COVID-19 Emergency Telecommunication Response Plan

Preview of Findings and Recommendations

RISI Rural Innovation Strategies

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

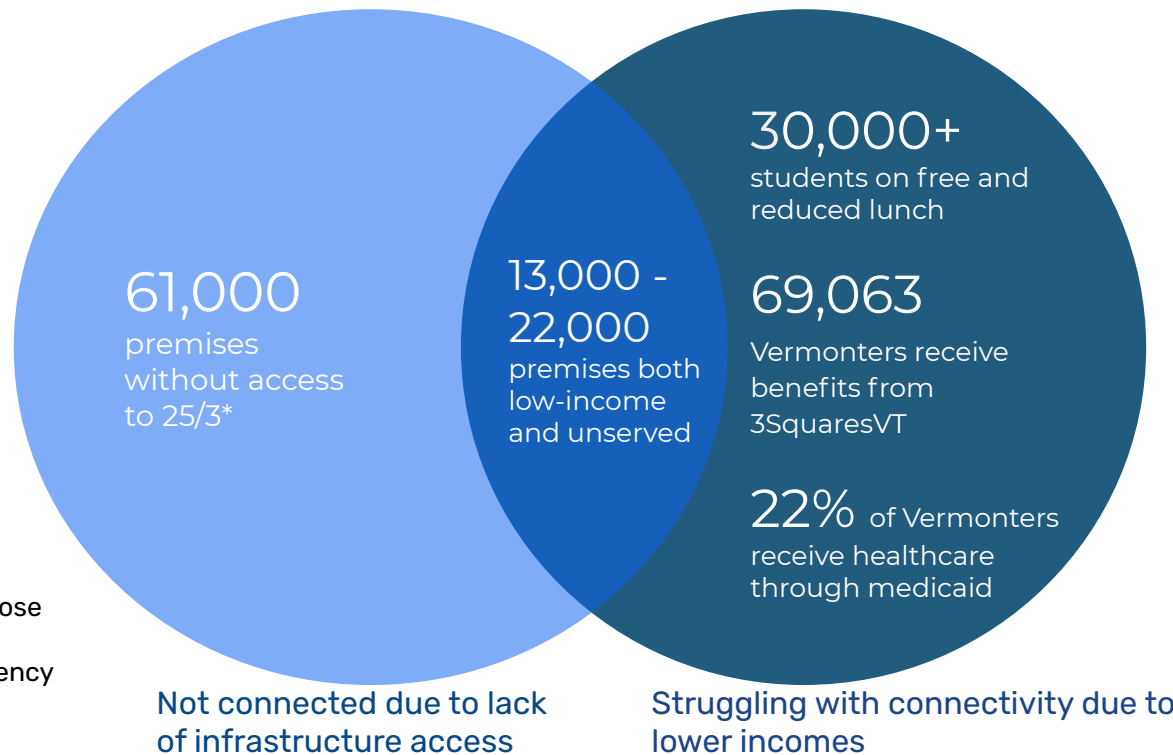- This is NOT the 10 year telecom plan or a blueprint to bring the state to 100/100 2024 goal.

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
- Phone-based residential survey targeting underserved premises: 411 responses
- Online business survey with 422 responses
- Online surveys of librarians (81 responses), superintendents (32 responses), town managers (49 responses)

Summary of Findings

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

Vermonters impacted the most by COVID-19 and telecommunication challenges

61,000 premises without access to 25/3*

13,000 - 22,000 premises both low-income and unserved

30,000+ students on free and reduced lunch

69,063 Vermonters receive benefits from 3SquaresVT

22% of Vermonters receive healthcare through medicaid

*excludes those newly served under Emergency Connectivity Initiative

Not connected due to lack of infrastructure access

Struggling with connectivity due to lower incomes

Survey and interview data indicate key challenges
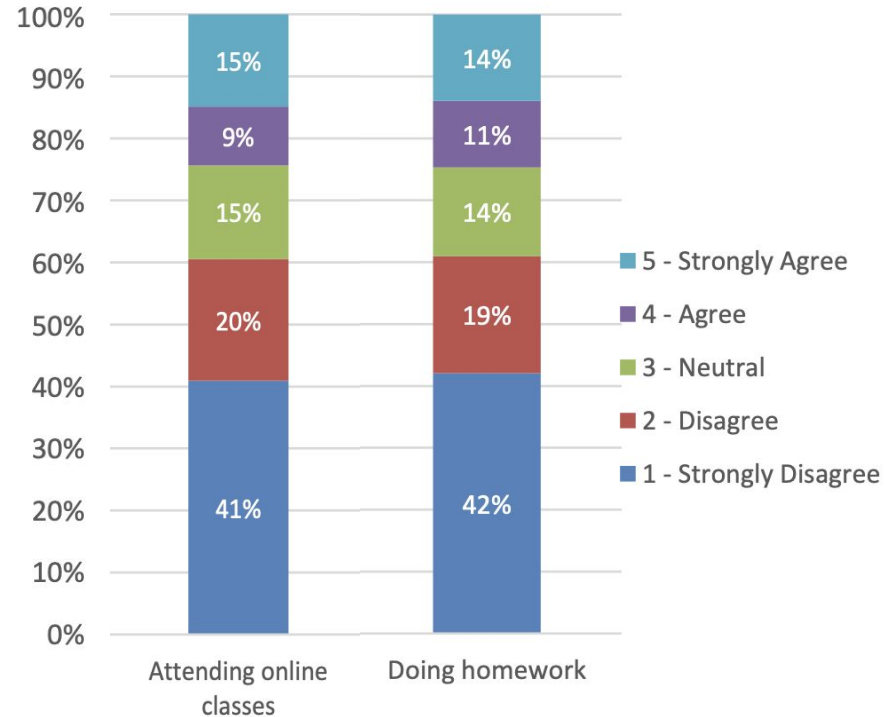
Learning from home

Teachers spend significant time working out at-home technical issues

Some districts have seen absenteeism increase

Students without wifi most often turn to parking lots with wifi and other students' homes to get access

Only 19% of phone-survey respondents without cable or fiber said that their home internet was adequate for remote learning

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

Legend:
- 5 - Strongly Agree
- 4 - Agree
- 3 - Neutral
- 2 - Disagree
- 1 - Strongly Disagree

Attending online classes: 41% (1), 20% (2), 15% (3), 9% (4), 15% (5)
Doing homework: 42% (1), 19% (2), 14% (3), 11% (4), 14% (5)

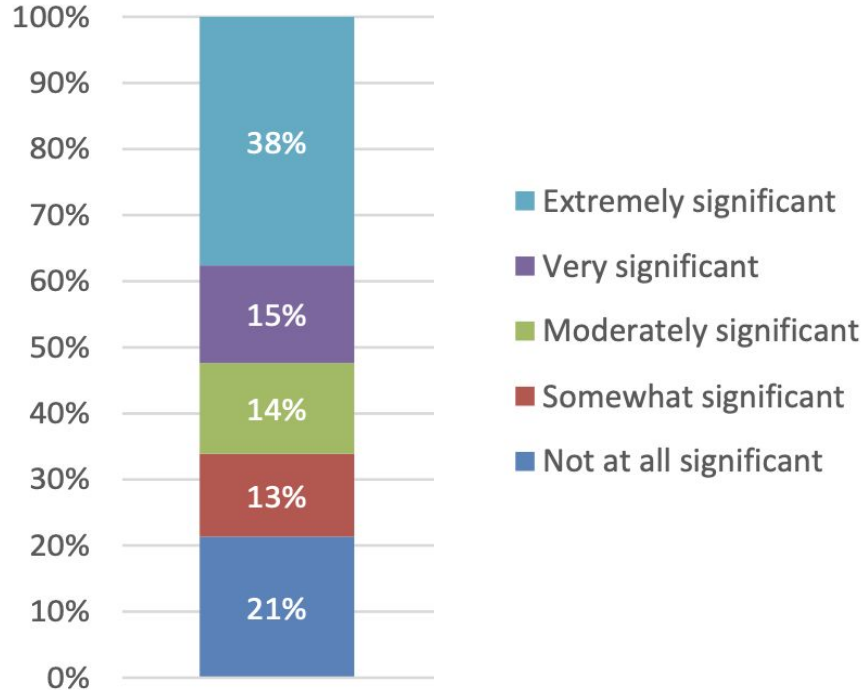# Survey and interview data indicate key challenges

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:

- Extremely significant — 38%
- Very significant — 15%
- Moderately significant — 14%
- Somewhat significant — 13%
- Not at all significant — 21%

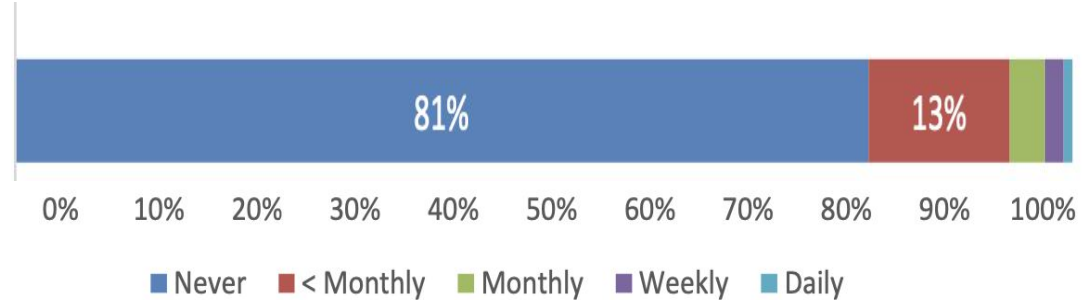# Survey and interview data indicate key challenges

Healthcare

Telehealth participation has skyrocketed - for those with service and access

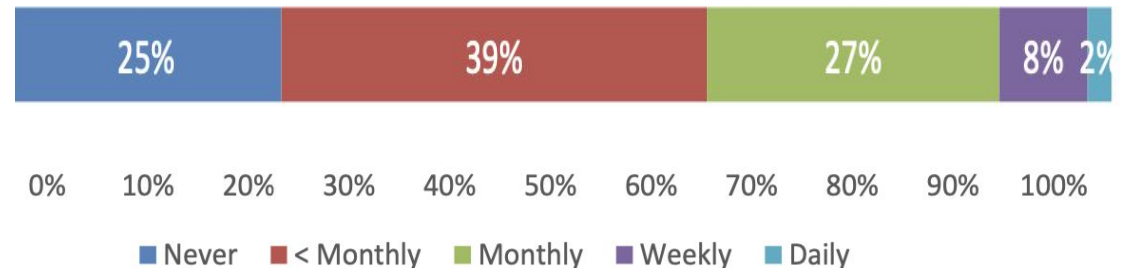4 in 10 people reported having technical issues during a telehealth appointment

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

Never 81% | < Monthly 13% | Monthly | Weekly | Daily

■ Never ■ < Monthly ■ Monthly ■ Weekly ■ Daily

Telehealth usage during pandemic

Never 25% | < Monthly 39% | Monthly 27% | Weekly 8% | Daily 2%

■ Never ■ < Monthly ■ Monthly ■ Weekly ■ Daily

# 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
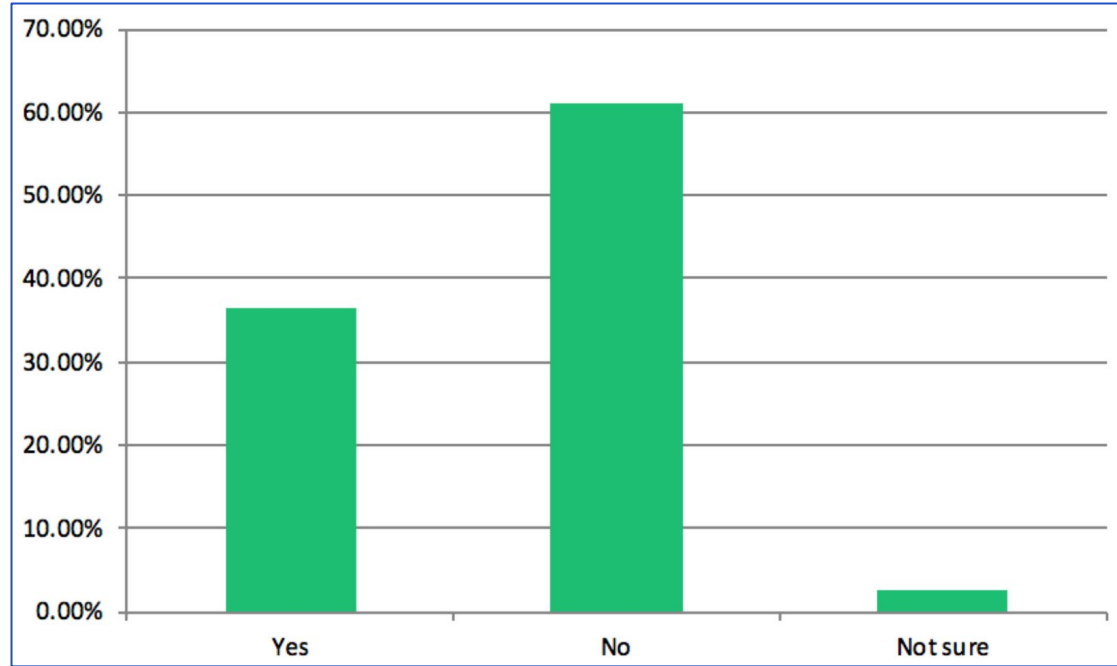
Answered: 41 Skipped: 8

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

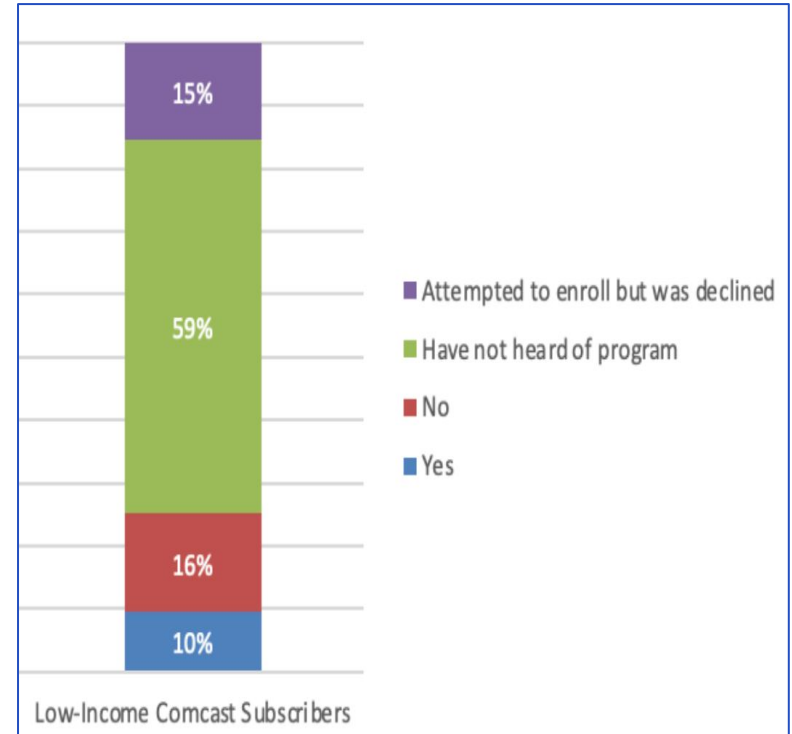| Adapted well	Needs some support	Challenges
E911 created redundant locations and protected PSAPs	RDCs are providing technical assistance to 300+ businesses to get operations online; demand has far outpaced program funding	Majority of towns have not started to plan for virtual town meeting, and do not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

Community Institutions adapted to support Vermonters

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

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

Chart: Low-Income Comcast Subscribers
- 15% Attempted to enroll but was declined
- 59% Have not heard of program
- 16% No
- 10% Yes

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 hotspots 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
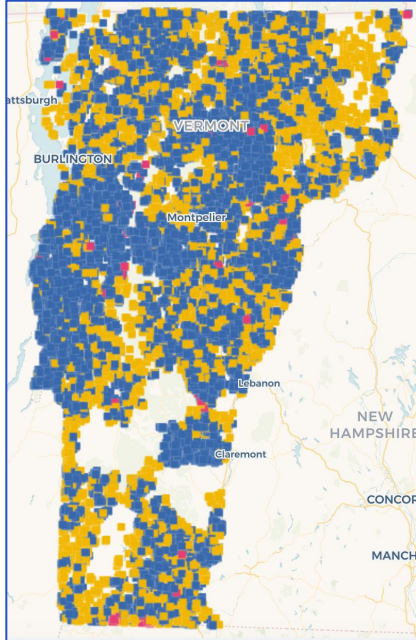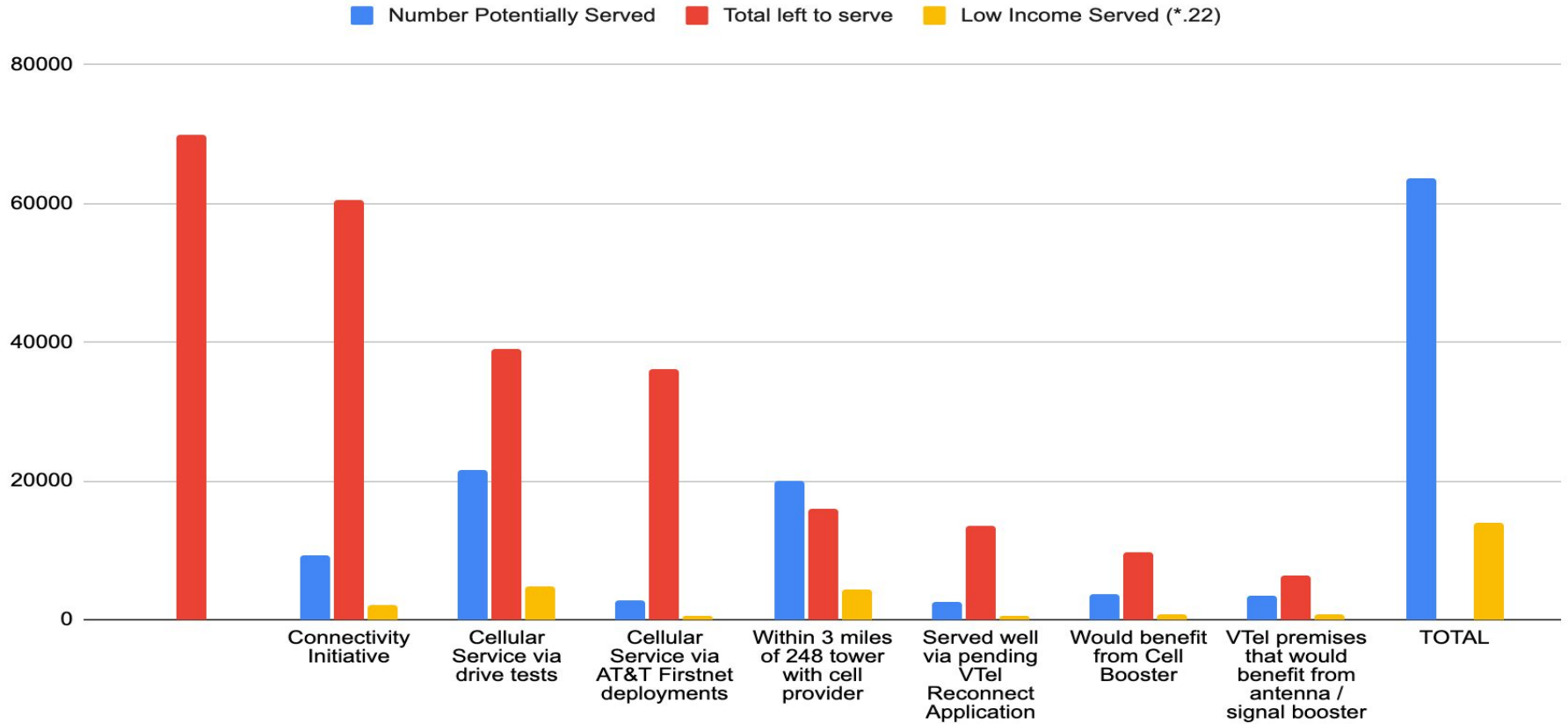

61,000 un- and underserved premises (2019)

Selection of datasets used:

- 2019 Vermont cable 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

Our analysis indicates that the state's 2019 premise-level broadband status dataset has only around a 12% error rate, *some of which was caused by new broadband construction after the data was collected.*

This is a very good dataset with a low error rate compared to other broadband datasets.

Path to reaching unserved premises

Legend: Number Potentially Served, Total left to serve, Low Income Served (*.22)

Categories: Connectivity Initiative, Cellular Service via drive tests, Cellular Service via AT&T Firstnet deployments, Within 3 miles of 248 tower with cell provider, Served well via pending VTel Reconnect Application, Would benefit from Cell Booster, VTel premises that would benefit from antenna / signal booster, TOTAL

Progression used in reductive mapping analysis

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Simultaneously, state should continue funding line extensions, but focus on unserved "pockets"
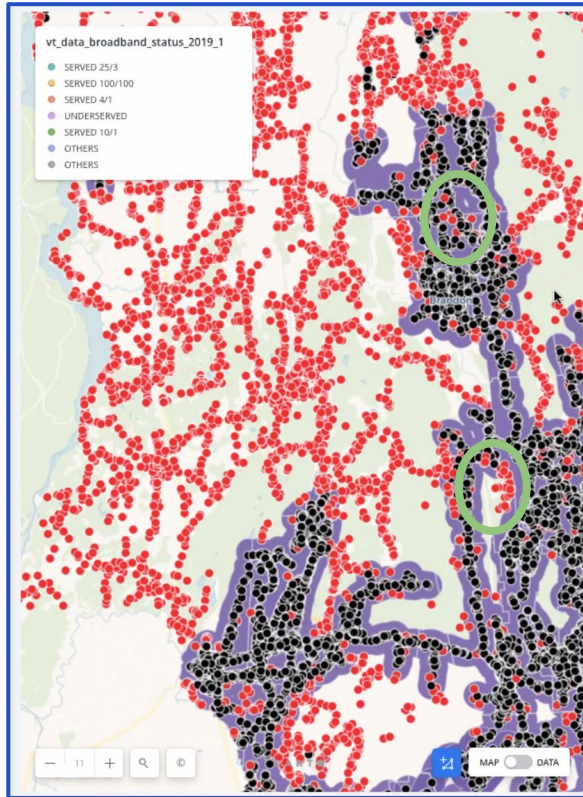
Our recommendation is to **prioritize pockets within existing networks** rather than open, contiguous areas. These pockets are most logically served by the provider surrounding them.

Red = unserved premise
Black = served by cable or fiber
Purple = .5 mile buffer around existing infrastructure
Green = example "pocket" cluster of unserved premises

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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	Estimated Need
- 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	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 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

Legal Review

"In general, the Report's three main near-term recommendations contemplate activities that do not present legal issues that are particularly unusual for the State, or that involve arcane concepts under federal and State communications law and regulation."

The legal review reiterated that:

- Contract negotiations must be consistent with state procurement regulations

- Data privacy must be maintained through acquisition of data on subsidy recipients and storage of data on subsidy recipients

Legal analysis included legal considerations pertinent to other common telecom topics:

- Right-of-way access and compensation
- Pole attachments
- Open-access networks
- Electric Co-op cross-subsidy of service

Please refer to the text of the plan for details on these considerations.

Legal review performed by Andrew Montroll of Montroll, Backus & Oettinger, and Jim Baller and Casey Lide of Keller and Heckman LLP

Thank you.