TELECOMMUNICATIONS AND BROADBAND UPDATE:

The Challenge of Rural Connectivity

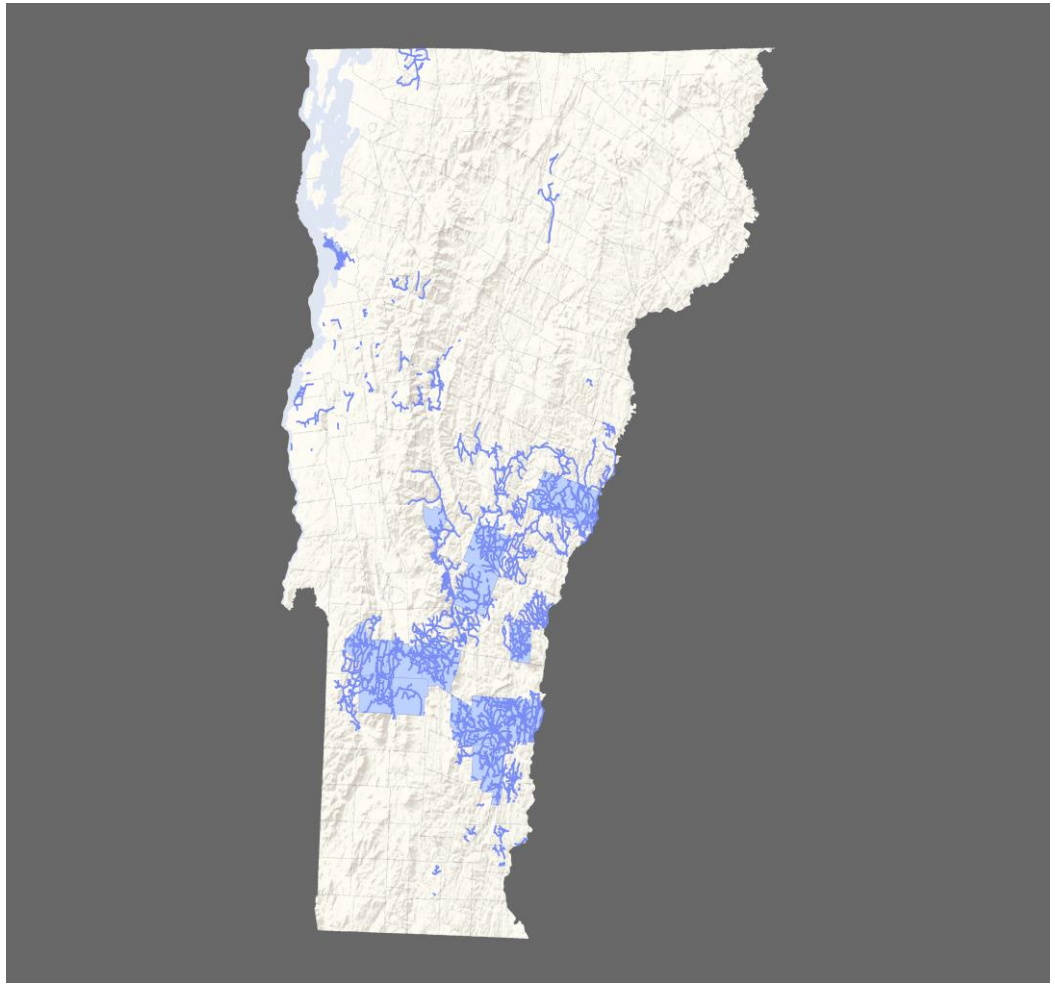
TELECOMMUNICATIONS AND CONNECTIVITY DIVISION

- Provide technical and policy support to the PSD in cases before the Public Utility Commission:
  - Telephone
  - Cable Television
  - 248a Wireless Tower siting
  - Telecom Licenses, Tariffs, & Special Contracts
- Telecommunications Planning and Policy
- Manage State Telecommunications Assets
- Universal Service Fund
- Connectivity Grant Program
- Broadband Availability Mapping
- Community Engagement
- Telecommunications Relay Service

THE BEST BROADBAND

25 towns in Vermont are 90%+ covered with fiber-to-the-premises.

- Andover
- Athens
- Barnard
- Braintree
- Brookfield
- Bridgewater
- **Burlington**
- Chester
- Danby
- Grafton
- Granville
- Hancock
- Middletown Springs
- Mount Holly
- Mount Tabor
- Pittsfield
- pomfret
- **Springfield**
- Rochester
- Strafford
- Stockbridge
- Thetford
- Tinmouth
- Wallingford
- West Windsor

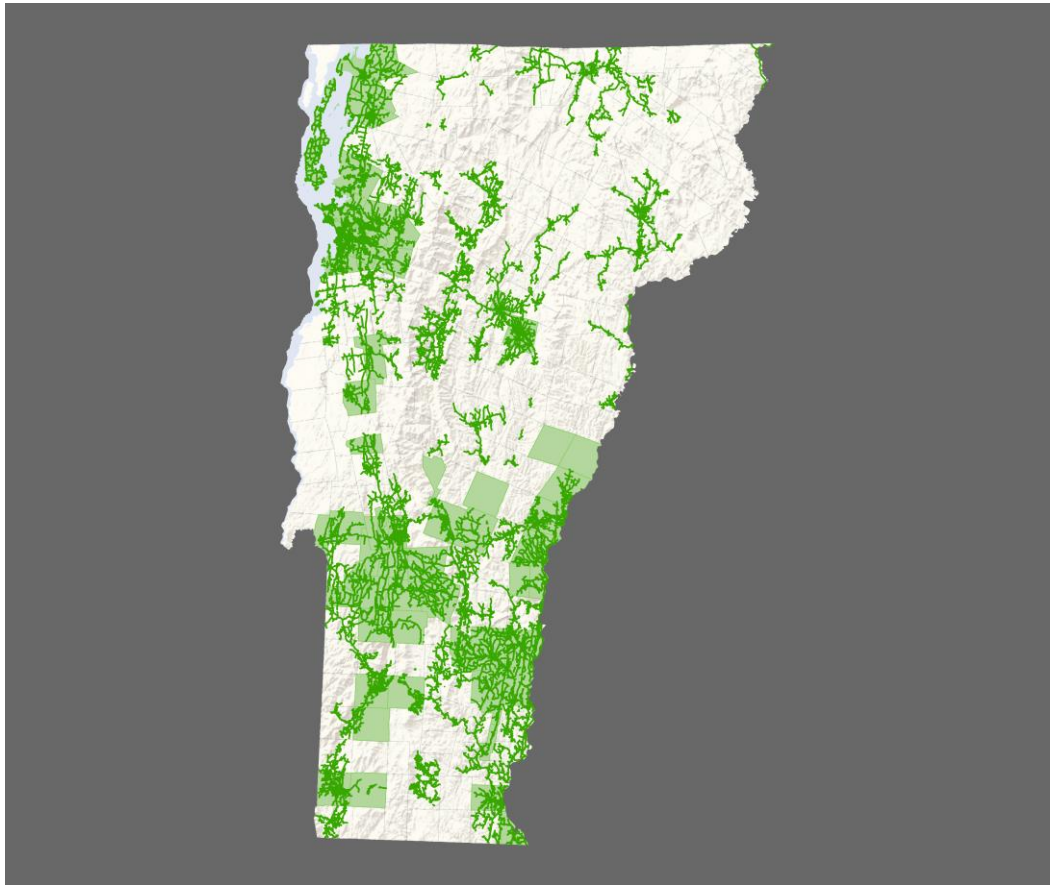


13% of state locations

REALLY GOOD BROADBAND

66 towns in Vermont have cable or better to 90%+ of the town

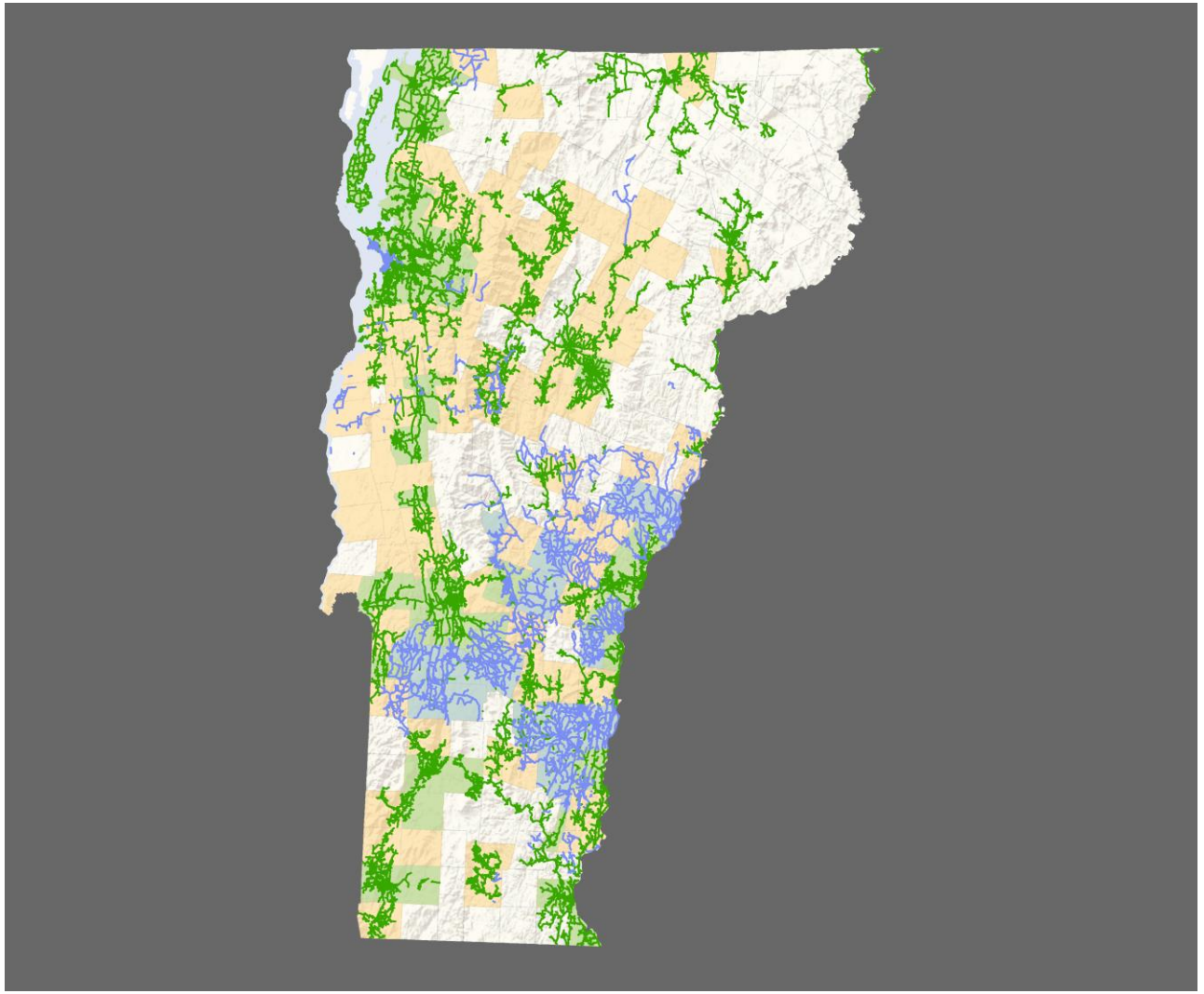
- **Barre City/Town**
- **Bennington**
- **Brattleboro**
- Bristol
- Brookline
- Castleton
- Clarendon
- Colchester
- Essex
- Fair Haven
- Grand Isle
- Hartford
- Hartland
- Highgate
- Ira
- Jericho
- Killington
- Leicester
- **Manchester**
- **Middlebury**
- Milton
- **Montpelier**
- **Newport City**
- North Hero
- Proctor
- Richmond
- Rockingham
- **Rutland City/Town**
- Shelburne
- Shrewsbury
- South Burlington
- South Hero
- **St. Albans City/Town**
- St. George
- Sunderland
- Swanton
- Vergennes
- Vernon
- Wells
- West Rutland
- Williston
- Windsor
- Winhall
- Winooski
- Woodford



68% of the State's locations

BASIC BROADBAND

148 towns in Vermont have DSL or better to at least 90% of the addresses in town.
Every town has some DSL coverage.



UNDERSERVED ADDRESSES

Approximately 16,899 addresses out of 303,835 lack **basic broadband**

94% of Vermont business and residential locations are served with basic broadband.

6% of Vermont business and residential locations lack basic broadband.

Nearly every town has some unserved addresses.

THE UNDERSERVED: WHERE ARE THEY?

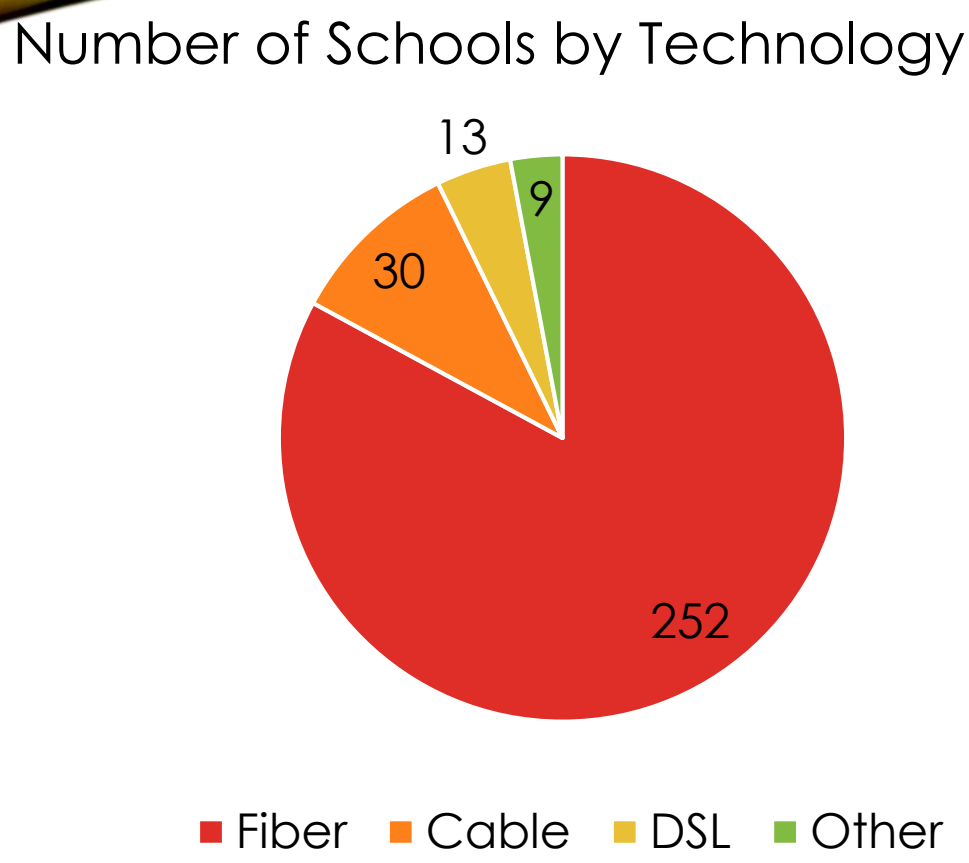
- The underserved are predominantly in rural areas -- low density, and far from downtown centers.
- **Essex County** – 33% underserved
- **Grand Isle** – 21% underserved
- **Caledonia County** – 20% underserved
- **Orleans** --15% underserved
- **Orange** – 12% underserved
- **Windham** – 8% underserved

THE 20 MOST UNDESERVED TOWNS

Percentage of Underserved Locations

- Averill – 92%
- Avery's Gore -100%
- Alburgh – 56%
- Brunswick – 71%
- East Haven – 36%
- Ferdinand – 83%
- Goshen – 35%
- Halifax – 44%
- Irasburg – 36%
- Kirby – 62.4%
- Lemington –40%
- Lewis – 100%
- Lowell – 43%
- Maidstone – 51%
- Newark – 51%
- Norton – 32%
- Somerset – 100%
- Sutton -- 47.6%
- Warren Gore – 93%
- Westfield – 41.9%

Honorable mention:
Readsboro -29%



BROADBAND AT SCHOOL

SCHOOLS ARE WELL SERVED

BROADBAND MARKET TRENDS

- Convergence – traditional media moving to the Internet (e.g. telephone, TV broadcast,)
- Cloud computing – Consumers expect seamless integration of devices and applications
- Internet of Things (IoT) – data enabled products are changing agriculture, healthcare, transportation, manufacturing, and energy
- Critical services are moving online (e.g. telehealth, Government, Education, etc.)
- Competition is fierce – telecoms compete on a variety of factors including content, bundled services, and price. Competition is largely between facilities based providers
- Private investment focused on upgrading existing systems and not on expansion (i.e. the move from 4G to 5G). The rural last mile remains underserved/unserved because the business case is lacking
- Light touch regulation – broadband is regulated at the federal level and the national policy is light touch regulation, such as removing barriers to deployment and promoting competition

CURRENT FEDERAL BROADBAND PROGRAMS

- Connect America Fund Phase II (FCC) - $50 million for Vermont. Given to FairPoint/Consolidated to expand DSL in rural, "high cost census blocks."
- Mobility Fund Phase II (FCC) – $4.5 Billion Nationwide for 4G/LTE service to unserved areas. State portions and eligibility are not determined. Eligible areas are in contest period.
- USDA –a variety of grant and loan products targeting the deployment of broadband. These programs currently fund areas that lack 25/3. USDA received $600 million this year earmarked for broadband nationwide
- Nat'l Broadband Map – the Dept. of Commerce received $7.5 million in funding to update the nations broadband map.
- E-RATE – provides subsidized broadband services to school and libraries. Vermont is well served by this program with the help of the AoE.

CURRENT STATE BROADBAND PROGRAMS

- Communications Union District
  - Provides a legal entity for municipalities to start telecom planning
  - Allows towns to work together on a regional issue
  - Provides structure and governance
- Connectivity Initiative
  - **Focus on the "last mile."** Funds business and residential locations **lacking 4/1 broadband**
  - **Minimizes overbuilding** – while overbuilding is sometime necessary, granular mapping data helps ensure that funds are directed to the right places
  - **Technology agnostic** – higher speeds are favored over lower but can fund any technology
  - **Scalable –** with an emphasis on cost per location, support can increase with increased levels of funding.
  - **Compliments other sources** – can be used conjunction with federal, local and private funding
  - **Funding uncertainty** – Funding depends on availability of cash in VUSF, which fluctuates based on budgets and revenues.
- Vermont High Cost Fund – ongoing support to rural telephone providers that provision broadband.

ISSUES FOR 2019

- Broadband Deployment
  - Community empowerment – Communications Union Districts
    - Municipal Bonding
    - Revolving Loan Program
  - Access Management Organization Funding
  - Wireless Network RFP
  - Mobility Fund Phase II (MF II)
  - Telephone Service Quality
  - Pole Attachments
  - Ten Year Telecommunications Plan