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Vermont Community Broadband
Board
**Vermont's Draft Broadband
Equity, Access, and
Deployment Initial Proposal
Volume 1**

Part of Vermont's Internet for All Plans

March 2024 - Revised Based on NTIA Initial Curing



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Executive Summary

The Infrastructure Investment and Jobs Act (Infrastructure Act or IIJA), enacted in 2021, includes \$42.45 billion of funding to achieve reliable, affordable, and high-speed Internet coverage throughout the United States through the Broadband Equity, Access, and Deployment (BEAD) Program, administered by the National Telecommunications Information Association (NTIA). This historic investment will lay critical groundwork for widespread availability and adoption of broadband, create new jobs and economic opportunities, expand access to healthcare services, enrich educational experiences of students, and improve overall quality of life for all US residents.

This is a once-in-a-generation funding opportunity that will allow states to make meaningful progress in closing the digital divide, and it is crucial that states have a comprehensive and well-informed plan for maximizing these funds. For Vermont, the Vermont Community Broadband Board (VCBB) has been tasked with this responsibility. This Initial Proposal Volume 1 outlines: ❌

- ▶ Existing efforts funded by the federal government or the State of Vermont to deploy broadband and close the digital divide (Initial Proposal Requirement 3)
- ▶ Identification of each unserved and underserved location within the State of Vermont (Initial Proposal Requirement 5)
- ▶ Vermont's definition of Community Anchor Institutions (CAIs) and identification of all eligible CAIs (Initial Proposal Requirement 6)
- ▶ Vermont's proposed challenge process (Initial Proposal Requirement 7)

This proposal is designed to reflect the strategy and principles outlined in Vermont's BEAD Five-Year Action Plan. In accordance with the BEAD Notice of Funding Opportunity (NOFO), this Initial Proposal Volume 1 has been developed to reflect feedback from stakeholder groups, including publicly- and privately-owned and operated Internet Service Providers (ISPs), relevant community-based organizations, related government agencies, and the public. This version reflects the version **approved by NTIA in March 2024.**

NOFO Requirements Table

The following table describes the requirements of the BEAD Initial Proposal as per the BEAD Notice of Funding Opportunity (NOFO) and the corresponding sections of this document in which they are addressed.¹

Table 1: BEAD NOFO Requirements

#	NOFO Requirement	Plan Reference Location
3	Identify existing efforts funded by the federal government or an Eligible Entity within the jurisdiction of the Eligible Entity to deploy broadband and close the digital divide, including in Tribal Lands.	1. Existing Broadband Funding
5	Identify each unserved location and underserved location within the Eligible Entity (<i>i.e.</i> , under the jurisdiction of the Eligible Entity, including unserved and underserved locations in applicable Tribal Lands), using the most recently published National Broadband Maps as of the date of submission of the Initial Proposal, and identify the date of publication of the National Broadband Maps used for such identification.	0. Unserved and Underserved Locations
6	Describe how the Eligible Entity applied the statutory definition of the term “community anchor institution,” identified all Eligible CAIs in its jurisdiction, identified all Eligible CAIs in applicable Tribal Lands, and assessed the needs of Eligible CAIs, including what types of CAIs it intends to serve; which institutions, if any, it considered but declined to classify as CAIs; and, if the Eligible Entity proposes service to one or more CAIs in a category not explicitly cited as a type of CAI in Section 60102(a)(2)(E) of the Infrastructure Act, the basis on which the Eligible Entity determined that such category of CAI facilitates greater use of broadband service by vulnerable populations.	0. Community Anchor Institutions
7	Include a detailed plan as to how the Eligible Entity will conduct a challenge process as described in Section IV.B.6 of the BEAD NOFO.	0. Challenge Process

¹ National Telecommunications and Information Administration, Broadband Equity, Access, and Deployment Program, Notice of Funding Opportunity (May 13, 2022), pp. 30-31 (BEAD NOFO). Available at: <https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf>.

Introduction

The Infrastructure Investments and Jobs Act, passed into law in 2021, includes a significant investment of \$65 billion to help close the digital divide and ensure that all residents have access to reliable, high-speed, and affordable broadband.² This historic investment will lay critical groundwork for widespread availability and adoption of broadband, creating new jobs and economic opportunities, providing increased access to healthcare services, enriching educational experiences of students, and improving overall quality of life for all residents.

The NTIA is administering two grant programs for states: the BEAD³ program and the Digital Equity Act program.⁴ The VCBB has been tasked with developing Vermont's strategy for broadband and digital equity, and the State's plan for administering the funds it receives from NTIA. The required components and process for the BEAD program are summarized in Figure 1.


The Initial Proposal Volume 1 serves as the first draft of Vermont's plan to achieve the intended purpose of the BEAD program: "every resident has access to a reliable, affordable, high-speed broadband connection, utilizing all funding available to be brought to bear to accomplish this goal, including but not limited to BEAD Program funds."⁵

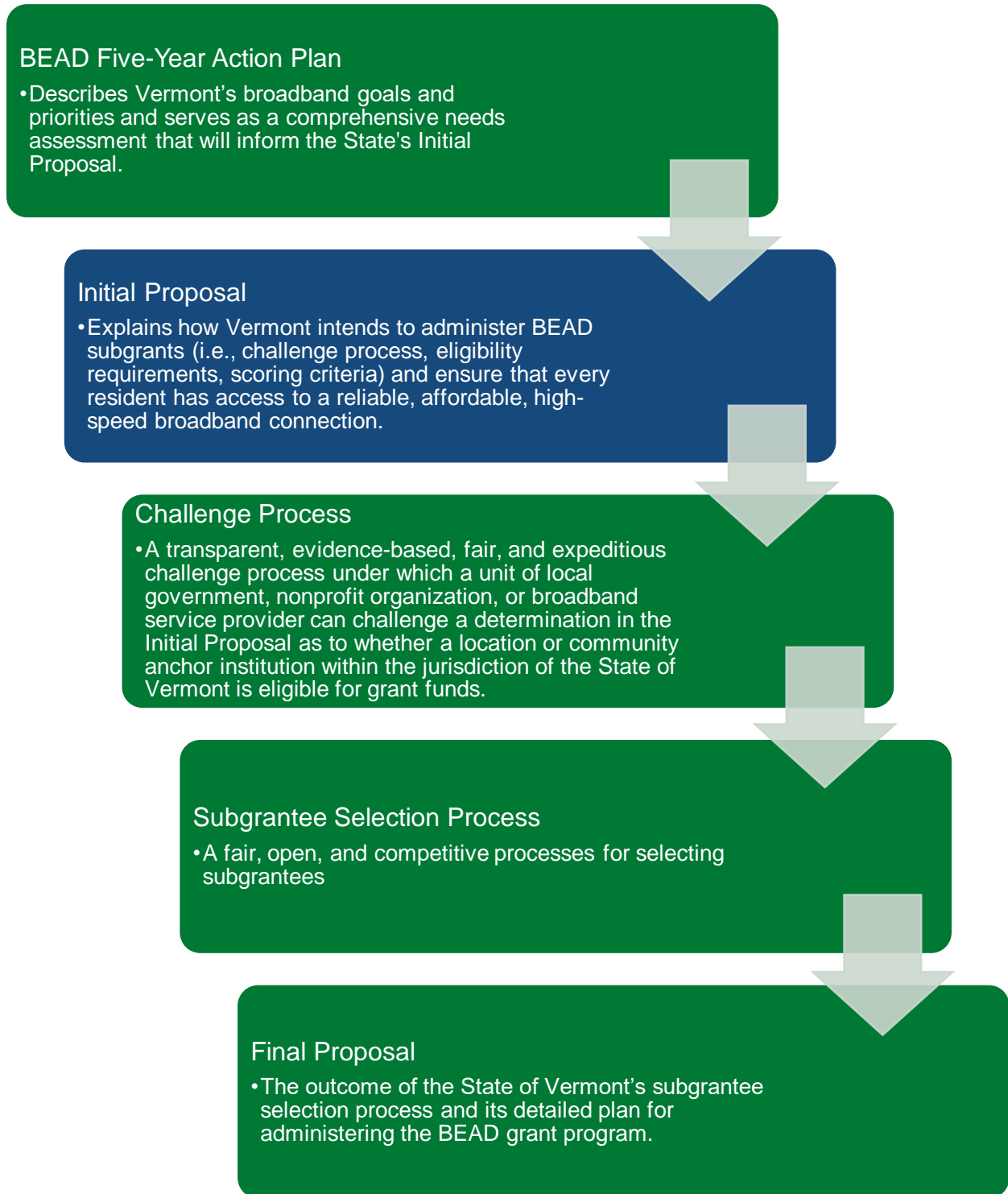
² United States Congress. "Infrastructure Investment and Jobs Act (IIJA)." Available at: <https://www.congress.gov/117/bills/hr3684/BILLS-117hr3684enr.pdf>.

³ The BEAD NOFO details the requirements of the program with which Vermont and subgrantees must comply. It is available here: <https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf>.

⁴ The Digital Equity Act Program Notice of Funding Opportunity details the requirements of the program with which Vermont and subgrantees must comply. It is available here: <https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/DE%20PLANNING%20GRANT%20NOFO.pdf>.

⁵ National Telecommunications and Information Administration. "Notice of Funding Opportunity: Broadband Equity, Access, and Deployment Program." P. 30. Available at: <https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf>.

Figure 1. BEAD Components and Process 



This document represents Volume 1 of Vermont’s Initial Proposal. NTIA allows BEAD Eligible Entities to submit the Initial Proposal in two volumes:

- ▶ **Initial Proposal Volume 1** (this document) includes the following BEAD requirements:⁶
 - Identify existing efforts funded by the federal government or an Eligible Entity (the State of Vermont, in this case) within the jurisdiction of the Eligible Entity to deploy broadband and close the digital divide, including in Tribal Lands (Requirement #3).
 - Identify each unserved location and underserved location within the Eligible Entity (i.e., under the jurisdiction of the Eligible Entity, including unserved and underserved locations in applicable Tribal Lands), using the most recently published National Broadband Maps as of the date of submission of the Initial Proposal, and identify the date of publication of the National Broadband Maps used for such identification (Requirement #5).
 - Describe how the Eligible Entity applied the statutory definition of the term “community anchor institution,” identified all Eligible CAIs in its jurisdiction, identified all Eligible CAIs in applicable Tribal Lands, and assessed the needs of Eligible CAIs, including what types of CAIs it intends to serve; which institutions, if any, it considered but declined to classify as CAIs; and, if the Eligible Entity proposes service to one or more CAIs in a category not explicitly cited as a type of CAI in Section 60102(a)(2)(E) of the Infrastructure Act, the basis on which the Eligible Entity determined that such category of CAI facilitates greater use of broadband service by vulnerable populations (Requirement #6).
 - Include a detailed plan as to how the Eligible Entity will conduct a challenge process as described in Section IV.B.6 of the BEAD NOFO (Requirement #7).
- ▶ **Initial Proposal Volume 2** includes all other requirements outlined in the BEAD NOFO, including long-term objectives, a detailed process for subgrantee selection, a detailed process for subgrantee monitoring and accountability, a definition of the Extremely High Cost Per Location Threshold, a description of low-cost plans that must be offered by all subgrantees, and more.⁷

⁶ National Telecommunications and Information Administration. “Proposed BEAD Challenge Process Guidance.” Available at: https://www.internet4all.gov/sites/default/files/202304/BEAD_Challenge_Process_Policy_Notice_-_Public_Comment_Draft_04.24.2023_0.pdf.


⁷ National Telecommunications and Information Administration. “Notice of Funding Opportunity: Broadband Equity, Access, and Deployment Program.” P. 32. Available at: <https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf>.

Existing Broadband Funding (Requirement 3)

Table 2: Existing Broadband Funding by Broadband Category as of September 15, 2023

Broadband Related Category	Total	Expended	Available	Remaining % of Available
Broadband Deployment	\$560,485,933	\$241,796,137	\$318,689,796	73.5%
Public Connectivity	\$98,405,060	\$33,729,052	\$64,676,008	14.9%
Affordability	\$41,770,080	\$7,575,840	\$34,194,240	7.9%
Other	\$15,290,316	\$6,467,477	\$8,822,840	2.0%
Planning, Administrative, or Overhead	\$9,292,000	\$2,321,919	\$6,970,081	1.6%
Grand Total	\$725,243,389	\$291,890,424	\$433,352,965	100.0%

Table 3: Detailed Funding Inventory as of September 15, 2023 

Source	Purpose	Total	Expended	Available
 NTIA Broadband Equity, Access, and Deployment Program	Broadband Deployment: Using the \$228.9M projected BEAD allocation to Vermont, \$223.9M is the maximum amount of funding available for last-mile connectivity less the \$5M to be spent on planning.	\$223,913,019	\$0	\$223,913,019
NTIA Broadband Equity, Access, and Deployment Program	Planning, Administrative, or Overhead: Initial \$5M of BEAD planning funds to be made available to Vermont.	\$5,000,000	\$292,247	\$4,707,753
State Federal Programs Match "Budget Adjustment Act FY2023"	Broadband Deployment: Matching funds for federal programs to be made available by the State of Vermont. Of this amount, \$20M is being used by the Government of Vermont for emergency state flood recovery with an	\$30,000,000	\$0	\$30,000,000

Source	Purpose	Total	Expended	Available
	assurance that it will be restored and a requirement that the Commissioner of Finance & Management present a proposal to replace the funds transferred from the appropriation as part of the Governor's FY24 budget adjustment proposal. (Emergency board minutes)			
US Treasury ARPA Capital Projects Fund	Broadband Deployment: Act 71 Broadband Construction grant amounts.	\$95,000,000	\$54,116,809	\$40,883,191
US Treasury ARPA Capital Projects Fund	Public Connectivity: Parks	\$1,600,000	\$0	\$1,600,000
US Treasury ARPA Capital Projects Fund	Public Connectivity: Libraries	\$16,400,000	\$0	\$16,400,000
US Treasury ARPA Coronavirus State and Local Fiscal Recovery Funds	Broadband Deployment: \$116M – Act 71 Broadband Construction grant amounts. Per the Vermont accounting department, this was later re-allocated to become \$109.3M.	\$109,260,528	\$94,803,543	\$14,456,985
US Treasury ARPA Coronavirus State and Local Fiscal Recovery Funds	Broadband Deployment: \$30M – Preconstruction grant amounts (H360 Act 71 & Act 9). Per the Vermont accounting department, this was later allocated to become \$36.7M.	\$36,739,472	\$34,698,931	\$2,040,541
US Treasury ARPA Coronavirus State and Local Fiscal Recovery Funds	Broadband Deployment: \$4M – Pre-purchase of materials allowance for preconstruction (authority granted in 8085(b) and 8084(a)(6)).	\$4,000,000	\$3,228,150	\$771,850
US Treasury ARPA Coronavirus State and Local Fiscal Recovery Funds	Public Connectivity: COVID-Response Temporary Broadband Lifeline Program, Wi-Fi Hot Spots, etc.	\$200,000	\$153,876	\$46,124

Source	Purpose	Total	Expended	Available
US Treasury ARPA Coronavirus State and Local Fiscal Recovery Funds	Broadband Deployment: Federal funding that went directly to the towns, some towns chose to allocate to their respective CUDs.	\$2,744,000	\$0	\$2,744,000
Affordable Connectivity Program (ACP)	Affordability: Provides eligible households with a discount on broadband service and connected devices. Eligible households based upon data from Education Superhighway, enrolled households from the Universal Service Administrative Company.	\$41,770,080* *This is a hypothetical rate based upon all eligible Vermont households for one year. ⁸	\$7,575,840* *This is an annualized rate based upon current enrollment. ⁹	\$34,194,240
State Universal Service Fund Allocation to Vermont Community Broadband Fund	Planning, Administrative, or Overhead: Funds to be used by Vermont for planning and administrative expenses.	Ongoing (estimated at \$792,000 per year)	Ongoing (estimated at \$792,000 per year)	\$0
Broadband Financing Fund One-Time State General Fund	Broadband Deployment: Supporting CUDs to secure the financing necessary to advance broadband projects.	\$1,500,000	\$400,000	\$1,100,000
FCC Rural Digital Opportunity Fund (RDOF)	Broadband Deployment: An FCC initiative designed to inject billions of dollars nationally into the construction and operation of rural broadband networks. Consolidated Communications, Inc.(\$19.0M), NRTC Phase I RDOF Consortium (\$9.6M), and CCO Holdings, LLC (\$29.7K) have been awarded funding in VT.	\$28,625,560	\$28,625,560	\$0

⁸ 116,028 Eligible households x 12 months x \$30 per month.

⁹ 21,044 Enrolled households x 12 months x \$30 per month.

Source	Purpose	Total	Expended	Available
ACAM	<p>Other:</p> <p>Provides set monthly payments based on a cost model to Rate of Return carriers to build broadband to a specific number of fixed locations in areas eligible for funding. Locations built are not required to be served with 100/20 Mbps.</p> <p>Telephone and Data Systems, Inc. has been awarded funds in Vermont.</p>	\$2,548,668 ¹⁰	\$1,120,535 ¹¹	\$1,428,133
ACAM II	<p>Other:</p> <p>Provides set monthly payments based on a cost model to Rate of Return carriers to build broadband to a specific number of fixed locations in areas eligible for funding. Locations built are not required to be served with 100/20 Mbps.</p> <p>Shoreham Telephone Company, LLC has been awarded funds in Vermont.</p>	\$12,741,648 ¹²	\$5,346,942 ¹³	\$7,394,707
E-Rate: Universal Service Program for Schools and Libraries	<p>Public Connectivity:</p> <p>Provides discounts to assist eligible schools and libraries to obtain affordable internet access and telecommunications services.</p>	\$80,205,060 ¹⁴	\$33,575,175 ¹⁵	\$46,629,885
USDA ReConnect: Loan + Grant Program	<p>Broadband Deployment:</p> <p>Furnishes loans and grants to provide funds for the costs of construction, improvement, or acquisition of facilities and equipment needed to provide broadband service in eligible rural areas.</p>	\$17,463,911	\$17,463,911	\$0

¹⁰ Based on \$263,655 per year for 9 years and 8 months.

¹¹ Based on \$263,655 per year for 4 years and 3 months.

¹² Based on 1,365,177 per year for 9 years and 4 months.


¹³ Based on 1,365,177 per year for 3 years and 11 months.


¹⁴ 2023 estimate of committed E-Rate funds based upon an average 7% increase in committed funds over the past 3 years. 2022 committed E-Rate funds were \$74,958,000.

¹⁵ 2023 estimate of disbursed E-Rate funds based upon an average of 71.7% of committed E-Rate funds being disbursed. This was then multiplied by (7/12) to reflect seven out of twelve months having passed in 2023.

Source	Purpose	Total	Expended	Available
	NEK Broadband has been awarded a grant in Vermont.			
Vermont Economic Development Authority Loan Program	Broadband Deployment: Eligible project costs include working capital, construction, and infrastructure / installation.	\$10,800,000	\$8,019,790	\$2,780,210
Northern Borders Regional Commission (NBRC): Securing the Public Interest through Shared Expertise and Services (SPISES) Program	Planning, Administrative, or Overhead: Funding to build technical oversight capacity at the VCBB and within VCUDA.	\$2,500,000	\$1,219,763	\$1,280,237
NBRC: Regional Forest Economy Partnership Grant Program	Planning, Administrative, or Overhead: Identify and leverage other public and private funds to reduce capital costs and promote affordability.	\$1,000,000	\$17,909	\$982,091
NBRC: 2020 State Economic & Infrastructure Development	Broadband Deployment: Funds to build a fiber-to-the-home telecom network to residences and businesses that do not currently have access to broadband in the Town of Fletcher.	\$439,443	\$439,443	\$0
Total		\$725,243,38	\$291,890,424	\$433,352,965

Unserved and Underserved Locations (Requirement 5)

VCBB has submitted CSV files to the NTIA detailing locations of: 

1. Unserved locations
2. Underserved locations
3. Eligible Community Anchor Institutions 

This data is based on the FCC National Broadband Map as of August 9, 2023. The public can view the planned submissions here: [BEAD | Explore VCBB \(arcgis.com\)](#)

Community Anchor Institutions (Requirement 6)

Vermont is a state of small cities and towns, where many communities do not have many of the CAIs that people living in more highly populated communities may go to access services. The statutory definition of a “Community Anchor Institution,” as provided by Section 60102(a)(2)(E) of the Infrastructure Act, is an entity such as a school, library, health clinic, health center, hospital or other medical provider, public safety entity, institution of higher education, public housing organization, or community support organization that facilitates greater use of broadband service by vulnerable populations. These populations include, but are not limited to, low-income individuals, unemployed individuals, children, the incarcerated, and aged individuals. The categories that are explicitly specified in the statutory definition adequately capture some, but not all, of the types of organizations that are facilitating the use of broadband service by vulnerable populations in Vermont.

The VCBB asked members of the public and stakeholder organizations what important community locations were missing from this list. Feedback highlighted how many community hubs are different in each town and region of Vermont, and that often they are private businesses. The suggestions provided valuable input for understanding how to get the word out about proposed broadband networks, new services available, and digital equity resources. Therefore, Vermont proposes the following definitions for the CAI categories indicated in the NOFO:

Proposed Definitions:

- **Public safety entity (F):** Public safety entities are defined to include courthouses, police departments, fire departments, EMS headquarters, and Red Cross and state-designated emergency shelters. Each of these entities facilitates the use of broadband by vulnerable populations including low-income families, aged individuals, and children, as well as Underrepresented Communities such

as the unhoused and those experiencing housing insecurity, incarcerated individuals, and individuals living in rural areas. These locations are pillars in the community, and places of safety where vulnerable Vermonters can go during times of crisis. It is crucial that Vermonters remain connected to the outside world during these times, and that these entities have reliable, high-capacity broadband. The VCBB has worked with the Vermont Department of Public Safety to identify these locations throughout the state.

Total Number of Public Safety Entities: 983

Total Number of Un-and-Underserved Public Safety Entities: 257

- **Library (L):** Libraries are defined to include all public and school libraries. These entities facilitate the use of broadband by all Underrepresented Communities. Libraries are known connectivity centers for all populations lacking reliable access at home. The VCBB has worked with the Department of Libraries to identify all library locations in the state for inclusion as CAIs.

Total Number of Libraries: 221

Total Number of Un-and-Underserved Libraries: 45

- **Public housing organization (P):** Public housing organizations are defined to include housing shelters, Housing and Urban Development-assisted housing developments, and local offices for the agencies providing these services. These entities facilitate the use of broadband by vulnerable populations including aged individuals, low-income households, and children, as well as Underrepresented Communities including the unhoused/those experiencing housing insecurity, racial and ethnic minorities, religious minorities, immigrants/refugees, and individuals living in rural areas. Public Housing Organizations are reliable locations where these populations are spending significant time, attempting to access other services (which frequently requires connectivity), and frequently offer other services including seminars or educational opportunities for public housing residents. Public housing organizations frequently offer meeting space for the local community (including members of Underrepresented Communities) to hold events and discussions which would benefit greatly from high-capacity broadband. The VCBB has worked with the Department of Housing and Urban Development and the Vermont Agency of Human Services to identify these locations.

Total Number of Public Housing Organizations: 5

Total Number of Un-and-Underserved Public Housing Organizations: 0

- **Health clinic, health center, hospital, or other medical provider (H):** Health clinics, health centers, hospitals, or other medical providers are defined to include all the entities listed in the definition, as well as the offices of primary care physicians and Urgent Care Centers. The VCBB has worked with local communities through

the RFI process, as well as the Vermont Department of Health, to identify these locations.

Total Number of Medical Providers: 475

Total Number of Un-and-Underserved Medical Providers: 60

- **Community support organizations (C):** The VCBB proposes to include the following entities as Community Support Organizations: local and state government buildings—including town clerk offices, town halls/buildings, or state government buildings that provide essential services (such as a Medicaid, unemployment, or housing assistance)— neighborhood and community centers, and social services agencies. These locations facilitate the use of broadband by vulnerable populations, including aged individuals, low-income individuals, and incarcerated individuals, as well as Underrepresented Communities, for important legal and social services for which broadband access is sometimes required (e.g., to complete forms, register for services). Such locations also often host summer camps, trainings, and community events that attract Vermonters from Underrepresented Communities. Only government buildings providing services or meeting space to the local community will be included as CAIs for the purposes of the BEAD program. The VCBB has worked directly with local communities to identify relevant locations through the RFI process described in detail in the Pre-Challenge Modification Section.

Total Number of Community Support Organizations: 3,048

Total Number of Un-and-Underserved Community Support Organizations: 1,054

- **Schools (S):** Schools are defined to include preschools offering qualified pre-Kindergarten programs, as well as public, private, charter, and parochial schools serving students in grades K-12. These entities facilitate the use of broadband by vulnerable populations including children and low-income individuals, as well as Underrepresented Communities including the unhoused/those experiencing housing insecurity, LGBTQIA+ individuals, racial and ethnic minorities, religious minorities, immigrants/refugees, and individuals living in rural areas. Schools offer educational programming for which broadband access is a critical component and are frequently the only locations where students from a variety of backgrounds can access the Internet. The VCBB has worked with the Vermont Agency of Education to identify all schools meeting this definition as CAIs in the state. A list of qualified pre-Kindergarten programs is available here.

Total Number of Schools: 611

Total Number of Un-and-Underserved Schools: 71

- **Institutions of higher education (I):** Institutions of higher education are defined to include: colleges, universities, trade schools, and locations where educational programming is being offered to adults outside of a formal college setting, specifically continuing education classes for adult learners. These locations

facilitate the use of broadband by vulnerable populations, such as low-income individuals, unemployed individuals, and aged individuals, and Underrepresented Communities including English language learners, individuals living in a rural area, and adults with low levels of literacy, who make up a large portion of the audiences for these programs. These organizations could offer additional digital skills programming if reliable, high-capacity broadband service was made available to them. Additionally, the educational experience of these adult learners would be substantially improved with reliable broadband. The VCBB has worked with stakeholders including leading non-profit groups focused on education (several of whom are already on Vermont's Digital Equity Core Planning Team) as well as the Vermont Agency of Education to identify relevant locations.

Total Number of Institutions of Higher Education: 31

Total Number of Un-and-Underserved Institutions of Higher Education: 2

In addition, the VCBB proposes the following new CAI categories, which will be additions to the list provided in the BEAD NOFO:

New CAI categories:

- **Houses of worship (W):** Houses of worship are defined to include churches, mosques, synagogues, temples, and other buildings whose primary purpose is worship or religious service. These locations facilitate the use of broadband by vulnerable populations, including low-income individuals, unemployed individuals, and aged individuals, as well as Underrepresented Communities such as religious minorities, people who are unhoused or experiencing housing insecurity, immigrants and refugees, the incarcerated/formerly incarcerated, and children/youth. In Vermont, these locations frequently facilitate the use of broadband by providing services to those populations (including soup kitchens, temporary shelter, warming/cooling stations, tutoring programs), and could provide a secondary benefit of offering the ability to connect to broadband while accessing these services. These locations are also regular social gathering places and would be able to facilitate broadband use by the broader community (including Underrepresented Communities) during those social gatherings. Only houses of worship offering support programs to Underrepresented Communities will be considered CAIs for the purposes of the BEAD program, and VCBB has worked directly with community stakeholders to identify those locations.

Total Number of Houses of Worship: 908

Total Number of Un-and-Underserved Houses of Worship: 281

- **Correctional facilities and juvenile detention centers (D):** Correctional facilities and juvenile detention centers help facilitate the use of broadband by vulnerable populations, inclusive of Underrepresented Communities such as incarcerated individuals and children/youth, as well as members of other Underrepresented Communities that experience disproportionately high rates of incarceration. For currently incarcerated individuals, correctional facilities are the

only possible place to access broadband. Reliable broadband access at correctional facilities and juvenile detention centers can enable access to educational programs that could strengthen digital skills and improve employability post incarceration, therefore contributing to a reduction in recidivism. The VCBB has heard from the Vermont Department of Corrections, which has indicated that broadband access is a high priority to enable it to expand its online educational programming.

Total Number of Correctional facilities and juvenile detention centers: 14
Total Number of Un-and-Underserved Correctional facilities and juvenile detention centers: 5

- **Public outdoor spaces (O):** Public outdoor spaces are defined to include community gardens, town greens, local and state parks, and park and rides. These spaces facilitate the use of broadband by vulnerable populations, including low-income individuals, individuals who are unhoused/ experiencing housing insecurity, children/ youth, and individuals that live in rural areas. Vermont has a significant population that is unhoused and experiencing housing insecurity who would also qualify as low-income individuals. With the housing crisis and limited shelter availability, public outdoor spaces are frequently where these Vermonters live and sleep. With limited ability to pay for mobile service, it would be massively beneficial to these populations for reliable, no-cost, high speed broadband to be made available at public outdoor spaces to facilitate communication, accessing benefits and services, and seeking employment. In fine weather, these are also frequent community gathering spaces that play host to club meetings, town gatherings, children's camps, and social events, which are accessed by all Vermonters, including members of Underrepresented Communities. Only public outdoor spaces that are being used for support programming or as temporary shelter by Underrepresented Communities will be included as CAIs for the purposes of the BEAD program. The VCBB has worked directly with communities to identify appropriate locations.

Total Number of Public outdoor spaces: 155
Total Number of Un-and-Underserved Public outdoor spaces: 56

- **Community media centers (MC):** Community media centers are defined to include public access television (and radio) stations. Community media centers facilitate the use of broadband by vulnerable populations, including children and youth. Some of Vermont's community media centers operate summer camps for children and youth interested in video production or journalism, as well as volunteer and internship opportunities. These programs would be augmented significantly with reliable broadband service, and these camps could serve as another access point to broadband service for those children/youth whose homes are un- or under-served. Only community media centers offering programming to Underrepresented Communities will be categorized as CAIs for the purposes of

the BEAD program. The VCBB has worked with public access television and radio stations individually to identify relevant locations.

Total Number of Community media centers: 24

Total Number of Un-and-Underserved Community media centers: 3

- **General stores (GS):** General stores are defined as those listed as general/country stores by the Vermont Retailers and Grocers Association. General stores facilitate the use of broadband by all vulnerable populations and underrepresented communities, but are particularly important for individuals living in rural areas (especially those living in rural areas that are also members of other Underrepresented Communities). In the most rural and remote areas of Vermont, the general store is frequently the only community gathering space in a town. Country and general stores across the state play host to meetings of various clubs (including the Lions Club, Rotary Club, Historical Society), events for senior citizens or veterans, and children's programming, host government meetings and townhalls, and some even include offices for government services, including post offices. In those communities, general stores are the single place where community members congregate for any number of activities, as well as to gather information and shop. Once connected with reliable, high-capacity broadband, they may often be the only locations in the most rural communities where digital skills programming could be offered, in the absence of another more traditional location (such as a school or community center). In many communities across Vermont, there would be no CAIs at all but for the inclusion of General Stores in this category. This would be a disservice to Vermonters in general, and to Vermont's Covered Populations in particular; Vermonters with limited mobility and transportation options may not be able to travel significant distances to reach locations where they can use the Internet, nor should they be expected to do so. Only general stores with gathering spaces or which provide additional social services will be considered CAIs for the purposes of the BEAD program, and the VCBB has worked directly with communities to identify relevant locations.

Total Number of General stores: 101

Total Number of Un-and-Underserved General stores: 35

The VCBB has identified specific CAIs using Homeland Infrastructure Foundation-Level Data from the U.S. Department of Homeland Security Geospatial Management Office and Vermont's E911 building classification data that includes the following: (i) colleges, (ii) universities, (iii) K12 schools, (iv) other education facilities, (v) hospitals and medical centers, (vi) clinics, (vii) nursing homes and long-term care, (viii) community and recreation centers, and (ix) libraries. The VCBB is also working with the Departments of Education, Libraries, Housing and Urban Development, along with other organizations to gather data on locations and available broadband speeds at those locations. Because these data sources do not include data on CMS or E-rate Entity ID, the VCBB has left these columns blank on the CSV files submitted to NTIA. The VCBB met with representatives from different types of CAI organizations to understand their broadband

and digital equity needs and resources, to request data they have on different locations, and to understand their current available broadband speeds.

CAIs currently lacking symmetrical Gigabit-speed broadband service will be classified as an “eligible community anchor institution,” meaning they will be prioritized for BEAD subgrant-funded deployments. The Public Service Department (PSD) recorded all buildings that had 100/100 Mbps symmetrical broadband and higher. VCBB assumes that a building with access to 100/100 Mbps symmetrical broadband most likely has access to fiber and would be capable of upgrading to a 1/1 Gbps service. The VCBB supplemented PSD data with other data sources as well, including the Agency of Education’s data on school broadband availability collected through the annual technology survey. Additionally, the VCBB completed an analysis of CAIs believed to have access to enterprise level service from providers’ middle mile network routes, using the PSD’s definition of served as located within 500 feet of Vermont’s E-911 Road Centerline layer where middle mile network routes are available. All community anchor buildings without access to 100/100 Mbps or higher service have been labeled as eligible for upgrade with BEAD funding. The VCBB has initially identified 1,869 community anchor institutions that are potentially eligible for an upgrade. The VCBB will continue to refine this data through analysis and external engagement as we prepare to begin the challenge process, and will incorporate any updates into the list of eligible CAIs released at the beginning of the challenge process. Note: As explicitly directed in the BEAD NOFO, Vermont has only included currently un and underserved CAIs on its location submission.

Vermont's List of Community Anchor Institution Types:

- ▶ PreK-12 schools
- ▶ Higher education institutions (such as University of Vermont, and Community College of Vermont)
- ▶ Workforce development organizations (such as VT Department of Labor locations, Working Fields, and Pathways VT)
- ▶ Adult education agencies (such as VT Adult Education, and Central Vermont Adult Basic Education)
- ▶ Libraries
- ▶ Health clinics, health centers, hospitals, and other medical providers
- ▶ Public safety entities (such as police departments, fire departments, and EMS headquarters, Red Cross emergency shelter locations)
- ▶ Public housing (such as housing and urban development-assisted housing)
- ▶ Neighborhood organizations and community centers, including community centers and neighborhood gathering spaces located on Tribal lands
- ▶ Houses of worship (such as churches, synagogues, mosques, and temples)
- ▶ Local and/or state government buildings (such as town halls, city halls, town clerk offices, and courthouses)
- ▶ Housing shelters (such as COTS)
- ▶ Social service agencies (such as Age Well)
- ▶ Correctional facilities and juvenile detention centers
- ▶ Public outdoor spaces (such as community gardens and park and rides)
- ▶ Community media centers
- ▶ General stores 

Challenge Process (Requirement 7)

Model Challenge Process

The VCBB is basing its Challenge Process on the NTIA BEAD Model Challenge Process but is not fully adopting it. Deviations from the model process are clearly marked below in brackets. The VCBB will adopt the DSL Modifications, Speed Test Modules, and Area and MDU Challenges from the NTIA Model Challenge Process and VCBB has also added a 5G Home Fixed Wireless Modification, and a Data Cap Modification.

Modifications to Reflect Data Not Present in the National Broadband Map

The VCBB and the PSD use an [Interactive Broadband Map](#), which combines broadband deployment information submitted by Vermont internet service providers and a database of building locations in the State used for emergency services called the E911 database. The E911 database contains comprehensive detail of the physical locations and types of buildings, ranging from residences to libraries to sugarhouses. The VCBB has used this map to issue bulk challenges to the FCC broadband map to date and will continue to compare FCC data releases against it for verification.

The VCBB will adopt the DSL Modifications, Speed Test Modules, and Area and MDU Challenges from the NTIA Model Challenge Process and VCBB has also added a 5G Home Fixed Wireless Modification and a Data Cap Modification.

DSL Modifications [From BEAD Model Challenge Process]

The VCBB will treat locations that the National Broadband Map shows to have available qualifying broadband service (i.e., a location that is “served”) delivered via DSL as “underserved.” This modification will better reflect the locations eligible for BEAD funding because it will facilitate the phase-out of legacy copper facilities and ensure the delivery of “future-proof” broadband service.

[VCBB ADDITION TO MODEL: Data Cap Modifications]

The broadband office will treat locations that the National Broadband Map shows to be served as unserved when there is evidence to demonstrate that the only service plans marketed to consumers at those locations that impose an unreasonable capacity



allowance (“data cap”) on the consumer, throttle speeds, or deprioritize home broadband service.

An unreasonable capacity allowance is defined as a data cap that falls below the monthly capacity allowance of 660 GB. Alternative plans without unreasonable data caps cannot be business-oriented plans not commonly sold to residential locations. A successful challenge may not change the status of the location to unserved or underserved if the same provider offers a service plan without an unreasonable capacity allowance or if another provider offers reliable broadband service at that location.

When the Data Cap Modification is used to reclassify reported service at a location with multiple providers and/or technologies, the relevant service(s) effected by the modification will be reclassified and the classification of location itself will be reprocessed with the updated entry.]

[VCBB ADDITION TO THE MODEL: At the conclusion of the post challenge process, the VCBB will once again run the DSL module and the data cap module to treat any new locations that are marked as “served” only due to service delivered via DSL or via a service with an unreasonable data cap as “underserved.” Examples of addresses in this scenario could include new BSLs in the new version of the FCC fabric that are served only with a service with an unreasonable data cap, or addresses that previously had been marked served with DSL and another technology, where the availability of the other technology was successfully challenged during the challenge process.]

[VCBB ADDITION TO MODEL Pre-Challenge Modification for Fixed Wireless

The VCBB will treat as “underserved” locations that the National Broadband Map shows to have available qualifying broadband service (i.e., a location that is “served”) due solely to the availability of Cellular Fixed Wireless Access (CFWA) as “underserved.” The VCBB has determined that this modification, and the corresponding rebuttal opportunity, will assist the VCBB in determining the availability of networks with sufficient capacity to meet the expected consumer demand for qualifying broadband in the relevant area. The VCBB has determined that 503 BSLs are affected by this modification. The affected CFWA provider will have an opportunity to rebut this modification.

The affected CFWA provider will have an opportunity to rebut this modification. To successfully rebut this modification, the cellular fixed wireless provider must demonstrate that it: is providing 100/20 Mbps or better service at the relevant locations (e.g., by using the rebuttal approach for the speed test area challenge); and has sufficient network capacity to simultaneously serve (i.e., as concurrently active subscribers) at least 80% of locations in the claimed coverage area reported as served only by cellular fixed wireless.]

Deduplication of Funding

The VCBB plans to use the BEAD Eligible Entity Planning Toolkit to identify existing federal enforceable commitments. The VCBB will enumerate locations subject to enforceable commitments by using the BEAD Eligible Entity Planning Toolkit and leveraging the following data sets:

1. The Broadband Funding Map published by the FCC pursuant to IIJA § 60105.
2. Data sets from State broadband deployment programs relying on funds from the Capital Projects Fund and the State and Local Fiscal Recovery Funds administered by the U.S. Treasury.
3. State of Vermont and local data collections of existing enforceable commitments.

The VCBB has made best efforts to create a list of broadband serviceable locations (BSLs) subject to enforceable commitments. If necessary, the VCBB will translate polygons or other geographic designations (e.g., a county or utility district) describing the area to a list of Fabric locations. The VCBB is submitting this list, in the format specified by the FCC Broadband Funding Map, to NTIA.

The VCBB will review its repository of existing state and local broadband grant programs to validate the upload and download speeds of existing binding agreements to deploy broadband infrastructure. In situations in which the state or local program did not specify broadband speeds, or when there was reason to believe a provider deployed higher broadband speeds than required, the VCBB will reach out to the provider to verify the deployment speeds of the binding commitment. The VCBB will document this process by requiring providers to sign a binding agreement certifying the actual broadband speeds deployed.

The VCBB will draw on these provider agreements, along with its existing database on state and local broadband funding programs' binding agreements, to determine the set of state and local enforceable commitments.

Challenge Process Design

Vermonters were highly engaged in developing the State's process of challenging the FCC's data on unserved and underserved locations. That effort yielded corrections and improvements to the data, adjusting the State's allocation of BEAD funding. Next, Vermont will conduct its own challenge process with the goal of more accurately identifying eligible locations for BEAD deployment project funding. Based on the NTIA BEAD Challenge Process Policy Notice, as well as the VCBB's understanding of the goals of the BEAD program, this proposal represents a transparent, fair, expeditious, and evidence-based challenge process. The VCBB is basing their Challenge Process on the NTIA BEAD Model Challenge Process but is not fully adopting it. The VCBB has also chosen to incorporate the optional modules of Area and MDU Challenge, DSL Modifications, and Speed Test Modifications. The VCBB has also added its own 5G

Home Fixed Wireless Modifications Module, and a Data Cap Module. Deviations from and additions to the model are clearly noted and contained within brackets.

Permissible Challenges

The VCBB will only allow challenges on the following grounds:

- The identification of eligible CAIs, as defined by the VCBB;
- CAI BEAD eligibility determinations;
- BEAD eligibility determinations for existing broadband serviceable locations (BSLs);
- Enforceable commitments; or
- Planned service.

Permissible Challengers

Permissible challengers include nonprofit organizations, units of local governments, and broadband service providers. Residents can submit challenges through their unit of local government or a nonprofit. This unit of local government or nonprofit will then upload the challenges to the state challenge portal. The goal of this challenge process is to help improve the accuracy of broadband availability across Vermont by challenging areas that may have been incorrectly marked as served, unserved, or underserved.

Challenge Process Overview

This challenge process incorporates four phases, spanning 90 days (Figure 2). [ADDITION TO MODEL: Estimated timelines are outlined here, VCBB may extend the Challenge or Rebuttal phase beyond 14 days but not longer than 24 days if they determine an extension is necessary.]

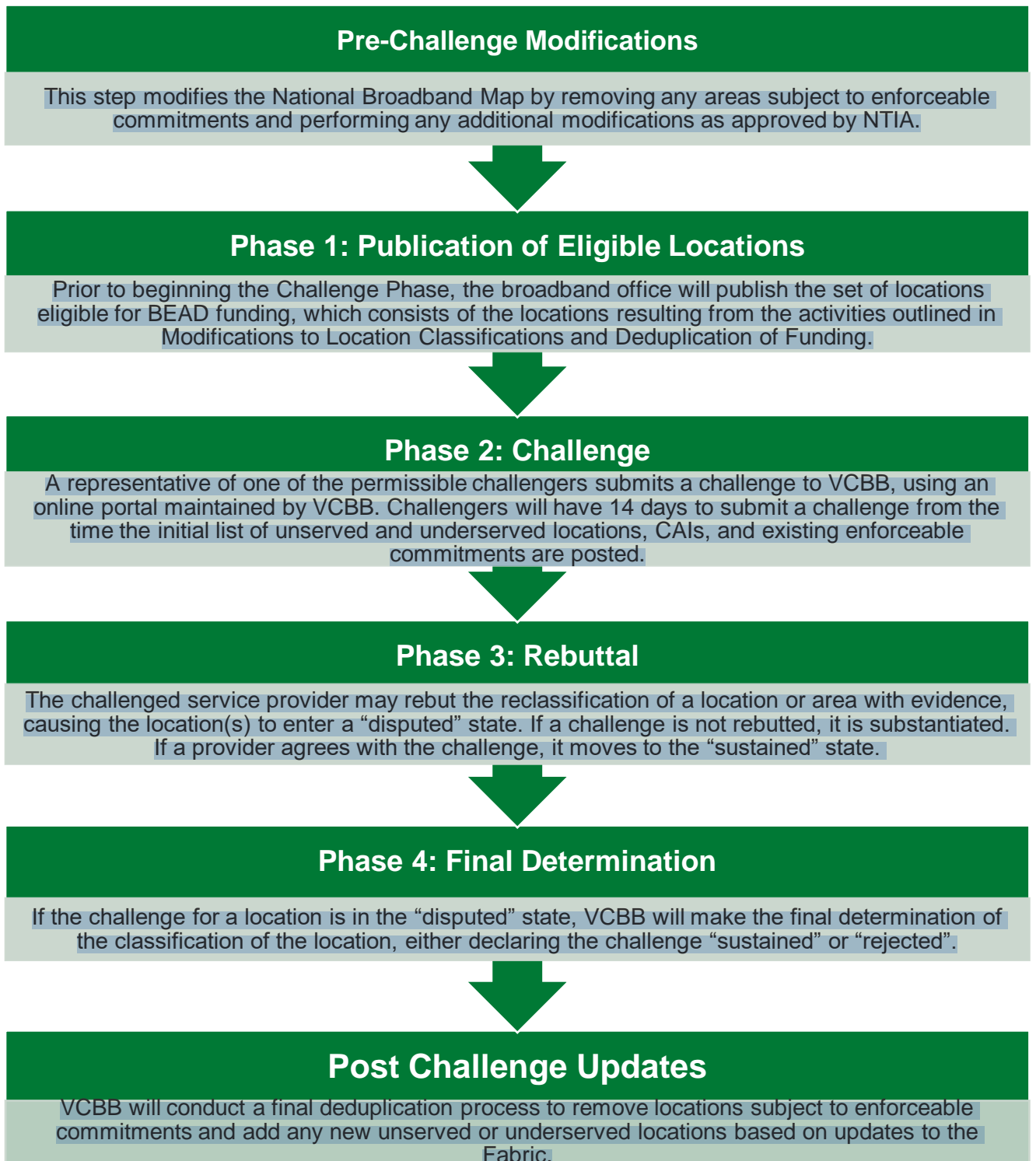
1. **Publication of Eligible Locations:** The VCBB published the set of locations eligible for BEAD funding, which consists of the locations resulting from the activities outlined in “Modifications to Location Classifications” and “Deduplication of Funding.” The VCBB also published locations considered served, as they may be challenged. This information is available at [the VCBB's website](#).
2. **Challenge Phase (14 days, estimated March 18-April 1, 2024):** During the Challenge Phase, the challenger will submit the challenge through the VCBB challenge portal. This challenge will be visible to the service provider whose service availability and performance is being contested. After this stage, the location will enter the “challenged” state.
 - a. **Minimum Level of Evidence Sufficient to Establish a Challenge:** The challenge portal will verify that the address provided can be found in the Fabric and is a BSL. The challenge portal will confirm that the challenged service is listed in the National Broadband Map and meets the definition of

reliable broadband service. For scanned images, the challenge portal will determine whether the quality is sufficient to enable optical character recognition (OCR). For availability challenges, the VCBB will manually verify that the evidence submitted falls within the categories stated in the NTIA BEAD Challenge Process Policy Notice and the document is unredacted and dated.

- b. **Timeline:** Challengers will have 14 calendar days to submit a challenge from the time the initial list of unserved and underserved locations, community anchor institutions, and existing enforceable commitments are posted.
3. **Rebuttal Phase (14 days, April 15-April 29, 2024):** Only the challenged service provider may rebut the reclassification of a location or area with evidence, causing the location or locations to enter the “disputed” state. [NOT IN MODEL PROCESS BUT ADDED FROM POLICY NOTICE: If a broadband service provider claims gigabit service availability for a CAI or a unit of local government disputes the CAI status of a location, the CAI may rebut.] A rebuttal causes the location or locations to enter the “disputed” state. If a challenge that meets the minimum level of evidence is not rebutted, the challenge is sustained. A provider may also agree with the challenge and thus transition the location to the “sustained” state. Providers must regularly check the challenge portal notification method (e.g., email) for notifications of submitted challenges.

 - a. **Timeline:** Providers will have 14 calendar days from notification of a challenge to provide rebuttal information to the VCBB.
4. **Final Determination Phase (30 days, April 22-May22, 2024):** During the Final Determination phase, the VCBB will make the final determination of the classification of all locations in “disputed” state, either declaring the challenge “sustained” or “rejected.”

Figure 2. Challenge Process Steps



Allowable Challenges

Table 4 outlines the types of challenges allowable under the BEAD program. Text in brackets deviates from the model challenge process.

Table 4. Allowable Challenges

Scope	Challenge Class	Challenge Type	Detail
Allowable	Location Eligibility Determination	<ul style="list-style-type: none"> • Availability (A) • Speed (S) • Latency (L) • Business Service Only (B) • Data Cap (D) • Technology (T) 	NTIA will permit challenges to the classification of a location as an unserved or underserved location eligible for BEAD funds (i.e., challenges to the broadband service availability data) for existing BSLs included in the FCC's Broadband Serviceable Location Fabric (Fabric). This includes the classification of individual BSLs that are multi dwelling units (MDUs) based on the availability of broadband service to individual units within the BSL. [ADDITION TO MODEL: VCBB will allow challenges from terrestrial fixed wireless ISPs to shift the classification of BSLs from underserved to served.]
Allowable	CAI Eligibility Determination		NTIA will permit challenges to the classification of a CAI as eligible for BEAD funds (i.e., challenges that a CAI does not receive at least 1 Gigabit broadband speeds).
Allowable	Identification of CAIs	• Location is a CAI (C)	NTIA will permit challenges to the Eligible Entity's identification of CAIs.

Scope	Challenge Class	Challenge Type	Detail
		<ul style="list-style-type: none"> • Location is Not a CAI (R) 	
Allowable	Enforceable Commitments	<ul style="list-style-type: none"> • Enforceable Commitment (E) • Not Part of an Enforceable Commitment (N) 	NTIA will permit challenges to the identification of previous federal, state, or local enforceable commitments to minimize duplication of funding.
Allowable	Planned Service	Planned Service (P)	NTIA will permit challenges where a broadband provider offers convincing evidence that they are currently building out broadband to challenged locations without government subsidy or are building out broadband offering performance beyond the program requirements.
Not Allowable	Classification of BSLs	NTIA will not permit challenges to the classification of a BSL on the Fabric (e.g., altering the BSL's "Building Type" classification on the Fabric to reflect a BSL's subscription to mass-market broadband service).	
Not Allowable	Addition or Removal of BSLs	NTIA will not permit new BSLs to be added to or removed from the Fabric. See, Infrastructure Act, 60102(a)(2)(H).	

Evidence for Allowable Challenges

In the following sections, text in brackets highlights modifications to the template provided by NTIA.

Table 5 describes examples of acceptable evidence for allowable challenges.

Table 5. Examples of Evidence for Allowable Challenges

Code	Challenge Type	Description	Specific Examples	Permissible Rebuttals
A	Availability	The broadband service identified is not offered at the location, including a unit of a multiple dwelling unit (MDU).	<ul style="list-style-type: none"> • Screenshot of provider webpage. • A service request was refused within the last [CHANGE TO MODEL TO ALIGN TIMELINES: 365 days] (e.g., an email or letter [ADDITION TO MODEL: or written account of a conversation with or] from a provider). 	<ul style="list-style-type: none"> • Provider shows that the location subscribes or has subscribed within [CHANGE TO MODEL TO ALIGN TIMELINES: 365 days] e.g., with a copy of a customer bill. [ADDITION TO MODEL: When providing a rebuttal that relies on evidence of inactive subscriptions, the rebuttal must include an affidavit stating that new connections are not subject to a waitlist, reconnection costs, or other undue delays or costs.

Code	Challenge Type	Description	Specific Examples	Permissible Rebuttals
			<ul style="list-style-type: none"> Lack of suitable infrastructure (e.g., no fiber on pole). A letter or email [ADDITION TO MODEL: or written account of a conversation (justification: often a phone call is the only way to reach providers)] dated within the last 365 days that a provider failed to schedule a service installation or offer an installation date within 10 business days of a request. A letter or email [ADDITION TO MODEL: or written account of a conversation] dated within the last 365 days indicating that a provider requested more than the standard installation fee to connect this location or that a Provider quoted an amount in excess of the provider's standard installation charge in order to connect service at the location 	<p>VCBB has added this affidavit due to input from public comment that an inactive subscription might indicate too high of a barrier for a customer to subscribe including a waitlist, reconnection cost, or other undue delays.]</p> <p>• If the evidence was a screenshot and believed to be in error, a screenshot that shows service availability. [VCBB has removed a screenshot as a permissible rebuttal because VCBB does not view a screenshot of a webpage showing availability as rigorous enough evidence for a rebuttal.]</p> <ul style="list-style-type: none"> The provider submits evidence that service is now available as a standard installation, e.g., via a copy of an offer sent to the location [ADDITION TO MODEL: AND Redlines and test reports (OTDR/light) or Photos of infrastructure physically present.

Code	Challenge Type	Description	Specific Examples	Permissible Rebuttals
			<ul style="list-style-type: none"> [ADDITION TO MODEL: A letter, email, or written account of a conversation with a provider representative indicating that the provider requires a site survey before confirming they can serve the location (Justification: Accounts for providers that have reported availability, but can't confirm the ability to deliver service without an onsite visit. If providers don't know, they should not report availability for that location.)] 	<p>VCBB has added to this evidence requirement due to evidence of offers sent to locations that are not able to be fulfilled based on lack of infrastructure at that location.]</p>
S	Speed	The actual speed of the fastest available service tier falls below the unserved or underserved thresholds.	Speed test by subscriber, showing the insufficient speed and meeting the requirements for speed tests.	Provider has countervailing speed test evidence showing sufficient speed, e.g., from their own network management system.
F	Terrestrial Fixed Wireless Speed	The actual speed of fastest available service at each location is	Speed test data demonstrating that an address reliably and consistently gets service	

Code	Challenge Type	Description	Specific Examples	Permissible Rebuttals
	[THIS CHALLENGE TYPE IS A VCBB ADDITION TO THE MODEL]	consistently 100/20 Mbps or greater	speeds at or above the 100/20 Mbps threshold. Speed tests may be conducted by the provider or collected from subscribers, as long as they meet the requirements for speed tests described below; AND answers to VCBB questions in the 5G Home Fixed Wireless Rebuttal Process and Evidence Requirements of Volume 1 of the Initial Proposal	
L	Latency	The round-trip latency of the broadband service exceeds 100 ms.	Speed test by subscriber, showing excessive latency.	Provider has countervailing speed test evidence showing latency at or below 100 ms, e.g., from their own network management system [DELETION FROM MODEL: or the CAF]
D	Data Cap	The only service plans marketed to consumers impose a [DELETION FROM MODEL: unreasonable] capacity allowance (“data cap”) on the consumer. [The low-cost broadband option that VCBB is requiring subgrantees to offer will not include a data cap.]	<ul style="list-style-type: none"> • Screenshot of provider webpage. • Service description provided to the consumer. • [ADDITION TO MODEL: Evidence that a cap had been reached and service was cut off.] 	Provider has terms of service showing that it does not impose a data cap [DELETION FROM MODEL: or offers another plan at the location without an unreasonable cap.]

Code	Challenge Type	Description	Specific Examples	Permissible Rebuttals
T	Technology	The technology indicated for this location is incorrect.	Manufacturer and model number of residential gateway that demonstrates the service is delivered via a specific technology.	Provider has countervailing evidence from their network management system showing an appropriate residential gateway that matches the provided service [ADDITION TO MODEL: and evidence such as a customer order record, that this gateway is actually installed at the customer's location. VCBB heard in public comment that providers advertised technology that was not actually available and due to this will raise the threshold of rebuttal.]
B	Business Service Only	The location is residential, but the service offered is marketed or available only to businesses.	<p>Screenshot of provider webpage [ADDITION TO MODEL: or documented correspondence with provider that residential service is not available.</p> <p>VCBB heard in public comment that provider webpages can reflect different information than what is communicated by provider representatives.]</p>	<p>Provider documentation that the service listed in the BDC is available at the location and is marketed to consumers [ADDITION TO MODEL: and demonstrated process consumers can use to order the service.</p> <p>VCBB heard in public comment that residents had experienced website stating service available and number to call, when residents called they were referred back to website where they couldn't sign up. Documentation of process for</p>

Code	Challenge Type	Description	Specific Examples	Permissible Rebuttals
				consumers to actually sign up will prevent this issue.]
E	Enforceable Commitment	The challenger has knowledge that broadband will be deployed at this location by the date established in the deployment obligation.	Enforceable commitment by service provider (e.g., authorization letter or performance bond).	Documentation that the provider has defaulted on the commitment or is otherwise unable to meet the commitment (e.g., is no longer a going concern).
P	Planned Service	The challenger has knowledge that broadband will be deployed at this location by June 30, 2024, without an enforceable commitment or a provider is building out broadband offering performance beyond the requirements of an enforceable commitment.	<ul style="list-style-type: none"> Construction contracts or similar evidence of on-going deployment, along with evidence that all necessary permits have been applied for or obtained. Contracts or a similar binding agreement between the state of Vermont and the provider committing that planned service will meet the BEAD definition and requirements of reliable and qualifying broadband even if not required by its funding source (i.e., a separate federal grant program), including the expected date deployment will be completed, which must be on or before June 30, 2024. 	Documentation showing that the provider is no longer able to meet the commitment (e.g., is no longer a going concern) or that the planned deployment does not meet the required technology or performance requirements.

Code	Challenge Type	Description	Specific Examples	Permissible Rebuttals
N	Not part of enforceable commitment	This location is in an area that is subject to an enforceable commitment to less than 100% of locations and the location is not covered by that commitment. (See BEAD NOFO at 36, n. 52.)	Declaration by service provider subject to the enforceable commitment. [ADDITION TO MODEL: or documentation of enforceable commitment to less than 100% of the locations. VCBB wanted challengers who aren't providers to be able to participate in this challenge type and therefore added an example that a non-provider could use.]	[ADDITION TO MODEL: Evidence that the location is part of an enforceable commitment. There was no permissible rebuttal in the model challenge process and VCBB wanted to create an opportunity for rebuttal.]
C	Location is a CAI	The location should be classified as a CAI.	Evidence that the location falls within the definitions of CAIs set by the state of Vermont.	Evidence that the location does not fall within the definitions of CAIs set by the state of Vermont or is no longer in operation.
R	Location is not a CAI	The location is currently labeled as a CAI but is a residence, a non-CAI business, or is no longer in operation.	Evidence that the location does not fall within the definitions of CAIs set by the state of Vermont or is no longer in operation.	Evidence that the location falls within the definitions of CAIs set by the state of Vermont or is still operational.

Evidence and Review Approach

To ensure that each challenge is reviewed and adjudicated based on fairness for all participants and relevant stakeholders, the VCBB will review all applicable challenge and rebuttal information in detail without bias, before deciding to sustain or reject a challenge. The VCBB will document the standards of review to be applied in a Standard Operating Procedure and will require reviewers to document their justification for each determination. The VCBB plans to ensure reviewers have sufficient training to apply the standards of review uniformly to all challenges. [ADDITION TO MODEL: If necessary, the broadband office maintains the ability to work with challengers and rebutters to align submissions with the appropriate challenge type and the requisite data specifications.]

[VCBB ADDITION TO MODEL: Cellular Home Fixed Wireless Rebuttal Process and Evidence Requirements

Akin to an area challenge, this pre-challenge modification will better reflect the locations eligible for BEAD funding because it will ensure the delivery of ubiquitous and future-proof broadband service and reflect challenges associated with providing 100/20 Mbps service via terrestrial fixed wireless networks in Vermont. Entities will be permitted to challenge this “underserved” classification—rebut the underserved presumption—by demonstrating that 100/20 Mbps service is available to relevant addresses and that speeds and latency requirements can be met during all seasons. Nonprofit organizations, units of local governments (including municipalities and CUDs), and other broadband service providers will be given the opportunity to rebut the challenge.

To successfully rebut this modification, the cellular fixed wireless provider must demonstrate it: A) is providing 100/20 Mbps or better service at the relevant locations; and B) has sufficient network capacity to simultaneously serve (i.e., as concurrently active subscribers) locations in the relevant coverage areas.

As noted above, the VCBB is concerned about the speeds and latencies that terrestrial fixed wireless technologies are able to reliably provide during periods of dense foliage. Therefore, the VCBB believes it is paramount that speed tests are conducted when leaves are on the trees, or that speed tests taken when leaves are not on the trees show results that are sufficiently fast to justify that speeds of 100/20 Mbps or greater would be expected at a time of peak foliage coverage. Should entities wish to dispute the modification of these addresses as underserved, they will be required to submit tests conducted during a period of foliage in 2023 no more than 180 days prior to the start of the challenge process, or to justify that speed tests are 40% better in fall and winter months when leaves are not on trees, to demonstrate that speeds of 100/20 Mbps or greater would be available during times of peak foliage coverage.

Based on ITU and IEEE publications, non-line-of-sight (non-LOS) propagation at frequencies between 600 MHz to 3.65 GHz experience between 20% to 40% more attenuation through trees.

1. International Telecommunication Union Radiocommunications Sector. Recommendation ITU-R P.833-10, "Attenuation in vegetation," September 2021. Available at https://www.itu.int/dms_pubrec/itu-r/rec/p/R-REC-P.833-10-202109-!!!PDF-E.pdf.
2. An Accurate Empirical Path Loss Model for Heterogeneous Fixed Wireless Networks Below 5.8 GHz Frequencies, Published Sept 2020 in IEEE Access. Available at <https://ieeexplore.ieee.org/abstract/document/9193927>.

The VCBB has shared this expectation publicly and communicated it directly to T-Mobile, which is responsible for the locations that will be pre-challenged. Outside of the timing flexibility and additional justification needed if speed tests are conducted during a time of no foliage, these speed tests will be required to meet all of the other standards discussed in the Speed Test Requirement section below.

In addition to speed test data, the VCBB will also request the following information from T-Mobile related to capacity and network loading to consider in conjunction with speed test data:

1. *Serving base station parameters:*
 - a. Antenna/Tower location (latitude, longitude)
 - b. Number of base stations on the tower
 - c. Total backhaul capacity for the tower, e.g., one Gbps (dedicated or shared)
 - d. Backhaul type: Fiber or Microwave
 - e. Backhaul provider name and proof of claimed backhaul capacity via a speed test.
 - f. Antenna height (meters) and azimuth (degrees)
 - g. Number of subscribers served by each base station on the tower
 - h. Frequency band and frequency range of operation, e.g., Band 2, 41, 48
 - i. Duplex type: Time Division Duplex or Frequency Division Duplex
 - j. Channel bandwidth, e.g., 10 MHz, 20 MHz, 40 MHz
 - k. Transmit power: in watts and decibel milliwatts
 - l. Antenna gain: in decibels
 - m. Effective isotropic radiated power (EIRP) in watts and decibel milliwatts
2. *Traffic Management and Oversubscription:* All network technologies like fixed wireless, fiber, cable, and satellite are oversubscribed, but fixed wireless networks present unique challenges when it comes to traffic management and oversubscription. Unlike fiber and cable technologies with a relatively stable and predictable capacity, fixed wireless networks face variances due to environmental factors, interference, and the non-uniform distribution of users in a given coverage area. In our example, if a fixed wireless tower has a backhaul of

1 Gbps to serve a neighborhood, the provider offers a package to customers that promises speeds of 150 Mbps. Operating with a one-to-one contention ratio, the tower could only accommodate six customers ($1 \text{ Gbps}/150 \text{ Mbps} = 6.66$). However, given the nature of wireless connectivity and the fact that not all customers will utilize maximum capacity at once, an oversubscription or a contention ratio of 10-to-1 may be used. This means they could potentially service 66 customers ($10 \text{ customers} \times 6.66$) on that 1 Gbps link.

Oversubscription in fixed wireless networks is particularly challenging due to the inherent variability of wireless connections. Signal attenuation from obstacles such as trees and buildings can weaken the signal, meaning that some customers require more transmission power and repeated data packets. Additionally, multipath interference, where signals bounce off obstacles, results in the tower sending data multiple times, further consuming the bandwidth. In shared frequency bands, noise and interference from other devices or even other wireless systems can disrupt service. Also, the physical clustering of users in weak coverage zones can strain beamforming capabilities, leading to uneven service distribution. Managing traffic in fixed wireless scenarios is complex due to the dynamic nature of wireless conditions. Users in weak coverage areas often communicate more with the tower, sending frequent feedback such as signal quality reports, handshaking, and error corrections. This feedback overhead, while essential for maintaining connectivity, consumes valuable tower resources and bandwidth. Interference, especially in shared bands, not only affects individual users but can also disrupt the overall traffic flow, causing network congestion. Algorithms designed to ensure fair bandwidth distribution across users can get taxed when trying to balance between strong and weak connections. Overcompensating for weak-signal users can diminish performance for those with strong signals, making it challenging to guarantee consistent service levels. The unpredictable nature of wireless connections, compounded by environmental and interference factors, necessitates sophisticated traffic management strategies and a disclosure of oversubscription and traffic management methods used by the fixed wireless provider.

3. *Base station transmit power level and EIRP*: The VCBB wants to ensure that speed test data accurately reflects the lived experience of Vermonters at relevant addresses who are attempting to use the Internet. The base station transmit power can be modified for most base stations, typically through firmware updates. The base station transmit power and EIRP has a direct impact on the signal strength of the tower, and subsequently on the quality of service received. Therefore, the VCBB will request that fixed wireless ISPs submitting a challenge attestation that, at the time the speed tests were conducted, the transmit power and EIRP at the time of speed test and customer install is always consistent and remains unchanged. If the power levels are modified, the ISP should explain the reason with specific numbers.

4. *Data Caps*: The presence of any data caps, throttling, or deprioritization of home broadband service in any of the plans offered at the location.]

Speed Test Requirements [From BEAD Model Process]

The VCBB will accept speed tests as evidence for substantiating challenges and rebuttals. Each speed test consists of three measurements, taken on different days. [ADDITION TO MODEL: Except in the case of evidence required of terrestrial fixed wireless speed challenges,] speed tests cannot predate the beginning of the challenge period by more than 60 days. [ADDITION TO MODEL: In the case of evidence required for terrestrial fixed wireless speed challenges, speed tests may predate the beginning of the challenge period by more than 60 days but less than 180 days in order to demonstrate that speeds were achievable during a time of foliage coverage in Vermont. If speed tests were taken within 60 days of the beginning of the challenge period and outside of the period of high foliage coverage, challengers should justify that the speeds are 40% better in fall and winter months when leaves are not on trees, to demonstrate that speeds of 100/20 Mbps or greater would be available at a time of peak foliage coverage.]

Speed tests can take five forms:

1. A reading of the physical line speed provided by the residential gateway, (i.e., DSL modem, cable modem (for hybrid fiber-coaxial),
2. ONT (for FTTH) or fixed wireless subscriber module.
3. A reading of the speed test available from within the residential gateway web interface.
4. A reading of the speed test found on the service provider's web page.
5. A speed test performed on a laptop or desktop computer within immediate proximity of the residential gateway, using a commonly used third-party speed test application.

Each speed test measurement must include:

- The time and date the speed test was conducted.
- The provider-assigned internet protocol (IP) address, either version 4 or version 6, identifying the residential gateway conducting the test.

Each group of three speed tests must include:

- The name and street address of the customer conducting the speed test.
- A certification of the speed tier the customer subscribes to (e.g., a copy of the customer's last invoice).
- An agreement, using an online form provided by the VCBB, granting access to these information elements to the VCBB, any contractors supporting the challenge process, and the service provider.

The IP address and the subscriber's name and street address are considered personally identifiable information (PII) and thus are not disclosed to the public (e.g., as part of a challenge dashboard or open data portal).

Each location must conduct three speed tests on three different days; the days do not have to be adjacent. The median of the three tests (i.e., the second highest (or lowest) speed) is used to trigger a speed-based (S) challenge, for either upload or download. For example, if a location claims a broadband speed of 100 Mbps/25 Mbps and the three speed tests result in download speed measurements of 105, 102 and 98 Mbps, and three upload speed measurements of 18, 26 and 17 Mbps, the speed tests qualify the location for a challenge, since the measured upload speed marks the location as underserved.

Speed tests may be conducted by subscribers, but speed test challenges must be gathered and submitted by units of local government, nonprofit organizations, or a broadband service provider.

Subscribers submitting a speed test must indicate the speed tier they are subscribing to. If the household subscribes to a speed tier of between 25/3 Mbps and 100/20 Mbps and the speed test results in a speed below 25/3 Mbps, this broadband service will not be considered to determine the status of the location. If the household subscribes to a speed tier of 100/20 Mbps or higher and the speed test yields a speed below 100/20 Mbps, this service offering will not count towards the location being considered served or underserved. However, even if a particular service offering is not meeting the speed threshold, the eligibility status of the location may not change. For example, if a location is served by 100 Mbps licensed fixed wireless and 500 Mbps fiber, conducting a speed test on the fixed wireless network that shows an effective speed of 70 Mbps does not change the status of the location from served to underserved.

A service provider may rebut an area speed test challenge by providing speed tests, in the manner described above, for at least 10% of the customers in the challenged area. The customers must be randomly selected. Providers must apply the 80/80 rule, i.e., 80% of these locations must experience a speed that equals or exceeds 80% of the speed threshold. For example, 80% of these locations must have a download speed of at least 20 Mbps (that is, 80% of 25 Mbps) and an upload speed of at least 2.4 Mbps to meet the 25/3 Mbps threshold and must have a download speed of at least 80 Mbps and an upload speed of 16 Mbps to be meet the 100/20 Mbps speed tier. Only speed tests conducted by the provider between the hours of 7 pm and 11 pm local time will be considered as evidence for a challenge rebuttal.

[ADDITION TO MODEL: Providers are required to provide a description of the measurement methodology used by their speed test. Descriptions should define how speed and latency are calculated as well as describe the vantage points used to generate the measurement.]

[ADDITION TO MODEL: Service providers utilizing fixed wireless technologies may only challenge the default underserved classification of an address by providing speed tests

for each individual location being challenged. No random sampling will be accepted. This is because line-of-sight and foliage density are highly variable from house to house, and both can have a potentially significant effect on service speeds. To ensure that providers have sufficient network capacity, and that speeds are being reliably delivered even during peak-usage periods, only speed tests conducted by the provider between the hours of 7 pm and 11 pm local time will be considered as evidence for a challenge of terrestrial fixed wireless speeds. Challenge data must still include three tests taken on different days.]

[ADDITION TO MODEL: In addition to providing a rebuttal to the locations included in the random sample selected by the broadband office as part of an area speed test challenge, the provider will be required to provide a direct rebuttal with evidence specific to the original challenges that triggered the area challenge. A successful rebuttal of an area challenge will overturn locations triggered by the area challenge, but the six, or more, original challenges can only be rebutted based on evidence specific to the location.]

Area and MDU Challenge [From BEAD Model Process]

The VCBB will administer area and MDU challenges for challenge types A, S, L, D, and T. An area challenge reverses the burden of proof for availability, speed, latency, data caps and technology if a defined number of challenges for a particular category, across all challengers, have been submitted for a provider. Thus, the provider receiving an area or MDU challenge must demonstrate that they are indeed meeting the availability, speed, latency, data cap and technology requirement, respectively, for all (served) locations within the area or all units within an MDU. The provider can use any of the permissible rebuttals listed above.

[MODIFICATION FROM MODEL: The BEAD Model Challenge Process recommended that an area challenge is triggered if 6 or more broadband serviceable locations using a particular technology and a single provider within a census block group are challenged, but based on Vermont's low population density, this threshold is too high. The average number of locations per census block group in Vermont is 504 and the median is 488, and 8 census block groups have fewer than 24 broadband serviceable locations. An area challenge will be triggered if challenges are submitted for either 25 percent of locations or 6 locations, whichever is lower.]

[MODIFICATION FROM MODEL: The BEAD Model Challenge Process recommended that the threshold for an MDU challenge is "at least 3 units or 10% of the unit count listed in the Fabric within the same broadband serviceable location, whichever is larger." In Vermont, 97.5% of MDUs are 10 or less units, so this threshold is too high. The average number of MDU units is 3.04 and the median is 2, so a MDU challenge will be triggered at 3 units or 50% of the unit count, whichever is lower.]

Each type of challenge and each technology and provider is considered separately, i.e., an availability challenge (A) does not count towards reaching the area threshold for a speed (S) challenge. [ADDITION TO MODEL: However, challenge (A) and (T) will be counted together when filed against the same provider for the same reported technology. Because broadband service is reported by technology in the FCC data, every availability challenge to a specific instance of broadband service also indicates that the technology listed is not available, and every technology challenge indicates that the broadband service reported by the provider using that technology is not available.] If a provider offers multiple technologies, such as DSL and fiber, each is treated separately since they are likely to have different availability and performance.

Area challenges for availability need to be rebutted with evidence that service is available for all BSLs within the census block group, e.g., by network diagrams that show fiber or HFC (hybrid fiber-coaxial) infrastructure or customer subscribers.

[ADDITION TO MODEL: The VCBB will not allow area challenges for fixed wireless due to the unique challenges described in the 5G Home Fixed Wireless Modifications section.]

Transparency

To ensure that the challenge process is transparent and open to public and stakeholder scrutiny, the VCBB will post drafts of the BEAD Initial Proposal Volumes 1 and 2, for 30-day public comment periods prior to submission to the NTIA. Upon approval from NTIA, the VCBB will again publicly post an overview of the challenge process phases, challenge timelines, and instructions on how to submit and rebut a challenge. This documentation will be posted publicly for at least a week prior to opening the challenge submission window.

The VCBB also plans to actively inform all units of local government of its challenge process and set up regular touchpoints to address any comments, questions, or concerns from local governments, nonprofit organizations, and internet service providers. Relevant stakeholders can find updates on the VCBB website (<https://publicservice.vermont.gov/vt-community-broadband-board-vcbb>) for challenge process updates and newsletters. They can also engage with the VCBB by a designated email address (vcbb.info@vermont.gov). Beyond actively engaging relevant stakeholders, the VCBB will also post all submitted challenges and rebuttals before final challenge determinations are made, including:

- The provider, nonprofit, or unit of local government that submitted the challenge,
- The census block group containing the challenged broadband serviceable location,
- The provider being challenged,
- The type of challenge (see Table 5), and

- A summary of the challenge, including whether a provider submitted a rebuttal.

The VCBB will not publicly post any personally identifiable information (PII) or proprietary information, including subscriber names, street addresses, or customer IP addresses. To ensure all PII is protected, the VCBB will review the basis and summary of all challenges and rebuttals to ensure PII is removed prior to posting on the website. Additionally, guidance will be provided to all challengers as to which information they submit may be posted publicly.

The VCBB will treat information submitted by an existing broadband service provider designated as proprietary and confidential consistent with applicable federal law and in alignment with Vermont statute. If any of these responses do contain information or data that the submitter deems to be confidential commercial information that should be exempt from disclosure under state open records laws or is protected under applicable state privacy laws, that information should be identified as privileged or confidential. Otherwise, the responses will be made publicly available.

Post Challenge Process Updates

Upon conclusion of the challenge process and prior to implementing the subgrantee selection process, VCBB will conduct a final deduplication review process to remove any locations that are subject to enforceable commitments. This will remove, for example, locations that had their classifications changed to unserved or underserved due to the challenge process but are subject to an enforceable broadband commitment. It will also remove unserved and underserved locations that became subject to a new binding broadband deployment commitment during the course of the challenge process. VCBB will add any new unserved and underserved locations to reflect updates to the National Broadband Map that occur after the challenge process, but will not change the service level at any locations that have already gone through the challenge process.


[VCBB ADDITION TO THE MODEL: At the conclusion of this post challenge process, the VCBB will once again run the DSL module and the data cap module to treat any new locations that are marked as “served” only due to service delivered via DSL or via a service with a data cap as “underserved.” Examples of addresses in this scenario could include new BSLs in the new version of the FCC fabric that are served only with a service with a data cap, or addresses that previously had been marked served with DSL and another technology, where the availability of the other technology was successfully challenged during the challenge process.]


NTIA Review and VCBB Publication


Prior to the subgrantee selection process, VCBB will submit to NTIA for review and approval the proposed final classifications of each unserved location, underserved location, or Eligible CAI within the jurisdiction of the Eligible Entity. Once approved by NTIA, VCBB will publicly post the final classifications of each location or Eligible CAI in the state at least 60 days before allocating grant funds for network deployment.

Public Comment

The Public Comment Draft of the BEAD Initial Proposal Volume 1 was posted on the VCBB website from July 19, 2023 until August 18, 2023.

The VCBB sent a press release calling for public comment to local, state, and national media and posted it on our website. The VCBB set up a webpage with information on various ways to submit comments, including email, a physical address, and a phone number. A link to the plan was posted multiple times on various social media channels to announce the public comment period. Targeted outreach was done to stakeholders including ISPs, CUDs, nonprofits, and others. The VCBB also recorded and posted a webinar summary of the Initial Proposal Volume 1 along with the Five-Year Action Plan and posted it on the VCBB website to make it easier for people to access and comment. Below is a summary of the public comment received and how it was incorporated. 

Summary of Feedback	How it was Incorporated
Questions and clarifications on Broadband Funding Inventory	Edits and additional detail were added to the Broadband Funding Inventory
Permit the public to comment on CAI list	VCBB will seek public comment and will continue to modify the CAI list until the commencement of the challenge process.
Follow NTIA Model Template more closely	NTIA Model Template is designed around a plain text form submission. VCBB wanted a public facing version of the document in addition to plain text. The public facing document was modified to more closely match NTIA template and language
Add preschools as CAI	Preschools are included under the definition of schools, VCBB added clarifying text to reflect this
Raising the bar for some evidence requirements in the challenge process (i.e. a screenshot of a provider webpage or a copy of a mailer sent to an address is not substantial enough evidence to be a rebuttal)	Incorporated more rigorous evidence requirements for challenges and rebuttals based on public input
Extend windows for challenge and rebuttal process	VCBB has left the window as 14 days but added a note that they may extend it at their discretion 

<p>Feedback in both directions – supporting the fixed wireless modification and asking VCBB to remove it</p> 	<p>Added a detailed process for rebuttal for the fixed wireless modification.</p>
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