down/upload speed from RIEDC [2] speed tests: 4, 4
Greatest down/upload speed from FCC [3] speed tests: 7,5
Greatest down/upload speed from FCC Mobile Applications [4] speed tests: No FCC Mobile speed tests were taken

Count of Historical speed tests: 30
Count of RIEDC [2] speed tests: 4
Count of FCC [3] speed tests: 1
Count of FCC Mobile Applications [4] speed tests: 0

RIEDC and FCC speed tests outside of reported service area: 5 of 5 speed tests were recorded outside the coverage area reported by provider

Middle mile facilities outside of reported service area: None of the 8 facilities reported are located within the reported service areas. The closest is within 400 ft, the furthest is 30 miles.

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census blocks served	0
Census blocks served, not reported by provider	4
Total number of served census blocks reported by provider	6
% of served census blocks confirmed by speed test	0%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile App Date Range: 3/11/2010 to 6/30/2011

Provider Name: Lightower Fiber Networks
DBA: Lightower Fiber Networks

Data Characteristics

FRN:	00017625567
Type of Data Submitted:	Census Blocks
Census Block Count (unique):	8,186
Provided Technology of Transmission:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	YES
Provided Typical Upload Speed:	YES
Provided Middle Mile:	NO
Provided Last Mile:	NO
Provided Road Segments for census blocks greater than 2 sq miles:	NO
Provided Address Points for census block greater than 2 sq miles:	NO
Provided End User Category:	NO

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category	Count
11	11	8,186

Typical down/upload speeds reported by provider: 11, 11

Number of technology of transmission types reported by provider: 1

Count of Middle Mile Facilities: 0

End User Category: Not provided

Data Verification:

Counties served by provider and number of census blocks with service. A total of 8,186 census blocks are served.

County	Census Blocks per County
Bristol	0
Kent	406
Newport	0
Providence	7,780
Washington	0

Greatest down/upload speed from Historical [1] speed tests: No speed tests were taken
Greatest down/upload speed from RIEDC [2] speed tests: No speed tests were taken
Greatest down/upload speed from FCC [3] speed tests: No speed tests were taken
Greatest down/upload speed from FCC Mobile Applications [4] speed tests: No speed tests were taken
Count of Historical speed tests: 0

Count of RIEDC [2] speed tests: 0
Count of FCC [3] speed tests: 0
Count of FCC Mobile Application [4] speed tests: 0

RIEDC and FCC speed tests outside of reported service area: No speed tests were taken

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census block served	0
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	8,186
% of served census blocks confirmed by speed test	0%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile App Date Range: 3/11/2010 to 6/30/2011

Provider Name: One Communications Corp.
DBA: One Communications

Data Characteristics

FRN:	0015337702
Type of Data Submitted:	Census Blocks
Census Block Count (unique):	452
Provided Technology of Transmission:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	NO
Provided Typical Upload Speed:	NO
Provided Middle Mile:	YES
Provided Last Mile:	NO
Provided Road Segments for census blocks greater than 2 sq miles:	NO
Provided Address Points for census blocks greater than 2 sq miles:	YES
Provided End User Category:	NO

Maximum advertised down/upload speeds reported by provider:

Technology	Max Download Category	Max Upload Category	Count
10	7	7	1
20	8	8	1
30	7	7	1

Typical down/upload speeds reported by provider: Not provided

Number of technology of transmission types reported by provider: 3

Total count of Middle Mile facilities: 17

End User Category: Not provided

Data Verification:

Counties served by provider and number of census blocks with service. A total of 452 census blocks are served.

County	Census Block per County
Bristol	13
Kent	40
Newport	38
Providence	338
Washington	23

Greatest down/upload speed from Historical [1] speed tests: 5, 5
Greatest down/upload speed from RIEDC [2] speed tests: 8, 8
Greatest down/upload speed from FCC [3] speed tests: 3, 2
Greatest down/upload speed from FCC Mobile Applications [4] speed tests: 3, 2

Count of Historical speed tests: 889
Count of RIEDC [2] speed tests: 42
Count of FCC [3] speed tests: 3
Count of FCC Mobile Application [4] speed tests: 3

Speed tests outside of reported service area: 14 of 48 speed tests were reported outside the coverage area reported by the provider.

Middle mile facilities outside of reported service area: All facilities are in the general area of served areas.

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census block served	17
Census blocks served, not reported by provider	12
Total number of served census blocks reported by provider	452
% of served census blocks confirmed by speed test	4%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: Sprint Nextel Corporation
DBA: Sprint

Data Characteristics

FRN:	0003774593
Type of Data Submitted:	Wireless
Census Block Count (unique):	N/A
Provided Technology of Transmission:	YES
Provided Spectrum Used:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	YES
Provided Typical Upload Speed:	YES
Provided Middle Mile:	NO
Provided Last Mile:	NO

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category
5	3

Typical down/upload speeds reported by provider: 5, 3

Number of technology of transmission types reported by provider: 1, with 2 spectrums

Data Verification:

Counties served by provider and number of census blocks with service. A total of 24,048 census blocks are served.

County	Census Blocks per County
Bristol	1,092
Kent	4,004
Newport	2,264
Providence	12,821
Washington	3,867

Greatest down/upload speed from Historical [1] speed tests: 6, 3
Greatest down/upload speed from RIEDC [2] speed tests: 8, 7
Greatest down/upload speed from FCC [3] speed tests: 7, 6
Greatest down/upload speed from FCC Mobile Applications [4] speed tests: 5, 5

Count of Historical speed tests: 10
Count of RIEDC [2] speed tests: 85
Count of FCC [3] speed tests: 5
Count of FCC Mobile Applications [4] speed tests: 291

RIEDC and FCC speed tests outside of reported service area: 4

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census blocks served	70
Census blocks served, not reported by provider	1
Total number of served census blocks reported by provider	24,048
% of served census blocks confirmed by speed test	<1%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: StarBand Communications, Inc.
DBA: StarBand Communications, Inc.

Data Characteristics

FRN:	0005087457
Type of Data Submitted:	Satellite
Census Block Count:	N/A
Provided Technology of Transmission:	YES
Provided Spectrum Used:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	NO
Provided Typical Upload Speed:	NO

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category
3	2

Typical down/upload speeds reported by provider: Not reported

Number of technology of transmission types reported by provider: 1, with 1 spectrum

Data Verification:

Counties served by provider and number of census blocks with service. A total of 25,181 census blocks are served:

County	Census Block per County
Bristol	1,092
Kent	4,183
Newport	2,452
Providence	13,157
Washington	4,297

Greatest down/upload speed from Historical [1] speed test: No speed tests were taken
Greatest down/upload speed from RIEDC [2] speed test: No speed tests were taken
Greatest down/upload speed from FCC [3] speed test: No speed tests were taken
Greatest down/upload speed from FCC Mobile Applications [4] speed test: No speed tests were taken

Count of Historical speed tests: 0
Count of RIEDC [2] speed tests: 0
Count of FCC [3] speed tests: 0
Count of FCC Mobile Applications [4] speed test: 0

RIEDC and FCC speed tests outside of reported service area: 0

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census block served	0
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	25,181
% of served census blocks confirmed by speed test	0%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: T-Mobile USA, Inc.
DBA: T-Mobile

Data Characteristics

FRN:	0006945950
Type of Data Submitted:	Wireless
Census Block Count (unique):	N/A
Provided Technology of Transmission:	YES
Provided Spectrum Used:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	NO
Provided Typical Upload Speed:	NO
Provided Middle Mile:	YES
Provided Last Mile:	NO

Maximum advertised down/upload speeds reported by provider:

Technology	Max Download Category	Max Upload Category
80	7	4

Typical down/upload speeds reported by provider: Not provided

Number of technology of transmission types reported by provider: 1, with 1 spectrum

Total count of Middle Mile facilities: 3

Data Verification:

Counties served by provider and number of census blocks with service. A total of 23,891 census blocks are served.

County	Census Blocks per County
Bristol	1,088
Kent	3,939
Newport	2,303
Providence	12,572
Washington	3,989

Greatest down/upload speed from Historical [1] speed tests: No Historical speed tests were taken
Greatest down/upload speed from RIEDC [2] speed tests: No RIEDC speed tests were taken
Greatest down/upload speed from FCC [3] speed tests: 2, 2
Greatest down/upload speed from FCC Mobile Applications [4] speed tests: 5, 3

Count of Historical speed tests: 0
Count of RIEDC 2010 [2] speed tests: 0
Count of FCC 2010 [3] speed tests: 1
Count of FCC 2010 Mobile Applications [4] speed tests: 62

RIEDC and FCC speed tests outside of reported service area: 0

Middle mile facilities outside of reported service area: The two facilities are within the reported service area, though are located within 280 ft of each other.

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census blocks served	69
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	23,891
% of served census blocks confirmed by speed test	<1%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
2 RIEDC Date Range: 3/23/2010 to 9/5/2011
3 FCC Date Range: 3/11/2010 to 6/30/2011
4 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: Verizon New England Inc.
DBA: Verizon

Data Characteristics

FRN:	0003628971
Type of Data Submitted:	Census Blocks, Road Segments
Census Block Count (unique):	18,479
Road Segment Count (unique):	626
Provided Technology of Transmission:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	NO
Provided Typical Upload Speed:	NO
Provided Middle Mile:	NO
Provided Last Mile:	NO
Provided Road Segments for census blocks greater than 2 sq miles:	YES
Provided Address Points for census blocks greater than 2 sq miles:	NO

Maximum advertised down/upload speeds reported by provider:

Technology	Max Download Category	Max Upload Category	Count
10	6	3	2,250
50	9	7	13,763

Typical down/upload speeds reported by provider: Not provided

Number of technology of transmission types reported by provider: 2

Total count of Middle Mile facilities: Not provided

Data Verification:

Counties served by provider and number of census blocks with service. A total of 18,522 census blocks are served (18,479 by census block data and 43 by road segment service data).

County	Census Blocks per County
Bristol	896
Kent	3,235
Newport	1,647
Providence	10,237
Washington	2,507

Greatest down/upload speed from Historical [1] speed tests: 10, 7 and 9, 8
Greatest down/upload speed from RIEDC 2010 [2] speed tests: 10,7
Greatest down/upload speed from FCC 2010 [3] speed tests: 9, 4 and 8, 8
Greatest down/upload speed from FCC 2010 [4] Mobile Application speed tests: 7, 7

Count of Historical speed tests: 44,322
Count of RIEDC [2] speed tests: 1,042
Count of FCC [3] speed tests: 383
Count of FCC Mobile Application [4] speed tests: 775

RIEDC and FCC speed tests outside of reported service area: 82 of the 2,200 speed tests outside of reported area

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census block served	1,215
Census blocks served, not reported by provider	37
Total number of served census blocks reported by provider	18,479
% of served census blocks confirmed by speed test	4%

Footnotes:

1 Historical Date Range: 3/23/2009 to 3/22/2010
RIEDC Date Range: 3/23/2010 to 9/5/2011
2 FCC Date Range: 3/11/2010 to 6/30/2011
3 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Provider Name: Wild Blue Communications, Inc.
DBA: Wild Blue Communications, Inc.

Data Characteristics

FRN:	0007843766
Type of Data Submitted:	Satellite
Census Block Count (unique):	N/A
Provided Technology of Transmission:	YES
Provided Spectrum Used:	YES
Provided Max Advertised Download Speed:	YES
Provided Max Advertised Upload Speed:	YES
Provided Typical Download Speed:	NO
Provided Typical Upload Speed:	NO

Maximum advertised down/upload speeds reported by provider:

Max Download Category	Max Upload Category
4	2

Typical down/upload speeds reported by provider: Not provided

Number of technology of transmission types reported by provider: 1, and 1 spectrum

Data Verification:

Counties served by provider and number of census blocks with service. A total of 25,181 census blocks are served.

County	Census Blocks per County
Bristol	1,092
Kent	4,183
Newport	2,452
Providence	13,157
Washington	4,297

Greatest down/upload speed from Historical [1] speed tests: 4, 1
Greatest down/upload speed from RIEDC [2] speed tests: No speed tests were taken
Greatest down/upload speed from FCC [3] speed tests: No speed tests were taken
Greatest down/upload speed from FCC Mobile Application [4] speed tests: No speed tests were taken

Count of Historical speed tests: 0
Count of RIEDC [2] speed tests: 0
Count of FCC [3] speed tests: 0
Count of FCC Mobile Application [4] speed tests: 0

RIEDC and FCC speed tests outside of reported service area: 0

%/# of census blocks verified by RIEDC and FCC speed tests:

Confirmation of census block served	0
Census blocks served, not reported by provider	0
Total number of served census blocks reported by provider	25,181
% of served census blocks confirmed by speed test	0%

Footnotes:

4 Historical Date Range: 3/23/2009 to 3/22/2010
5 RIEDC Date Range: 3/23/2010 to 9/5/2011
6 FCC Date Range: 3/11/2010 to 6/30/2011
7 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Community Anchor Institutions: All categories

Data Characteristics

Type of Data Submitted:	Point
Feature Count:	984
Provided Technology of Transmission:	YES, INCOMPLETE (382 of 984)
Provided Subscribe Downstream Speed:	YES, INCOMPLETE (411 of 984)
Provided Subscribe Upstream Speed:	YES, INCOMPLETE (861 of 984)
Provided Street Address:	YES, COMPLETE
Provide Public Wifi:	YES, COMPLETE
Provided URL:	YES, INCOMPLETE (888 of 984)
Provided CAIID:	YES, INCOMPLETE (652 of 984)

Count of Community Anchor Institutions by category:

CAI Category	Count of Features
1 – School K through Grade 12	518
2 - Library	91
3 – Medical/healthcare	56
4 – Public safety	243
5 – Univ., college, other post-secondary	24
6 – Other govt support - govt	48
7 – Other govt support - nongovt	4

Maximum Subscribe down/upstream speeds reported by institutions:

CAI Category	Max Downstream Category	Max Upstream Category	Count
1	10	10	1
2	10	10	1
3	10	10	4
4	10	10	2
5	11	11	2
6	11	11	1
7	7	6	1

Number of technology of transmission types reported by provider: 9

Data Verification:

Greatest down/upload speed from Historical speed test: 10, 10
Greatest down/upload speed from RIEDC [1] speed test: 10, 8
Greatest down/upload speed from FCC [2] speed test: 9, 3 or 8, 8
Greatest down/upload speed from FCC Mobile Applications [3] speed tests: 7, 5

Count of RIEDC speed tests: 398
Count of FCC speed tests: 52
Count of FCC Mobile Applications speed tests: 79

Footnotes:

1 RIEDC Date Range: 3/23/2010 to 9/5/2011

2 FCC Date Range: 3/11/2010 to 6/30/2011

3 FCC Mobile Application Date Range: 3/11/2010 to 6/30/2011

Appendix A
Glossary of Key Terms

RIEDC: The Rhode Island Economic Development Corporation is the full service, official economic development organization for the state of Rhode Island. A quasi-public agency, the Corporation serves as a government and community resource to help streamline the business expansion in, and relocation to, Rhode Island.

BBRI: An initiative of the RIEDC, Broadband Rhode Island funded by the American Recovery and Reinvestment Act and focuses on broadband mapping and broadband planning in the State of Rhode Island.

Community Anchor Institute: Community Anchor Institutions (CAI) include Schools, libraries, medical and healthcare providers, public safety entities, community colleges and other institutions of higher education, and other community support organizations and entities.

NTIA: The National Telecommunications and Information Administration (NTIA) is an agency of the United States Department of Commerce that serves as the President's principal adviser on telecommunications policies pertaining to the United States' economic and technological advancement and to regulation of the telecommunications industry.

FCC: The Federal Communications Commission (FCC) is an independent agency of the United States government, created, Congressional statute, and with the majority of its commissioners appointed by the current President. The FCC works towards six goals in the areas of broadband, competition, the spectrum, the media, public safety and homeland security, and modernizing the FCC.

Census Block: A census block is the smallest geographic unit used by the United States Census Bureau for tabulation of 100-percent data (data collected from all houses, rather than a sample of houses). Several blocks make up block groups, which again make up census tracts.

Up Speed, Upstream Speed, Upload Speed: Measurement that describes how fast your connection can send data from your device.

Down Speed, Downstream Speed, Download Speed: Measurement that describes how fast your connection can deliver data to your device.

Transmission Type, Transmission Technology: Method by which users access broadband.

Types Include

- 10-Asymmetric xDSL
- 20-Symmetric xDSL
- 30-Other Copper Wireline
- 40-Cable Modem – DOCSIS 3.0
- 41-Cable Modem – Other
- 50-Optical Carrier/Fiber to the End User
- 60-Satellite
- 70-Terrestrial Fixed Wireless - Unlicensed
- 71-Terrestrial Fixed Wireless - Licensed
- 80-Terrestrial Mobile Wireless
- 90-Electric Power Line
- 0-All Other

Spectrum Used: From which band range on the radio frequency spectrum the broadband signal is transmitted.

Types Include

1-Cellular spectrum (824-849 MHz; 862-869) used to provide service
2-700 MHz spectrum (698-758 MHz; 775-788 MHz; 805-806 MHz) used to provide service
3-Broadband Personal Communications Services spectrum (1850-1915 MHz; 1930-1995) used to provide service
4-Advanced Wireless Services spectrum (1710-1755 MHz; 2100-2155) used to provide service
5-Broadband Radio Service/Educational Broadband Service spectrum (2496-2690 MHz) used to provide service
6-Unlicensed (including broadcast television white spaces) spectrum used to provide service
7-Specialized Mobile Radio Service (SMR) (817-824 MHz; 862-869 MHz; 896-901 MHz; 935-940 MHz)
8-Wireless Communications Service (WCS) spectrum (2305-2320 MHz; 2345-2360 MHz), 3650-3700 MHz
9-Satellite (L-band, Big LEO, Little LEO, 2 GHz, Ka-Band, Ku-Band)
10-Other
99-Unknown

Middle Mile: The segment of a telecommunications network linking a network operator's core network to the local network plant, typically situated in the central office

Last Mile: The final leg of delivering connectivity from a communications provider to a customer.

Section C: Data Processes and Submission Overview

Submission Summary

The Broadband Rhode Island Mapping Team (BBRI) Team, led by EA Engineering, Science & Technology, Inc. (EA) in its role as primary technical lead for the Rhode Island Broadband Mapping project, contacted 140 potential facilities-based broadband service providers (BSPs) and received data from 19 providers. An overall summary of the data submission is described below:

140 potential facilities-based broadband service providers were contacted
34 BSPs did not respond
3 BSPs responded but did not provide data
84 BSPs were identified as resellers of data
19 BSPs responded and provided data

Of those that provided data:

9 provided only census block information
1 provided census blocks and addresses
1 provided census blocks and road segments
8 provided wireless coverage areas

In addition, 8 of the 19 responsive BSPs provided middle mile infrastructure points and 2 of 19 responsive BSPs provided last mile infrastructure points.

Rhode Island Broadband Mapping Data Processes

Data Received From Providers – The process begins by receiving data from each provider that offers service in the State of Rhode Island (RI). Broadband data is currently received from 19 broadband facility based service providers within the State who have signed Non-Disclosure Agreements with RIEDC. Once all of the available data is received from a provider it is reviewed and archived in its native format. While the same data is requested from each provider the information often comes in different formats and with missing attribute and or spatial data. If attributes are missing from the dataset the provider is contacted to see if the missing information is available.

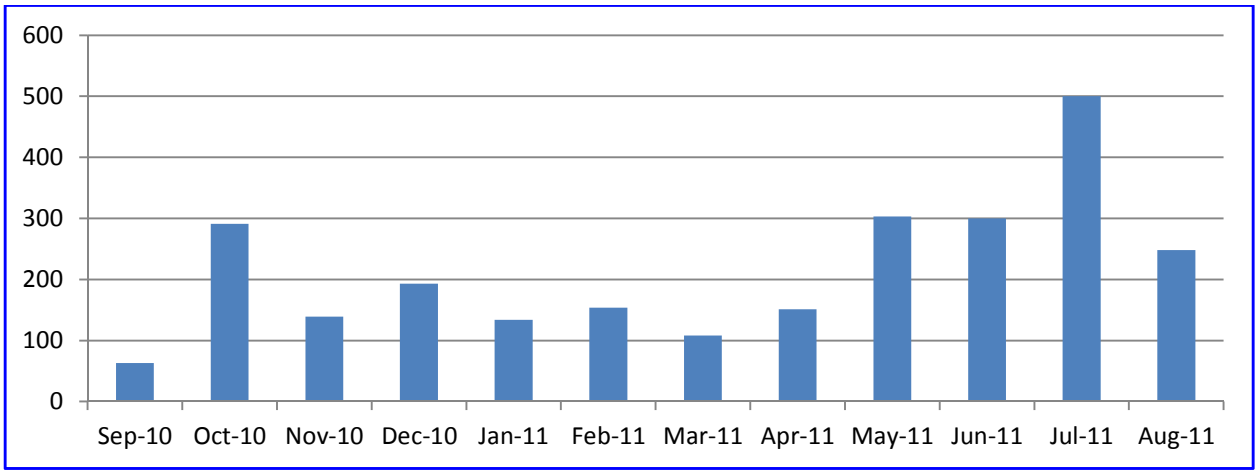
Data Evaluated & Processed – The EA project team gives the data spatial attributes through geocoding to the RI E911 data or by joining the data to the 2010 census block data. The attribute data is then formatted so that the database can easily be entered in the Broadband Rhode Island geodatabase. Speeds reported below broadband levels are removed from the dataset and archived. Data that is located in census blocks great than 2 square miles are loaded into either the address or street segment feature classes. All remaining data is loaded into the census block feature class. The data is loaded using Esri tools and software. The Broadband Rhode Island, or our data analysis geodatabase, stores the most recent broadband information.

Data is extracted from this geodatabase and formatted as needed to be used for the State's web map and our biannual NTIA submittals. Data is pulled from this analysis database, formatted to meet the web and NTIA formatting requirements, and loaded into either the NTIA transfer database or the web mapping database using custom built data extraction and loading tools.

- Community Anchor Institute (CAI) Data: The initial list of CAIs were received from the University of Rhode Island and populated into the BBRI database. This data was then compared to and updated using 3rd party datasets in order to create the most comprehensive CAI list available for RI. In order to collect the broadband data for the CAIs, the BBRI Team utilized a top down approach. The agencies that oversaw a large number of CAIs such as RINET and OSHEAN were contacted regarding the data collection. CAIs that still had missing attribute data after contacting these agencies were contact directly via phone and email. Once contacted, the CAIs were directed to an online survey. The online survey walked the user through a short questionnaire that collected the required CAI broadband data. At the end of the survey the user was directed to take a speed test in order to help with the data collection and verification process.

Data Verification – Once the data is loaded into the geodatabase the verification process can begin. This process is comprised of several steps to ensure that the actual facilities and services provided to the public match the provider's data being reported.

- Compared to Available Datasets -
    - Speed test – Using Ookla's speed test application, EA has been collecting speed test data for RI since March 2010. A breakdown of speed tests collected over the past year by EA, displayed by month, can be found in the table below. EA uses both the FCC speed tests collected for RI and the speed tests collected on the RI broadband website to get a better view of the actual speeds and coverage area providers are offering the public. The speed tests are geocoded and mapped by provider. (FCC speed test providers are identified by the speed test's IP address) Each provider's speed test data is compared to their stated coverage area. Discrepancies are noted and reported back to the provider. The provider either gives a reason for the discrepancy or instructs us to modify their coverage area to match the speed test data.



- User feedback - user feedback information is captured by both the FCC and RI's broadband mapping website. This information is reviewed on a case by case basis. Changes are made as needed to the data and reported to the provider, similar to the speed test data update process.

- Best practices for final data quality checks include the review and comparison to 3rd party datasets (such as the FCC's 477 data) with the information received from the providers. The FCC's data is used to check for previously unknown providers, perform spatial analysis and comparisons on the data, and to give a better understanding of our confidence in the data. Since FCC data is broken out by census tract the provider's data must be converted to the tract level in order to perform a full data comparison.

- Spatial Analysis of Coverage Area– Spatial Analysis is performed on each provider's data set. The analysis checks for small areas in populated sections of the state that are surrounded by coverage areas but do not show coverage. These "donut holes" in the data are reviewed and reported to the provider if we feel they have a high probability of actually being covered by the providers' broadband services.

- Physical Infrastructure Survey - As part of the expanding need to verify broadband coverage within RI, a physical infrastructure survey pilot project was performed for the Town of Foster. The physical infrastructure survey verified the physical broadband facilities present within the Town. EA performed the survey utilizing GPS equipment and industry knowledge to capture the actual location of strategic infrastructure facilities throughout Foster. The data was then mapped and analyzed to determine where wireline broadband service is theoretically available within the town. Structures outside of the identified theoretical service area were mailed surveys to determine if broadband was actually available at their location as well as collect additional broadband usage information from the residents.

- Provider Meetings - The BBRI Team held conference calls with broadband providers that had significant changes in their current data submittals or had identified issues that required a review. These conference calls were used as working sessions to review reasoning behind changes being made, discuss findings, address questions, and review edits being made to the provider's submitted dataset. Following the meetings, edits to the data were made final based on the information agreed upon. The reason for making each edit to the data was documented in case issues or questions arose in the future.

- 3rd Party Verification – A 3rd party, Mapping & Planning Services (M&PS), is used to do provide an independent review and a report on the status of each provider's data. These reports summarize the data collected and provide a second review of the verification steps listed above.

Data Analysis – In addition to the data verification steps, a complete summary of each provider's data and static broadband coverage maps are created for RIEDC. These maps are used to analyze existing data availability and plan for future broadband development and outreach projects.

Geodatabase Checks– Once the data is processed and verified the database is checked prior to submittal to the NTIA. This process is comprised of several steps to ensure that the information in the geodatabase is as accurate and complete and possible.

- Visual Checks - These visual checks inspect the data to ensure completeness, accuracy, and engineering logic. The visual inspection process employs random sampling techniques to validate feature placement and attribution. The random sampling is performed in accordance with ANSI standards for attribute inspection.

- Automated Checks – These checks are performed on 100% of the data. ESRI's Production Line Tool Set (PLTS) and the NTIA's QC toolbox are utilized for the automated check of the data. PLTS check for both schema and logical errors in the data. The following checks are performed on the data.

    - Geodatabase Format - Verify that the geodatabase's name and feature classes are correct per the corresponding RIEDC data model and NOFA requirements.
    - Coordinate System Errors - Check for proper projection definition.
    - Validity Checks - Verify the attribution fields in the tables and field values fall within the domain specified in the geodatabase.
    - Duplicate Item Values - Verify the uniqueness of attribute values within a user-specified item (such as Feature IDs).
    - Invalid Item Values - Checks for invalid codes using discrete values and ranges defined in the appropriate domain tables.
    - Spatial Logic Checks - Checks the geodatabase to validate minimum size polygons, minimum length lines, and dangles in line feature classes.

- If the geodatabase has passed all tests listed above, and has met the acceptance criteria, the dataset is considered passed and can be processed for delivery to RIEDC and the NTIA. If the geodatabase fails any test and does not meet acceptance criteria, the data is considered failed and will be returned with error reports to the data processing team for correction. Additional follow-up with the providers may be necessary to correct the issue(s). Once edits are completed or exceptions are documented, the geodatabase will be returned to the QC team for an additional sequence of all QC procedures. This process will be repeated until all tests have received a passing status or exceptions have been documented.

Section D: Rhode Island's Current Broadband Mapping Issues

This section lists the issues the BBRI Team has encountered and is currently developing mitigation efforts against. These issues are being reviewed by the BBRI Team in conjunction with other States and the NTIA. Recommended solutions to each issue have been or will be presented to the NTIA when they are available.

1. Currently the NTIA requires data at the address or street segment level for census blocks that are greater than 2 square miles in diameter. This is a model that was developed to work for all states. However, in the northeast region and RI in particular, the BBRI Team feels that the size standard for reporting at the address and street segment level should be smaller due to the higher density levels of population. The BBRI Team is currently looking into a size standard that would better fit RI.

2. Speed tests are currently being extensively utilized by the BBRI team. The tests are very good at showing that coverage is available in a given area, but the actual speeds reported vary widely from one test to the next. The speeds are inconsistent even if they are taken at the same location within minutes of one another. Therefore, the speed results taken from this test cannot be used to verify or populate provider's typical speeds.

3. When using the SBDD submission check tool, the CAI TransTech check failed on the basis of "unexpected values." Based on the National Broadband Map message board, this seems to be an issue with the submission check tool and not the database attributes. Therefore, no change was made to correct CAI TransTech value at this time. Updates to the check tool will be required in the future to eliminate this issue.

4. The NTIA's Data Package spreadsheet needs to be updated.
    a. For the "Data Package Home" tab, one of the questions still reference 2000 census blocks instead of 2010.
    b. For the "Providers Table" tab, we are required to list all potential providers that were contacted as part of this project. This means that resellers are listed even if we are not requesting data from them. There is no response in column F – "This Company provided data, will provide data, will not provide data, or is non-responsive" to match this category. The BBRI Team listed these resellers as "will provide data" and noted that no data is being collected from them in the comments column.