

COVID-19 Emergency Telecommunication Response Plan

Preview of Findings and
Recommendations

Our Tasks and Framework for this Effort

- Undertook quantitative and qualitative research to understand use of (and lack of) broadband during pandemic
- Developed short-term, immediate strategies for pandemic response
 - Targeted to address immediate COVID-19 needs
 - Should not adversely impact long term goal of 100/100
 - Should assist in driving towards long-term state goals whenever possible
- Recommendations assume financial and staff/contract resources act quickly
- Due to the urgency and short timeline, some recommendations will be further detailed in the final submission
- **This is NOT the 10 year telecom plan or a blueprint to bring the state to 100/100 2024 goal.**

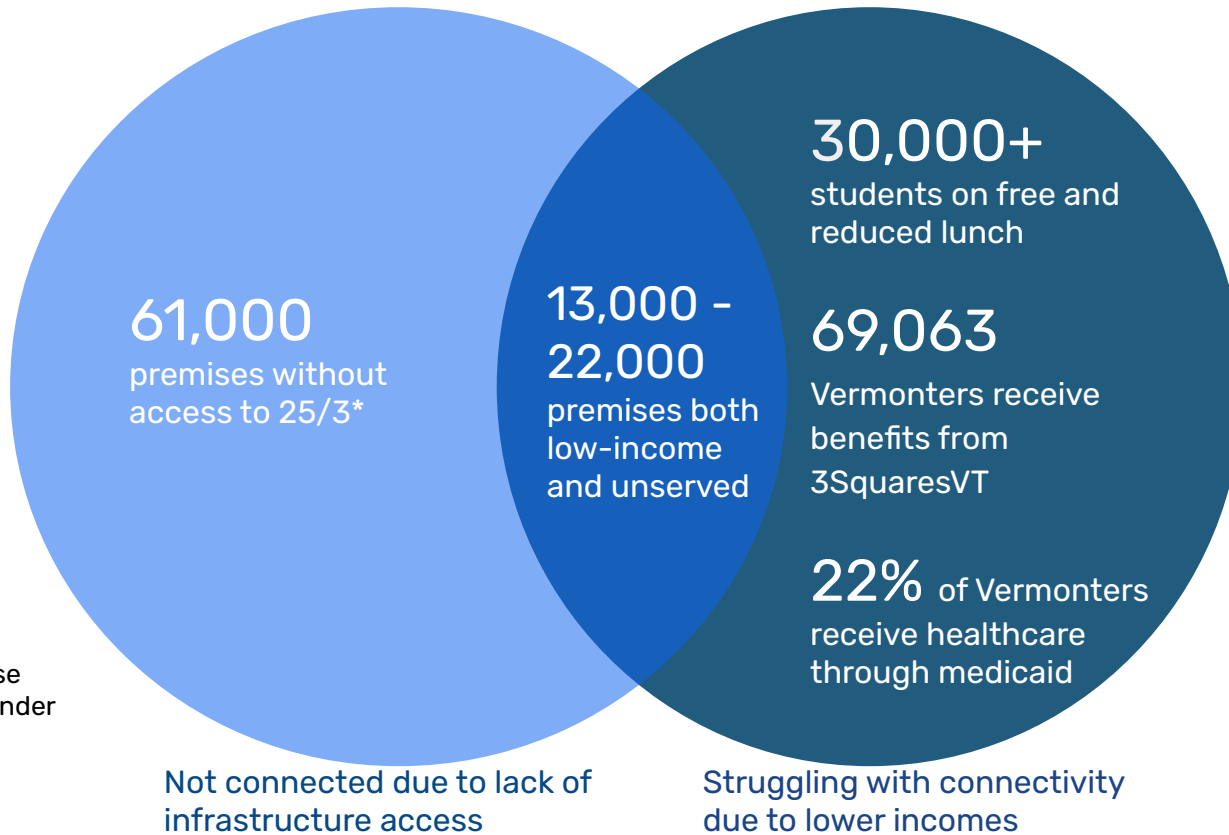
Surveys and background interviews

- Interviews with 63 stakeholders across public and private sectors
- Online residential survey with 4,000+ responses, 3,046 were complete and used in the analysis
- Online business survey with 422 responses
- Phone-based residential survey targeting underserved premises: 200 responses
- Online surveys of librarians (81 responses), superintendents (32 responses), town managers (49 responses)

Summary of Findings

- Core challenges across stakeholders are with residential connectivity, not institutional connectivity
- Three categories: unserved due to infrastructure challenge, unserved due to income & unserved due to both
- Intense need for connectivity for remote work, remote education & telehealth
- Using temporary cellular data infrastructure, we can get to over 90% connectivity for short term needs
- Need a mobilization of people to quickly implement
- Many stakeholders, including CUDs, have an important role to play

Vermonters impacted the most by COVID-19 and telecommunication challenges



*excludes those newly served under Emergency Connectivity Initiative

Survey and interview data indicate key challenges

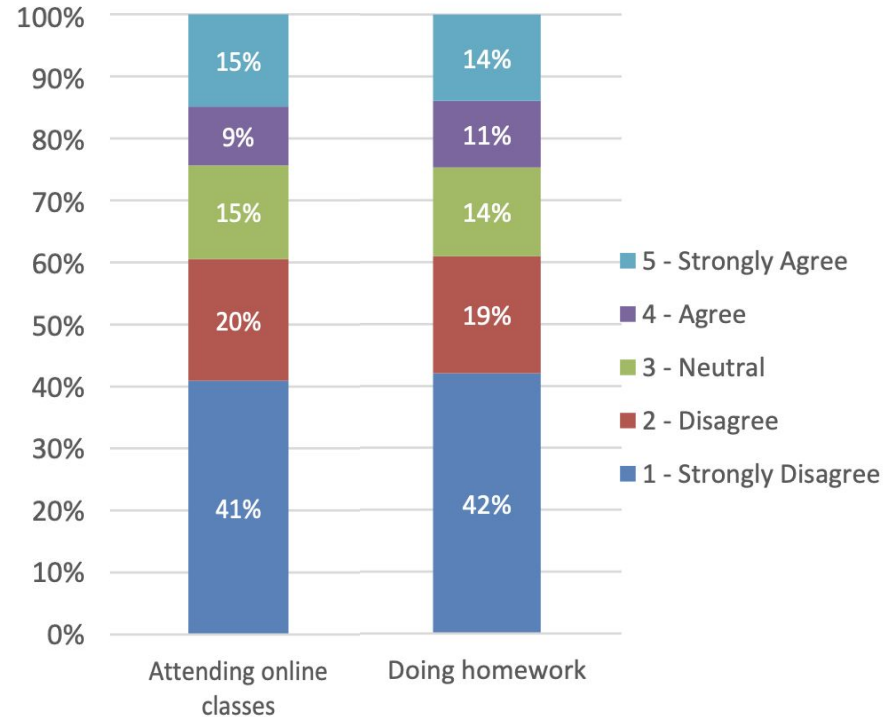
Learning from home

Teachers spend significant time working out at-home technical issues

Some districts have seen absenteeism increase

Students without wifi are turning to school parking lots, parking lots outside of other wifi-enabled buildings, and other students' homes to get access

Assessment of adequacy of home broadband connection for the following purposes:



Survey and interview data indicate key challenges

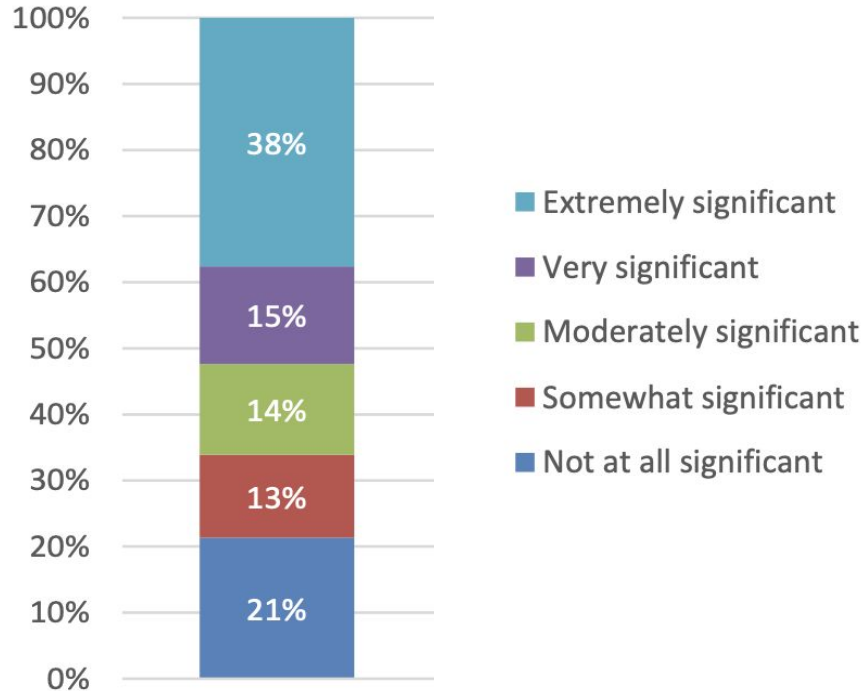
Working from home

Businesses across the state transitioning work and operations online

State-run networks seeing lower traffic, as state workers use their residential providers

Workers at home across the state struggle with connectivity

Significance of inadequate broadband to Vermont businesses at the business location, employees' homes, or customer homes:



Survey and interview data indicate key challenges

Healthcare

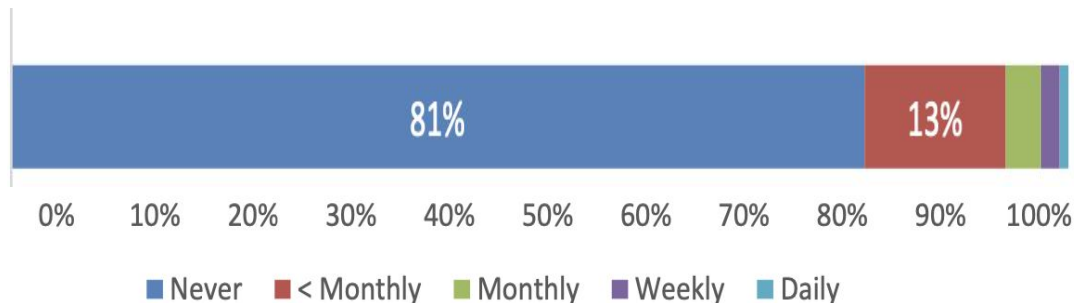
Telehealth participation has skyrocketed - for those with service and access

4 in 10 people reported having technical issues during a telehealth appointment

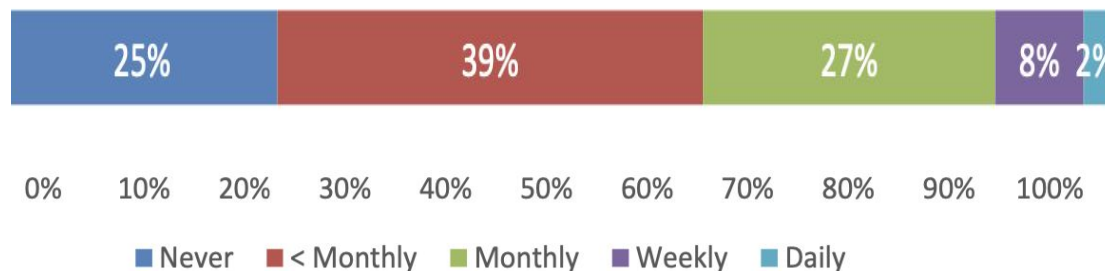
Health professionals unable to work from home when quarantined due to poor broadband

Health professionals spend significant time helping patients with technical challenges during telehealth appointments

Telehealth usage pre pandemic



Telehealth usage during pandemic



Survey and interview data indicate key challenges

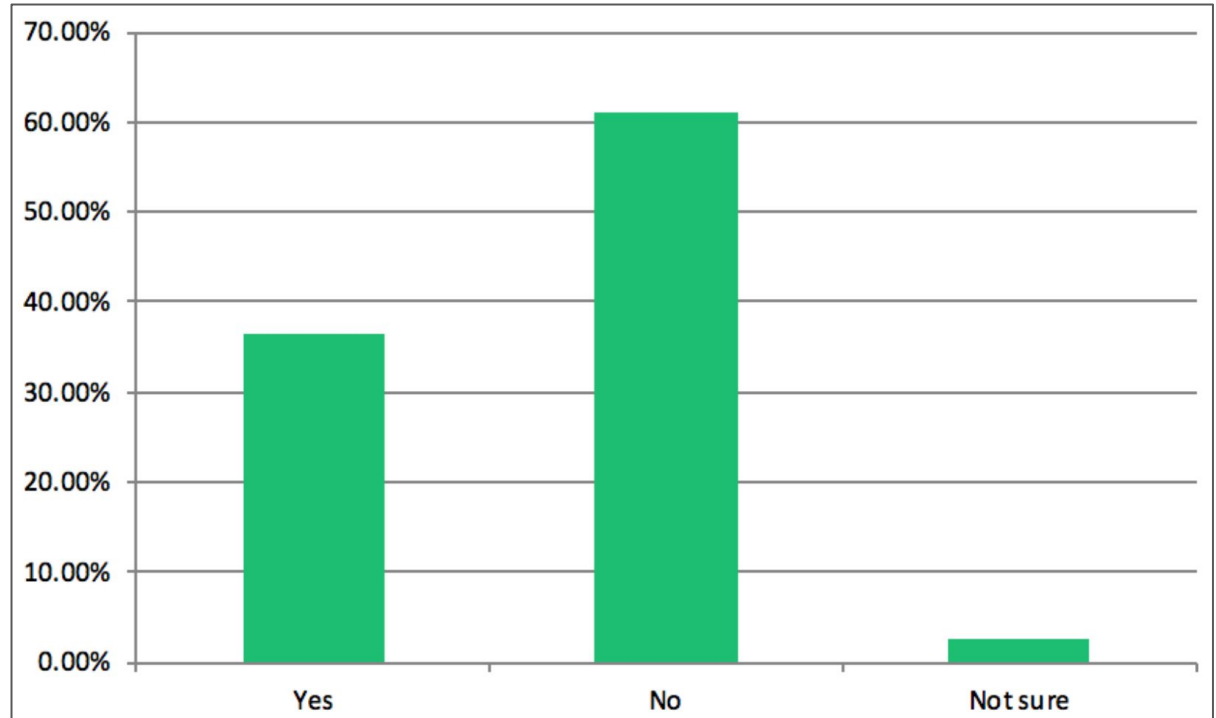
Civic engagement

70% of town managers report having difficulty understanding constituents with poor service during public meetings

50% report meeting interruptions from technical issues

Town Managers overwhelming ranked inadequate internet access as the largest barrier to constituents staying connected.

Has your town started planning for an online town meeting, should the pandemic preclude an in-person event?



State agencies and government systems have been resilient – but face challenges related to access

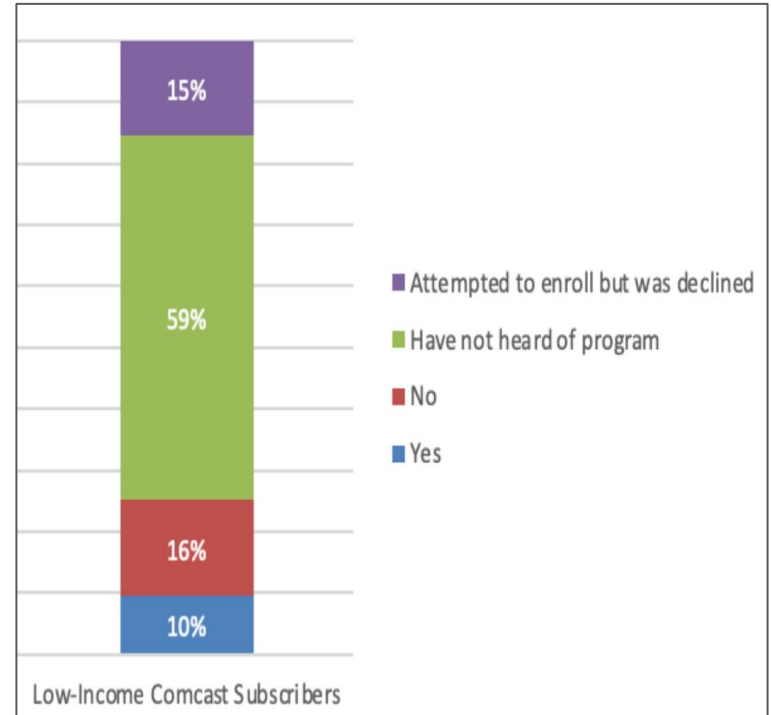
Adapted well	Needs some support	Challenges
<p>E911 created redundant locations and protected PSAPs</p> <p>Public Service Dept. deployed beneficial emergency connectivity programs with limited staff</p> <p>Unemployment Insurance computer system was upgraded mid-pandemic, in June.</p> <p>ANR allows remote game harvest registration</p>	<p>RDCs are providing technical assistance to 300+ businesses to get operations online; demand has far outpaced program funding</p> <p>Many remote AoT and AnR locations do not have cell or internet access – which is a concern for public safety reasons as well.</p> <p>Department of Libraries feels some FiberConnect network equipment is close to failing and hard to replace.</p>	<p>Majority of towns have not started to plan for virtual town meeting, and do not feel confident they can reach constituents with connectivity issues</p> <p>High friction in some programs intended to help alleviate telecom challenges, which is resulting in low adoption</p>

Community Institutions adapted to support Vermonters

Libraries	PEG TV	Superintendents	CUDS
<p>Many have limited indoor public computer usage for COVID safety, despite demand for devices</p> <p>Some have 40-65 daily users of outside wifi</p> <p>Only 2 libraries are lending mobile hot spots to enable connectivity at home</p>	<p>Communication tool for municipalities and municipal functions</p> <p>Assisting with schools and delivery of content</p> <p>Broadcasting museum exhibitions, music, arts, and culture</p>	<p>Vast majority cited broadband availability in the community as a significant factor in their 2020/2021 opening plans</p> <p>Have re-oriented curriculum and curriculum deliver to fit pandemic circumstances</p>	<p>Re-orienting to explore short-term connectivity options as well as long-term fiber solution</p> <p>Using CARES Act dollars when possible to achieve short-term success</p> <p>Strong desire to support low-income and underserved community members</p>

ISP challenges and responses vary by technology and provider

- Residential bandwidth usage up as much as 30%
- DSL is constrained by capacity, limiting new customer in some cases
- Increased demand for installations and upgrades has resulted in labor shortages and delays
- Comcast and Charter Spectrum have low-cost programs although there is low adoption of these programs (see right)
- Independent networks, like Burlington Telecom, Waitsfield Champlain Valley Telecom, and ECFiber providing free service to low-income subscribers in certain circumstances



Despite adaptation & resilience, significant challenges remain for Vermonters

- Almost 61,000 premises still unserved by 25/3 after Emergency Connectivity Initiative
- Low-income Vermonters are disproportionately unable to access broadband connection
- Low adoption of programs intended for low-income support
 - Comcast Internet Essentials, Spectrum Internet Assist
 - Temporary Broadband Subsidy program underutilized
- Continued technology and digital literacy barriers
 - Teachers, doctors, town managers all spending disproportionate amount of time addressing technical issues with remote programming
 - No institutions today are staffed and funded enough to be go-to resources for connectivity issues in community

Recommended Emergency Mitigation Strategies

- 1. Provide a new broadband service subsidy to low-income Vermonters during the pandemic who have access to good broadband but can't afford it**
- 2. Connect unserved addresses quickly using short-term infrastructure solutions, primarily with 4G mobile hot spots and signal boosters as needed**
- 3. Launch a 6 month Broadband Corps to implement program and provide digital literacy support**

Recommendation 1: Provide broadband subsidy to reach low-income families

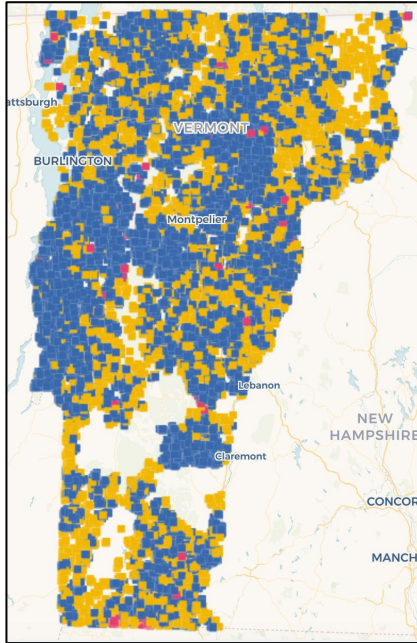
- **State-level contracting to realize efficiencies and competitive pricing**
 - Greater savings and effectiveness rather than subsidizing via individual customers
- Provide codes good for free service from any participating provider to remove cost as barrier
 - This model has been used effectively in other states like Alabama and Delaware
 - Requires implementation management and database connecting codes, providers, addresses, and subsidies, but removes friction on part of user;
 - Implementation can be contracted out
- Make process simple as possible to increase participation and use
- **Eligibility recommended based on income level, regardless of current internet use**
- Build on existing eligibility mechanisms (eg, Medicaid, school lunch program)
- Fund fixed networks where possible, & mobile hotspots elsewhere in conjunction with recommendation 2

Recommendation 2: Invest in targeted equipment and infrastructure to reach the unserved

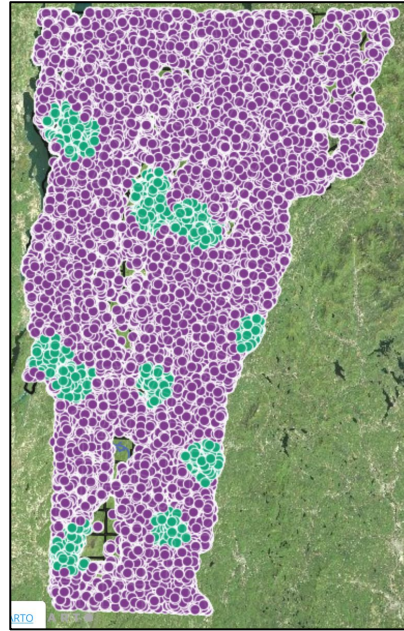
Provide new service at unserved premises by triaging speed, cost, and quality of infrastructure, in the following order:

1. **Mobile Cellular Data:** Provide monthly mobile hotspots for low income families with good cell coverage
2. **Signal Boosters:** Provide signal boosting equipment for premises with poor but existing cell service
3. **Line Extensions:** Fund extensions in a targeted way to reach “pockets” of unserved premises surrounded by existing wired service

Geospatial analysis was used to estimate premises reached by various technologies



61,000 un- and underserved premises (2019)

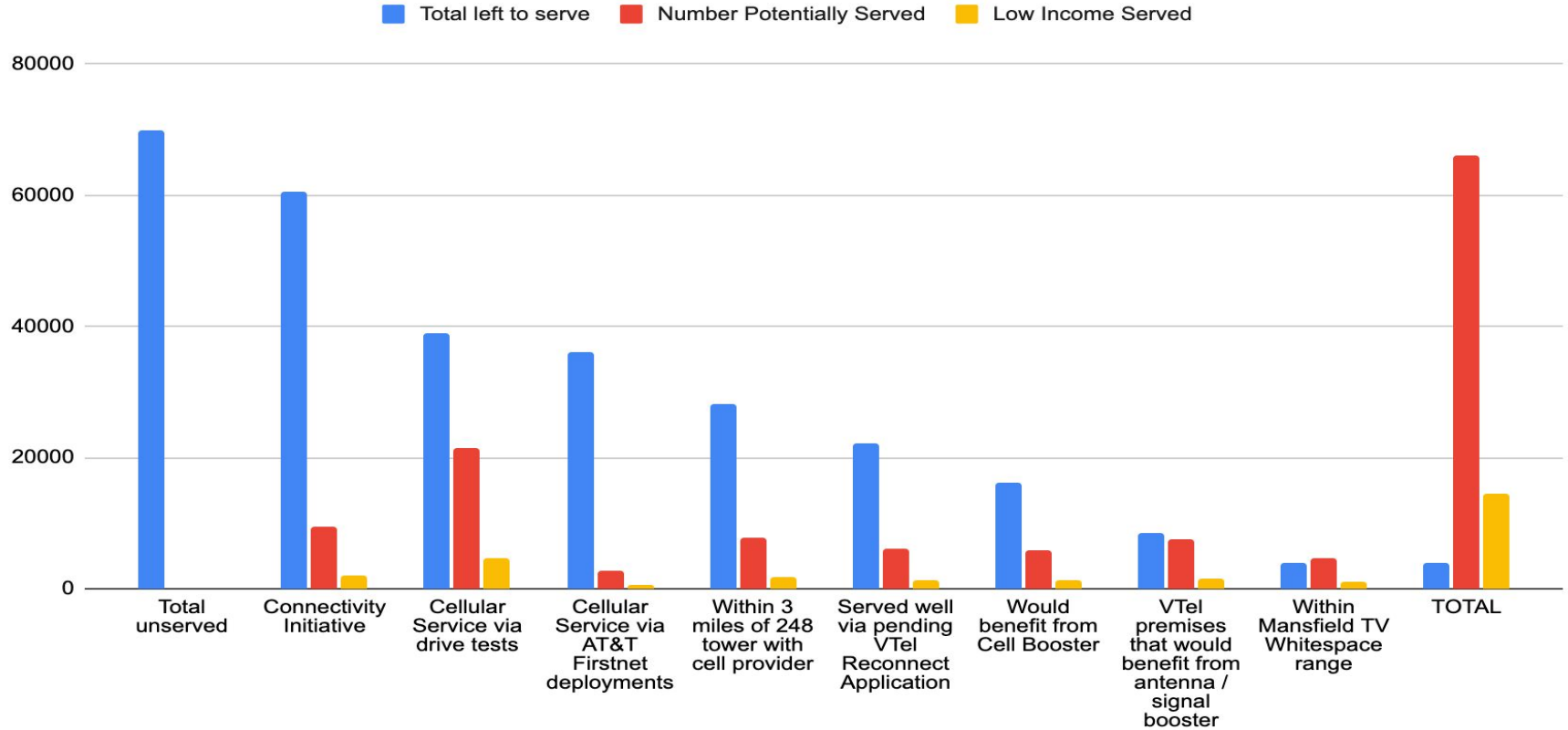


Premises served by 2020 AT&T Firstnet expansions

Selection of datasets used:

- 2019 Vermont able and fiber systems
- PSD Broadband Status 2019
- ATT Firstlight expansion locations
- 248a tower permit locations
- Natural Resource Board applications
- Backhaul and middle mile networks (various providers)
- Utility pole data (various providers)
- Mobile Wireless Drive Test (2019)
- Mobile Wireless Drive Test crowd-sources (2020)
- USDA pending applications
- State-owned fiber assets
- ILEC territories
- Connectivity Initiative Awards

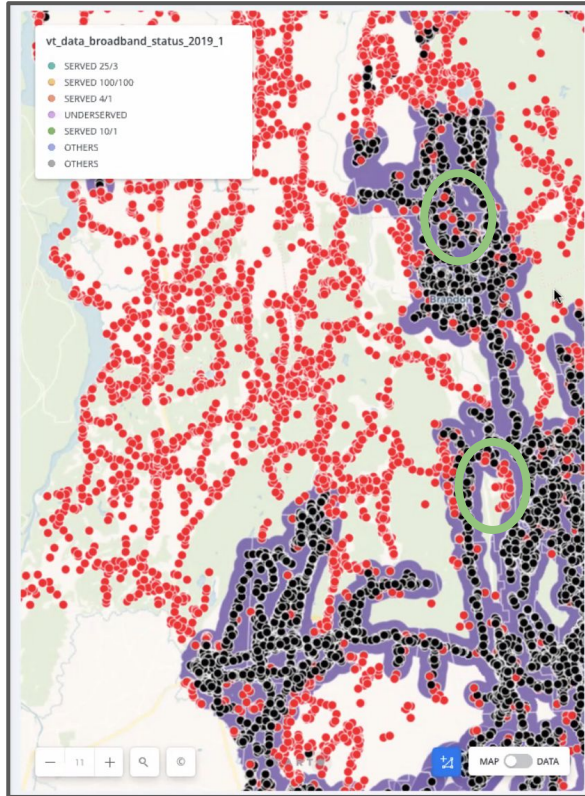
Path to reaching unserved premises



Progression used in reductive mapping analysis



Simultaneously, state should continue funding line extensions, but focus on unserved “pockets”



Our recommendation is to **prioritize pockets within existing networks** rather than open, contiguous areas. These pockets are most logically served by the provider surrounding them.

Red = unserved premise

Black = served by cable or fiber

Purple = .5 mile buffer around existing infrastructure

Green = example “pocket” cluster of unserved premises

Recommendation 3: Develop a Broadband Corps to provide technical help

A significant amount of work is necessary to address Vermont's immediate needs, but the nature of the work does not require significant technical skills. Vermont should consider starting a broadband corps (like a gap year program) for a short-term service "spike".

Responsibilities

- Field work and testing to ensure proposed solutions work on location
- Installations and on-site troubleshooting
- Technology help desk for any Vermonter to call with connectivity issues

Estimated Need

- 42 corps members
 - 2 per RPC region, + 20 statewide
 - RPCs need not be managing entity
 - Members should coordinate closely with CUDs
- Localized teams do site preparation and testing, local digital literacy trainings
- Statewide team focuses on installations from central equipment storage, and central technology help desk
- Management needs: Director, regional managers, data manager, operations manager

Summary of all Cost Estimates

Recommendation	Unserved Universe	Cost Estimates
Bulk Purchase of Ongoing Service	Hooking up low-income subscribers with K-12 students where there is existing good service	\$7M for 1 year service via existing infrastructure
	Hot spots for low-income subscribers without existing service	\$2.4M for 1 year service via mobile hot-spots
Line Extension	39 towns with more than 85 percent existing coverage, and with premises that according to the analysis could be served by line extensions	\$5,598,974
Booster Antennas	3,700 additional unserved locations that have weak cell service and could benefit from repeaters /1,575 low-income households	\$535,000
Broadband Corps	Field work and tech support	\$1.2-1.5M



Thank you.