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January 15, 2023

The Honorable Ann Cummings, Chair
Senate Committee on Finance

The Honorable Amy Sheldon, Chair
House Committee on Environment and Energy

The Honorable Christopher Bray, Chair
Senate Committee on Natural Resources and Energy

Re: Connectivity Division Annual Report; 30 V.S.A. §202e(e)

Dear Honorable Senators and Representatives:

I am pleased to submit this annual report of the Connectivity Division for fiscal year 2022, pursuant to 30 V.S.A. § 202e(e).

If you have any questions about this report, please do not hesitate to contact me or Jim Porter, Acting Director for Telecommunications and Connectivity.

Kind regards,

DocuSigned by:

A handwritten signature in black ink that reads "June E. Tierney". The signature is written in a cursive style and is enclosed within a blue DocuSign signature box.

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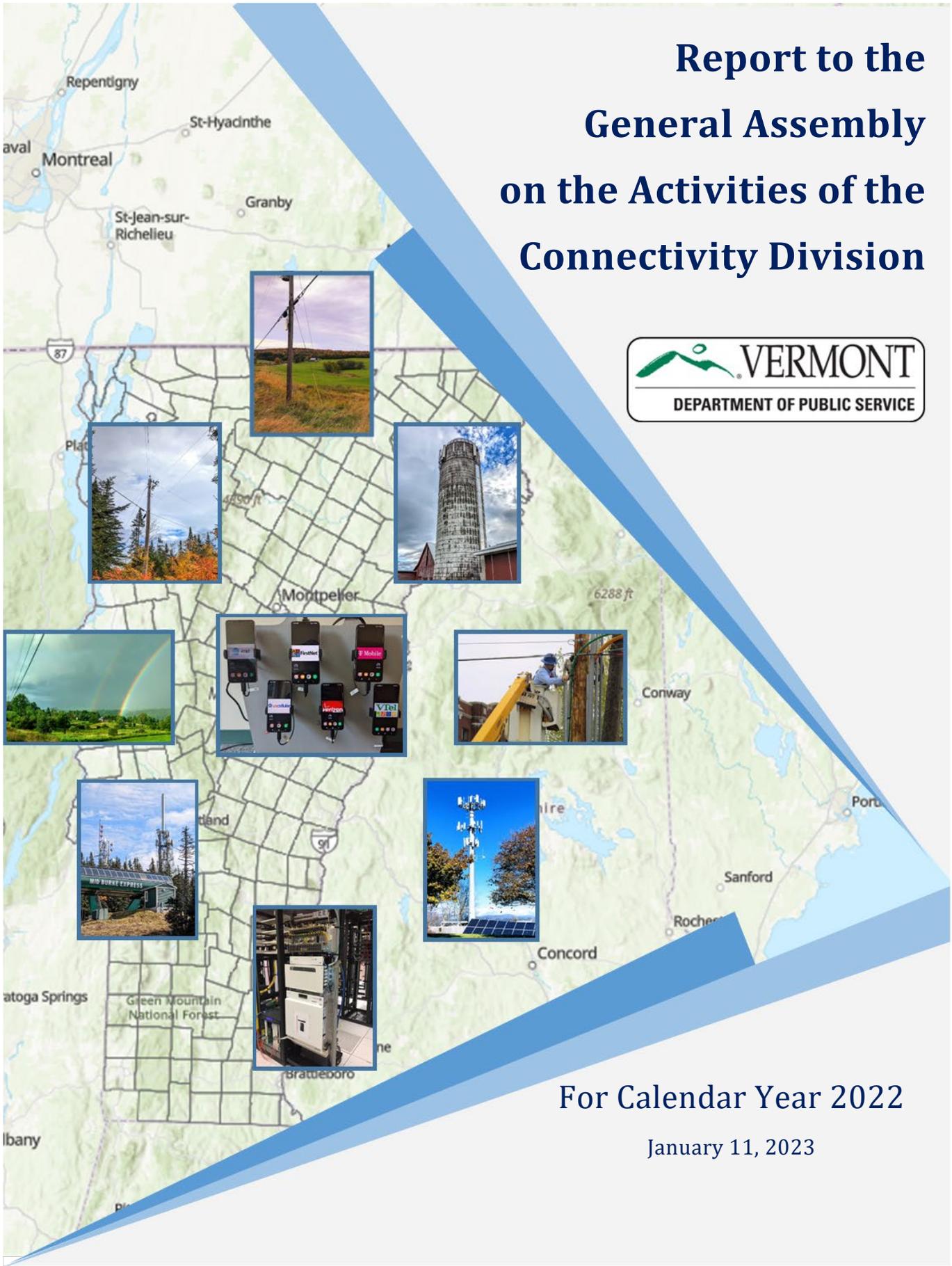
June E. Tierney
Commissioner

Report to the General Assembly on the Activities of the Connectivity Division



For Calendar Year 2022

January 11, 2023



This report contains links to additional reports, interactive maps, and resources on the Public Service Department website. It is best viewed in a digital format.

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Additional Department Website Resources Referenced in this Report:

- [Vermont Universal Service Fund | Department of Public Service](#)
- [Broadband High-Speed Internet Availability in Vermont | Department of Public Service](#)
 - o [Interactive Broadband Map | Department of Public Service \(vermont.gov\)](#)
 - o [Broadband Availability Map - 4/1 2022 \(vermont.gov\)](#)
 - o [Broadband Availability Map - 100/20 2022 \(vermont.gov\)](#)
 - o [Broadband Availability Map - 100/100 2022\(vermont.gov\)](#)
- [Mobile Wireless Drive Test | Department of Public Service \(vermont.gov\)](#)
 - o [Drive Test Report 2022.pdf \(vermont.gov\)](#)
 - o [Drive TestMaps2022.pdf \(vermont.gov\)](#)
 - o [Mobile Wireless Drive Test 2022 \(arcgis.com\)](#)

Introduction

This is the annual report of the Division for Telecommunications and Connectivity (“Division”) of the Department of Public Service (“Department”). This report was completed with the advice and assistance of the Telecommunications and Connectivity Advisory Board.

This report includes the following:

1. An overview of the Connectivity Division
2. An overview and recommendation of the Telecommunication and Connectivity Advisory Board
3. Financial statements covering the Division’s operations during the year including:
 - a. Contracts and agreements entered into by the Division
4. The areas served and the areas not served by broadband that has a download speed of at least 4 Mbps download and an upload speed of at least 1 Mbps;
5. The areas served and the areas not served by broadband that has a download speed of at least 25 Mbps download and an upload speed of at least 3 Mbps;
6. The areas served and the areas not served by wireless broadband that has a download speed of at least 25 Mbps download and an upload speed of at least 3 Mbps;
7. The areas served and the areas not served by broadband that has a download speed of at least 100 Mbps download and an upload speed of at least 20 Mbps;
8. The areas served and the areas not served by broadband that has a combined download and upload speed of at least 100 Mbps;
9. The areas served and the areas not served by wireless voice communications.
10. The areas served and the areas not served by wireless data communications.

With the passage of Act 71 in 2020, the General Assembly created the Vermont Community Broadband Board (“VCBB”) and prescribed a set of statutory criteria to guide the VCBB in funding the planning and construction of last-mile broadband in Vermont. Accordingly, in deference to Act 71 and the VCBB’s work, the Department has not proposed a new broadband action plan. The 2020 Broadband Action plan can be found on the Department website:

[Emergency Broadband Action Plan | Department of Public Service \(vermont.gov\)](#)

On June 30, 2021, the Department published the Ten-year Telecommunications Plan, which includes strategies for expanding broadband deployment and the overarching policy goals driving these strategies. These strategies are available for the VCBB’s consideration, and the Department otherwise defers to the VCBB in planning the next steps for expanding broadband.

The 2021 Ten-Year Telecommunications Plan can be found on the Department website: [10-Year Telecommunications Plan | Department of Public Service \(vermont.gov\)](#)

Telecommunications and Connectivity Division

The Division was established to improve access to affordable telecommunications technology for all Vermonters, support universal availability of voice and broadband, and lead the state's telecommunications policy and regulatory efforts.

The Division oversees the telephone and cable industries, and advocates for the public interest in telecommunications matters before the Public Utility Commission, including review of mergers, tariffs, and licenses. The Division is responsible for preparing the state Telecommunications Plan. The Division annually gathers broadband availability information to identify underserved locations statewide and prepares maps and statistics depicting information at several speed tiers. The Division also administers the Vermont Telecommunication Relay Service, connecting individuals who are deaf, deaf-blind, hard-of-hearing or have a speech disability, with users of standard telephones.

Staff

The Division is led by a division director who oversees four full-time staff members. Each position is focused on different areas of Vermont's telecommunications landscape. With overlap between positions, the Division staff brings a cohesive approach to serving the needs of Vermonters. Recent staff departures leave two positions open at the start of 2023, the Telecom Director, and Connectivity Coordinator.

- Telecom Division Director – (Vacant December 2022)
Formulates telecommunications policies and procedures, which are compatible with the goals and objectives of state government. Supervises a professional and technical staff that is responsible for planning, technical consulting, financial support, and installation and repair services. Develops both short- and long-range plans for state-wide telecommunications needs.
- Telecom Infrastructure Specialist
Performs specialized investigations, analysis, and advocacy for the Department of Public Service related to the present and future capabilities, quality, reliability, and readiness of Vermont's telecommunications infrastructure.
- Telecom Project Manager
Plan and manage the installation and maintenance of the Department's telecommunication assets throughout the state by directing and reviewing work activities and performance. Works with the private sector to develop safe and effective work plans to implement fiber optic and wireless infrastructure. Coordinates interaction with the State's Telecommunication Relay Service (TRS) contracted providers and convenes the TRS advisory council. Provides technical review and recommendations on telecom-related petitions reviewed by the department.

- Connectivity Coordinator -- (Vacant December 2022)
The Connectivity Coordinator focuses on specialized planning, research, and advisory work on telecommunications-related policy. Administers, tracks, and manages telecommunications related grant programs.

Telecommunications and Connectivity Advisory Board ("TCAB")

This report was completed with the advice and assistance of the Telecommunications and Connectivity Advisory Board. The TCAB was created under 30 V.S.A. § 202f. The Telecommunications and Connectivity Advisory Board is an eight-member board charged with making recommendations to the Commissioner of Public Service regarding his or her telecommunications responsibilities and duties. The Board consists of members of government, private industry, and community organizations. The Board meets up to six times a year.

Currently, the board has five members. Upon review of this Report, three members of the TCAB have recommended the TCAB be disbanded. With the creation of the VCBB under Act 71 in 2020, the General Assembly prescribed a set of statutory criteria to guide, fund, plan and construct last-mile broadband in Vermont. The TCAB's role in advising the Department on Connectivity Grant awards, and internet access speeds for publicly funded telecommunications projects has ended. The TCAB has not held a meeting since January 2022. Members of the TCAB and the Telecom Division recommend to the Legislature the dissolution of the TCAB.

Operating and Financial Statements

Summary of Grants

No awards were made in 2022. Act 71 eliminated all grant programs.

Summary of Contracts and Agreements

In 2022 the Division entered five new contracts. Three contracts are related to telecommunications accessibility required under 30 V.S.A. § 218a and the Americans with Disabilities Act. A solar maintenance contract will allow for the continued maintenance and operation of the department's solar resiliency sites (formerly operated by the Vermont Telecommunications Authority). The final contract, Mobile Wireless Testing Support, was seeking a vendor to help manage the collection, processing, and mapping of data related to the 2022 Wireless Drive Test. All Division contracts are offered through the State of Vermont Request for Proposal ("RFP") process. RFPs are posted on State websites and the Vermont Business Registry. Bids received are reviewed and scored before selection.

TRS Contract – Sprint/T-Mobile was contracted to provide the primary Telecommunications Relay Service ("TRS") program for the 2022-2024 contract term. The Maximum value of the contract is \$750,000.00 and is funded through the Vermont Universal Service Fund. Previously Sprint/T-Mobile has been awarded the TRS contract and it included both TRS and Caption Telephone Service ("CapTel").

In 2022, Sprint/T-Mobiles accessibility offerings changed and they no longer provide a CapTel component.

CapTel Contract – Hamilton Relay was contracted to provide the CapTel program for the 2022-2024 contract term. The Maximum value of the contract is \$500,000.00 and is funded through the Vermont Universal Service Fund. Hamilton Relay is currently the only national contractor offering CapTel service. Hamilton Relay brings with them years of experience and managed a seamless transition from the previous CapTel contractor.

EDP Program -- Vermont Center for Independent Living (“VCIL”) was contracted to administer the Equipment Distribution Program (“EDP”) for the 2022-2024 contract term. The Maximum value of the contract is \$500,000.00. The EDP provides accessible telephone devices to qualified Vermonters with disabilities.

Solar Resiliency Site Maintenance Contract -- Airosmith Development Inc. was contracted for the 2022-2024 Contract term to provide the maintenance and repair services for 10 small solar resiliency sites maintained by the Department. The Maximum value of the contract is \$100,000.00

Mobile Wireless Testing Support – Ookla was contracted to support the 2022 Mobile Wireless Drive test. The Maximum value of the contract was initially \$108,000.00 and was later amended to include an additional \$8500.00 of deliverables. Ookla, a leader in wireless and internet speed tests and service collection was contracted to provide data collection software, hardware recommendations, data processing, and deliverables that will be used to produce a comprehensive picture of wireless connectivity in Vermont.

Vermont Universal Service and Connectivity Funds

The Vermont Universal Service Fund (“VUSF”) is managed by a fiscal agent, Solix, Inc., under contract with the Department of Public Service. Solix issues monthly VUSF reports and is audited annually. The monthly reports, audits and more VUSF information can be found on the VUSF webpage: [Vermont Universal Service Fund | Department of Public Service](#)

In accordance with 30 V.S.A. § 7511, monies collected by the fiscal agent are deposited into the VUSF and are used to support the following costs and programs, ranked in order of priority:

- (A) Costs payable to the fiscal agent under its contract with the Commissioner;
- (B) The Vermont Telecommunications Relay Service (and the Equipment Distribution Program);
- (C) The Vermont Lifeline program;
- (D) Enhanced-911 services;
- (E) Connectivity Fund (comprised of the Connectivity Initiative and the High-Cost Program).



In Act 190 of 2014, the legislature set the VUSF assessment rate at a flat 2%. Act 41 of 2015 transferred oversight responsibility of the VUSF to the Department of Public Service. Act 79 of 2019 increased the VUSF charge rate by four-tenths of one percent. The current 2.4% charge is

assessed on telecommunications services that include telephone, mobile wireless voice, and prepaid wireless. In 2020, the General Assembly directed monies raised by the 4/10s of a percent to the Vermont Community Broadband Fund.

The Connectivity Fund was a sub-fund of the VUSF. The VUSF is a special fund that is supported through an assessment on retail telecommunications services provided within Vermont.

Per Act 71, as of January 1, 2022, the Connectivity Initiative is administered by the VCBB, who will decide how to use the available Connectivity Initiative funds. Proceeds from the 4/10s of one percent increase are now directed to the Vermont Community Broadband Board to support staffing pursuant to 30 V.S.A. § 7523.

Broadband Availability Data

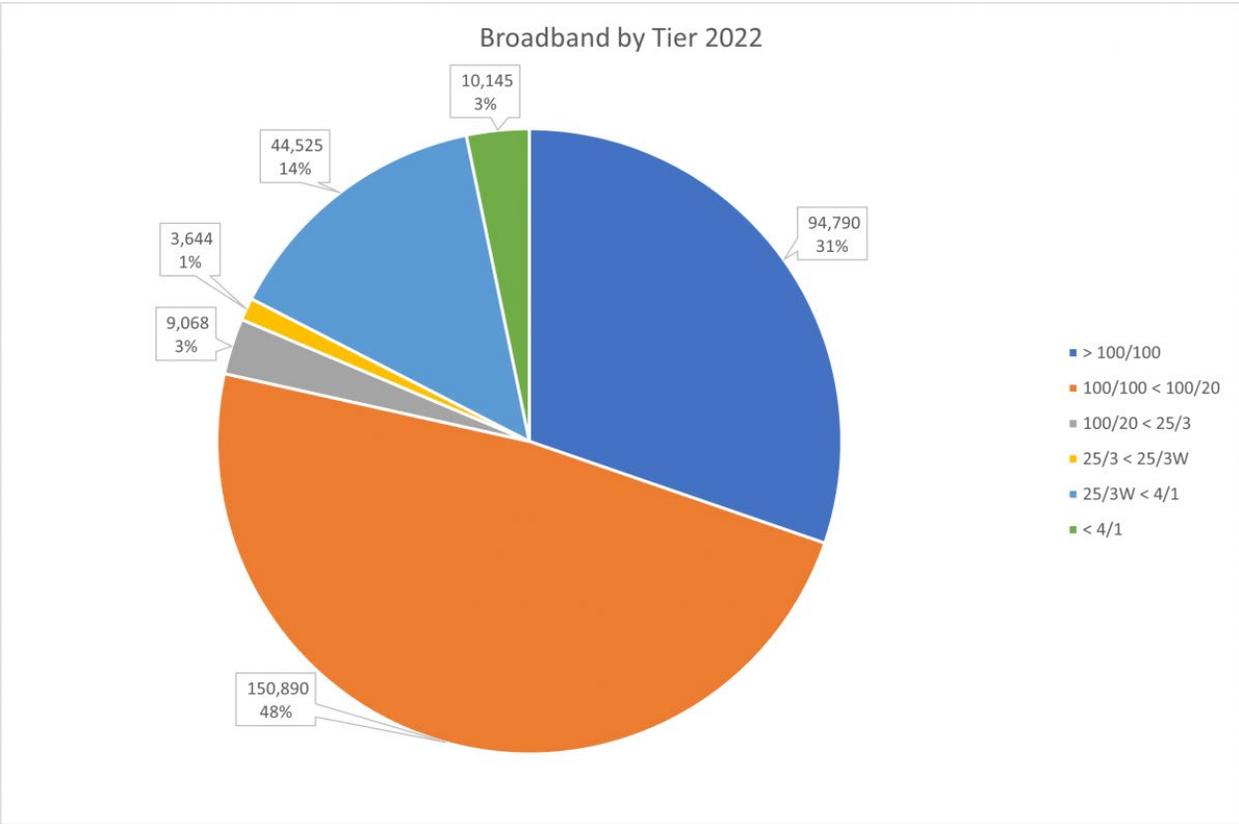
To inform broadband policy and planning, the Department annually surveys and maps the deployment of high-speed broadband internet access in Vermont, pursuant to 30 V.S.A. § 202e (e). For 2022, the Department prepared maps, and narrative descriptions, for the following speeds: 4/1 - 4 Mbps download and an upload speed of at least 1 Mbps; 25/3 - at least 25 Mbps download and an upload speed of at least 3 Mbps; 25/3 Mbps W – Wireless service at least 25 Mbps download and an upload speed of at least 3 Mbps; 100/20 - at least 100 Mbps download and an upload speed of at least 20 Mbps; and 100/100 -- download speed of at least 100 Mbps and is symmetrical. If monetarily feasible, the Department also maps areas served and the areas not served by wireless communications service.

The information in the reports, last updated with data from 11/8/2022, is summarized in the table and graph below, for a total of 313,062 buildings. Each tier shows the number and percent of locations served at that speed or better. Additional details including address level information, an interactive map, and town and county downloadable statistics can be found on the Department website [Broadband High-Speed Internet Availability in Vermont | Department of Public Service](#)

Broadband availability by speed tier

Speed Tier	Served		Not Served	
100/100 Mbps	94,790	30.30%	218,272	69.70%
100/20 Mbps	245,680	78.50%	67,382	21.50%
25/3 Mbps	254,748	81.40%	58,314	18.60%
25/3 Mbps W ¹	258,392	82.50%	54,670	17.50%
4/1 Mbps	302,917	96.80%	10,145	3.20%

¹ The "25/3 Mbps W" tier includes wireless broadband services, where speed tests were conducted within 500' of a location to demonstrate deployment.



Areas served at 4 Mbps down and 1 Mbps upload speed or better

As of November 8, 2021, based on information provided to the Department by Internet service providers, the data, indicates that of the 313,062 business and residential locations (E911 building locations) in the state, broadband service of at least 4/1 Mbps or better is presently available from an Internet service provider to all but 10,145 locations.

Areas served by *Wireless* 25 Mbps down and 3 Mbps upload speed or better

As of November 8, 2021, based on information provided to the Department by Internet service providers, the data, indicates that of the 313,062 business and residential locations (E911 building locations) in the state, wireless broadband service of at least 25/3 Mbps or better² is presently available from a service provider at all but 54,670 locations.

² The "25/3 Mbps W" tier includes wireless broadband services, where speed tests were conducted within 500' of a location to demonstrate deployment.

Areas served at 25 Mbps down and 3 Mbps upload speed or better

As of November 8, 2021, based on information provided to the Department by Internet service providers, the data, indicates that of the 313,062 business and residential locations (E911 building locations) in the state, broadband service of at least 25/3 Mbps or better is presently available from a service provider at all but 58,314 locations.

Areas served at 100 Mbps down and 20 Mbps upload speed

As of November 8, 2021, based on information provided to the Department by Internet service providers, the data, indicates that of the 313,062 business and residential locations (E911 building locations) in the state, broadband service of 100/20 Mbps is presently available from a service provider for 245,680 locations.

Areas served at 100 Mbps down and 100 Mbps upload speed

As of November 8, 2021, based on information provided to the Department by Internet service providers, the data, indicates that of the 313,062 business and residential locations (E911 building locations) in the state, broadband service of 100/100 Mbps is presently available from a service provider for 94,790 locations.

Broadband Tier Availability in CUD territories

The chart below depicts the available speed tiers in each territory of the Communications Union District (“CUD”).



Broadband Availability Maps

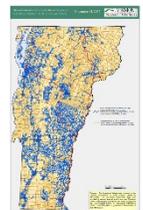
Broadband Available by E911 Building Location 4 Mbps Down/1 Mbps Up or Better

- [Broadband Availability4_1_2022_111522.pdf \(vermont.gov\)](#)
- 302,917 out of 313,062 E911 building locations (96.8%) statewide are served at 4/1 Mbps or better by independent telephone companies, cable, or fiber to the premises.
- 10,145 out of 313,062 E911 building locations (3.2%) 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.



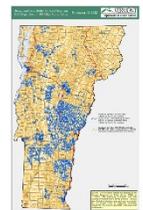
Broadband Available by Road Segment 100 Mbps Down/20 Mbps Up or Better

- [Broadband Availability 100_20_2022_111522.pdf \(vermont.gov\)](#)
- Roads and addresses are served at 100/20 Mbps or better by fiber to the home or cable. 245,680 out of 313,062 building locations (78.5%) are serviceable at 100/20 Mbps or better.
- Roads not served at 100/20 Mbps or better. 67,382 out of 313,062 building locations (21.5%) are serviceable with broadband less than 100/20 Mbps.



Broadband Available by Road Segment 100 Mbps Down/100 Mbps Up or Better

- [Broadband Availability100_100_2022_111522.pdf \(vermont.gov\)](#)
- Roads are served at 100/100 Mbps or better by fiber to the premises. 94,790 out of 313,062 building locations (30.3%) are served at 100/100 Mbps or better by fiber to the premises.
- Roads not served at 100/100 Mbps or better. 218,272 out of 313,062 building locations (69.7%) are served with broadband less than 100/100.



Wireless Communications

Identifying areas that lack mobile wireless service is a critical step toward expanding and improving mobile wireless service around the state. Beginning in 2018 the department gathered information about the availability of mobile wireless data services throughout Vermont. The maps created were incrementally updated in 2019 and 2020, with volunteer help from Vermont towns and Regional Planning Commissions.

In 2022 the Department completed the most comprehensive wireless driving test to date. The 2022 drive test is a collaboration between the PSD and the AOT. AOT conducted the majority of the driving, logging more than 6,500 miles during the summer to gather the data. The testing routes included Federally funded highways, State Highways, many local roads, high-volume E911 call areas, and consumer-requested areas, such as trailheads, backroads, and more.

To conduct the analysis, the State of Vermont partnered with Ookla®, a global leader in network intelligence and connectivity insights.

Subsection 202(e)(4) requires the Department to map wireless communications only “if monetarily feasible.” Vermont’s efforts to collect wireless availability data have assisted Vermonters and state policymakers with informed and detailed information about wireless networks. With the availability of federal funding available to Vermont for broadband, continuous updates to the state’s wireless maps will be important.

The FCC appropriated \$65 million to implement the Broadband Data Accountability and Transparency Act (“DATA Act”). Among other things, the DATA Act includes the following:

- Requires the FCC to collect granular service availability data from wired, fixed wireless, and satellite broadband providers;
- Permits the FCC to consider whether to collect verified coverage data from state, local, and tribal governments, as well as from other entities.
- Sets parameters for service availability data collected from mobile broadband providers to ensure accuracy and;
- Creates a process for consumers; state, local, and tribal governments; and other groups to challenge FCC maps with their own data, and require the FCC to determine how to structure that process without making it overly burdensome on challengers.

Mobile Wireless Test Results

The results of the 2022 Mobile Wireless Drive Test, which evaluated voice and data service in the state for six different mobile wireless providers, are described in the [Drive Test Report](#). The report and printable maps can be found on the Department website [Mobile Wireless Drive Test | Department of Public Service \(vermont.gov\)](#)

The results of the test are best viewed on the interactive map. [Mobile Wireless DriveTest 2022 \(arcgis.com\)](#). Printable drive test maps. [DriveTestMaps2022.pdf \(vermont.gov\)](#)

For voice service, each map shows hexagons in the following colors:

- Dark Green: Good Coverage – All calls completed
- Bright Green: Some Coverage – More than half of calls completed
- Dark Red: Some Coverage – Less than half of calls completed
- Bright Red: Poor Coverage – No calls completed

For data service, each map shows hexagons in the following colors:

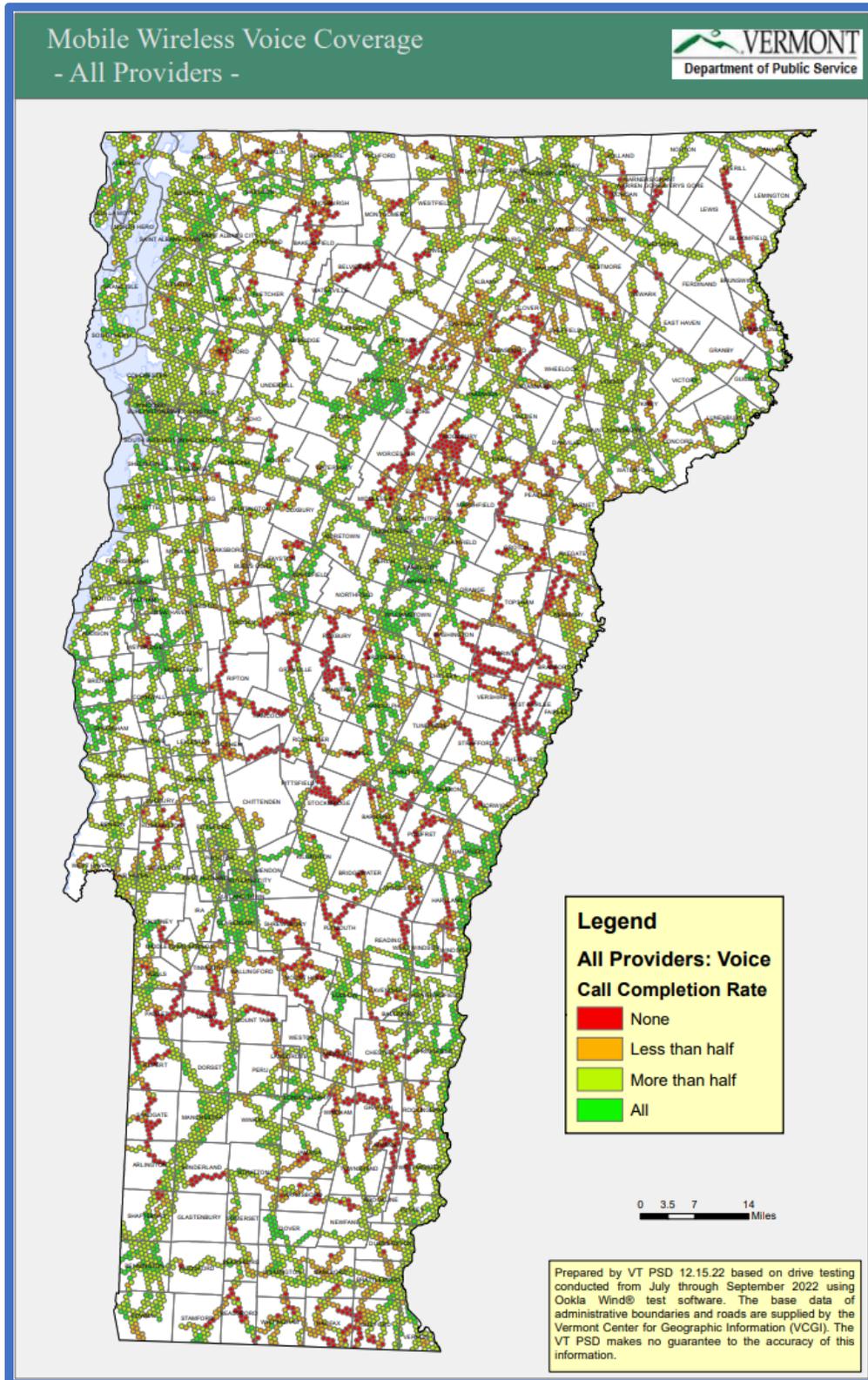
- Dark Green: Excellent Coverage – Average download speed of more than 25 Mbps
- Bright Green: Some Coverage – Average download speed between 5 Mbps and 25 Mbps
- Dark Red: Poor Coverage – Average download speed between 0 Mbps and 5 Mbps
- Bright Red: No Coverage – All speed tests failed to complete

The map also has a pop-up function. Clicking on a hexagon will depict a summary of the results for all tests conducted in that hexagon.

The map depicts hexagons that are shaded to show the coverage identified within that area. The map depicts the Drive Test results in 14 separate layers, with separate maps for voice, data, and each provider. Users can manually enable the layers they wish to view, one layer at a time.

Map of Wireless Voice Coverage (6 Providers)

Page 1 of the [Printable Drive Test Maps](#).



Map of Wireless Data Coverage (6 Providers)

Page 2 of the [Printable Drive Test Maps](#).

