

# BROADBAND ACTION PLAN

April 26, 2019

The State of Vermont is committed to ensuring that all Vermonters have the best available high-speed Internet access. While statistics indicate that about  $\frac{3}{4}$  of the buildings in the state have access to service at 25/3 Mbps, the FCC current definition of broadband, thousands of rural locations lack access to service at 4/1 Mbps, the older definition. Without access to these services these locations are left out the modern digital economy. It is therefore the top priority for telecommunications policy to ensure that these locations have access to modern telecommunications services.

The intent of Vermont's telecommunications planning and policy law is to "support measures designed to ensure that by the end of the year 2024 every E-911 business and residential location in Vermont has infrastructure capable of delivering Internet access with service that has a minimum download speed of 100 Mbps and is symmetrical."<sup>1</sup> To that end, the Department of Public Service is directed to promote "access to affordable broadband service to all residences and businesses in all regions of the State."<sup>2</sup> Legislation directs the Department to start with those locations that lack service of 4/1 Mbps or better, and provide each with access at 10/1 Mbps.<sup>3</sup> This action plan, prepared pursuant to state law,<sup>4</sup> offers a strategy to advance these goals.

Fiber to the premises (FTTP) is widely understood to be the best technology for reaching the 2024 goal, but other technologies, including hybrid fiber coax (HFC) cable service (CableLabs DOCSIS 3.1 standard), DSL (ITU VDSL2 standard), and even mobile wireless (3GPP 5G standard) are also capable of meeting these requirements. Because HFC cable service is widely available in the state, existing cable networks should be considered as an important element in the state's overall broadband strategy.

Broadband affordability remains a challenge. Communities that can afford to tackle broadband expansion will succeed in improving service. But many communities cannot afford the capital costs of infrastructure deployment. Furthermore, many potential consumers in low income towns cannot afford the retail rate for the service itself. The FCC has taken steps to address low-income accessibility, such as expanding the popular lifeline program to wireless carriers and broadband providers. Some carriers also offer low-income packages. Yet, where families have access to only one carrier, these programs may not be available. Affordability is a criterion for the Department to weigh when awarding grants.

## BAP Point 1: New models for broadband development

Vermont has seen significant improvement in broadband availability, but much work remains. State and federal funding constraints on broadband investment are limiting the current approach and new models for broadband deployment are needed. State policy must strengthen the connection between the demand for rural broadband and the Vermont-based industries that are likely to benefit from broadband deployment. With the increase of Internet of Things (IoT) ready appliances and services, broadband access will be necessary to support the basic functions of most households, and these services will be delivered by edge providers over broadband capable networks. Electric companies will manage load with micro-load control systems. Health care will be delivered by the internet, allowing patients the opportunity to heal in their own homes. Intelligent Transportation Systems (ITS) will make our highways safer and reduce carbon emissions. Educational opportunities will also be extended with broadband, allowing children access to globally available learning platforms. Without adequate broadband service, many Vermonters will not be able to adopt innovative technology.

The State should continue to explore new ways to leverage public-private partnerships in healthcare, education, transportation, and energy sectors in support of broadband expansion. The Department must work with other state agencies, including Agency of Transportation, Agency Commerce & Community

Development, Department of Health, Agency of Education, and other stakeholders to realize Vermont's Connectivity goals.

## BAP Point 2: Service Characteristic Objectives

Vermont legislation refers to the minimum technical service characteristic objectives of broadband service ("Objectives") to serve two specific purposes: a.) locations lacking services at these speeds will be eligible for State support<sup>5</sup>, and b.) grantees accepting State support will be obligated to provide services at these speeds.<sup>6</sup> Vermont legislation directs the Department to define the Objectives in the Vermont Telecommunications Plan.<sup>7</sup> The 2014 Vermont Telecommunications Plan set the Objectives at 4 Mbps down and 1 Mbps up. After the goal of universal availability of at least 4/1 Mbps is met, the focus will be directed toward furtherance of the goal of ensuring universal availability at 100/100 Mbps.

This will be accomplished through the establishment of interim speed tier Objectives in the Telecommunications Plan listed below.<sup>8</sup>

- 2014 - 2017: 4/1 Mbps
- 2017 - 2020: 10/1 Mbps
- 2020 - 2024: 100/100 Mbps

## BAP Point 3: Coordination with FCC

FCC policies dictate separate approaches for two types of areas: completely unserved areas and partially served areas.<sup>9</sup> The FCC Connect America Fund (CAF) Phase II program is focused exclusively on completely unserved areas. The program defined areas eligible for support as census blocks where no location had access to service at 4/1 Mbps from a provider other than the incumbent local telephone company. The program will, by 2021, bring broadband Internet access at 10/1 Mbps service to the majority of locations in these completely unserved areas.<sup>10</sup> The State of Vermont's Connectivity Fund,<sup>11</sup> (including the high-cost program and the Connectivity Initiative) supported by the Vermont Universal Service Fund, will be directed to bring service to locations not served by the CAF II program. These are areas with locations that lack access to services at 4/1 Mbps or better but that are excluded from the CAF II program because they are in partially served areas or areas in which CAF II providers have chosen not to serve. The Department will work with the Public Utilities Commission ("PUC") to ensure that support from the high cost Program is directed to these locations.

## BAP Point 4: Town-based approach to the Connectivity Initiative

State funding alone will not suffice to achieve Vermont's 2024 broadband goal at this time. Therefore, the Department will develop, with advice from the Connectivity Advisory Board, a process for leveraging state investment with municipal and private investments in existing broadband networks. Vermont's Public Utility Commission's cable line extension rule is a proven process for rationally allocating costs between service providers and consumers.<sup>12</sup> To ensure that cable operators are able to recover the capital investment required for line extensions, the rule employs a formula to apportion capital costs between the cable provider and affected cable subscribers on a sliding scale based on subscriber density. This formula can also be used to apportion costs of broadband deployment between service providers and subscribers. In addition, to add further incentive to deployment, the subscriber portion of the capital cost can be shared by the State and regional stakeholders, and the individual subscribers. These stakeholders could include municipalities, educational institutions, healthcare service providers, electric utilities, and other organizations.

The Department will then solicit requests for broadband service from towns, neighborhoods and other private groups. The Department will work with the Vermont League of Cities and Towns, the Agency of

Commerce and Community Development, and the Regional Planning Commissions to ensure notice of this opportunity is provided to towns and that towns have an effective means to participate. The Department will identify all underserved locations through its broadband mapping system and will publish this information in the Connectivity Division annual report. Upon a formal stakeholder request, Department staff will visit the stakeholders and present broadband availability information and explain the funding process. The Department will provide a rough estimate of the cost to deploy services throughout the requested areas with an assumed take rate, using the cable line extension rule as a guide. If the petitioning stakeholder group pledges to fund some of the customer portion of the estimated capital cost, the Department will conduct a request for proposals, subject to available Connectivity Initiative funding. After receipt of a qualifying proposal, the stakeholder will be required to canvas the residents of the proposed service area and obtain signed contracts from potential customers. The final customer portion of the capital cost, as calculated under the PUC rule, will be split between the Connectivity Initiative, the stakeholder, and the individual subscribers. The Department will explore whether a process could be developed for resolving future requests for service by residents who did not participate in the initial funding of the project.

The Department will also work to reform its Request for Proposals (RFP) process. As the Department revamps its RFP process, it should provide greater weight and consideration to affordability, through the cost of equipment, price of the service and any other factor that may impact the final price of the service. Consideration should also be given to economic factors of the area receiving publicly funded resources. The Department will also ensure that clear expectations for towns and carriers is provided in the RFP.

---

<sup>1</sup> 30 V.S.A. § 202(c)(10)

<sup>2</sup> 30 V.S.A. § 202e(a)(1)

<sup>3</sup> 30 V.S.A. § 7515(b)a)

<sup>4</sup> The Broadband Action Plan is a requirement of 30 V.S.A. § 202e(b)(6) and was originally issued on January 15, 2018.

<sup>5</sup> 30 V.S.A. § 7515b(a)

<sup>6</sup> 30 V.S.A. § 202 (e)

<sup>7</sup> 30 V.S.A. 202d(g)

<sup>8</sup> *2014 Telecommunications Plan*, at 89

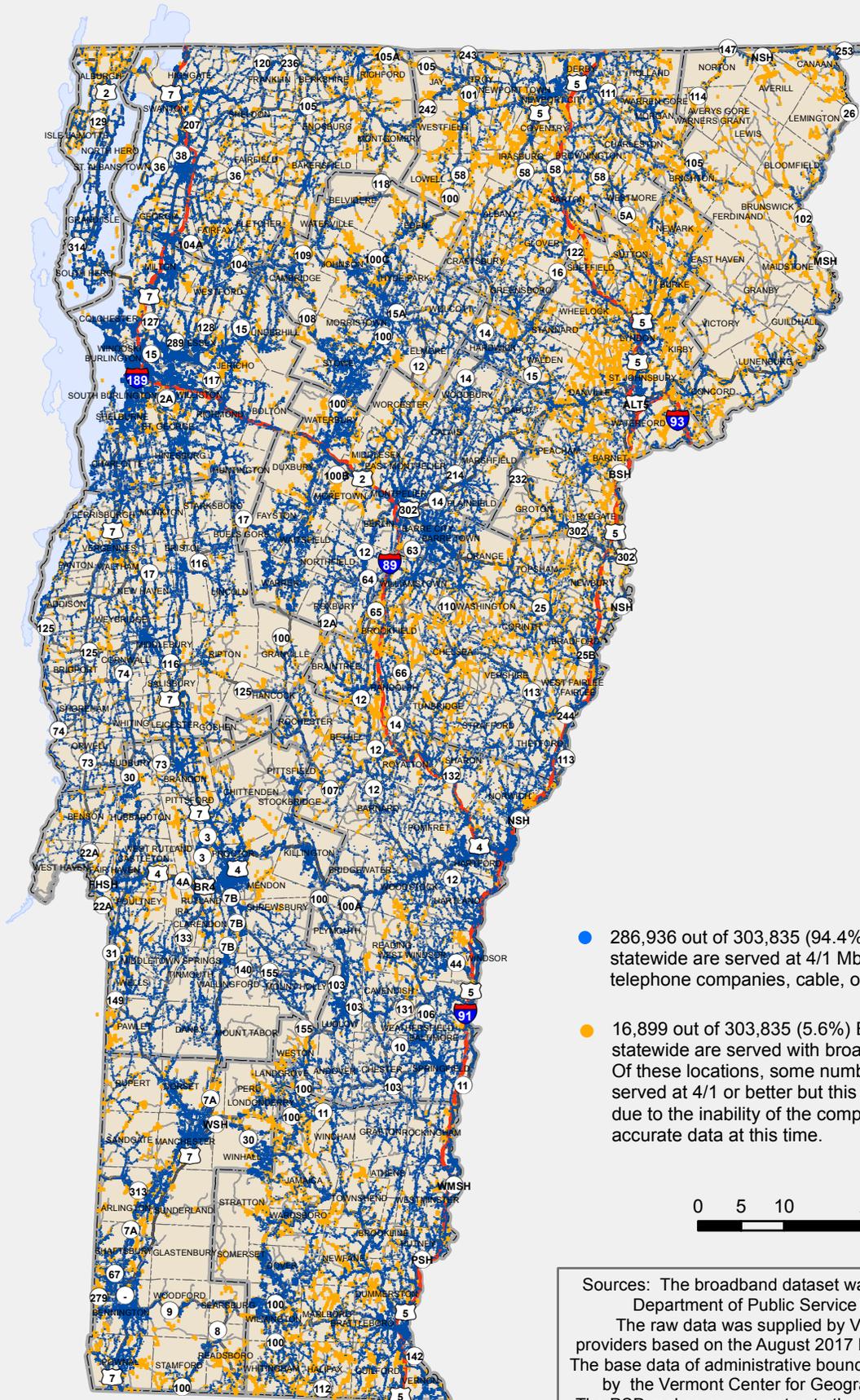
<sup>9</sup> The Department believes that many potentially underserved locations have access to 4/1 Mbps service from wireless providers. However, while most wireless service providers submit coverage maps depicting service availability, only one affirmatively asserts the availability of service at 4/1 Mbps at the address level.

<sup>10</sup> On August 19, 2015, FairPoint Communications (now Consolidated Communications Inc.) accepted the CAF II award of \$8,789,359 per year for six years from the FCC and is required to offer services supporting 10 Mbps download speed and 1 Mbps upload speed to 28,399 supported locations within 6 years of the award. Through GIS analysis the PSD identified approximately 45,833 business and residential locations in the CAF II service territory and in FairPoint exchanges.

<sup>11</sup> 30 V.S.A. § 7516

<sup>12</sup> PUC Rule 8.313

# Broadband Availability by E911 Building Location 4 Mbps Down / 1 Mbps Up or Better



- 286,936 out of 303,835 (94.4%) E911 building locations statewide are served at 4/1 Mbps or better by independent telephone companies, cable, or fiber to the premises.
- 16,899 out of 303,835 (5.6%) E911 building locations statewide are served with broadband less than 4/1 Mbps. Of these locations, some number are already served at 4/1 or better but this cannot be verified due to the inability of the companies to provide accurate data at this time.

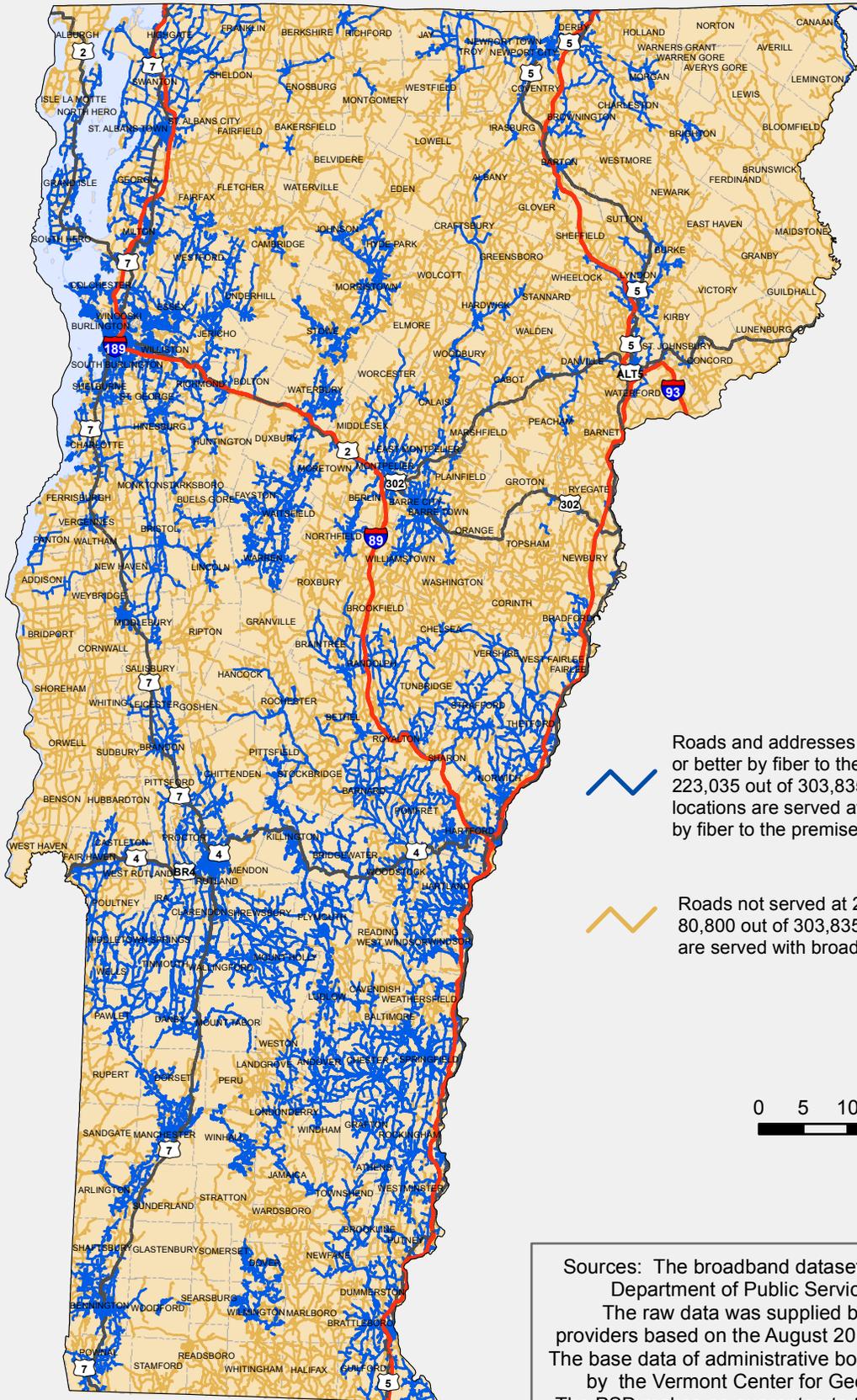
Sources: The broadband dataset was prepared by the Vermont Department of Public Service (PSD) on 1/3/2018. The raw data was supplied by Vermont internet service providers based on the August 2017 PSD request for information. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

# Broadband Availability by Road Segment 25 Mbps Down / 3 Mbps Up or Better



Department of Public Service

December 31, 2018



Roads and addresses served at 25/3 Mbps or better by fiber to the premises or cable. 223,035 out of 303,835 (73.4%) building locations are served at 25/3 Mbps or better by fiber to the premises or cable.



Roads not served at 25/3 Mbps or better. 80,800 out of 303,835 (26.6%) building locations are served with broadband less than 25/3.



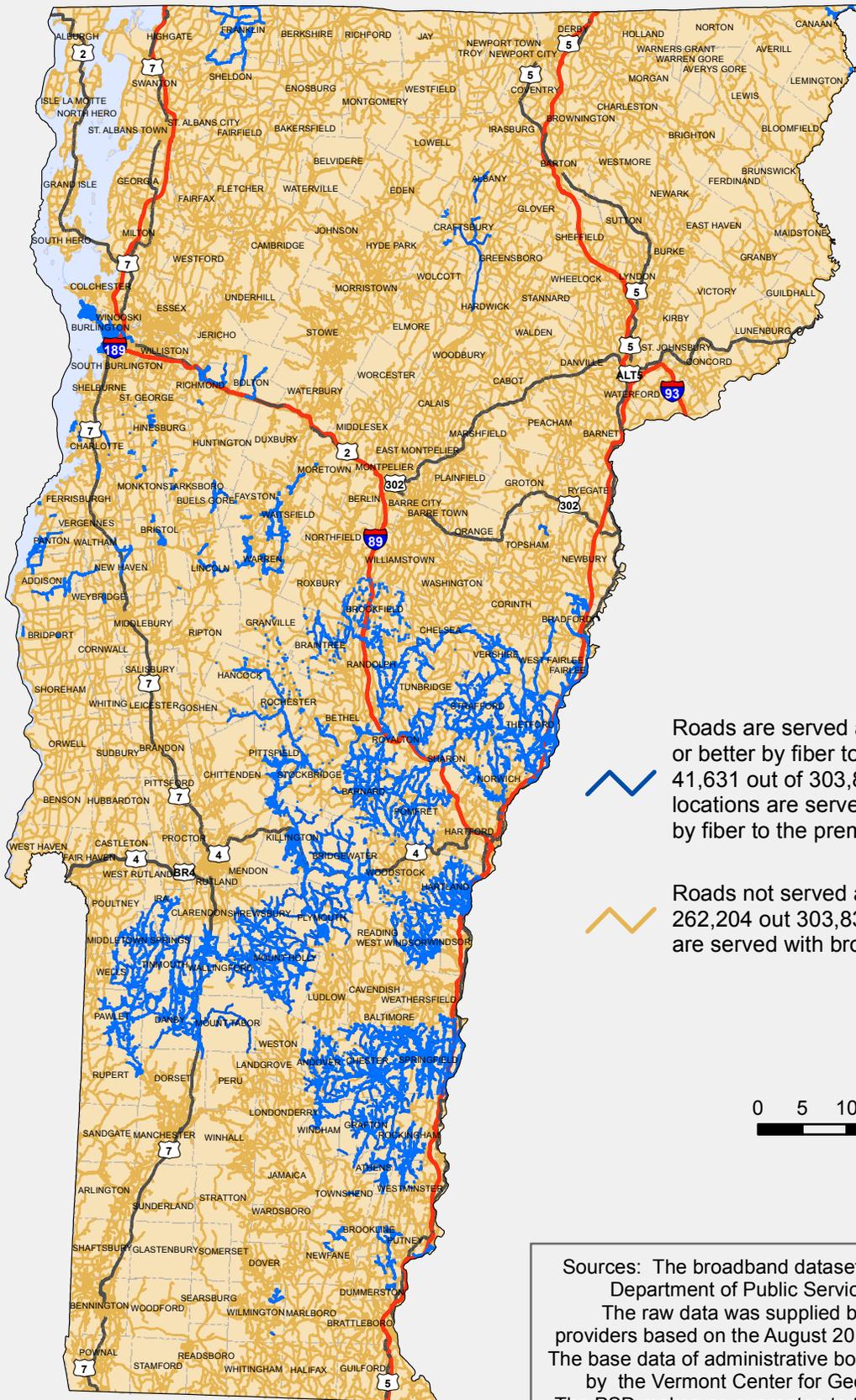
Sources: The broadband dataset was prepared by the Vermont Department of Public Service (PSD) on 12/31/2018. The raw data was supplied by Vermont internet service providers based on the August 2018 PSD request for information. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

# Broadband Availability by Road Segment 100 Mbps Down / 100 Mbps Up or Better



Department of Public Service

December 31, 2018



Roads are served at 100/100 Mbps or better by fiber to the premises or cable. 41,631 out of 303,835 (13.7%) building locations are served at 100/100 Mbps or better by fiber to the premises or cable.



Roads not served at 100/100 Mbps or better. 262,204 out of 303,835 (86.3%) building locations are served with broadband less than 100/100.



Sources: The broadband dataset was prepared by the Vermont Department of Public Service (PSD) on 12/31/2018. The raw data was supplied by Vermont internet service providers based on the August 2018 PSD request for information. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

# Mobile Wireless in Vermont

---

*January 15, 2019*



## **Mobile Wireless Coverage in Vermont**

In October and November of 2018 The Department of Public Service (PSD) conducted a drive test of the state of mobile wireless coverage in Vermont. The initiative was undertaken primarily to demonstrate that good cause exists to expand the territory in the state that is deemed eligible for forthcoming federal grants. When the test results were completed and submitted to the Federal Communications Commission (FCC), the PSD analyzed the results to derive insights about mobile wireless service in the state. This report describes the drive test process, provides a summary of the results, and explains how the information was assessed by the FCC for the grant process.

### **FCC Mobility Phase II program**

The FCC, through the Mobility Phase II program, intends to direct up to \$4.53 billion in support through reverse auctions to bidders that commit to offer mobile wireless service in eligible areas throughout the nation. When the program was announced only a small amount of territory in Vermont was eligible for this funding. Under the FCC rules for the program, areas without access to wireless service providing 5 Mbps will be eligible for the grants. To identify these areas, the FCC directed service providers to submit information, on a confidential basis, depicting the area where they believe consumers have access to service with at least 5 Mbps. The FCC identified the eligible areas as those areas where no company asserted that it offers service at 5 Mbps or better. This process resulted in only 1,310 square kilometers of eligible areas in Vermont, out of a total territory of approximately 25,000 square kilometers.

The FCC also authorized a process by which states could challenge asserted wireless coverage in ineligible areas. After reviewing confidential maps submitted by providers that purport to show the extent of coverage it was clear that many of the areas purportedly served in fact very likely lacked service. The PSD undertook a test of all major roads in the state to determine where mobile wireless service is actually available from a consumer perspective. The data gathered by the Department through its participation in the challenge could render significantly more territory in Vermont eligible for this grant process.

### **Drive Test Methodology**

Because the primary purpose for the Department's drive test effort was to participate in the FCC challenge process, the PSD developed a methodology to generate data that would meet the rigorous specifications laid out by the FCC for a challenge. The FCC developed a map that divides each state into thousands of one-kilometer square blocks. In order to successfully challenge coverage in a block, a challenger was required to submit results of download speed tests conducted within that block which demonstrate speeds below 5 Mbps. Separate results had to be submitted for each provider that allegedly serves that block, within the part of the block they purportedly serve. Moreover, the FCC specified that to successfully challenge service in a block, a challenge must encompass 75% of the test area, where each test point was afforded a radius of 400 meters.

Some states prepared challenges by reviewing the confidential maps submitted by the providers and targeting testing in small areas. Other participants chose to challenge service for only individual providers in select areas. Analysis of initial proof-of-concept tests showed that a drive test sticking to main roads would not be very efficient at meeting the FCC requirement to test 75% of the territory of a block. Meeting the 75% threshold would require several tests at least 400 meters apart within each block. This could be met if the route went directly through the middle of a block. In most cases however, the main roads transect the blocks obliquely, that is, along a side or a corner. In these blocks, a

drive test would not meet the 75% requirement. The PSD lacked time or budget to conduct a test thoroughly enough to meet the 75% threshold on a wide basis. The PSD considered testing only small targeted areas with a goal of testing on side roads to meet the 75% threshold in those areas. Ultimately, the PSD decided that the results of a drive test throughout the state could provide insight beyond the challenge process. Therefore, the PSD determined that it would conduct a drive test of all major roads (roads that receive federal aid) even though only a portion of the transected blocks would reach the 75% threshold.

The PSD identified an Android smartphone application, G-NetTrack, that recorded the results specified by the FCC. An initial review demonstrated that while the app recorded results for the three required parameters (latency, signal level, and download speed) each was recorded with a different timestamp and location. It would be difficult to put this information in the format required by the FCC for the submission. PSD staff contacted the app developer who agreed to update the app to include all three parameters in a data sequence with a single timestamp and location in the results log file. Deployment of the app required the assistance of the Vermont Agency of Digital Services (ADS). ADS configured an Internet server to host a file containing thousands of pictures. The app on the smartphones was configured to attempt to download this file and record the results at set intervals.

The PSD configured the application to conduct a test sequence lasting 20 seconds, consisting of a 10 second download test, 5 second ping test, and a 5 second pause. The PSD acquired handsets and service for each of the six facilities-based providers that asserted service in the state: AT&T, Sprint, T-Mobile, US Cellular, Verizon Wireless, and VTel Wireless. The PSD configured the app to continually repeat the test sequence on each handset while the drive tests were underway. With an average speed of 40 Miles per hour (18 meters per second), the test every 20 seconds produced data with about 360 meters between result locations. The product of this effort is a set of 187,506 download speed test results at locations along all of the major roads in the state.

### **Statewide Results**

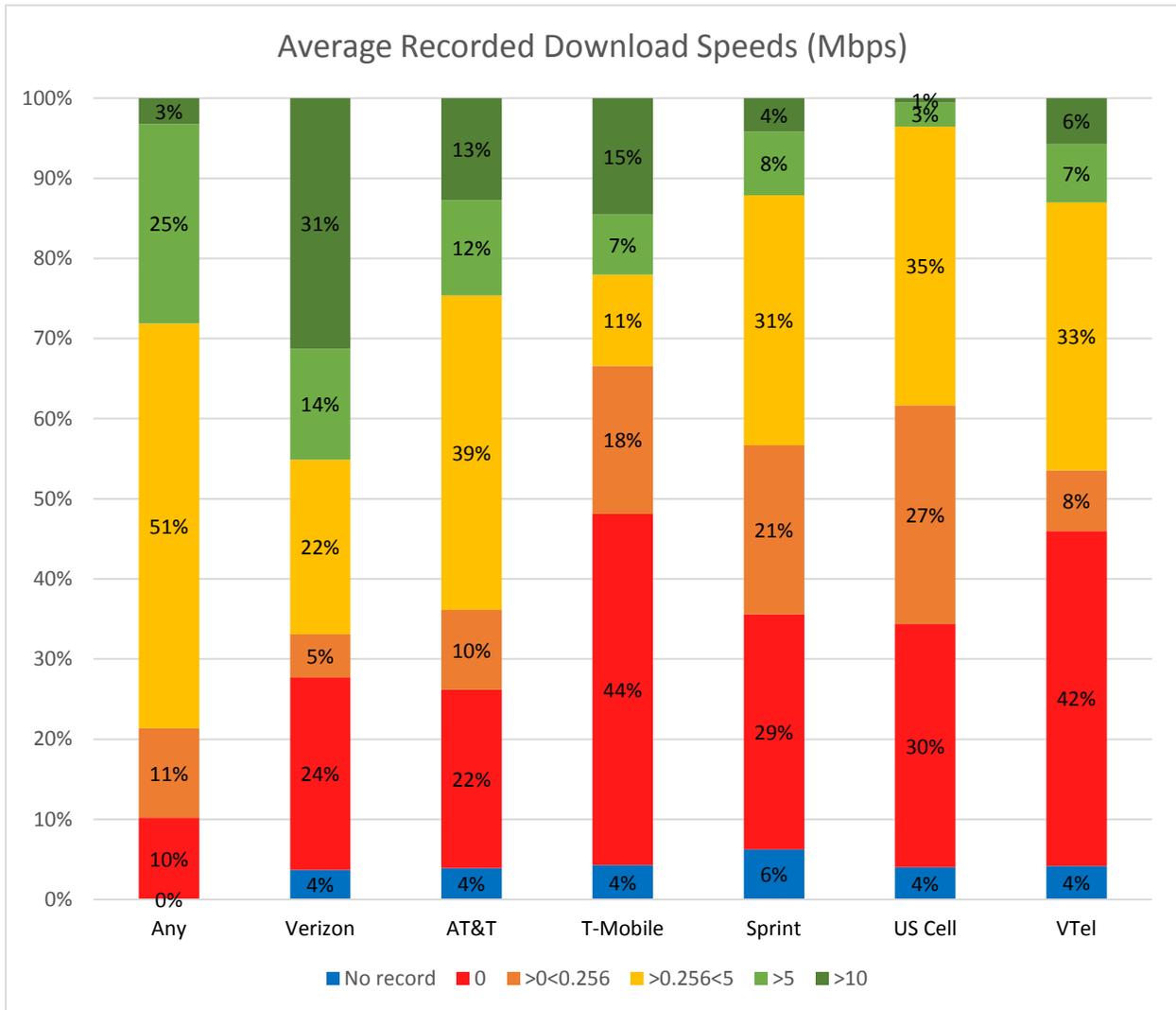
The Department employed the one-kilometer square blocks developed by the FCC to generalize the results. This generalization is helpful for analysis and to view the information in maps at large scales, such as for a statewide view. For each carrier, the PSD determined the average download speed recorded in each block using the following five-tier classification system:

-  No service, text, voice, and data not available
-  Spotty service, under 256 kbps, text may be possible, voice not likely
-  OK service, up to 5 Mbps, voice, text and email likely, web browsing may be possible
-  Good service, 5 Mbps to 10 Mbps, voice, text and web browsing likely, streaming may be possible
-  Great service, more than 10 Mbps, voice, text and video streaming likely

It is important to keep in mind that while this generalization is indicative of the coverage, it is not meant to assert the availability of such coverage throughout each block. In fact, there can be significant

variation in coverage within any block. Users should refer to the individual download speed tests visible on the interactive maps for more precise information.

The chart below compares the average download speeds obtained by each carrier in the tests. For each carrier, the chart lists the percentage of blocks where the average recorded download speed falls into five different speed tiers.



Analysis of this data shows these key findings:

- The two largest carriers, AT&T and Verizon, have a similar number of blocks where they have at least some service: 72% for Verizon and 74% for AT&T;
- 65% of the tested blocks have service from both AT&T and Verizon;
- 54% of the tested blocks are served by both AT&T and Verizon at speeds better than 0.256 kbps;
- 15% of the tested blocks have no service from either AT&T or Verizon;
- Verizon has the largest number of blocks with the highest speeds, 31% for Verizon vs. 13% for AT&T and 15% for T-Mobile;
- There are 106 blocks served only by VTel Wireless, including 47 where the download speed was less than 0.256 kbps.

Blocks where there is no recorded speed test for that carrier are the result of the nature of the drive test. While the drive test recorded data for all carriers along the same routes, the tests were not exactly synchronized, so not all carriers have results in all blocks.

### Vermont FCC Challenge Submittal

The FCC employed an automated process to review the results of the drive test submitted by the PSD. In order to challenge service in a given one-kilometer block, challengers were required to submit download speed tests within the asserted coverage area in that block for each carrier that asserted coverage. The process identified 4,186 blocks where the challenge was successful. Of these, 789 blocks met the requirement to test 75% of the block. In another 3,397 blocks, the challenge was only provisionally accepted because the tests submitted covered less than 75% of the block. The process rejected the challenge in 1,879 one-kilometer blocks. Of these rejected blocks, 1,607 were apparently rejected because all of the tests for all carriers that asserted service in that block exceeded 5 Mbps. Another 272 blocks had tests that demonstrated less than 5 Mbps, (including 194 blocks showing no service at all) but were rejected because the specific location of the tests fell outside of the company's asserted coverage area. Many of these rejected blocks are adjacent to the identified Eligible Area.

The table below depicts the quantity of blocks and the quantity of E-911 Business and residential buildings within these blocks for different categories of blocks.

Category	Blocks	PCT	Buildings	PCT
Challenge accepted (75% tested)	789	3%	23,087	8%
Challenge provisional (<75% tested)	3,397	13%	102,770	34%
Challenge rejected	1,879	7%	68,993	23%
Not tested	19,373	76%	108,985	36%
Total	25,438		303,835	

Analysis of this information shows these key findings:

- The drive test transected only 23% of the blocks in the state, but these blocks contain 65% of the buildings in the state;
- The challenge in 30% of the transected blocks were rejected, largely because the service recorded exceeded 5 Mbps;
- Only 13% of the transected blocks met the 75% threshold;
- Testing the 70% of the blocks that the drive test did not transect would require a significant effort, and only a small portion would meet the 75% threshold.

## Interactive Map

The Department prepared an interactive map service depicts mobile wireless coverage for each of the six facilities based providers operating in Vermont: AT&T, Sprint, T-Mobile, US Cellular, Verizon Wireless, and VTel Wireless. The map is accessible on the Department website.

Use the two buttons in the upper right to navigate the site:

-  Layer button, to select between providers
-  Legend button, an explanation of the colors

The layer for each provider includes two maps: a coverage map with information prepared by the service provider, and the results of a drive test conducted by the Vermont Department of Public Service in October and November, 2018.

**COVERAGE MAP:** The coverage maps, shown in pink , were submitted by the provider to the Federal Communications Commission and indicate where the provider believes consumers should expect to receive data service with at least 200 kbps, as of December 31, 2017. This publicly available information was downloaded from the FCC website; it was produced by the individual providers and the PSD makes no claim about its accuracy. For VTel Wireless, users may optionally enable the VTel Wireless ARRA service territory map by clicking Layer button, then the right arrow next to VTel.

**DRIVE TEST MAP:** PSD staff employed the android smartphone application G-NetTrack to conduct download speed tests at approximately 300 meter intervals along all federal-aid highways. The results of the drive tests are show with five colors, as follows:

-  No service, text, voice, and data not available
-  Spotty service, under 256 kbps, text may be possible, voice not likely
-  OK service, up to 5 Mbps, voice, text and email likely, web browsing may be possible
-  Good service, 5 Mbps to 10 Mbps, voice, text and web browsing likely, streaming may be possible
-  Great service, more than 10 Mbps, voice, text and video streaming likely

The drive test data is presented in two formats, depending on the scale of the map (how far the user zooms in or out):

- **DATA TEST POINTS:** When zoomed-in to a neighborhood scale, the service depicts the results of the 187,000 individual data tests. Clicking on an individual point will provide the information from that test, including the timestamp, the download speed (in Mbps), the latency (the round-trip time for a request to a website, in milliseconds), and the signal strength (RSRP in dBm).
- **AVERAGE SPEED BLOCKS:** When zoomed-out beyond the neighborhood scale, the map depicts blocks, one kilometer square, that show the average of the download speeds recorded within that block. This generalization of information provides users an indication of coverage in a neighborhood when viewed at different scales. **THIS DOES NOT INDICATE SERVICE THROUGHOUT A BLOCK.** Users should zoom-in to view the individual download speed test points and judge accordingly.

In addition to the data for each individual provider, the Layer button  allows users to select two additional views:

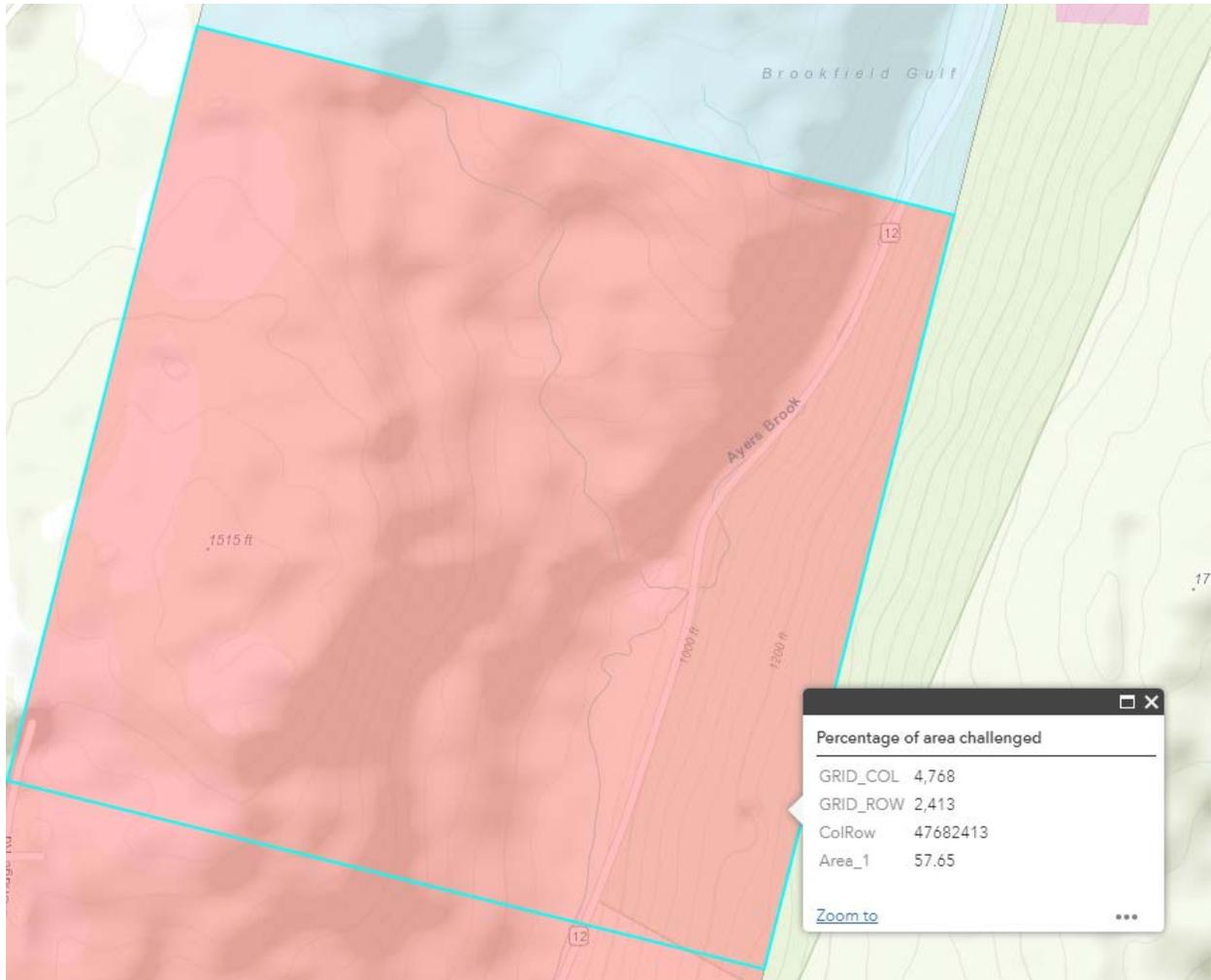
The COMPOSITE layer depicts the blocks that contain download tests, color coded by the average of all of the tests, for all carriers, conducted in that block. This includes data for all carriers, and thus masks variation in coverage between individual providers. Clicking on an individual block will show the average results for each provider in that block. Results listing "999.000" indicate no test was conducted for that carrier in that block.

The CHALLENGE layer depicts the status of each block in the submission of the PSD in the FCC Mobility Fund Phase II Challenge process. Blocks are depicted in one of three colors. Blue blocks are where the challenge was rejected, either because a.) the block is already largely eligible, or b.) because no tests below 5 Mbps were submitted. Blocks that are red and pink were accepted because tests with results less than 5 Mbps for each carrier that asserted coverage were submitted. Blocks in red met the requirement for testing 75% of the block. The challenge for the blocks in pink may be considered but did not meet the 75% territory requirement. This layer also includes the original "eligible area" in purple , areas where no carrier asserted that it provides service.

**Difficulty meeting the 75% threshold:**

Of the 4,186 tested blocks, 3,397 did not meet the 75% threshold. Here are some examples that demonstrate the difficulty of meeting this requirement.

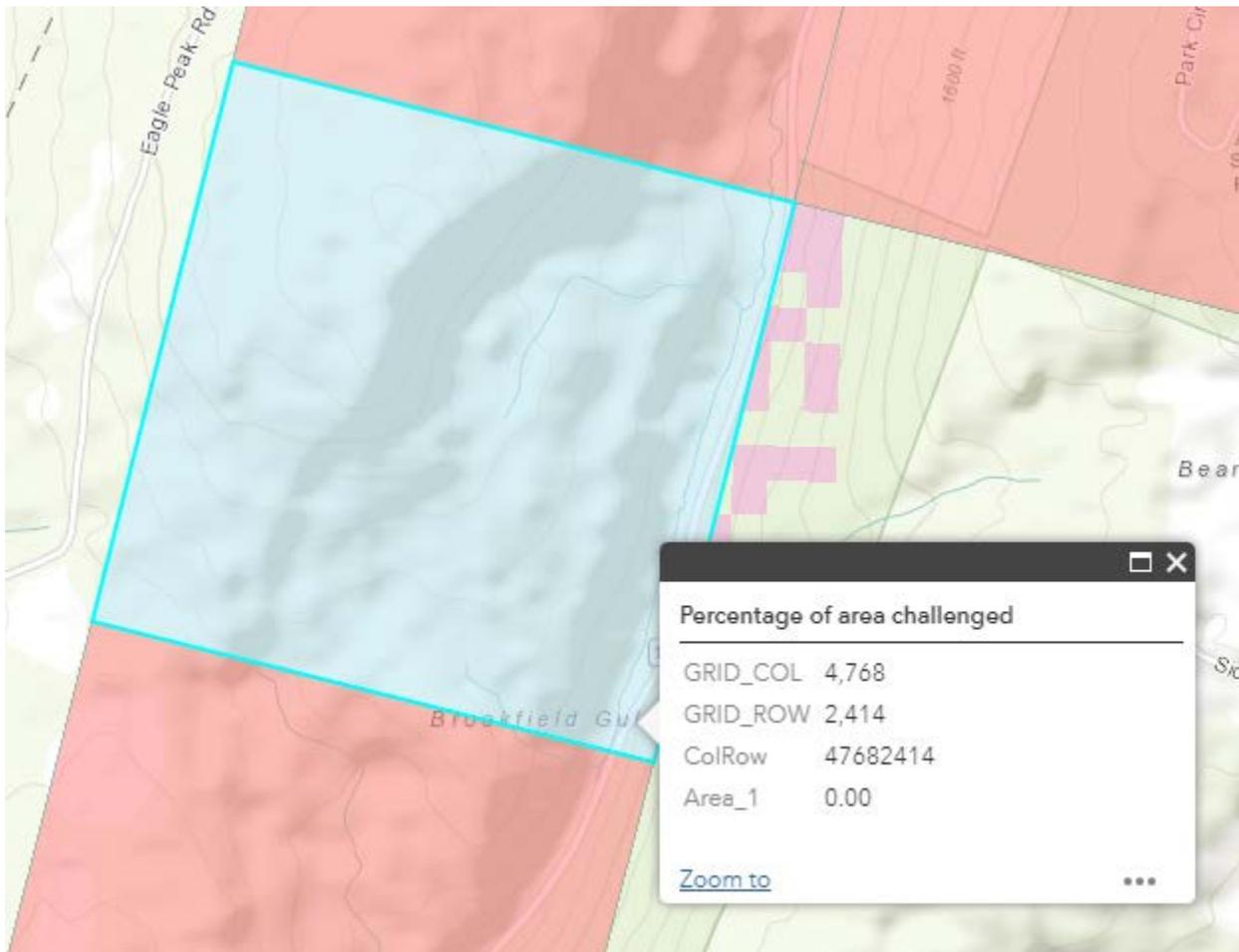
For instance, see Grid\_Col 4,768 / Grid\_Row 2,413. The PSD challenge for this block was accepted and the challenged area was calculated to be 57.65%. The PSD tests were all along the main road, Route 12. There are no other roads in this block, and the steep terrain would make additional testing in this cell by hiking treacherous. Moreover, the buildings in the area would be along the roads, so testing the area of the block lacking roads is highly inefficient.



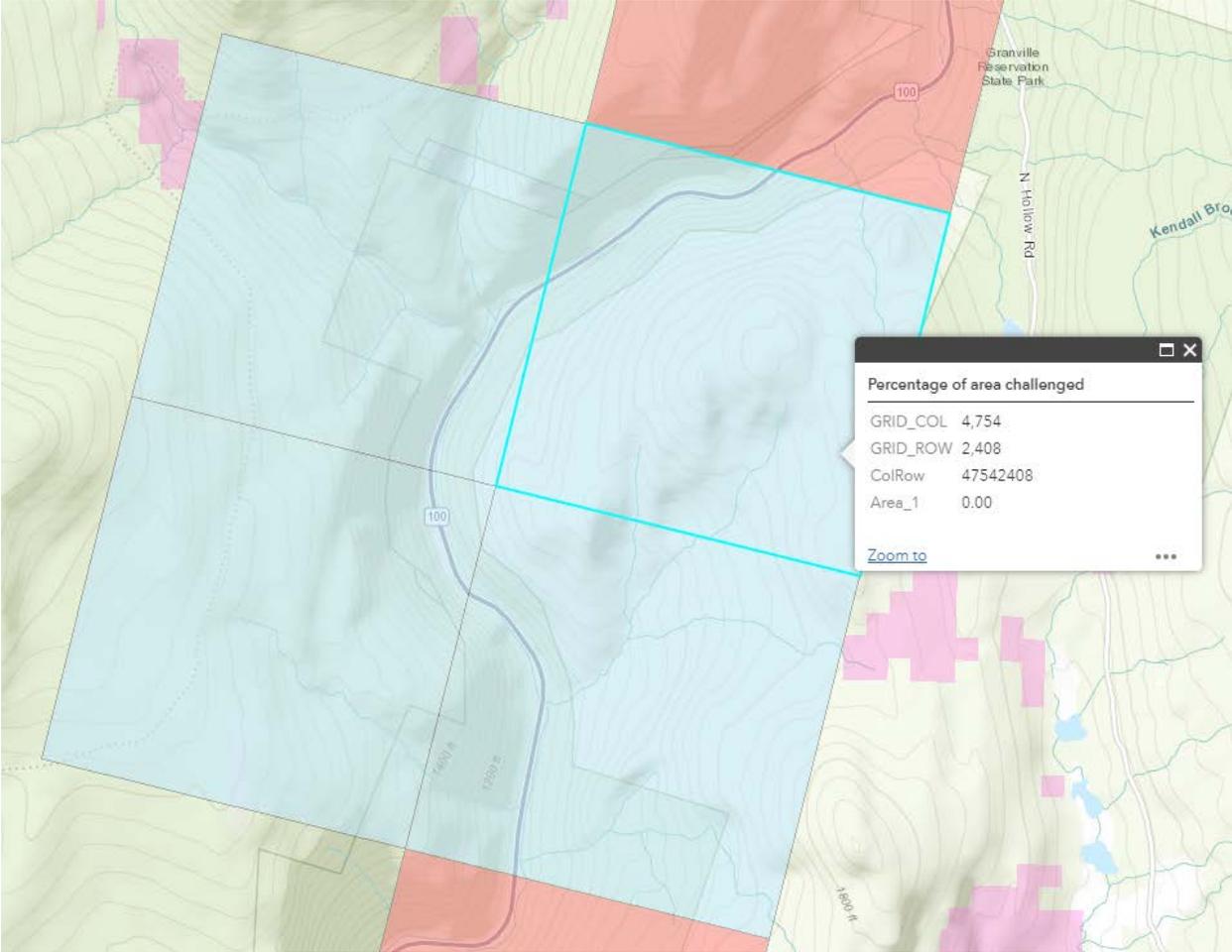
### Blocks rejected because the tests were “Outside Challengeable areas of a block”

Of the 1,879 blocks where the tests were deemed invalid, 194 were blocks where the tests demonstrate no service from any carrier, and 78 show service less than 5 Mbps from any carrier. These were likely rejected because the tests were not conducted within the “challengeable” area of a block. That is, the tests need to be conducted not only within the block, but for each carrier, the test must be conducted within the portion of the block that the carrier claimed it served. This is problematic if the carrier asserts that it serves a part of a block with no roads.

For example see Grid\_Col 4768 / Grid\_Row 2414. Most of the cell is allegedly served, and is thus ineligible, with just a few pixels that lack asserted coverage. By chance the PSD tests in this cell fell within these few pixels.



As an another example, see the four blocks around Grid Col 4753, Grid\_Row 2408. The tests were all along the roads in Eligible areas, while the area with asserted coverage lies in the roadless areas on the hills above.

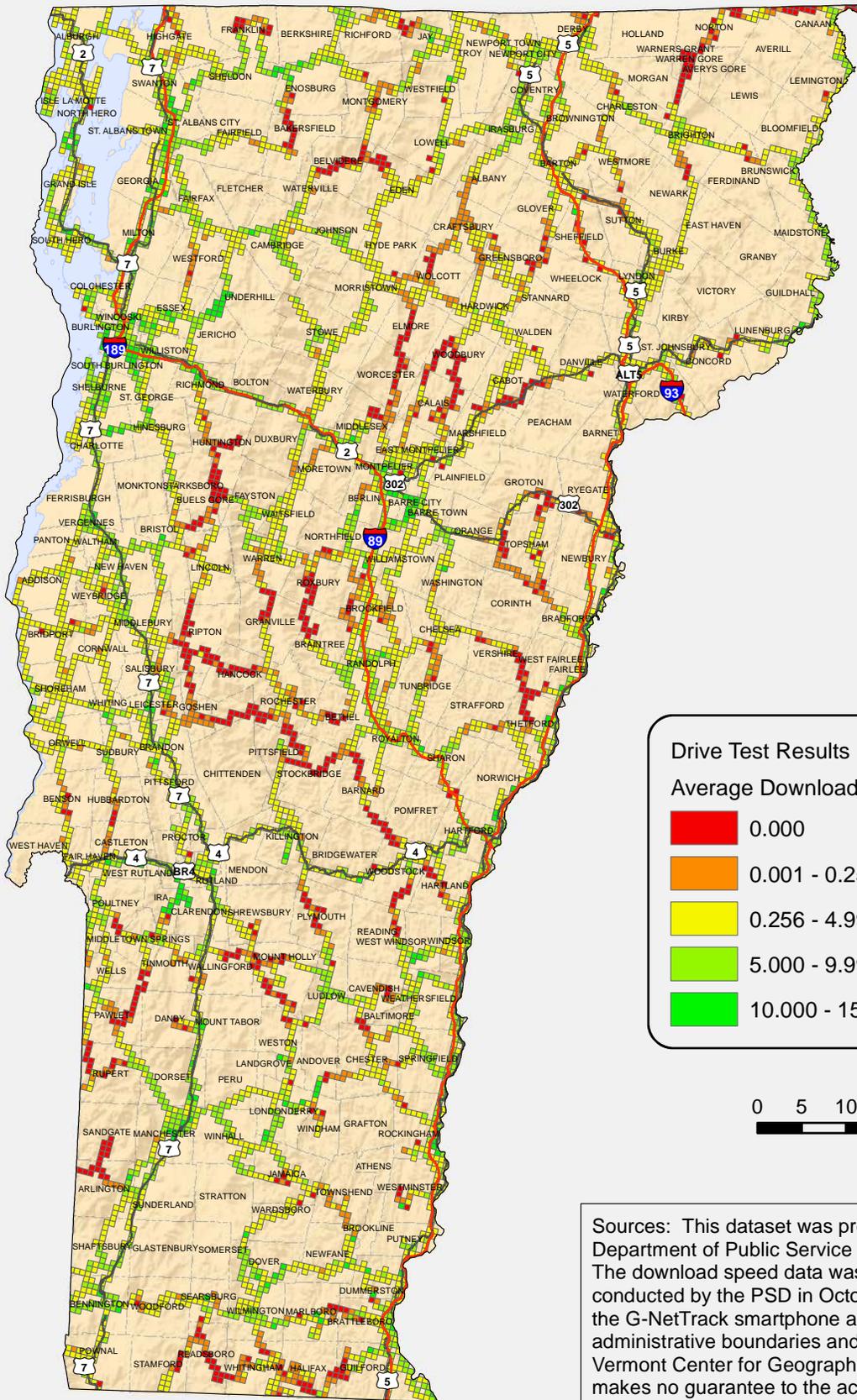


# Mobile Wireless in Vermont All Carriers 4G-LTE Data Coverage



Department of Public Service

December 31, 2018



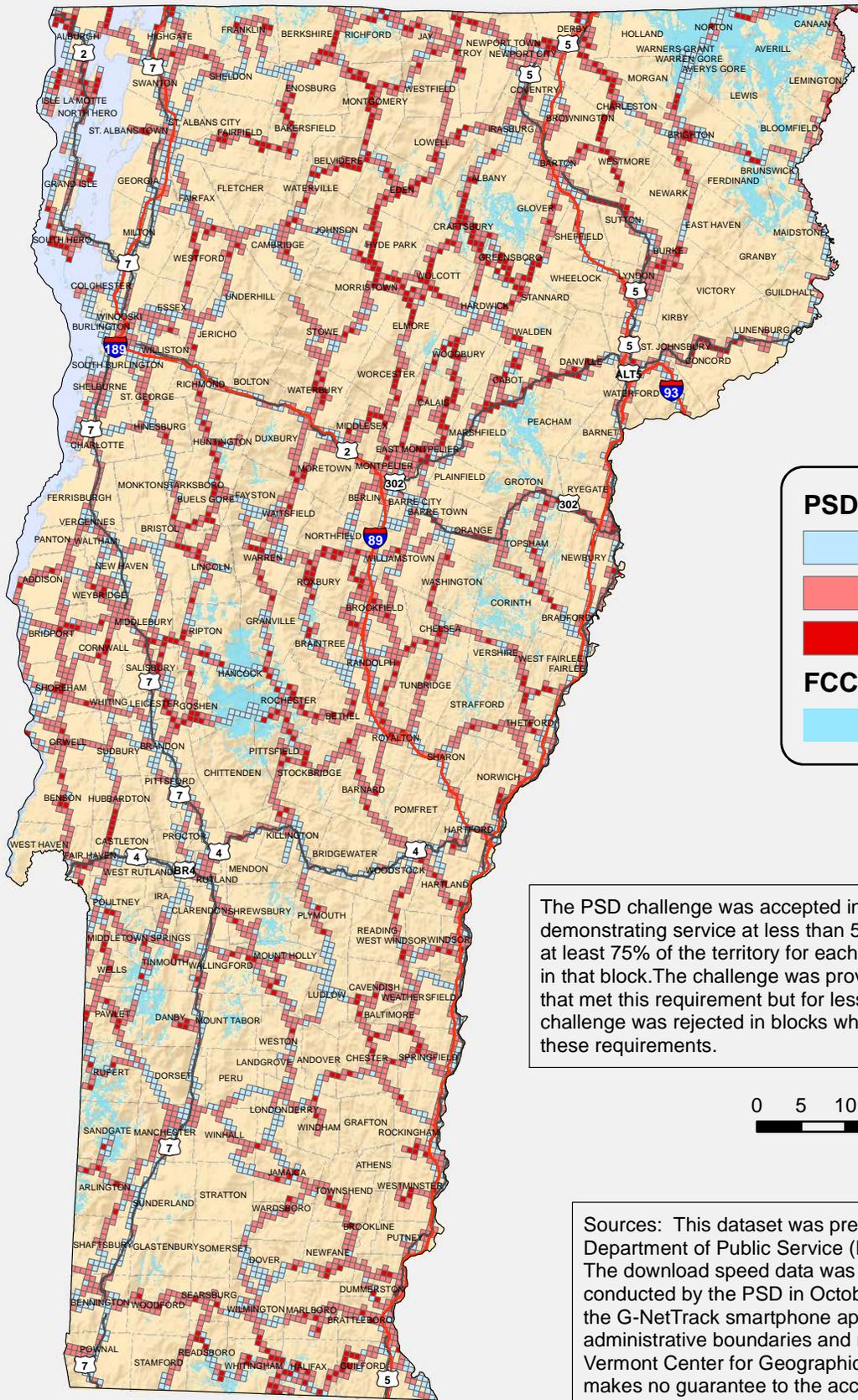
**Drive Test Results**  
Average Download Speed (Mbps)

Red	0.000
Orange	0.001 - 0.255
Yellow	0.256 - 4.999
Light Green	5.000 - 9.999
Dark Green	10.000 - 150.000



Sources: This dataset was prepared by the Vermont Department of Public Service (PSD) on 12/31/2018. The download speed data was collected during a drive test conducted by the PSD in October and November 2018 using the G-NetTrack smartphone application. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

# Mobile Wireless in Vermont Mobility Fund 4G-LTE Data Challenge



**PSD Challenge Blocks**

- Rejected (1,879)
- Provisional (3,397)
- Accepted (789)

**FCC Mobility Fund**

- Initial Eligible Area

The PSD challenge was accepted in blocks where results demonstrating service at less than 5 Mbps were submitted for at least 75% of the territory for each carrier that asserted service in that block. The challenge was provisionally accepted for blocks that met this requirement but for less than 75% of the area. The challenge was rejected in blocks where the tests did not meet these requirements.



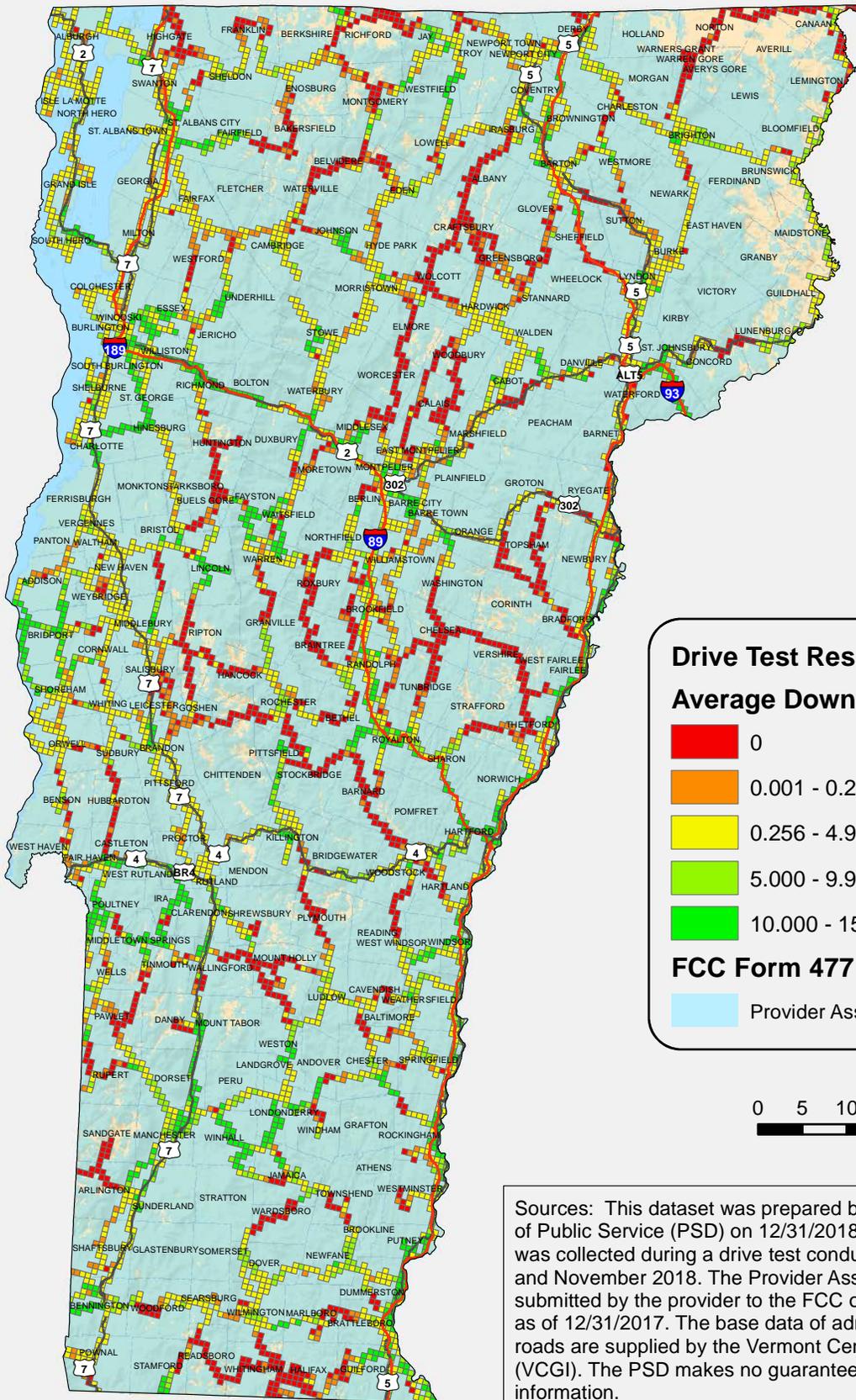
Sources: This dataset was prepared by the Vermont Department of Public Service (PSD) on 12/31/2018. The download speed data was collected during a drive test conducted by the PSD in October and November 2018 using the G-NetTrack smartphone application. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

# Mobile Wireless in Vermont AT&T 4G-LTE Data Coverage



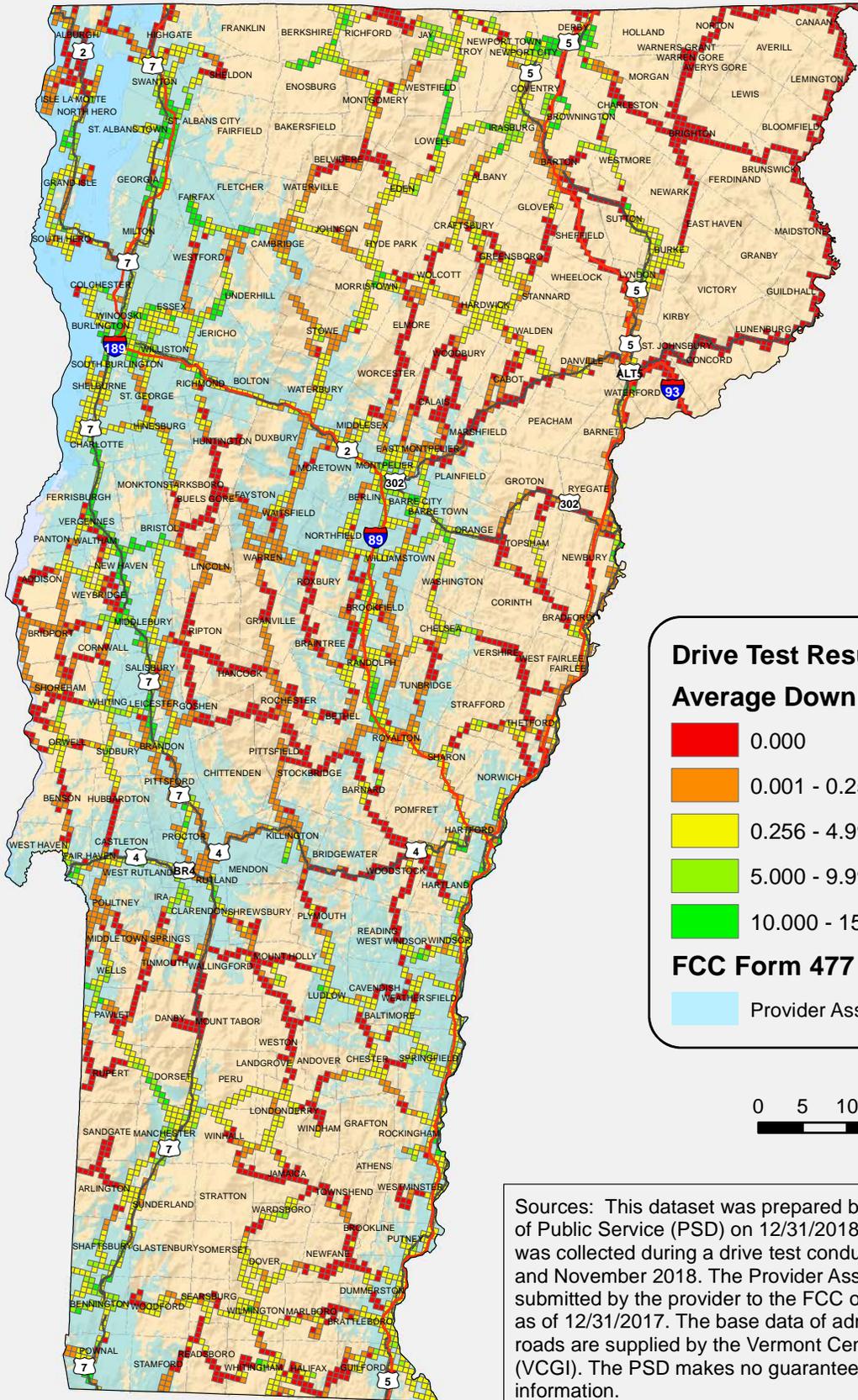
Department of Public Service

December 31, 2018



Sources: This dataset was prepared by the Vermont Department of Public Service (PSD) on 12/31/2018. The download speed data was collected during a drive test conducted by the PSD in October and November 2018. The Provider Asserted Coverage area was submitted by the provider to the FCC on form 477 showing service as of 12/31/2017. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

# Mobile Wireless in Vermont Sprint 4G-LTE Data Coverage



**Drive Test Results**  
**Average Download Speed (Mbps)**

- 0.000
- 0.001 - 0.255
- 0.256 - 4.999
- 5.000 - 9.999
- 10.000 - 150.000

**FCC Form 477**

- Provider Asserted Coverage



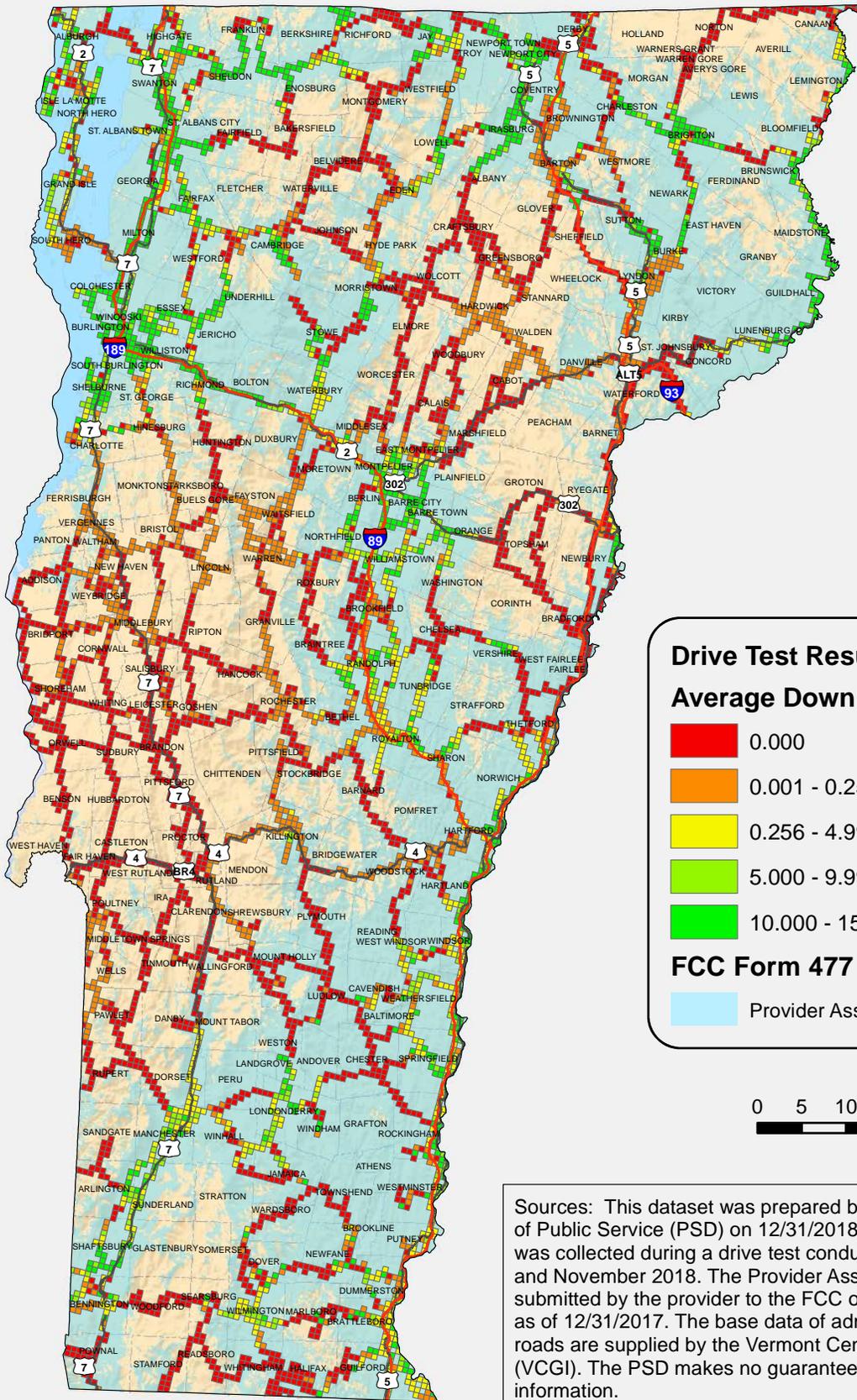
Sources: This dataset was prepared by the Vermont Department of Public Service (PSD) on 12/31/2018. The download speed data was collected during a drive test conducted by the PSD in October and November 2018. The Provider Asserted Coverage area was submitted by the provider to the FCC on form 477 showing service as of 12/31/2017. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

# Mobile Wireless in Vermont T-Mobile 4G-LTE Data Coverage



Department of Public Service

December 31, 2018



**Drive Test Results**  
**Average Download Speed (Mbps)**

- 0.000
- 0.001 - 0.255
- 0.256 - 4.999
- 5.000 - 9.999
- 10.000 - 150.000

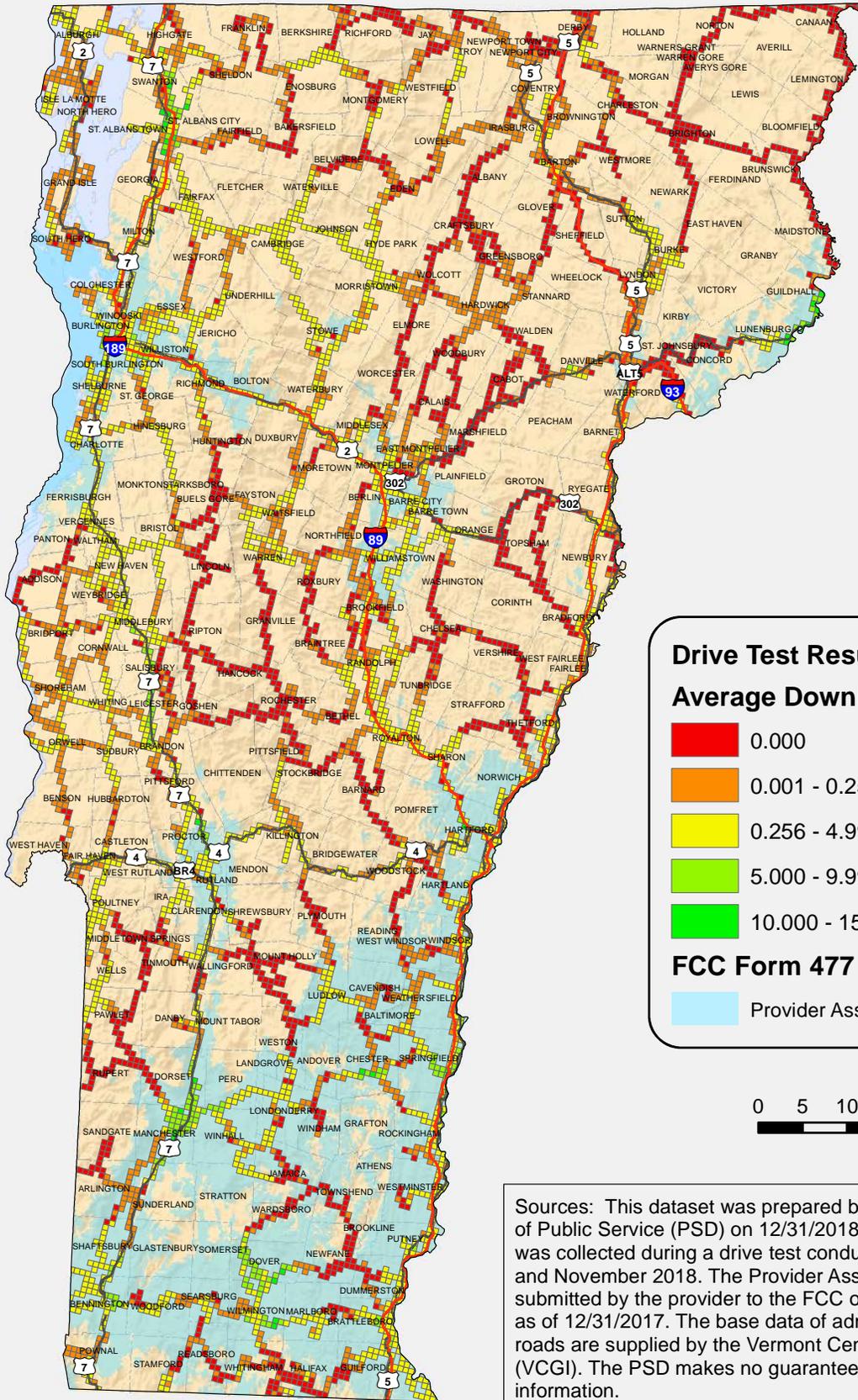
**FCC Form 477**

- Provider Asserted Coverage



Sources: This dataset was prepared by the Vermont Department of Public Service (PSD) on 12/31/2018. The download speed data was collected during a drive test conducted by the PSD in October and November 2018. The Provider Asserted Coverage area was submitted by the provider to the FCC on form 477 showing service as of 12/31/2017. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

# Mobile Wireless in Vermont US Cellular 4G-LTE Data Coverage



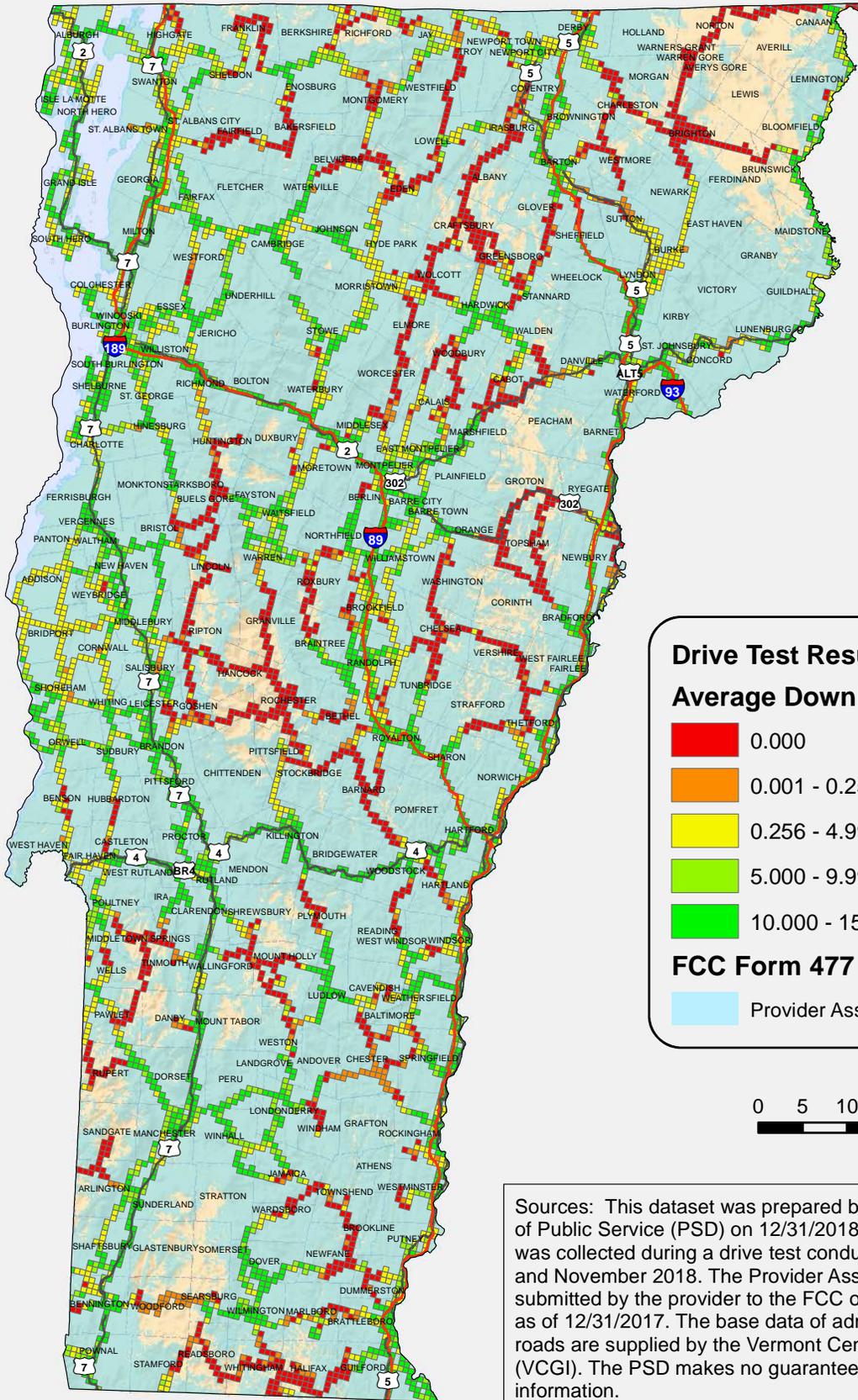
Sources: This dataset was prepared by the Vermont Department of Public Service (PSD) on 12/31/2018. The download speed data was collected during a drive test conducted by the PSD in October and November 2018. The Provider Asserted Coverage area was submitted by the provider to the FCC on form 477 showing service as of 12/31/2017. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

# Mobile Wireless in Vermont Verizon 4G-LTE Data Coverage



Department of Public Service

December 31, 2018



**Drive Test Results**  
**Average Download Speed (Mbps)**

- 0.000
- 0.001 - 0.255
- 0.256 - 4.999
- 5.000 - 9.999
- 10.000 - 150.000

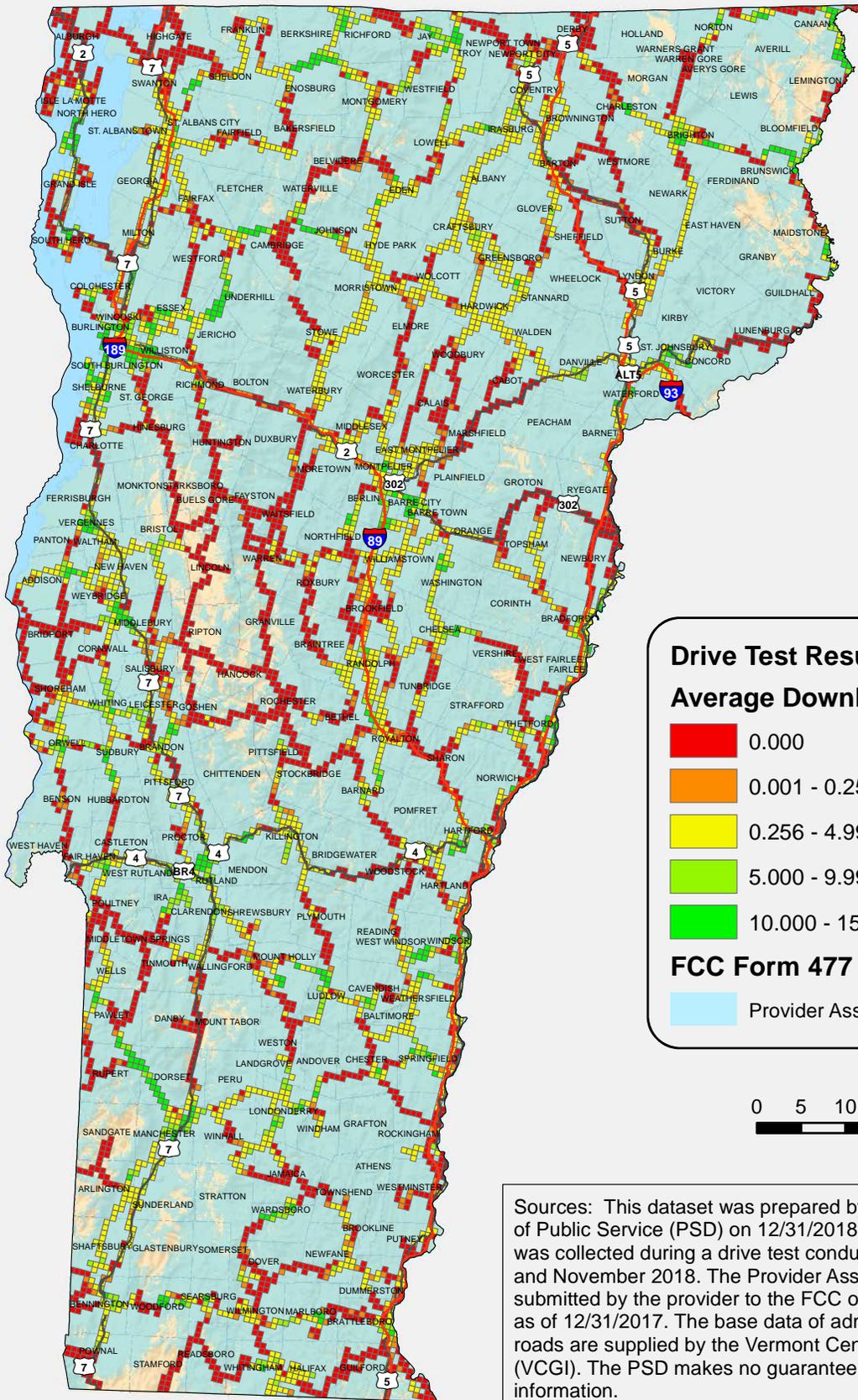
**FCC Form 477**

- Provider Asserted Coverage



Sources: This dataset was prepared by the Vermont Department of Public Service (PSD) on 12/31/2018. The download speed data was collected during a drive test conducted by the PSD in October and November 2018. The Provider Asserted Coverage area was submitted by the provider to the FCC on form 477 showing service as of 12/31/2017. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

# Mobile Wireless in Vermont VTel Wireless 4G-LTE Data Coverage



**Drive Test Results**  
**Average Download Speed (Mbps)**

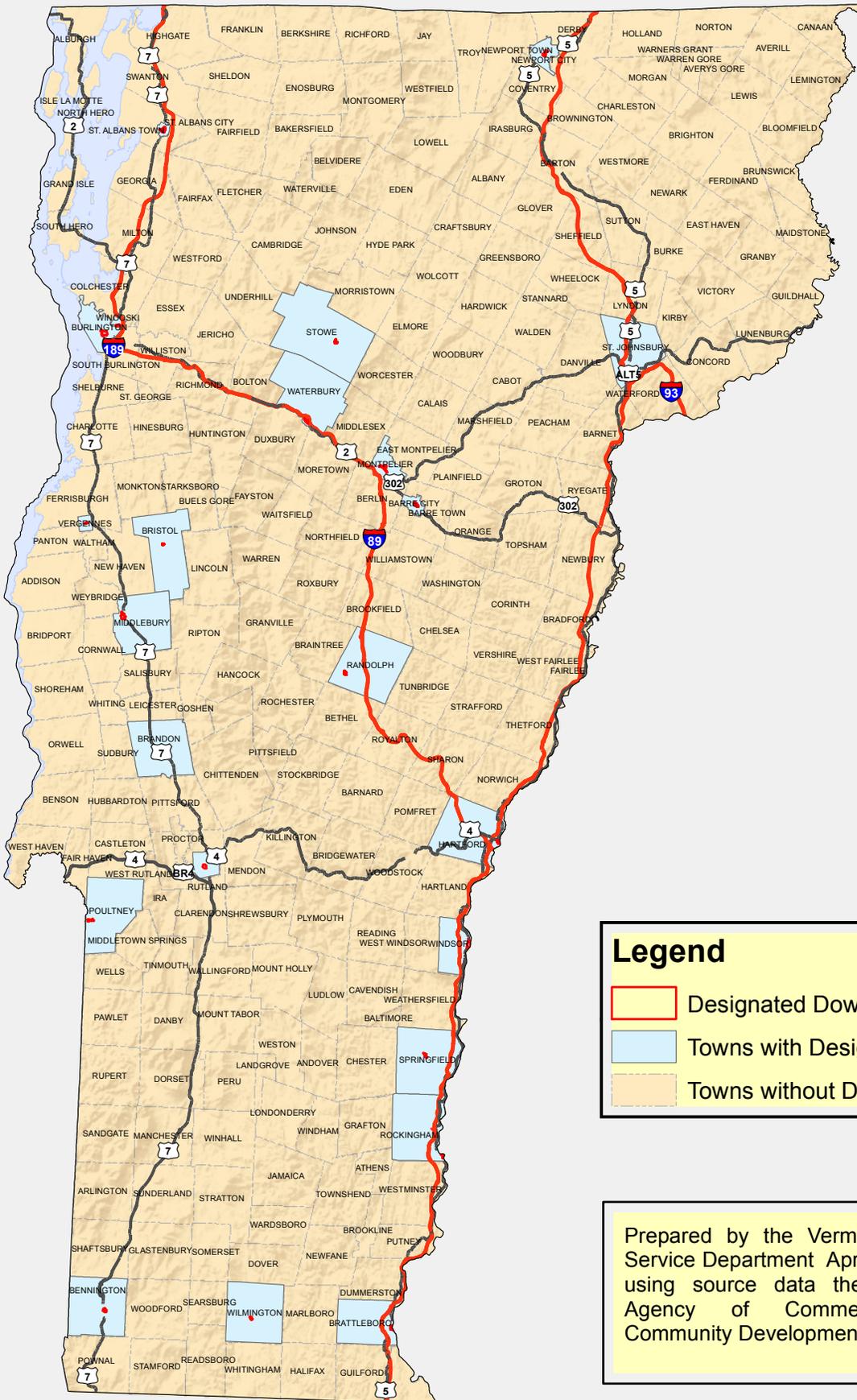
- 0.000
- 0.001 - 0.255
- 0.256 - 4.999
- 5.000 - 9.999
- 10.000 - 150.000

**FCC Form 477**

- Provider Asserted Coverage



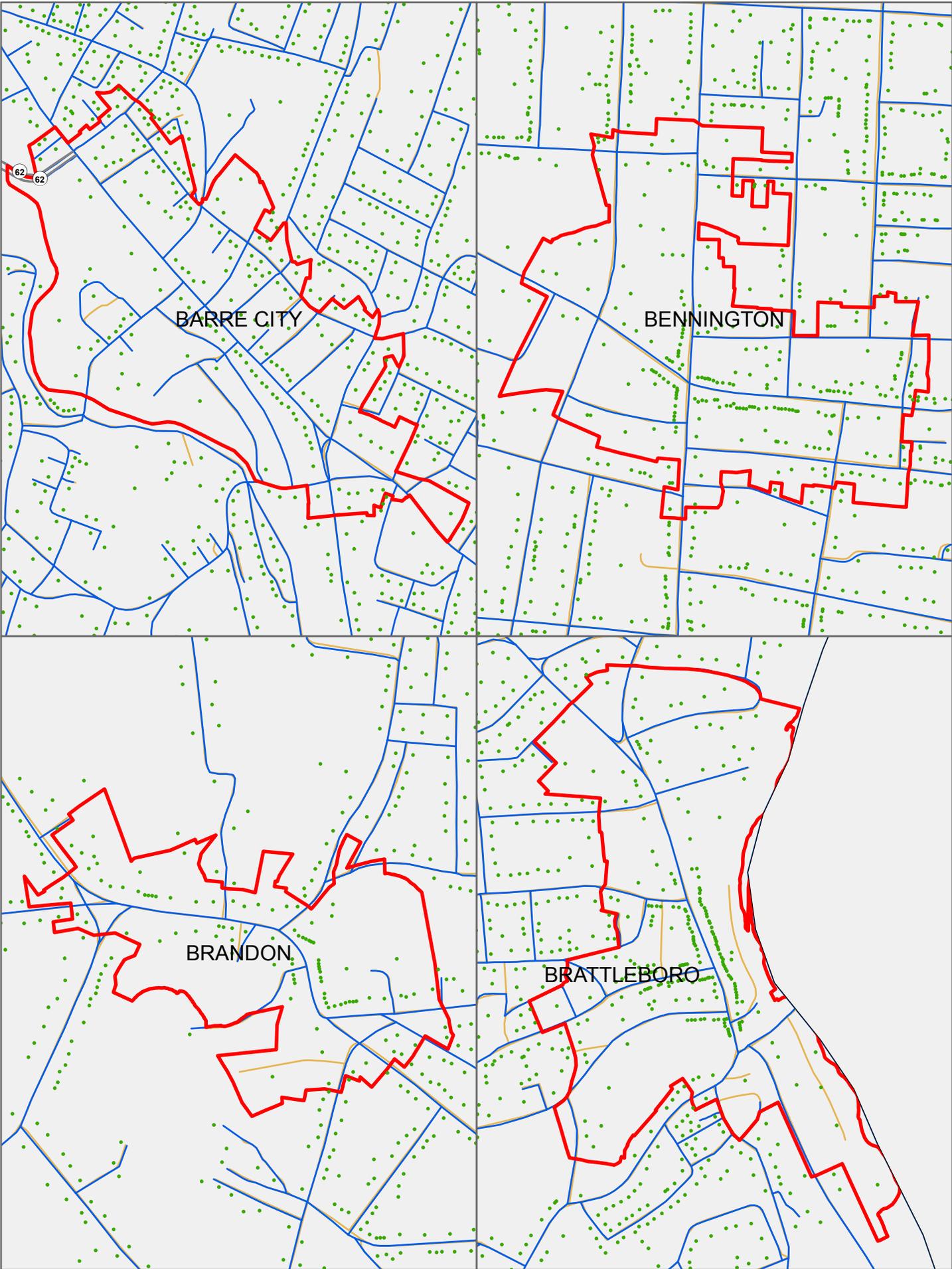
Sources: This dataset was prepared by the Vermont Department of Public Service (PSD) on 12/31/2018. The download speed data was collected during a drive test conducted by the PSD in October and November 2018. The Provider Asserted Coverage area was submitted by the provider to the FCC on form 477 showing service as of 12/31/2017. The base data of administrative boundaries and roads are supplied by the Vermont Center for Geographic Information (VCGI). The PSD makes no guarantee to the accuracy of this information.

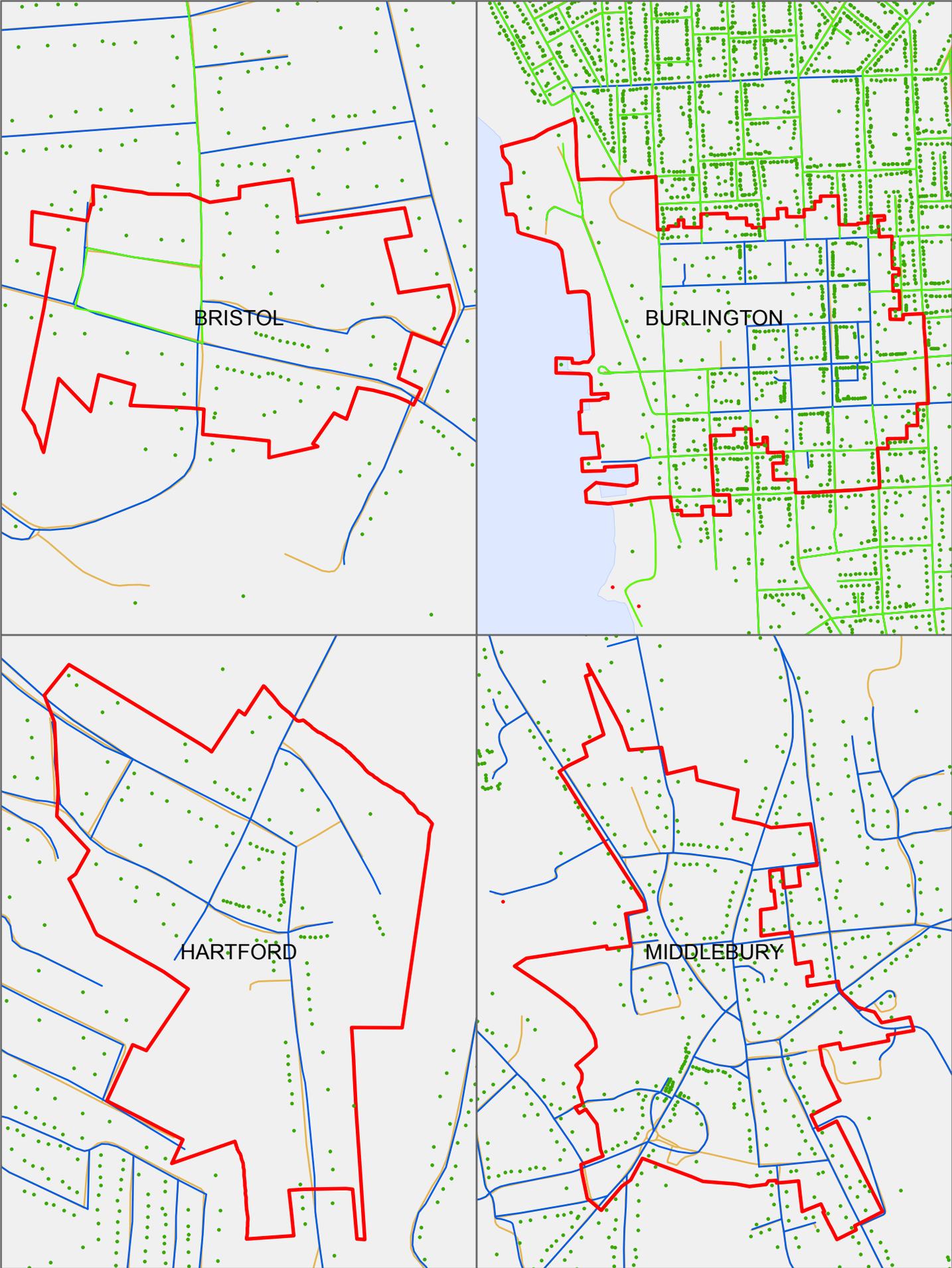


**Legend**

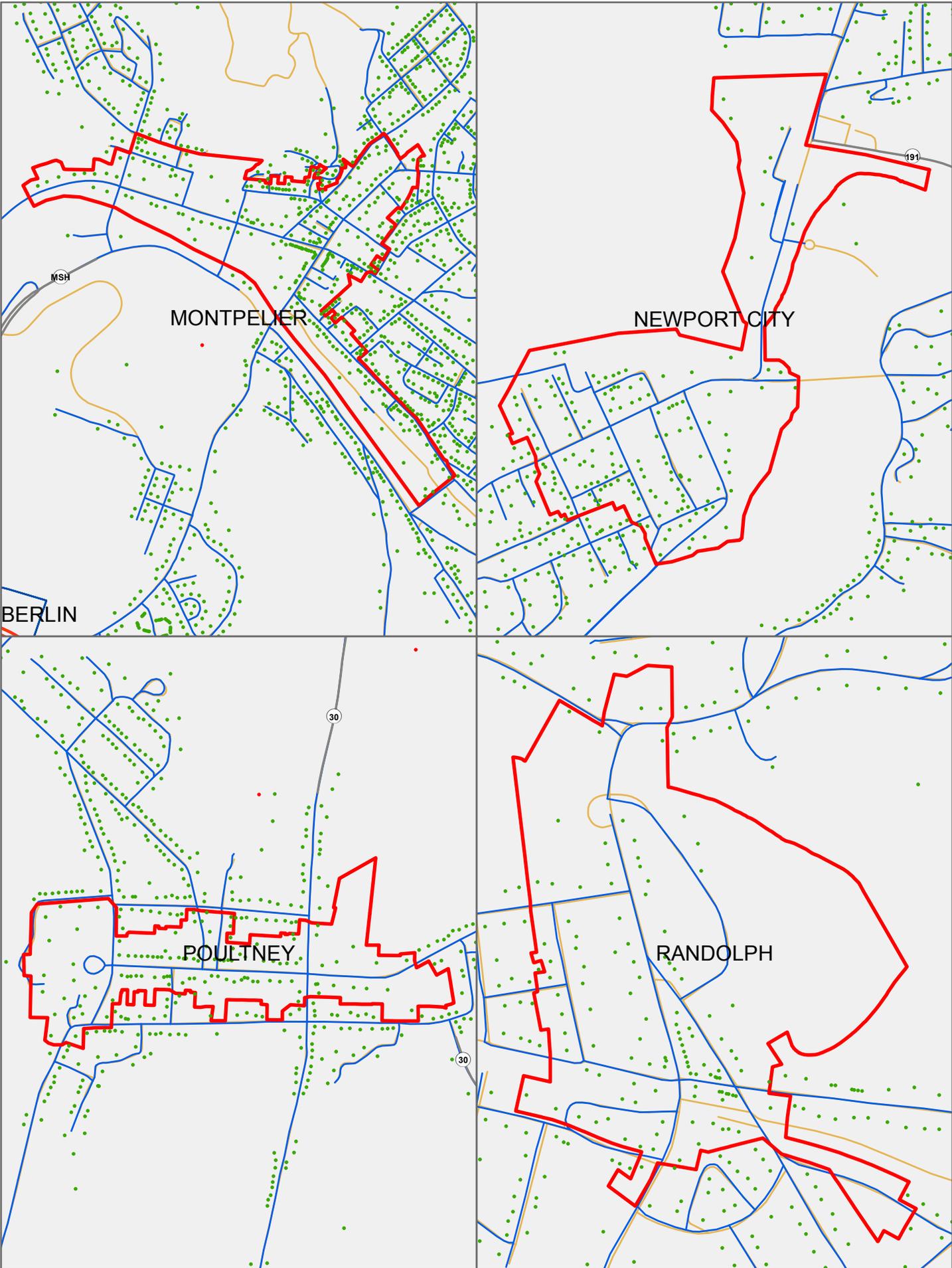
- Designated Downtowns (23)
- Towns with Designated DTs
- Towns without Designated DTs

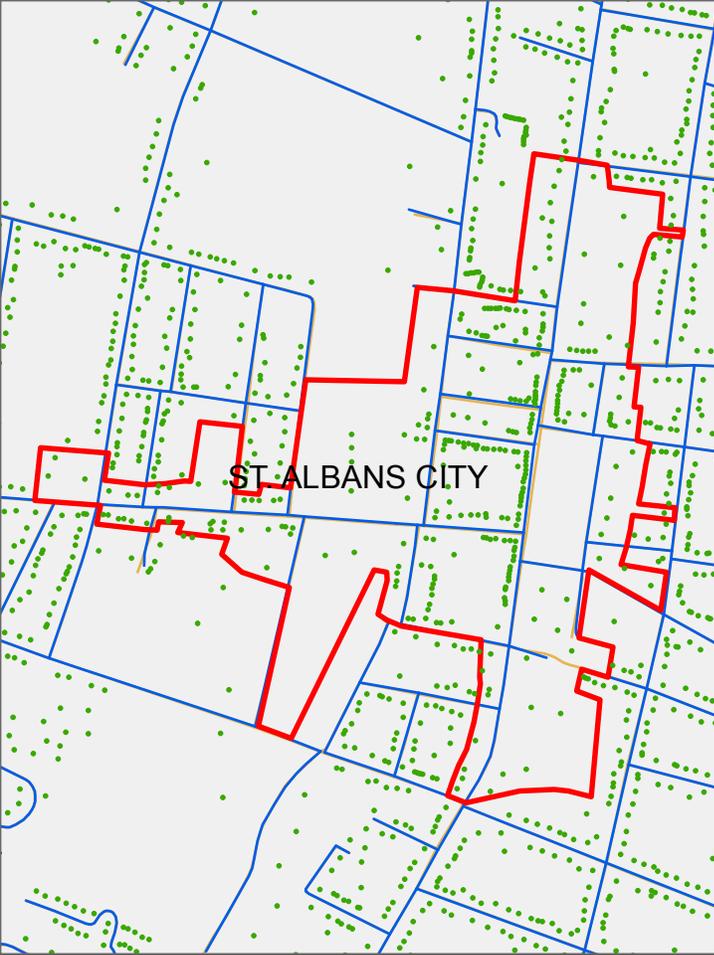
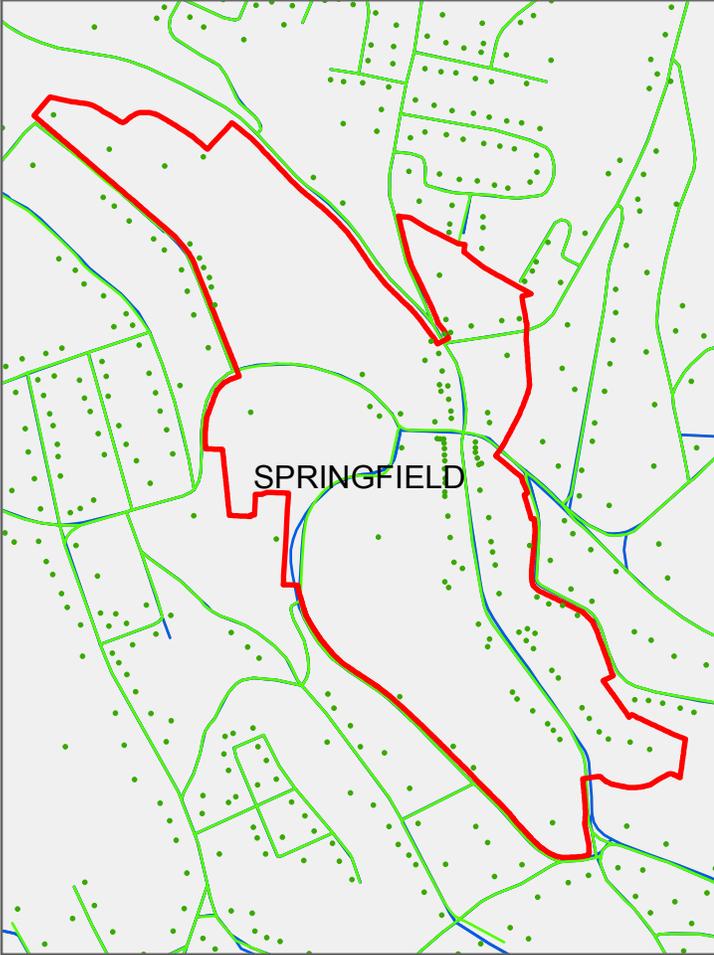
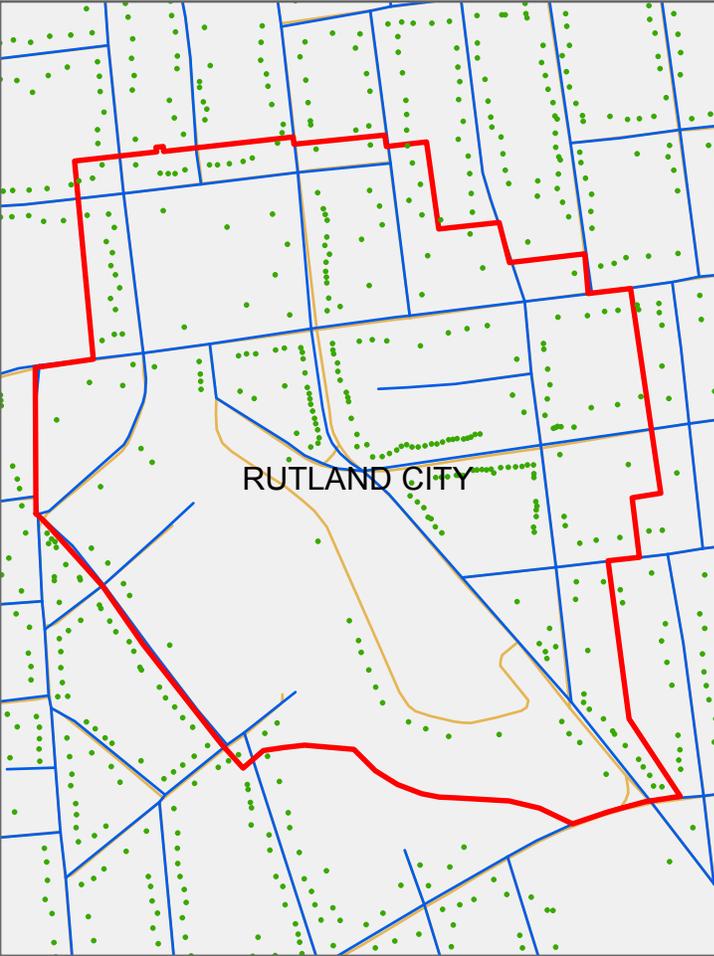
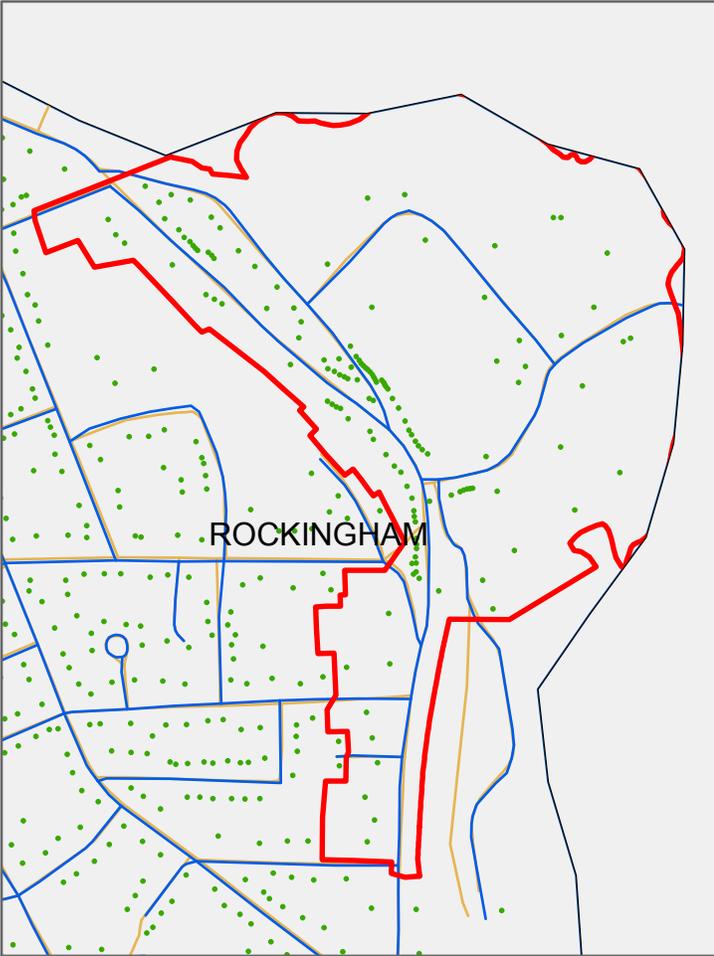
Prepared by the Vermont Public Service Department April 22, 2019 using source data the Vermont Agency of Commerce and Community Development

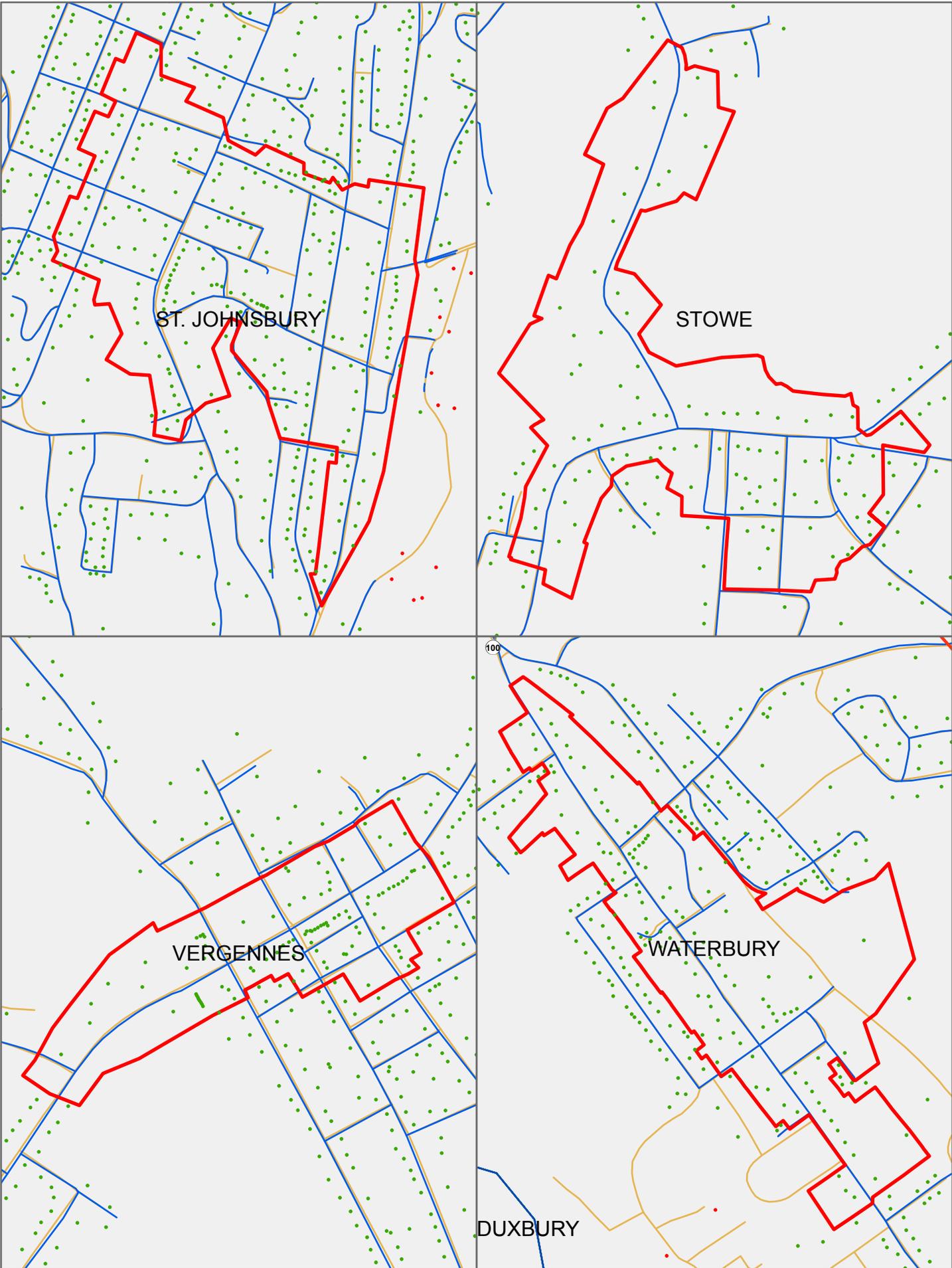


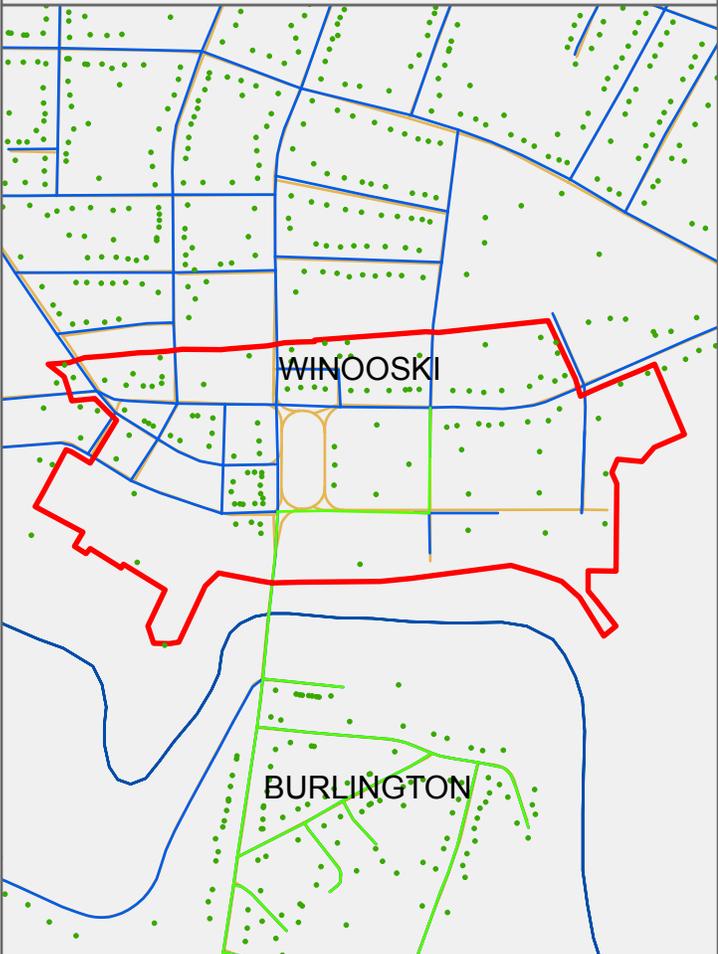
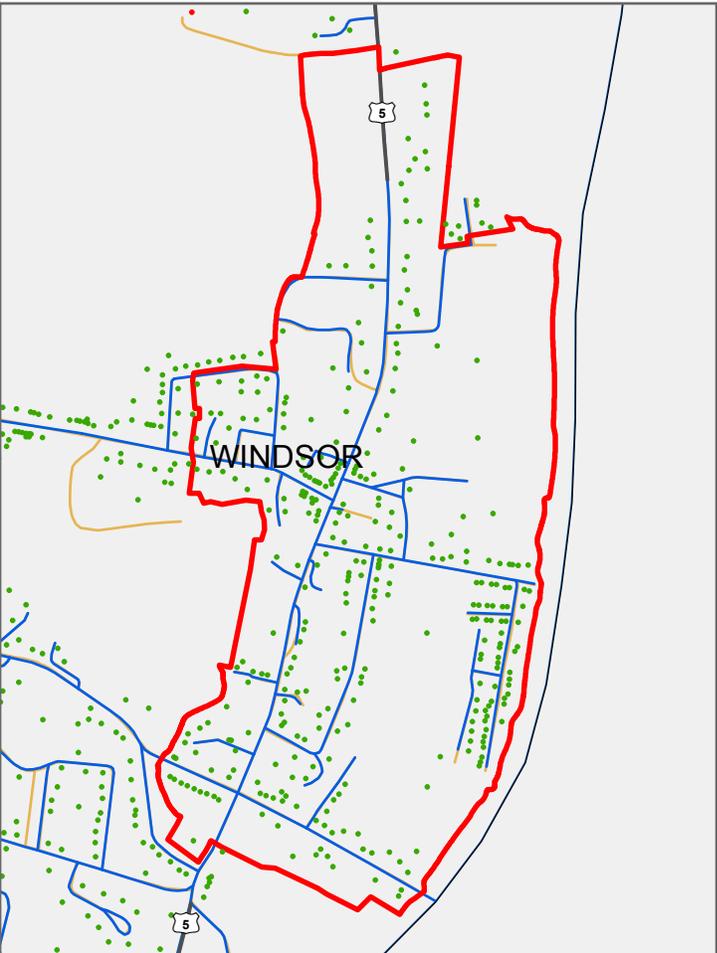
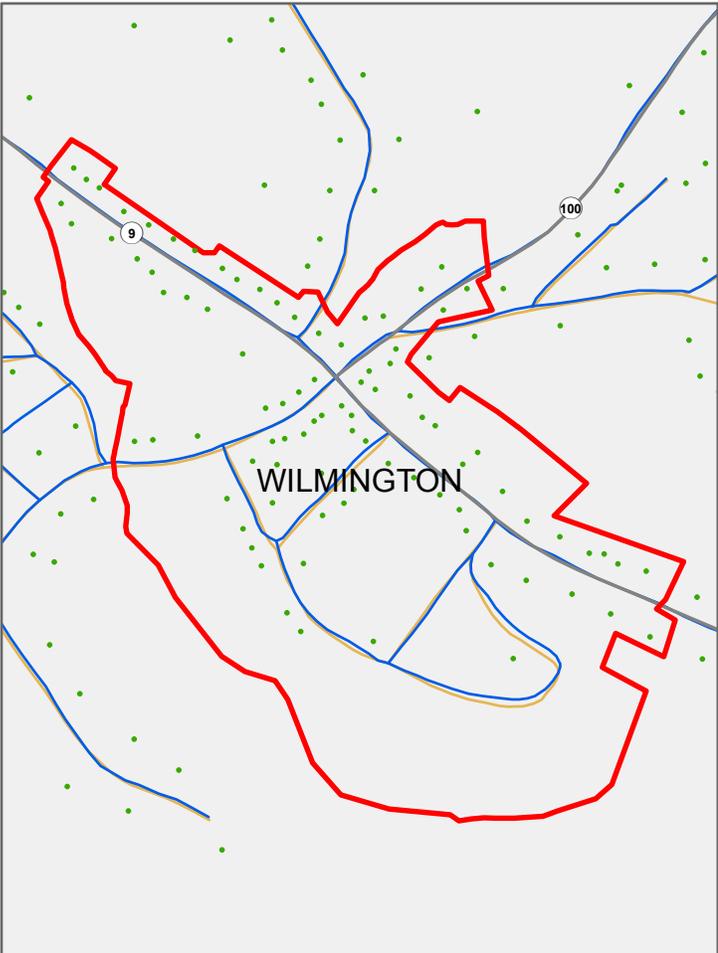


Appendix 4









**Broadband Statistics Summary by Town as of December 31, 2018**

County	Town	Total Buildings	Served locations are affirmatively reported as served by specific providers								Locations are potentially served at 4	
			Served 100/100 or Better	Percent Served 100/100 or Better	Served 25/3 or Better	Percent Served 25/3 or Better	Served 10/1 or Better	Percent Served 10/1 or Better	Served 4/1 or Better	Percent Served 4/1 or Better	Underserved	Percent Underserved
ADDISON		17,661	1,509	8.5%	9,609	54.4%	10,627	60.2%	17,101	96.8%	560	3.2%
BENNINGTON		20,336	120	0.6%	16,420	80.7%	17,688	87.0%	19,268	94.7%	1,068	5.3%
CALEDONIA		15,754	16	0.1%	8,062	51.2%	10,249	65.1%	12,775	81.1%	2,979	18.9%
CHITTENDEN		56,836	11,672	20.5%	53,234	93.7%	53,620	94.3%	56,225	98.9%	611	1.1%
ESSEX		5,348	309	5.8%	1,163	21.7%	2,237	41.8%	3,807	71.2%	1,541	28.8%
FRANKLIN		22,252	535	2.4%	15,131	68.0%	17,357	78.0%	20,899	93.9%	1,353	6.1%
GRAND ISLE		6,168	0	0.0%	3,650	59.2%	4,536	73.5%	5,469	88.7%	699	11.3%
LAMOILLE		12,588	0	0.0%	6,238	49.6%	8,497	67.5%	11,869	94.3%	719	5.7%
ORANGE		15,394	4,481	29.1%	8,919	57.9%	10,394	67.5%	13,967	90.7%	1,427	9.3%
ORLEANS		16,350	85	0.5%	8,276	50.6%	10,396	63.6%	14,572	89.1%	1,778	10.9%
RUTLAND		30,585	6,646	21.7%	27,369	89.5%	27,662	90.4%	29,839	97.6%	746	2.4%
WASHINGTON		26,475	1,147	4.3%	18,481	69.8%	19,975	75.4%	25,722	97.2%	753	2.8%
WINDHAM		26,666	2,319	8.7%	19,462	73.0%	21,791	81.7%	24,632	92.4%	2,034	7.6%
WINDSOR		31,422	12,792	40.7%	27,021	86.0%	28,125	89.5%	30,791	98.0%	631	2.0%
<b>TOTALS</b>		<b>303,835</b>	<b>41,631</b>	<b>13.7%</b>	<b>223,035</b>	<b>73.4%</b>	<b>243,154</b>	<b>80.0%</b>	<b>286,936</b>	<b>94.4%</b>	<b>16,899</b>	<b>5.6%</b>

**Broadband Statistics Summary by Town as of December 31,2018**

County	Town	Total Buildings	Served locations are affirmatively reported as served by specific providers								Locations are potentially served at 4	
			Served 100/100 or Better	Percent Served 100/100 or Better	Served 25/3 or Better	Percent Served 25/3 or Better	Served 10/1 or Better	Percent Served 10/1 or Better	Served 4/1 or Better	Percent Served 4/1 or Better	Underserved	Percent Underserved
ADDISON	Addison	835	203	24.3%	257	30.0%	266	31.0%	827	99.0%	8	1.0%
ADDISON	Bridport	656	43	6.6%	51	7.0%	57	8.0%	585	89.0%	71	10.0%
ADDISON	Bristol	1601	431	26.9%	1,458	91.0%	1,460	91.0%	1,594	99.0%	7	0.4%
ADDISON	Cornwall	572	0	0.0%	0	0.0%	0	0.0%	539	94.0%	33	5.0%
ADDISON	Ferrisburgh	1659	98	5.9%	814	49.0%	942	56.0%	1,584	95.0%	75	4.0%
ADDISON	Goshen	139	0	0.0%	0	0.0%	0	0.0%	104	74.0%	35	25.0%
ADDISON	Granville	267	48	18.0%	48	17.0%	146	54.0%	260	97.0%	7	2.0%
ADDISON	Hancock	240	132	55.0%	132	55.0%	193	80.0%	234	97.0%	6	2.0%
ADDISON	Leicester	694	0	0.0%	650	93.0%	676	97.0%	680	97.0%	14	2.0%
ADDISON	Lincoln	677	128	18.9%	395	58.0%	412	60.0%	671	99.0%	6	0.9%
ADDISON	Middlebury	2917	0	0.0%	2,754	94.0%	2,815	96.0%	2,900	99.0%	17	0.6%
ADDISON	Monkton	873	50	5.7%	589	67.0%	652	74.0%	865	99.0%	8	0.9%
ADDISON	New Haven	792	123	15.5%	445	56.0%	452	57.0%	767	96.0%	25	3.0%
ADDISON	Orwell	742	0	0.0%	0	0.0%	0	0.0%	705	95.0%	37	4.0%
ADDISON	Panton	324	112	34.6%	132	40.0%	139	42.0%	321	99.0%	3	0.9%
ADDISON	Ripton	372	0	0.0%	0	0.0%	166	44.0%	289	77.0%	83	22.0%
ADDISON	Salisbury	830	0	0.0%	76	9.0%	390	46.0%	796	95.0%	34	4.0%
ADDISON	Shoreham	737	0	0.0%	0	0.0%	0	0.0%	701	95.0%	36	4.0%
ADDISON	Starksboro	914	104	11.4%	593	64.0%	603	65.0%	909	99.0%	5	0.5%
ADDISON	Vergennes	999	0	0.0%	996	99.0%	996	99.0%	998	99.0%	1	0.1%
ADDISON	Waltham	234	0	0.0%	89	38.0%	127	54.0%	208	88.0%	26	11.0%
ADDISON	Weybridge	404	37	9.2%	130	32.0%	135	33.0%	388	96.0%	16	3.0%
ADDISON	Whiting	183	0	0.0%	0	0.0%	0	0.0%	176	96.0%	7	3.0%
BENNINGTON	Arlington	1291	0	0.0%	1,085	84.0%	1,152	89.0%	1,200	92.0%	91	7.0%
BENNINGTON	Bennington	6028	0	0.0%	5,928	98.0%	5,934	98.0%	5,973	99.0%	55	0.9%
BENNINGTON	Dorset	1464	10	0.7%	1,162	79.0%	1,231	84.0%	1,356	92.0%	108	7.0%
BENNINGTON	Glastenbury	4	0	0.0%	0	0.0%	2	50.0%	4	100.0%		0.0%
BENNINGTON	Landgrove	177	0	0.0%	10	5.0%	69	38.0%	145	81.0%	32	18.0%
BENNINGTON	Manchester	2806	0	0.0%	2,694	96.0%	2,705	96.0%	2,775	98.0%	31	1.0%
BENNINGTON	Peru	517	0	0.0%	117	22.0%	231	44.0%	450	87.0%	67	12.0%
BENNINGTON	Pownal	1730	0	0.0%	1,544	89.0%	1,581	91.0%	1,644	95.0%	86	4.0%
BENNINGTON	Readsboro	529	0	0.0%	0	0.0%	287	54.0%	416	78.0%	113	21.0%
BENNINGTON	Rupert	497	110	22.1%	110	22.0%	202	40.0%	418	84.0%	79	15.0%
BENNINGTON	Sandgate	319	0	0.0%	19	5.0%	130	40.0%	259	81.0%	60	18.0%
BENNINGTON	Searsburg	132	0	0.0%	2	1.0%	41	31.0%	104	78.0%	28	21.0%
BENNINGTON	Shaftsbury	1695	0	0.0%	1,309	77.0%	1,477	87.0%	1,577	93.0%	118	6.0%
BENNINGTON	Stamford	470	0	0.0%	0	0.0%	195	41.0%	403	85.0%	67	14.0%
BENNINGTON	Sunderland	596	0	0.0%	551	92.0%	553	92.0%	568	95.0%	28	4.0%
BENNINGTON	Winhall	1700	0	0.0%	1,533	90.0%	1,542	90.0%	1,620	95.0%	80	4.0%
BENNINGTON	Woodford	381	0	0.0%	356	93.0%	356	93.0%	356	93.0%	25	6.0%
CALEDONIA	Barnet	1015	0	0.0%	201	19.0%	577	56.0%	801	78.0%	214	21.0%
CALEDONIA	Burke	1004	0	0.0%	549	54.0%	588	58.0%	692	68.0%	312	31.0%

County	Town	Total Buildings	Served locations are affirmatively reported as served by specific providers								Locations are potentially served at 4,	
			Served 100/100 or Better	Percent Served 100/100 or Better	Served 25/3 or Better	Percent Served 25/3 or Better	Served 10/1 or Better	Percent Served 10/1 or Better	Served 4/1 or Better	Percent Served 4/1 or Better	Underserved	Percent Underserved
CALEDONIA	Danville	1421	0	0.0%	770	54.0%	812	57.0%	979	68.0%	442	31.0%
CALEDONIA	Groton	705	0	0.0%	188	26.0%	572	81.0%	580	82.0%	125	17.0%
CALEDONIA	Hardwick	1426	16	1.1%	962	67.0%	1,013	71.0%	1,422	99.0%	4	0.3%
CALEDONIA	Kirby	274	0	0.0%	30	10.0%	54	19.0%	104	37.0%	170	62.0%
CALEDONIA	Lyndon	2277	0	0.0%	1,874	82.0%	1,898	83.0%	2,002	87.0%	275	12.0%
CALEDONIA	Newark	597	0	0.0%	0	0.0%	69	11.0%	293	49.0%	304	50.0%
CALEDONIA	Peacham	568	0	0.0%	292	51.0%	449	79.0%	464	81.0%	104	18.0%
CALEDONIA	Ryegate	674	0	0.0%	245	36.0%	537	79.0%	553	82.0%	121	17.0%
CALEDONIA	Sheffield	468	0	0.0%	108	23.0%	197	42.0%	322	68.0%	146	31.0%
CALEDONIA	St. Johnsbury	2890	0	0.0%	2,484	85.0%	2,553	88.0%	2,722	94.0%	168	5.0%
CALEDONIA	Stannard	141	0	0.0%	0	0.0%	20	14.0%	137	97.0%	4	2.0%
CALEDONIA	Sutton	487	0	0.0%	110	22.0%	141	28.0%	262	53.0%	225	46.0%
CALEDONIA	Walden	657	0	0.0%	84	12.0%	372	56.0%	620	94.0%	37	5.0%
CALEDONIA	Waterford	650	0	0.0%	106	16.0%	236	36.0%	469	72.0%	181	27.0%
CALEDONIA	Wheelock	500	0	0.0%	59	11.0%	161	32.0%	353	70.0%	147	29.0%
CHITTENDEN	Bolton	497	157	31.6%	248	49.0%	262	52.0%	491	98.0%	6	1.0%
CHITTENDEN	Buels Gore	16	14	87.5%	14	87.0%	15	93.0%	16	100.0%		0.0%
CHITTENDEN	Burlington	11615	10,574	91.0%	11,585	99.0%	11,585	99.0%	11,615	100.0%		0.0%
CHITTENDEN	Charlotte	1858	102	5.5%	1,218	65.0%	1,223	65.0%	1,845	99.0%	13	0.7%
CHITTENDEN	Colchester	6348	0	0.0%	6,177	97.0%	6,188	97.0%	6,261	98.0%	87	1.0%
CHITTENDEN	Essex	7228	0	0.0%	7,031	97.0%	7,041	97.0%	7,163	99.0%	65	0.9%
CHITTENDEN	Hinesburg	1902	223	11.7%	1,371	72.0%	1,397	73.0%	1,896	99.0%	6	0.3%
CHITTENDEN	Huntington	892	7	0.8%	625	70.0%	632	70.0%	892	100.0%		0.0%
CHITTENDEN	Jericho	1987	0	0.0%	1,827	91.0%	1,832	92.0%	1,890	95.0%	97	4.0%
CHITTENDEN	Milton	4274	0	0.0%	3,849	90.0%	3,933	92.0%	4,133	96.0%	141	3.0%
CHITTENDEN	Richmond	1718	423	24.6%	1,572	91.0%	1,582	92.0%	1,716	99.0%	2	0.1%
CHITTENDEN	Shelburne	3176	0	0.0%	3,054	96.0%	3,077	96.0%	3,118	98.0%	58	1.0%
CHITTENDEN	South Burlington	6954	170	2.4%	6,902	99.0%	6,903	99.0%	6,944	99.0%	10	0.1%
CHITTENDEN	St. George	316	0	0.0%	292	92.0%	296	93.0%	314	99.0%	2	0.6%
CHITTENDEN	Underhill	1238	0	0.0%	937	75.0%	1,056	85.0%	1,193	96.0%	45	3.0%
CHITTENDEN	Westford	830	0	0.0%	727	87.0%	745	89.0%	803	96.0%	27	3.0%
CHITTENDEN	Williston	4251	0	0.0%	4,075	95.0%	4,120	96.0%	4,199	98.0%	52	1.0%
CHITTENDEN	Winooski	1736	2	0.1%	1,730	99.0%	1,733	99.0%	1,736	100.0%		0.0%
ESSEX	Averill	245	0	0.0%	0	0.0%	0	0.0%	20	8.0%	225	91.0%
ESSEX	Averys Gore	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8	100.0%
ESSEX	Bloomfield	236	0	0.0%	0	0.0%	57	24.0%	165	69.0%	71	30.0%
ESSEX	Brighton	930	0	0.0%	589	63.0%	613	65.0%	810	87.0%	120	12.0%
ESSEX	Brunswick	76	0	0.0%	0	0.0%	7	9.0%	23	30.0%	53	69.0%
ESSEX	Canaan	621	279	44.9%	279	44.0%	372	59.0%	494	79.0%	127	20.0%
ESSEX	Concord	889	0	0.0%	265	29.0%	456	51.0%	709	79.0%	180	20.0%
ESSEX	East Haven	214	0	0.0%	0	0.0%	82	38.0%	139	64.0%	75	35.0%
ESSEX	Ferdinand	77	0	0.0%	0	0.0%	3	3.0%	14	18.0%	63	81.0%
ESSEX	Granby	101	0	0.0%	0	0.0%	36	35.0%	67	66.0%	34	33.0%
ESSEX	Guildhall	183	0	0.0%	0	0.0%	53	28.0%	138	75.0%	45	24.0%

County	Town	Total Buildings	Served locations are affirmatively reported as served by specific providers								Locations are potentially served at 4,	
			Served 100/100 or Better	Percent Served 100/100 or Better	Served 25/3 or Better	Percent Served 25/3 or Better	Served 10/1 or Better	Percent Served 10/1 or Better	Served 4/1 or Better	Percent Served 4/1 or Better	Underserved	Percent Underserved
ESSEX	Lemington	91	30	33.0%	30	32.0%	30	32.0%	57	62.0%	34	37.0%
ESSEX	Lewis	47	0	0.0%	0	0.0%	0	0.0%	0	0.0%	47	100.0%
ESSEX	Lunenburg	886	0	0.0%	0	0.0%	392	44.0%	672	75.0%	214	24.0%
ESSEX	Maidstone	360	0	0.0%	0	0.0%	71	19.0%	249	69.0%	111	30.0%
ESSEX	Norton	221	0	0.0%	0	0.0%	52	23.0%	171	77.0%	50	22.0%
ESSEX	Victory	102	0	0.0%	0	0.0%	13	12.0%	71	69.0%	31	30.0%
ESSEX	Warners Grant	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	100.0%
ESSEX	Warren Gore	59	0	0.0%	0	0.0%	0	0.0%	8	13.0%	51	86.0%
FRANKLIN	Bakersfield	646	0	0.0%	210	32.0%	308	47.0%	566	87.0%	80	12.0%
FRANKLIN	Berkshire	721	0	0.0%	88	12.0%	324	44.0%	614	85.0%	107	14.0%
FRANKLIN	Enosburg	1264	0	0.0%	659	52.0%	865	68.0%	1,170	92.0%	94	7.0%
FRANKLIN	Fairfax	1730	0	0.0%	732	42.0%	1,118	64.0%	1,573	90.0%	157	9.0%
FRANKLIN	Fairfield	977	0	0.0%	88	9.0%	365	37.0%	793	81.0%	184	18.0%
FRANKLIN	Fletcher	628	0	0.0%	0	0.0%	206	32.0%	559	89.0%	69	10.0%
FRANKLIN	Franklin	923	381	41.3%	382	41.0%	421	45.0%	906	98.0%	17	1.0%
FRANKLIN	Georgia	2026	0	0.0%	1,731	85.0%	1,827	90.0%	1,948	96.0%	78	3.0%
FRANKLIN	Highgate	1823	87	4.8%	1,767	96.0%	1,769	97.0%	1,800	98.0%	23	1.0%
FRANKLIN	Montgomery	801	0	0.0%	227	28.0%	697	87.0%	699	87.0%	102	12.0%
FRANKLIN	Richford	1051	0	0.0%	721	68.0%	756	71.0%	939	89.0%	112	10.0%
FRANKLIN	Sheldon	948	67	7.1%	265	27.0%	378	39.0%	857	90.0%	91	9.0%
FRANKLIN	St. Albans City	2549	0	0.0%	2,549	100.0%	2,549	100.0%	2,549	100.0%		0.0%
FRANKLIN	St. Albans Town	3089	0	0.0%	2,847	92.0%	2,899	93.0%	3,013	97.0%	76	2.0%
FRANKLIN	Swanton	3076	0	0.0%	2,865	93.0%	2,875	93.0%	2,913	94.0%	163	5.0%
GRAND ISLE	Alburgh	1817	0	0.0%	0	0.0%	490	26.0%	1,246	68.0%	571	31.0%
GRAND ISLE	Grand Isle	1273	0	0.0%	1,262	99.0%	1,264	99.0%	1,267	99.0%	6	0.5%
GRAND ISLE	Isle La Motte	567	0	0.0%	0	0.0%	386	68.0%	553	97.0%	14	2.0%
GRAND ISLE	North Hero	1085	0	0.0%	1,003	92.0%	1,011	93.0%	1,013	93.0%	72	6.0%
GRAND ISLE	South Hero	1426	0	0.0%	1,385	97.0%	1,385	97.0%	1,390	97.0%	36	2.0%
LAMOILLE	Belvidere	226	0	0.0%	0	0.0%	83	36.0%	215	95.0%	11	4.0%
LAMOILLE	Cambridge	1672	0	0.0%	577	34.0%	878	52.0%	1,555	93.0%	117	6.0%
LAMOILLE	Eden	821	0	0.0%	0	0.0%	323	39.0%	620	75.0%	201	24.0%
LAMOILLE	Elmore	552	0	0.0%	0	0.0%	248	44.0%	483	87.0%	69	12.0%
LAMOILLE	Hyde Park	1382	0	0.0%	1,002	72.0%	1,124	81.0%	1,354	97.0%	28	2.0%
LAMOILLE	Johnson	1289	0	0.0%	917	71.0%	965	74.0%	1,139	88.0%	150	11.0%
LAMOILLE	Morristown	2394	0	0.0%	1,862	77.0%	1,972	82.0%	2,349	98.0%	45	1.0%
LAMOILLE	Stowe	3078	0	0.0%	1,880	61.0%	2,364	76.0%	3,046	98.0%	32	1.0%
LAMOILLE	Waterville	336	0	0.0%	0	0.0%	182	54.0%	315	93.0%	21	6.0%
LAMOILLE	Wolcott	838	0	0.0%	0	0.0%	358	42.0%	793	94.0%	45	5.0%
ORANGE	Bradford	1265	281	22.2%	886	70.0%	957	75.0%	1,199	94.0%	66	5.0%
ORANGE	Braintree	677	256	37.8%	549	81.0%	593	87.0%	662	97.0%	15	2.0%
ORANGE	Brookfield	715	337	47.1%	340	47.0%	473	66.0%	706	98.0%	9	1.0%
ORANGE	Chelsea	729	188	25.8%	307	42.0%	419	57.0%	581	79.0%	148	20.0%
ORANGE	Corinth	924	0	0.0%	0	0.0%	1	0.1%	754	81.0%	170	18.0%
ORANGE	Fairlee	669	476	71.2%	477	71.0%	538	80.0%	612	91.0%	57	8.0%

County	Town	Total Buildings	Served locations are affirmatively reported as served by specific providers								Locations are potentially served at 4,	
			Served 100/100 or Better	Percent Served 100/100 or Better	Served 25/3 or Better	Percent Served 25/3 or Better	Served 10/1 or Better	Percent Served 10/1 or Better	Served 4/1 or Better	Percent Served 4/1 or Better	Underserved	Percent Underserved
ORANGE	Newbury	1367	12	0.9%	804	58.0%	1,001	73.0%	1,162	85.0%	205	14.0%
ORANGE	Orange	550	0	0.0%	40	7.0%	208	37.0%	470	85.0%	80	14.0%
ORANGE	Randolph	2021	333	16.5%	1,790	88.0%	1,803	89.0%	1,877	92.0%	144	7.0%
ORANGE	Strafford	630	617	97.9%	617	97.0%	617	97.0%	620	98.0%	10	1.0%
ORANGE	Thetford	1384	1,360	98.3%	1,375	99.0%	1,377	99.0%	1,379	99.0%	5	0.4%
ORANGE	Topsham	741	6	0.8%	6	0.8%	32	4.0%	632	85.0%	109	14.0%
ORANGE	Tunbridge	768	213	27.7%	291	37.0%	425	55.0%	663	86.0%	105	13.0%
ORANGE	Vershire	460	291	63.3%	291	63.0%	349	75.0%	417	90.0%	43	9.0%
ORANGE	Washington	616	0	0.0%	198	32.0%	266	43.0%	518	84.0%	98	15.0%
ORANGE	West Fairlee	422	111	26.3%	111	26.0%	257	60.0%	354	83.0%	68	16.0%
ORANGE	Williamstown	1456	0	0.0%	837	57.0%	1,078	74.0%	1,361	93.0%	95	6.0%
ORLEANS	Albany	615	20	3.3%	20	3.0%	285	46.0%	563	91.0%	52	8.0%
ORLEANS	Barton	1478	0	0.0%	932	63.0%	992	67.0%	1,376	93.0%	102	6.0%
ORLEANS	Brownington	558	0	0.0%	324	58.0%	439	78.0%	527	94.0%	31	5.0%
ORLEANS	Charleston	768	0	0.0%	460	59.0%	506	65.0%	704	91.0%	64	8.0%
ORLEANS	Coventry	531	0	0.0%	242	45.0%	289	54.0%	437	82.0%	94	17.0%
ORLEANS	Craftsbury	720	58	8.1%	58	8.0%	214	29.0%	664	92.0%	56	7.0%
ORLEANS	Derby	2473	0	0.0%	1,908	77.0%	2,057	83.0%	2,262	91.0%	211	8.0%
ORLEANS	Glover	806	0	0.0%	119	14.0%	371	46.0%	688	85.0%	118	14.0%
ORLEANS	Greensboro	824	7	0.8%	82	9.0%	355	43.0%	777	94.0%	47	5.0%
ORLEANS	Holland	458	0	0.0%	5	1.0%	133	29.0%	344	75.0%	114	24.0%
ORLEANS	Irasburg	628	0	0.0%	179	28.0%	247	39.0%	533	84.0%	95	15.0%
ORLEANS	Jay	538	0	0.0%	341	63.0%	341	63.0%	357	66.0%	181	33.0%
ORLEANS	Lowell	556	0	0.0%	0	0.0%	181	32.0%	379	68.0%	177	31.0%
ORLEANS	Morgan	809	0	0.0%	533	65.0%	583	72.0%	735	90.0%	74	9.0%
ORLEANS	Newport City	1879	0	0.0%	1,859	98.0%	1,861	99.0%	1,873	99.0%	6	0.3%
ORLEANS	Newport Town	865	0	0.0%	408	47.0%	481	55.0%	752	86.0%	113	13.0%
ORLEANS	Troy	879	0	0.0%	684	77.0%	713	81.0%	798	90.0%	81	9.0%
ORLEANS	Westfield	375	0	0.0%	122	32.0%	183	48.0%	255	68.0%	120	32.0%
ORLEANS	Westmore	590	0	0.0%	0	0.0%	165	27.0%	548	92.0%	42	7.0%
RUTLAND	Benson	607	0	0.0%	0	0.0%	0	0.0%	508	83.0%	99	16.0%
RUTLAND	Brandon	1850	0	0.0%	1,613	87.0%	1,675	90.0%	1,788	96.0%	62	3.0%
RUTLAND	Castleton	2212	0	0.0%	2,034	91.0%	2,075	93.0%	2,180	98.0%	32	1.0%
RUTLAND	Chittenden	718	1	0.1%	599	83.0%	607	84.0%	646	89.0%	72	10.0%
RUTLAND	Clarendon	1203	17	1.4%	1,152	95.0%	1,154	95.0%	1,157	96.0%	46	3.0%
RUTLAND	Danby	770	769	99.9%	769	99.0%	769	99.0%	770	100.0%		0.0%
RUTLAND	Fair Haven	1143	0	0.0%	1,051	91.0%	1,066	93.0%	1,124	98.0%	19	1.0%
RUTLAND	Hubbardton	645	0	0.0%	66	10.0%	66	10.0%	618	95.0%	27	4.0%
RUTLAND	Ira	223	155	69.5%	208	93.0%	208	93.0%	210	94.0%	13	5.0%
RUTLAND	Killington	1362	1,117	82.0%	1,352	99.0%	1,356	99.0%	1,360	99.0%	2	0.1%
RUTLAND	Mendon	643	2	0.3%	570	88.0%	577	89.0%	591	91.0%	52	8.0%
RUTLAND	Middletown Springs	448	446	99.6%	446	99.0%	446	99.0%	446	99.0%	2	0.4%
RUTLAND	Mount Holly	1102	1,085	98.5%	1,086	98.0%	1,086	98.0%	1,101	99.0%	1	0.1%
RUTLAND	Mount Tabor	141	141	100.0%	141	100.0%	141	100.0%	141	100.0%		0.0%

County	Town	Total Buildings	Served locations are affirmatively reported as served by specific providers								Locations are potentially served at 4,	
			Served 100/100 or Better	Percent Served 100/100 or Better	Served 25/3 or Better	Percent Served 25/3 or Better	Served 10/1 or Better	Percent Served 10/1 or Better	Served 4/1 or Better	Percent Served 4/1 or Better	Underserved	Percent Underserved
RUTLAND	Pawlet	834	482	57.8%	727	87.0%	727	87.0%	754	90.0%	80	9.0%
RUTLAND	Pittsfield	409	399	97.6%	399	97.0%	400	97.0%	403	98.0%	6	1.0%
RUTLAND	Pittsford	1412	0	0.0%	1,247	88.0%	1,255	88.0%	1,322	93.0%	90	6.0%
RUTLAND	Poultney	1693	3	0.2%	1,444	85.0%	1,495	88.0%	1,621	95.0%	72	4.0%
RUTLAND	Proctor	769	0	0.0%	758	98.0%	759	98.0%	760	98.0%	9	1.0%
RUTLAND	Rutland	1828	0	0.0%	1,791	97.0%	1,791	97.0%	1,826	99.0%	2	0.1%
RUTLAND	Rutland City	6103	0	0.0%	6,103	100.0%	6,103	100.0%	6,103	100.0%		0.0%
RUTLAND	Shrewsbury	605	434	71.7%	579	95.0%	585	96.0%	595	98.0%	10	1.0%
RUTLAND	Sudbury	429	0	0.0%	0	0.0%	1	0.2%	419	97.0%	10	2.0%
RUTLAND	Tinmouth	361	361	100.0%	361	100.0%	361	100.0%	361	100.0%		0.0%
RUTLAND	Wallingford	1029	1,029	100.0%	1,029	100.0%	1,029	100.0%	1,029	100.0%		0.0%
RUTLAND	Wells	961	205	21.3%	928	96.0%	929	96.0%	943	98.0%	18	1.0%
RUTLAND	West Haven	136	0	0.0%	0	0.0%	82	60.0%	134	98.0%	2	1.0%
RUTLAND	West Rutland	949	0	0.0%	916	96.0%	919	96.0%	929	97.0%	20	2.0%
WASHINGTON	Barre City	2905	0	0.0%	2,869	98.0%	2,875	98.0%	2,905	100.0%		0.0%
WASHINGTON	Barre Town	3349	0	0.0%	3,178	94.0%	3,245	96.0%	3,347	99.0%	2	0.1%
WASHINGTON	Berlin	1378	0	0.0%	1,084	78.0%	1,106	80.0%	1,347	97.0%	31	2.0%
WASHINGTON	Cabot	855	0	0.0%	471	55.0%	691	80.0%	793	92.0%	62	7.0%
WASHINGTON	Calais	878	0	0.0%	314	35.0%	521	59.0%	861	98.0%	17	1.0%
WASHINGTON	Duxbury	664	0	0.0%	313	47.0%	469	70.0%	566	85.0%	98	14.0%
WASHINGTON	East Montpelier	1162	0	0.0%	786	67.0%	921	79.0%	1,151	99.0%	11	0.9%
WASHINGTON	Fayston	967	101	10.4%	201	20.0%	214	22.0%	965	99.0%	2	0.2%
WASHINGTON	Marshfield	761	0	0.0%	287	37.0%	575	75.0%	741	97.0%	20	2.0%
WASHINGTON	Middlesex	837	0	0.0%	431	51.0%	505	60.0%	696	83.0%	141	16.0%
WASHINGTON	Montpelier	2839	0	0.0%	2,823	99.0%	2,825	99.0%	2,839	100.0%		0.0%
WASHINGTON	Moretown	822	50	6.1%	417	50.0%	423	51.0%	720	87.0%	102	12.0%
WASHINGTON	Northfield	1923	0	0.0%	1,380	71.0%	1,380	71.0%	1,914	99.0%	9	0.5%
WASHINGTON	Plainfield	579	0	0.0%	243	41.0%	362	62.0%	571	98.0%	8	1.0%
WASHINGTON	Roxbury	498	18	3.6%	18	3.0%	18	3.0%	488	97.0%	10	2.0%
WASHINGTON	Waitsfield	1027	464	45.2%	501	48.0%	521	50.0%	1,024	99.0%	3	0.3%
WASHINGTON	Warren	1528	514	33.6%	570	37.0%	590	38.0%	1,522	99.0%	6	0.4%
WASHINGTON	Waterbury	2269	0	0.0%	2,032	89.0%	2,049	90.0%	2,140	94.0%	129	5.0%
WASHINGTON	Woodbury	769	0	0.0%	352	45.0%	442	57.0%	736	95.0%	33	4.0%
WASHINGTON	Worcester	465	0	0.0%	211	45.0%	243	52.0%	396	85.0%	69	14.0%
WINDHAM	Athens	258	258	100.0%	258	100.0%	258	100.0%	258	100.0%		0.0%
WINDHAM	Brattleboro	4671	0	0.0%	4,475	95.0%	4,536	97.0%	4,639	99.0%	32	0.7%
WINDHAM	Brookline	310	0	0.0%	292	94.0%	295	95.0%	297	95.0%	13	4.0%
WINDHAM	Dover	2053	0	0.0%	1,667	81.0%	1,851	90.0%	2,029	98.0%	24	1.0%
WINDHAM	Dummerston	960	105	10.9%	667	69.0%	741	77.0%	802	83.0%	158	16.0%
WINDHAM	Grafton	556	556	100.0%	556	100.0%	556	100.0%	556	100.0%		0.0%
WINDHAM	Guilford	1158	0	0.0%	864	74.0%	920	79.0%	1,020	88.0%	138	11.0%
WINDHAM	Halifax	607	0	0.0%	0	0.0%	158	26.0%	340	56.0%	267	43.0%
WINDHAM	Jamaica	1094	0	0.0%	683	62.0%	810	74.0%	967	88.0%	127	11.0%
WINDHAM	Londonderry	1404	2	0.1%	1,145	81.0%	1,163	82.0%	1,315	93.0%	89	6.0%

County	Town	Total Buildings	Served locations are affirmatively reported as served by specific providers								Locations are potentially served at 4,	
			Served 100/100 or Better	Percent Served 100/100 or Better	Served 25/3 or Better	Percent Served 25/3 or Better	Served 10/1 or Better	Percent Served 10/1 or Better	Served 4/1 or Better	Percent Served 4/1 or Better	Underserved	Percent Underserved
WINDHAM	Marlboro	611	0	0.0%	1	0.2%	224	36.0%	451	73.0%	160	26.0%
WINDHAM	Newfane	1099	80	7.3%	785	71.0%	848	77.0%	960	87.0%	139	12.0%
WINDHAM	Putney	1143	164	14.3%	821	71.0%	887	77.0%	1,090	95.0%	53	4.0%
WINDHAM	Rockingham	2173	619	28.5%	2,108	97.0%	2,114	97.0%	2,133	98.0%	40	1.0%
WINDHAM	Somerset	26	0	0.0%	0	0.0%	0	0.0%	0	0.0%	26	100.0%
WINDHAM	Stratton	628	0	0.0%	367	58.0%	410	65.0%	518	82.0%	110	17.0%
WINDHAM	Townshend	807	28	3.5%	496	61.0%	567	70.0%	688	85.0%	119	14.0%
WINDHAM	Vernon	876	0	0.0%	805	91.0%	815	93.0%	850	97.0%	26	2.0%
WINDHAM	Wardsboro	866	0	0.0%	0	0.0%	374	43.0%	713	82.0%	153	17.0%
WINDHAM	Westminster	1612	181	11.2%	1,411	87.0%	1,458	90.0%	1,560	96.0%	52	3.0%
WINDHAM	Whitingham	949	0	0.0%	0	0.0%	497	52.0%	789	83.0%	160	16.0%
WINDHAM	Wilmington	2361	104	4.4%	1,838	77.0%	1,932	81.0%	2,238	94.0%	123	5.0%
WINDHAM	Windham	444	222	50.0%	223	50.0%	377	84.0%	419	94.0%	25	5.0%
WINDSOR	Andover	464	463	99.8%	463	99.0%	463	99.0%	463	99.0%	1	0.2%
WINDSOR	Baltimore	110	0	0.0%	0	0.0%	0	0.0%	108	98.0%	2	1.0%
WINDSOR	Barnard	756	709	93.8%	709	93.0%	738	97.0%	746	98.0%	10	1.0%
WINDSOR	Bethel	1024	317	31.0%	680	66.0%	812	79.0%	906	88.0%	118	11.0%
WINDSOR	Bridgewater	641	593	92.5%	593	92.0%	603	94.0%	636	99.0%	5	0.8%
WINDSOR	Cavendish	958	0	0.0%	726	75.0%	726	75.0%	932	97.0%	26	2.0%
WINDSOR	Chester	1754	1,751	99.8%	1,752	99.0%	1,752	99.0%	1,754	100.0%		0.0%
WINDSOR	Hartford	4800	4	0.1%	4,511	93.0%	4,611	96.0%	4,785	99.0%	15	0.3%
WINDSOR	Hartland	1575	1,138	72.3%	1,532	97.0%	1,539	97.0%	1,565	99.0%	10	0.6%
WINDSOR	Ludlow	2416	0	0.0%	2,142	88.0%	2,142	88.0%	2,413	99.0%	3	0.1%
WINDSOR	Norwich	1530	653	42.7%	1,390	90.0%	1,418	92.0%	1,473	96.0%	57	3.0%
WINDSOR	Plymouth	834	618	74.1%	731	87.0%	731	87.0%	833	99.0%	1	0.1%
WINDSOR	Pomfret	566	494	87.3%	496	87.0%	539	95.0%	561	99.0%	5	0.9%
WINDSOR	Reading	513	67	13.1%	252	49.0%	309	60.0%	432	84.0%	81	15.0%
WINDSOR	Rochester	831	197	23.7%	488	58.0%	577	69.0%	810	97.0%	21	2.0%
WINDSOR	Royalton	1310	587	44.8%	833	63.0%	975	74.0%	1,244	94.0%	66	5.0%
WINDSOR	Sharon	746	241	32.3%	247	33.0%	403	54.0%	703	94.0%	43	5.0%
WINDSOR	Springfield	3764	3,757	99.8%	3,763	99.0%	3,763	99.0%	3,764	100.0%		0.0%
WINDSOR	Stockbridge	586	180	30.7%	180	30.0%	357	60.0%	573	97.0%	13	2.0%
WINDSOR	Weathersfield	1544	86	5.6%	1,242	80.0%	1,257	81.0%	1,521	98.0%	23	1.0%
WINDSOR	West Windsor	736	718	97.6%	719	97.0%	723	98.0%	731	99.0%	5	0.7%
WINDSOR	Weston	611	0	0.0%	505	82.0%	512	83.0%	543	88.0%	68	11.0%
WINDSOR	Windsor	1466	7	0.5%	1,409	96.0%	1,409	96.0%	1,415	96.0%	51	3.0%
WINDSOR	Woodstock	1887	212	11.2%	1,658	87.0%	1,766	93.0%	1,880	99.0%	7	0.4%
<b>TOTALS</b>		<b>303,835</b>	<b>41,631</b>	<b>13.7%</b>	<b>223,035</b>	<b>73.4%</b>	<b>243,154</b>	<b>80.0%</b>	<b>286,936</b>	<b>94.4%</b>	<b>16,899</b>	<b>5.6%</b>