



## Project History

Vermont's Broadband Mapping Initiative (BMI) is a collaborative broadband data collection and verification effort involving partners from the public, private and academic sectors participating as the Vermont Broadband Mapping Team (Broadband Team). The Team has initiated the creation and development of a comprehensive geographic database of broadband service availability in the State of Vermont. Landline and wireless services (fixed and mobile) are being mapped, including wireless voice and data with information provided by broadband companies and other sources. The broadband mapping information collected and verified through this initiative is supporting efforts to expand broadband infrastructure throughout Vermont. Most importantly, the geographic inventory will further refine our understanding of the location of "unserved" and "underserved" areas in the state, thereby supporting targeted future investments in these areas.

The Broadband Team includes the following organizations: Vermont Department of Public Service, the Vermont Telecommunications Authority, the Center for Rural Studies at the University of Vermont, Vermont's Enhanced 9-1-1 Board and the Vermont Center for Geographic Information. The Broadband Team is also supported by private sector contractors.

Vermont's initiative is being supported by the NTIA's Broadband Data and Development Grant Program (SBDD), which is working toward the development of a National Broadband Map. The SBDD program has been funded by the American Recovery and Reinvestment Act (ARRA).

## Broadband Data Development Methodology

First, the Vermont Department of Public Service (DPS) contacted each provider offering broadband service in the State and asked them if they would be willing to work with the Broadband Team. Providers were asked to provide data about their broadband networks to VCGI to help map the extent of their broadband coverage. Providers were given the option to have their broadband information only shown in aggregate form. In some cases Non-Disclosure Agreements (NDAs) were executed as security for this purpose. Non-cooperating providers were not included on the broadband mapping database, and therefore are not reflected on the broadband maps.

A variety of data source and data collection methods were used to identify the characteristics and geographic extent of broadband service in Vermont. Here is a quick breakdown

- **Cable:** Mapped to street/street-segment level
- **DSL:** Mapped as polygons (usually Exchange areas) or address points (list of addresses submitted by provider).
- **Fiber Optic:** Mapped as address points (list of address submitted by provider)
- **Fixed Wireless (WISP):** Mapped as polygons (propagation maps prepared by independent contractor using data provided by WISPs)



- **Mobile Wireless:** Mapped as polygons (data submitted by provider)
- **Satellite:** Mapped as polygons (data submitted by provider). Providers of satellite-based broadband services claimed that they covered the entire state.

Providers were asked to confirm their broadband offerings (and advertised speeds) by providing copies of public printed advertisements or web site documentation to DPS. This information was used to populate the speed information contained in the broadband layers. In numerous cases providers did not submit the necessary speed information.

Note: The completeness of this speed information influenced what was rendered on the 3Mbps down and 2Mbps up maps (refer to “Production of Broadband PDF Maps” below).

Further analysis was completed by contractors and the Broadband Team to verify the accuracy of the data provided. For example, propagation maps were generated by a paid contractor based on tower site information provided. These propagation maps were compared to the original and a copy forwarded to any provider that had provided data. Adjustments were made where appropriate.

The broadband mapping data will be updated biannually based on information submitted by providers and/or collected by the Broadband Team.

#### **Production of Broadband PDF Maps**

Upon completion and verification of the broadband data, the Broadband Team initiated the production of cartographic map products (PDF maps) depicting the extent of broadband coverage in Vermont. These maps are available here <http://www.vcgi.org/broadband/maps>

- **BB Coverage:** The cable, DSL, fiber optic, and wireless broadband layers were used to create the coverage maps. Satellite broadband coverage layers were excluded from the maps. The DSL and fiber “service points” were generalized into one-mile circles and squares around each point. They were generalized to ensure compliance with non-disclosure agreements (NDAs) established with certain providers.
- **BB Coverage by Census Block:** The cable, DSL, fiber optic, and wireless broadband layers were “intersected” with Vermont’s E911 address point layer to determine broadband availability at the address-level. This information was then intersected with Vermont’s 2009 Census Block layer to calculate availability at the Census Block level. This Census Block data was used to create the “Broadband Availability by Census Block” PDF maps.

**DISCLAIMER:** VCGI, the Broadband Mapping Team, and the State of Vermont make no representations of any kind, including but not limited to the warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied with respect to the broadband data and maps.