

**David Healy Testimony Before the Vermont Senate Finance Committee on the Vermont
January 29, 2019**

**Vermont Telecommunication Plan: Need for a Statewide Telecommunications (Telco) Utility
Infrastructure GIS Database**

“Sound Planning Requires Sound Data”

In my role with the Central Vermont Fiber (CVFiber) Board of Directors I have learned quite quickly that the lack of accurate statewide telecommunications data makes the job of planning and implementing a fiber-to-the-premise task very difficult to carry out. My purpose in submitting this testimony is to gain legislative recognition for direction and funding for the development the information necessary to support high speed broadband throughout the State of Vermont.

The deployment of community-based fiber-to-the-premise projects (FTTP) and high speed broadband requires the development of a statewide database with accurate pole, cell tower location, propagation areas, information about all pole attachments with associated supporting infrastructure next to the poles, and locations of available fiber networks. This information will greatly support the planning and deployment of community-based FTTP projects. Figure 1 shows the current extent of community-based FTTP projects in Vermont. These grass roots efforts are growing because of the frustration over years of limited progress. Over 65 communities are now engaged in FTTP. These organizations need state support to increase the pace of success.

The Draft Final 2018 Telecommunications Plan sections on broadband falls short on addressing this need as it left out a key element of broadband planning: the need for of statewide telco infrastructure data to support high speed broadband development and comprehensive cellular coverage in the state. In not identifying this need, the draft plan is missing a key element for reaching the state’s broadband goals. The plan needs to identify the related information necessary for planning, database creation costs, methods for financing, collecting, managing and updating a statewide telco database for supporting statewide broadband and cell service deployment. Having a multiplicity of developers of this data would be very wasteful mistake. The Vermont Department of Public Service (DPS) should take the lead on overseeing/managing this data development effort.

I believe the Vermont Legislature should mandate this as a requirement of the Telecommunications Plan as well as address the optimum funding methods to develop an accessible statewide Telco Utility Infrastructure database based on standards that can meet many of the state’s current and future needs. Ideally this would be a joint effort between to the Vermont’s utilities, Vermont Department of Public Service (DPS) and the Vermont Center for Geographic Information (VCGI). Funding options include utility bill back, bonding, and general funds. There is precedent for this. Vermont made a significant multi-million dollar investment in creating the statewide E911 GIS databases in the early 90’s is one possible model for this effort. This was supported by a telephone fee. That database has more than paid back its costs in other non-E911 projects.

When the Vermont Geographic Information System was established in 1988 as part of Act 200, its charge was to develop data, data standards and to be a repository/distributor for all the state’s GIS datasets. In their original data development plan, utility data sets were to be included, but never got developed due to budget cuts in 1992.

Costs of Creating the Telco Utility Infrastructure

Availability of this database would reduce the cost of the engineering now required for each separate community FTTP project by having it completed as a comprehensive project for the entire state built on common standards. The availability of this data would facilitate state high speed broadband and cell phone coverage. Based on ECFiber (a Communications Union District (CUD)) experience, it costs about \$30,000/mile to run fiber in Vermont. Of those costs approximated \$2-3,000/mile is spent on surveying and inventorying existing pole information.

It would certainly be preferable to collect this information in a standard and shareable format. There are efficient methods to do this. This can be done by contractor or by utility. For example, there are GPS-laser, hand-held pole data collection devices that simplify and speed up the process. (<https://bit.ly/2Cp7SWa>) There a company offering a turnkey system in which they will collect and process all attribute (pole attachments) data for ~ \$40/pole. Some of the state's utilities may have much of this information in their in-house databases. This would have to be explored as part of the planning behind creating the statewide Telco Utility Infrastructure GIS database. There will be significant costs for building proposed Telco Data Infrastructure Database. It is truly an investment in Vermont's future.

A secondary benefit of mandating this project is that it might help our utilities to better recapture their pole attachment license fees. The DPS could advocate that the PUC adopt rules requiring the provision of the essential Telco Utility data to a shared statewide GIS database.

Access

Currently, each utility/telco has some version of their pole location and limited information about their poles and attachments. Some is in digital format and others on paper. The only publicly available databases of pole and lines are those of Green Mountain Power (GMP). They provide their pole inventory (314,495 poles) to VCGI who makes it available for downloading or viewing on the internet (<http://geodata.vermont.gov/datasets/vt-green-mountain-power-pole-data>). Vermont Electric Cooperative (VEC) provides line but no pole data.

The only currently publicly available fiber cable database are those lines paid for by the State of Vermont—see attached map. The need for knowing where available fiber is for community broadband is critical to know where connections and extensions are possible. It is also essential for understanding and establishing redundancy. This not addressed in the Draft Plan. This is also important for the role out of a public safety network. It seems possible that the VELCO fiber network is a potential worthy partner in this effort that the DPS should be exploring. Electric utilities who are moving to smart home infrastructure will also need a fiber access to homes so there is an added incentive for supporting a statewide Telco Infrastructure Database.

Other than from GMP, VEC, and the DPS which are available from VCGI, my attempts at obtaining inventories of fiber locations or electric utility pole databases from other utilities has proved impossible. I believe it would take a Public Utilities Commission (PUC) rulemaking to order that each utility to annually provide the required information to VCGI for aggregation, quality assurance and access to the state, all utilities, CUDs and the public.

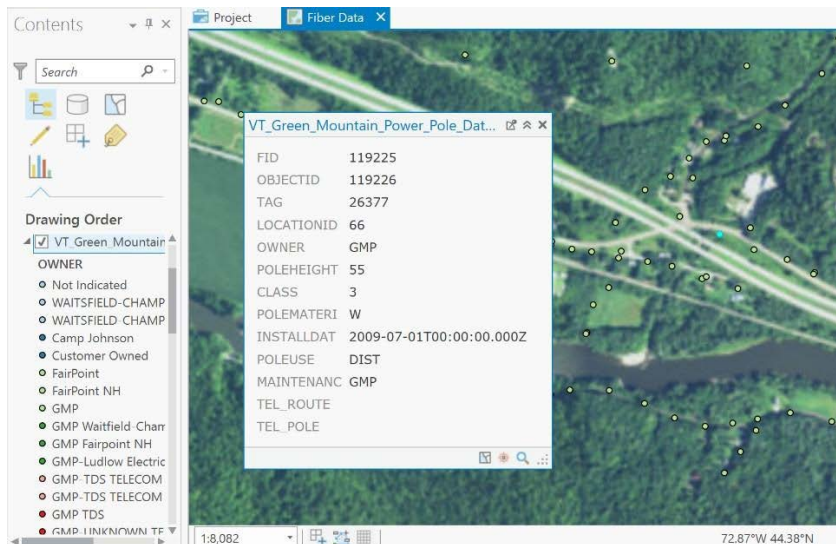
Data Accuracy/Quality

Based on the experience of ECFiber and Kingdom Fiber the locational accuracy and the attachment information is of limited value for FTTP projects. ECFiber and Kingdom Fiber, as part of their costs for project engineering, have had to do their own inventory of locating poles and collecting pole information. This task is expensive as it is done on project by project basis. There is similar experience with Washington Electric Coop pole data. Some utilities have not kept their “attachment” information up to date even though it is a revenue source.

There is a similar need for cell tower locations and what providers are currently on those towers. As the recent DPS road inventory of cell coverage shows, this is a need for much better coverage information. Relying solely on wireless provider maps is a gamble. Investment in propagation studies are also important of the proposed Telco Infrastructure Database.

Missing from the current publicly available GMP GIS database is identification of other lines, equipment, related communications and power-dependent electronics that are resident on each pole, as well as the existence or potential for supporting infrastructure next to the poles. The publicly available version of the GMP database does indicate the owners of the poles. The uniform collection of this greater range and more complete set of information from all entities with attached infrastructure residing on the poles in the public right-of-way would not only help utilities in collecting the pole rents, but also enable thoughtful planning for broadband deployment and possibly 5G mobile wireless service.

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The GMP database of poles contains the following limited set of attributes:

- Location ID
- Owner
- Pole Height
- Class
- Pole Material
- Installation Date
- Pole Use
- Maintenance
- Telephone Route
- Telephone Pole

The creation of a Telco Infrastructure GIS Database would also resolve accuracy of pole locations. The current level of accuracy is insufficient for FTTP planning and needs to be redone each time an FTTP deployment is planned. The DPS and the Public Utilities Commission (PUC) could advance this critical data development that would not only serve the utilities’ financial interests but would also greatly aid in the state’s goal of improving deployment of broadband. It might also expedite removal of derelict twin poles.

Funding Possibilities

An alternate consideration for funding statewide pole data collection is to assess each electric utility and telecommunications carrier an annual fee per pole to pay for VCGI to collect and compile the

information. This would be similar to how the E911 system in Vermont is supported. It would seem more practical to have the organizations with ownership interest in the poles to complete this activity with the VCGI performing the necessary quality assessment on behalf of the PUC. The PUC could set the quality standards for the submission of the data with the help of the VCGI. The VCGI would also be the manager of this database for access and distribution.

Summary

- Impossible to do telecommunications planning in the absence of comprehensive data
- Mandate Telco Utility Infrastructure Development
- Advance Community Fiber Support
- Reduce Community Fiber Deployment Costs
- Advance Understanding of Cell Coverage
- Understand where fiber redundancy is needed to avoid interruption of service
- Improve Public Access
- Develop a variety of funding sources to develop and maintain database
- Improve Data Quality with Data Standards
- Support utility recovery of pole attachment fees
- Improved Infrastructure Asset Management/Rate Payer Support

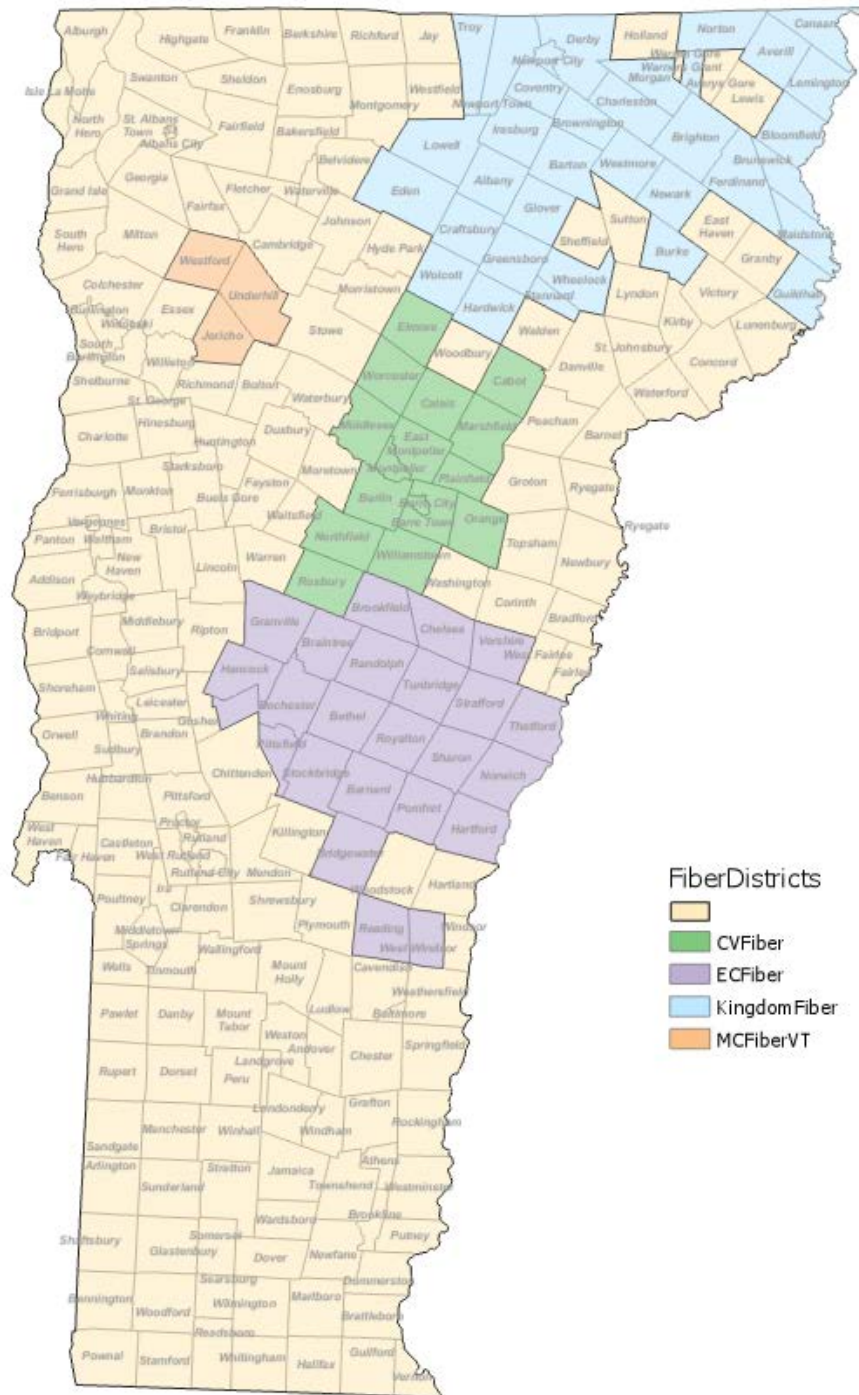
Respectfully Submitted by:

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David Healy Bio

- A GIS Specialist with over 30 years of diverse GIS experience in using and creating GIS data.
- Calais Representative to CVFiber, a 16-Town Communications Union District
- GIS Consultant (former Vice President) Stone Environmental, Montpelier, 1995-present.
- Operations Administrator of the Vermont's Office of Geographic Information Services (OGIS) (later the Vermont Center for Geographic Information-VCGI) 1988-992.
- Policy Analyst, Vermont Governor's Office of Planning and Research 1981-1988
- Physical Planner, Commonwealth of the Northern Mariana Islands 1980-1981
- Community Planner, US EPA, San Francisco, 1972-1978

Figure 1 Existing FTTP Projects & Districts



Telecommunication Infrastructure GIS Resources

Esri, the maker the ArcGIS software platform that has been adopted as Vermont's standard, has developed solution templates and data models for the utility industry. Esri has worked with the electric user community to develop data models for energy utilities. Their data models serve as foundational templates that any utility can use to build utilities GIS applications:

http://downloads2.esri.com/support/TechArticles/Energy_Uilities.pdf

For example the data model for collecting Fiber data has a comprehensive data dictionary that covers every aspect of building a fiber database backend to support the management of that infrastructure: <http://solutions.arcgis.com/telecommunications/help/fiber-data-model/>

Esri has also built a number of utility/telco online solutions as a jumpstart for organizations: <http://solutions.arcgis.com/telecommunications/wireline/foundation-solutions/>