

# Meeting the Broadband Workforce Challenge

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VERMONT COMMUNITY BROADBAND BOARD

## 1. Executive Summary

The Vermont Legislature recognized the importance of broadband access for all Vermonters prior to the COVID crisis. It became clear that due to the low density of rural Vermont, there simply will not be a business case to enable the existing private telecommunications providers to connect these rural addresses. In 2015, the Vermont Legislature authorized the formation of Communications Union Districts (CUD), enabling two or more towns to join together to provide communication infrastructure to residents. Much like a water and sewer or solid waste district, CUDs allow towns to aggregate demand for a service and find efficiency by sharing the operation of the district. The enabling legislation allows communities to aggregate their demand resulting in a better business case.

When COVID hit in early 2020, schools were closed, and many businesses went virtual. This resulted in a crisis for rural Vermonters. Lacking connectivity, Vermonters were forced to sit in their cars outside schools and libraries to continue their education and work. These Vermonters were not able to participate in social activities, the economy, education, or the healthcare system. Unemployment and school delinquencies soared, and educational performance sagged.

Recognizing this crisis during the 2020 session, The Temporary Broadband Subsidy Program was established. This provides eligible Vermont households with a credit to assist with internet service subscriptions. Residents who suffered an economic hardship due to COVID-19 and require high-speed internet services for a qualifying need may receive a temporary credit of up to \$40 per month toward an internet service subscription. The legislature also set aside \$17 million to extend broadband infrastructure using this federal CARES money.

In the 2021 session, Vermont established the Vermont Community Broadband Board (VCBB) under Act 71 and allocated \$150 million toward getting under and unserved Vermonters connected. Act 71 strives to provide universal high-speed, affordable fiber-optic broadband to all unserved and underserved areas of the state. The legislation created the VCBB to oversee this work and disperse grants to regional Communications Union Districts (CUDs) to build out broadband infrastructure throughout the state over the next several years. Act 71 stipulates that any funds must be committed to networks that are capable of synchronous 100 Mbps, which only a fiber optic infrastructure can do.

Meanwhile, the Infrastructure Investment and Jobs Act (IIJA), enacted by the 117th United States Congress and signed into law by President Joe Biden on November 15, 2021, committed \$62.5 billion toward building broadband infrastructure through the Broadband Equity Access and Deployment (BEAD) program administered through the National Information and Information Administration (NTIA). This program provides Vermont with a minimum of \$100 million in additional funds. In the 2022 session, Vermont committed an additional \$95 million to the VCBB for construction of broadband networks. The total funding of \$345 million is projected to be adequate to provide up to 60% of the funds necessary to enable the CUDs to build business plans to get all Vermonters connected to reliable, high-speed broadband. Making the most of this historic funding will require an unprecedented number of telecommunications workers.

Even before COVID, Vermont was experiencing worker shortages. The fact that turnover in the fiber construction industry is high adds to the challenge. According to the 2021 Bureau of Labor Statistics, average turnover for construction was 56.9% and utilities was 54.9%. With the large influx of infrastructure funds, the demand for skilled labor will severely exacerbate the existing problem.

In response to this challenge, the Vermont Community Broadband Board had developed this Workforce Development Plan that outlines the framework and roadmap to address six major areas –

- [Increase industry awareness and involvement in the opportunity created by these programs](#)
- [Adequate capacity of education and training programs to develop the talent pipeline](#)
- [Promote, target and recruit participants in Vermont](#)
- [Support for the industry to create sustainable employment opportunities](#)
- [A roadmap of career possibilities for participants in the Workforce Development Programs](#)

## 2. Introduction

Vermont currently has nine Communication Union Districts. Currently there are 208 of Vermont's 252 towns that are members of CUDs. Greater than 92% of Vermont's under and unserved addresses are served by a CUD. Six towns are voting to join a tenth district that will serve Chittenden County. As of this writing, close to \$100 million has been allocated to CUDs and towns to develop designs and plans. Construction has started in some of the CUDs.

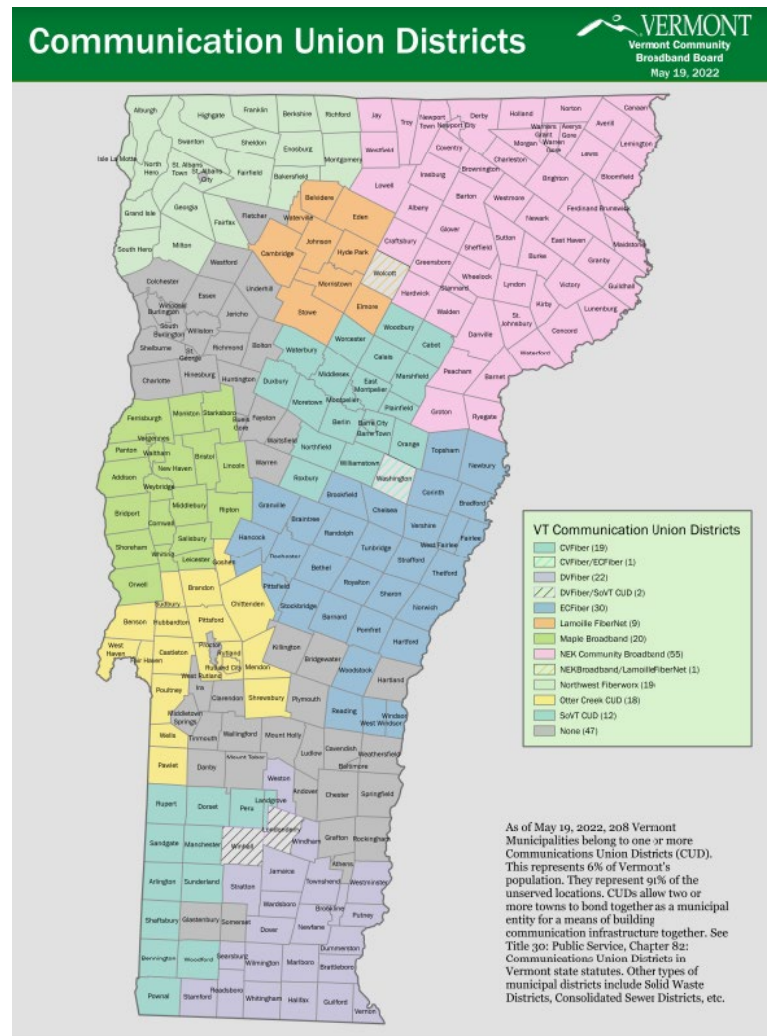
The VCBB, working with the Vermont Department of Labor, surveyed telecommunications companies in December 2021. The results of those surveys showed that companies were not aware of the amount of construction that Vermont was planning, nor were these companies prepared for the increased demand that would be placed on their workforce. The exception was Consolidated Communications, who already had 30 unfilled openings.

The VCBB then reached out to the Communications Workers of America (CWA). While the CWA did not offer any Vermont-specific programs, they did offer to help recruit qualified technicians who may be willing to re-enter the workforce. The CWA also offered help in developing and recruiting for training programs.

The VCBB and NEK Broadband Communications Union district began working with Vermont Technical College to develop a training program for existing telecommunication workers. This was well attended, with a total of 35 participants in three classes. However, this training was for existing workers and did not add to the workforce.

Recognizing the challenge, the 2022 Vermont Legislature provided grant funding to the Vermont Department of Labor and Vermont Technical College to develop and implement a Fiber Optic Broadband Apprenticeship program.<sup>1</sup> Leadership on the grant is provided by Vermont Technical College, who is working with the Fiber Broadband Association and the Vermont Community Broadband Board.

The VCBB has allocated additional funds for training and incentives. Building a workforce that will ensure closing the digital divide as quickly as possible, along with meeting the required milestones of the federal grants is a top priority. These programs offer an opportunity to create long-term economic stability and new career paths for struggling Vermonters. With the tight labor market, we need every able-bodied person to be in the workforce. In each aspect of the program, the VCBB Workforce Development Team will consider how to support a more inclusive and diverse workforce.



<sup>1</sup> Attachment A to this document - VTC Broadband Apprenticeship and Scope of Work



Workforce programs that build coordination of service and support delivery will proactively mitigate barriers that limit workforce participation, such as physical, financial and child-care.

### 3. The Challenge

The state of Vermont, through [Act 71](#), signed into law on June 8, 2021, set a goal and provided funding to get every Vermont address connected to reliable broadband. In this Act, the definition of broadband is 100 Mbps synchronous. This will require the construction of an approximately 8,000-mile fiber optic network over a five year period. This will create additional demand for over 200<sup>2</sup> fiber optic technicians, as well as interrelated jobs, such as tree-trimmers to prepare rights-of-way as well as electric utility lineworkers to perform the make-ready work that is necessary to enable the fiber optic cable to be placed on the utility poles.

The state of Vermont currently has challenges finding qualified employees in all sectors of the economy. Today, [Vermont's unemployment rate is 2.1%](#), which puts Vermont in the lowest five states for unemployment (top five for employment). The COVID pandemic exacerbated a worker shortage that already existed in the telecommunications industry. Even without the new construction to meet the requirements of Act 71, there are many openings for fiber optic workers.

The telecommunications industry also suffers from high turnover. The average for 2021 was 54.6%<sup>3</sup>. This means that a company will have to train and hire two people for every opening. Broadband infrastructure talent often moves to more lucrative positions in the electric utility industry and related subcontracting because those industries offer a higher rate of pay. Often employees will move to other companies within the industry to obtain higher wage rates. In some cases, subcontractors require the companies they are contracting with to sign non-compete clauses. The Communication Union Districts and the VCBB will not allow non-compete clauses. The VCBB would like to see a greater focus on the quality of their work environment and not rely on anti-competitive restrictions.



<sup>2</sup> An overhead crew of four can construct 2,000 feet per day roadside; 1,000 feet per day cross-country. An underground crew of three can pull 2,400 feet of fiber per day. An excavator with one operator can dig 1,250 feet of trench per day.

<sup>3</sup> US Bureau of Labor statistics - <https://www.bls.gov/data/>

#### 4. Background

Upon formation in August 2021, the VCBB began working with NEK Broadband, the largest CUD to evaluate the workforce requirements to meet Vermont's goal to get every address served by high speed reliable broadband. The Vermont Legislature required that any construction that is supported by grant programs be a minimum of 100 Mbps synchronous bandwidth which meant that this could only be accomplished through a fiber optic network. In order to meet the goals, it would require 1,800 miles of additional fiber construction per year for a period of five years. With pre-existing 30 openings for fiber technicians in the largest telecom provider, it was clear that the human resources needed to carry out the goals were not available.

A Workforce Survey was conducted with the Vermont Department of Labor in December 2021.<sup>4</sup> The survey results indicated that the industry believed they had adequate capacity. The telecommunications industry was largely unaware of the tsunami of broadband funding that was coming. The survey also showed that there is not an industry focus on retention. The industry has been very competitive and keeping labor costs low is a key strategy. In some cases pay structures focused solely on the number of feet that can be constructed in a day. This narrow focus on production did not consider other factors that should be included in workforce planning and performance measures, such as quality of work as well as the fact that there is a lot of variability in how much fiber can be pulled in a day. For example, mountainous terrain is much slower than open farmland. This also did not consider the importance of safety practices and employee development. The survey covered companies throughout New England, as well as New York State. This region is where Vermont will be competing for the resources needed to construct the fiber-to-the-premise network.

The VCBB and NEK Broadband immediately started working with the Vermont Technical College<sup>5</sup>, which set up a fiber technician program to train existing telecommunication workers on how to splice fiber and started delivering those courses. The VCBB Workforce Development program then expanded to include other Communication Union Districts to engage with stakeholders across the region to communicate plans and needs, as well as to determine how to meet the construction timelines. Those stakeholders include:

- telecommunication providers
- construction companies,
- industry associations,
- trade groups (including the Fiber Broadband Association),
- rural cooperatives,
- municipal associations,
- vocational non-profits,
- the Communication Workers of America,
- the International Brotherhood of Electrical Workers and



<sup>4</sup> See attachment B - Act 71 Sec 16 Workforce Report

<sup>5</sup> Vermont Tech is merging with Castleton University and Northern Vermont University in July 2023 to become Vermont State University.

- Building the Network with Vermont’s Career Technical Education<sup>6</sup> centers. Process oversight will be provided by representatives from the Communication Union Districts, the Vermont Department of Labor and Vermont Technical College.

The goals of this effort include:

- Facilitate the establishment and scaling of education and training programs,
- focus on local residents,
- provide Vermonters with opportunities for better-paying jobs,
- provide job and career opportunities for the marginally employed,
- create career paths, and
- improve employee retention.

## 5. Program Elements

### a. Building the Network

Creating the appropriate training and apprenticeship programs to ensure that the workforce is in place to meet Vermont’s fiber network construction goals will require cooperation between the program funders, designers, deliverers and employers. Even prior to the COVID crisis, employers recognized that they had a serious problem with recruitment and retention. Addressing the labor shortages will require active involvement and flexibility from everyone involved. In today’s tight labor market there are a number of key challenges that will require solutions. Those include:

- Lack of standards regarding industry credentialing* - This lack of standardization has led to workers with very specific skill sets. This leads to problems in designing broader and more effective programs as well as limiting the flexibility to move workers around to meet the challenges of scheduling. For example, there are four different accreditations in the industry for fiber splicers:
  - ETA Fiber Optics Technician-Outside Plant (FOT-OSP) Certification
  - BICSI Continuing Education Credits
  - Light Brigade Certificate of Completion
  - Fiber Optic Association accreditation

The VCBB Workforce Development Team will work with the stakeholders to develop a training and certification program that meets all the requirements of the different certifications. This provides both the workers and the employers with greater flexibility.

- Lack of employer-based apprenticeship programs* - The telecommunications industry has not embraced the need for and importance of investing in apprenticeship programs and cross-training. Production quotas and piece rate pay discourage companies and employees from putting effort into developing new employees. The material supply chain problems that have resulted from COVID have exacerbated the problem due to the fact that workers have a narrow scope of skills. For example, outside plant technicians do not cross-train to do customer premise installations. Therefore, the imbalance of work skills combined with the material shortages leads to delays in construction timelines. The construction industry has recognized this problem and has introduced legislation to Congress ([S.3768](#)) to create additional programs in that industry. The VCBB Workforce Development Team is working with the Communication Workers of America, the Fiber Broadband Association and industry stakeholders to create more apprenticeship programs and opportunities.

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<sup>6</sup> Career technical education is provided statewide through 15 service regions. Each service region is served by a technical center(s) and/or comprehensive high school(s). School districts and independent high schools are assigned to a technical education service region.

iii. *Addressing the entire human resource supply chain* - there are many key jobs along the construction timeline, any shortage can impact the delivery schedule. The Workforce Development Team will address those needs, which include:

- Staking engineers and technicians - including field verification of design, filing make-ready applications and participating in make-ready ride-outs.
- Make-ready line workers - these are the First-Class Line workers that will prepare the poles and related infrastructure for fiber construction. These line workers require training and a four-year apprenticeship program to be able to work in the high-voltage electrical space.
- Outside Fiber Technicians - These are the people who will be stringing and splicing the fiber. These employees need to be able to work from heights as well as be trained in bucket rescue.
- Inside Fiber Technicians. - These are the people who will be providing the drops and connecting the premise, including commissioning the customer.
- Heavy equipment operators - The people who will run the equipment to build and bury the conduit
- Customer support technicians - Provide customers with support and problem-solving
- Customer care representatives - Provide billing and account support
- Trainers, including train-the-trainer programs for retired experts in the field

iv. *Work with employers to improve recruitment retention* - The VCBB Workforce Development team will work with employers to identify best practices for reducing turnover in the workforce as well as how to attract new employees. The competition for workers is intense and retention cannot rely on pay alone. The data shows that the telecommunications industry is hiring two employees for every one that becomes productive. The first step in this process is to help identify what the cost of turnover is for the regional companies. With these costs known, the VCBB Workforce Development team can then work with the companies to develop budgets and plans for how to effectively recruit new employees as well as measure and improve retention rates. Strategies include:

- Supervisory and management training
- Individual employee career paths to match personal goals
- Pay structures that enhance collaboration
- Apprenticeship programs
- Measuring and improving workplace culture



b. *Connect with Employers* - The VCBB Workforce Development Team will reach out to a list of companies that provide construction and maintenance services to Vermont telecommunication companies. These are companies that are in Greater New England and New York State. The goal of this outreach is to obtain information about the following:

- Existing workforce openings
- Turnover rates
- Future workforce needs



- Training and apprenticeship programs
- Interest level - participation agreements
- Career paths
- Individual transition plans - from recruitment to training to employment
- How to make it easier for the smaller employers - how get trainees totally ready for the work so as not totake away from existing productivity within a company
- Strategies to reduce risk and liability
- Strategies to create more human resources. Those include:
  - a. prison programs,
  - b. attracting workers from out of state,
  - c. immigration - support for work visas - proof of need (such as demonstrating lack of availability - data),
  - d. centralized resource for sourcing workers, and
  - e. housing support

The outreach will include the following organizations:

- Eustis Cable
- Crossbow Communications
- Consolidated Communications
- Waitsfield Champlain Valley Telecom
- GWI/ValleyNet
- Engineers Construction Incorporated
- construction companies in surrounding states such as Sertek, Level Eight, Syracuse Utilities, and others)

c. *Pay-it-Forward* - The Vermont Community Broadband Board is exploring the feasibility of a “Pay-It-Forward” fund to meet Vermont’s broadband workforce needs.

The Pay-It Forward program would seek to grow the broadband workforce with Career Impact Bonds, a student-friendly financing model that relies on investors to provide catalytic capital that covers upfront training costs and critical support services for learners that is then repaid after job placement through four phases by:

- i. Focusing on recruitment of economically underserved individuals and communities to increase awareness of available, high-quality broadband jobs.
- ii. Helping pay for trainees to attend job training programs through the Vermont Technical College.
- iii. Placing graduated trainees into jobs with employer partners.
- iv. Collecting repayment from placed graduates through an income-share agreement.

Through this structure of recycling capital, [Social Finance](#)<sup>7</sup> estimates that the training program would be able to increase the number of professionals in Vermont’s broadband workforce by over 200% compared to a traditional grant program.



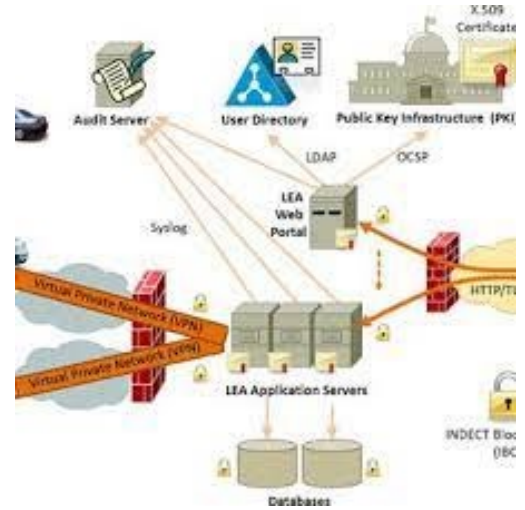

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<sup>7</sup> Social Finance is a national impact finance and advisory nonprofit that works with the public, private, and social sectors to create partnerships and investments that measurably improve lives.



- v. *Promote, target and recruit participants in Vermont Career path programs* - The VCBB Workforce Development Team is working with other partners to provide career growth opportunities beyond the needs of getting all Vermonters connected to fiber-optic broadband. As part of this plan, the VCBB Workforce Development Team will work with employers and potential candidates to understand each employee's career options and goals. This will be an important element of recruitment and retention for the industry. The VCBB Workforce Development Team will work with industry partners, such as Efficiency Vermont, solar developers, electric utilities and others to identify jobs across the sector that motivated employees can prepare for. This preparation will include industry certifications, training and college courses that support the individual employee's career plan. Starting as a fiber technician, potential career paths could include -

- Smart grid technology
- Information technology
- Cyber-Security
- Electrical Line Work
- Automation
- Fiber network design
- Supervisory and Management
- Customer support
- GIS services
- Project Management
- Electrical engineering



## 6. Next Steps

The VCBB Workforce Development Team will immediately reach out to key industry partners to create an industry action team to implement this plan. As part of this outreach, the VCBB will recruit industry partners and develop an Advisory Board to provide oversight and guidance.

### Initial Timeline

- October through November 2022 - Collect information from industry partners and employers
- Q4, 2022
  - Finalize training core curriculum,
  - Create an Industry Advisory Board
  - Create a Training Advisory Board
  - Work with Vermont Department of Labor to develop proposed legislation for a state-wide, cross-sector Pay-it-Forward program
  - Engage with Vermont's Career Technical Education program
  - Finalize the targeted professions in the human resource supply chain,
  - Develop success measures
  - Recruit trainers
  - Source, fund and deploy training resources
- Q1, 2023
  - Propose legislation for a state-wide, cross-sector Pay-it-Forward program,
  - Further develop curriculum for targeted professions,
  - identify/develop management training programs with industry partners,
  - Develop agreements on Pay-It-Forward programs
  - develop and formalize career path partnerships with industry partners,
  - Develop Career Technical Education programs
  - Recruit and train.

- Q2, 2023
  - Pass legislation for a state-wide, cross-sector Pay-it-Forward program\*,
  - Commence program delivery
  - Finalize agreements with industry partners
  - Implement reporting based on success measures
  - Establish Career Technical Education programs
  - Implement Pay-it-forward programs
  - Recruit and train.
- Q3, 2023
  - Commence Career Technical Education programs

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