



“Going to bed at night saying
we’ve done something wonderful,
that’s what matters to me.”

- Theodore Roosevelt

Broadband Over Yonder, Through the Hollars and Hills: Tennessee Collaborates to Expand Broadband

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State of Tennessee

Department of Finance and Administration | Division of Strategic Technology Solutions

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Contacts: Addy Newsom, Project Coordinator - CIO Office
& Chris Meeks, GIS IT Supervisor – STS



Strategic
Technology Solutions

Executive Summary

In 2017, the Governor announced the Tennessee Broadband Accessibility (TBA) Grant Program, which resulted in \$45M grants and tax credits over three years to be invested in improving broadband accessibility in unserved areas of the State of Tennessee. The completed first round successfully distributed nearly \$10M in direct grants. The overall goal of this program was to provide expanded communication capabilities and increased citizen access to broadband services in areas that were underserved.

Towards accomplishing this goal, the Department of Economic and Community Development (TNECD) partnered with Strategic Technology Solution (STS) on the TBA Grant Program. TNECD enlisted the assistance of STS's Geographical Information Systems (GIS) team to provide data analysis and data visualization resources. GIS used applicant data along with authoritative state, local and federal data sets to assist during the vetting process. The team provided comprehensive analysis and mapping tools to aid discussions and clarify any questions or concerns by either the administrators or the applicants. GIS was also employed to provide easy-to-understand maps which were used during the public comment phase of round one. The grantees selected demonstrated a high need for grant funding, the ability to implement and sustain the project long term, strong community support and the economic impact of the infrastructure deployment. Awards from round one of funding were deemed to provide service to more than 5,000 locations in thirteen different counties across the State of Tennessee. Talk about making an impact on the lives of Tennesseans!

“I am pleased to announce that we are getting our rural areas up to speed and expanding broadband in the areas that need it most...I am committed to ensuring connectivity in every corner of our state as broadband impacts our goals for health care, education, economic development and beyond.” Governor Bill Lee, 2019



Broadband Expansion

Business Problem

All over the United States, there are rural and underserved areas with no or limited access to broadband. Often times, there are no providers in these areas willing to invest in the infrastructure to provide services for these smaller populations because the profit just isn't there. Unfortunately, this is also true in rural areas within the State of Tennessee. This means these underserved communities and citizens are unable to leverage communication technologies that would promote economic development, interoperability and improve quality of life.

Over the past several years, the Federal Communications Commission (FCC) has encouraged State Governments to work towards promoting "the expansion of competitive telecommunications networks, which are a vital component of technological innovation and economic growth and help to ensure that the U.S. remains a leader in providing its citizens opportunities for economic and educational development" (FCC, 2018). So in 2017, the Governor of Tennessee announced the creation of our Broadband Accessibility (TBA) Grant Program, which aimed to provide grants and tax credits for improving broadband accessibility in unserved areas of the State of Tennessee. Because Tennessee's Department of Economic and Community Development (TNECD) mission is to develop dynamic, diverse economies and thriving communities for generations of Tennesseans, they were assigned the lead on this program.

Concept/Solution

The goal of the Rural Broadband Expansion program was to facilitate broadband access to all Tennesseans, while promoting fair practices that increase deployment and encourage adoption. Funds were to be targeted to areas that were unlikely to receive broadband service without grant funding. In order to ensure this was achieved fairly, TNECD partnered with Strategic Technology Solutions (STS) Geographic Information Systems (GIS). The GIS team worked to develop and execute the project to identify key rural areas where broadband internet services could be expanded.

As part of the application process, applicant providers submitted digital locational data describing their proposed project areas. This data ranged from simple outlines of an area of interest to detailed boundary

infrastructure and customer data. This data was analyzed and visualized by STS GIS in conjunction with authoritative local, state and federal data to assist TNECD in their evaluation and scoring process.

STS GIS provided analytical and mapping assistance for the initial 71 grant applicants. Using advanced analytical techniques along with authoritative local addressing, U.S. Census and state agency data sources, STS GIS produce more than 200 individual maps to support the TNECD scoring process. Each map allowed the TNECD evaluators to visualize the analysis results and identify any areas in the grant applicant submissions that fell outside eligibility zones, included areas of previous funding or that conflicted with other applicants.

With the use of this data, TNECD was able to accurately award the funding to qualified ISP companies who applied to provide the critical broadband service. Without STS GIS support, TNECD would have been hard pressed to evaluate how well each candidate met the established criteria for a grant award. As a result, TNECD awarded nine from the original 71 applicants. Image 1 below depicts these round one award recipients.

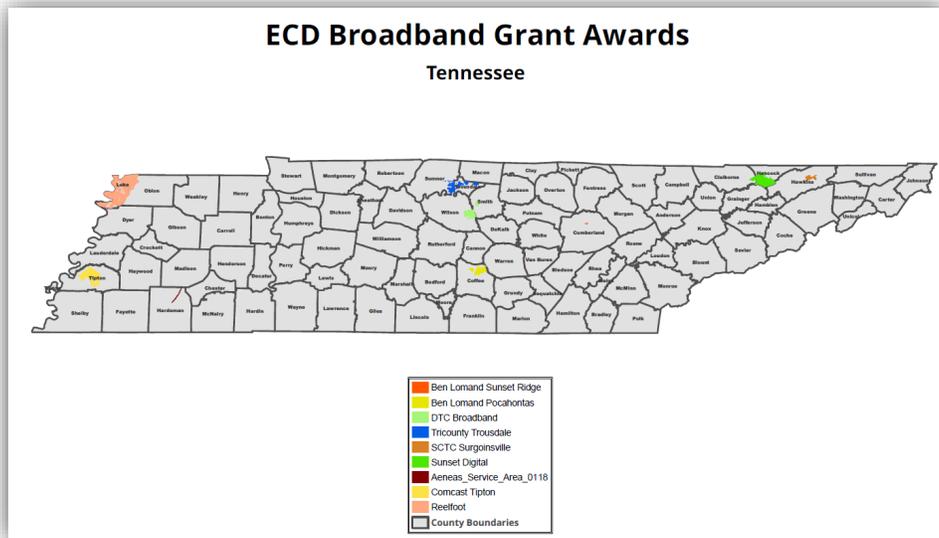
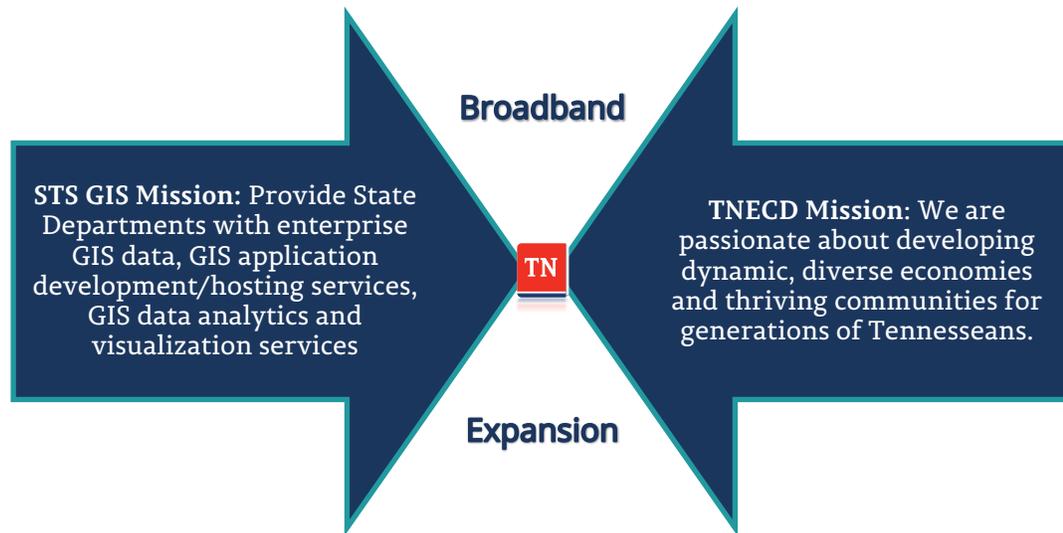


Image 1: Round One Grant Award Recipients

Collaboration

Key elements to the program's success were the detailed mapping services which were supplied by the GIS team. Working hand-in-hand with the TNECD Broadband Director for Community and Rural Development and the TNECD Senior Rural Policy Advisor, STS GIS provided a custom solution involving a combination of local 911 address points, street data, FCC and US Census data layers. STS GIS, in partnership other State of TN Departments and several local and federal partners, developed a GIS data clearinghouse. The STS GIS clearinghouse was designed to provide a single source of authoritative data to our partners in order to reduce the expenditure of time and resources need to constantly maintain access to and from multiple Departments. By combining these authoritative data layers and a variety of analytical techniques (buffering, overlay, and intersect) a consistent and repeatable process for evaluating applicant data was developed and deployed with great success for TNECD's use.



In a separate process STS GIS worked with TNECD to provide data and maps to support the public comment period of the application process and to assist grant applicants in identifying areas eligible for grant applications, clarify issues of confusion, as well as resolve or avoid areas of potential conflict with other providers. These data and maps were made available via a website specifically designed by TNECD for this purpose.

The GIS team provided key data to TNECD that allowed them to overlay four different data sets to produce maps that revealed key untapped rural areas and areas that already qualified for broadband service. Image 2 below is an example of an overlap map that GIS provided to assist TNECD with determining eligibility. This specific map portrays information regarding the Trousdale Tri-County areas, which was one of the more complicated areas to map according to the team. Not only did this map include standard data layers, but it

also contained an additional .kmz data set of a provider's broadband plant. GIS overlaid this data and excluded any addresses within 1000 ft. of existing infrastructure to ensure the State would not fund any overbuilds. This map was specifically used to work with the grantee recipient in scaling back the proposed project area. Without the ability to do this kind of analysis, TNECD we would have had to disqualify this application and leave out all the people that really needed service.

The information provided by GIS assisted TNECD to work with grantees in properly scaling the correct areas to identify true need, thereby ensuring the best use of the State of Tennessee's funding. The dedication and flexibility of the STS GIS team was key in allowing our State to achieve its goal. Crystal Ivey, Broadband Director for TNECD's Community and Rural Development, called out the efforts of STS GIS for recognition – stating, "One of the most important aspects (and a statutory requirement) of our broadband grant program is that we award only to locations that are unserved, or currently do not have access to broadband. Chris Meeks from STS GIS's work helped us to ensure that this didn't happen, and it can be a complicated process! A common stereotype for state government is that our processes are slow and cumbersome, but Chris has disproven this completely and works with us to get us whatever we need!"

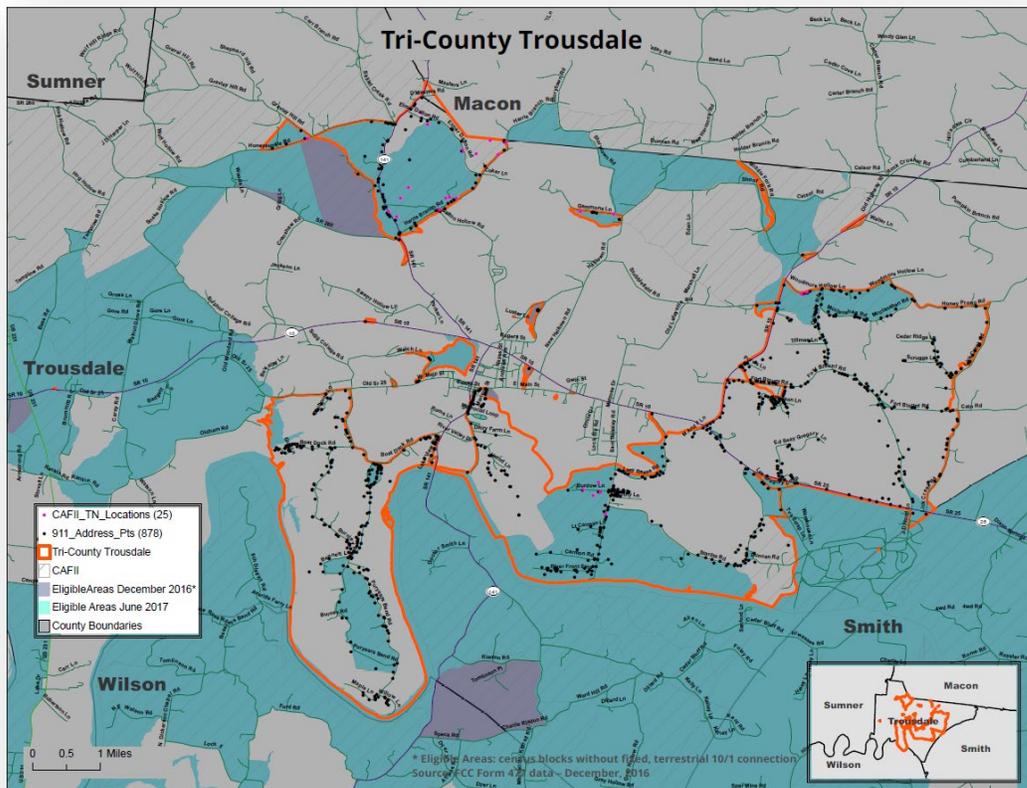


Image 2: Tri-County Trousdale Overlay Map

Impact

Round One grant mapping began in August 2017 and carried through until the end of 2017. STS GIS provided analytical and mapping assistance for 71 applicants over several months. Resulting in the announcement of grant awards for nine grantees in March of 2018. After TNECD awarded the round one grants, thirteen counties were upgraded which resulted in 5,200 locations having Gig-capable broadband service at an affordable price. The grantees selected demonstrated a high need for grant funding, the ability to implement and sustain the project long term, strong community support and the economic impact of the infrastructure deployment. These awards total \$9,844,862.14 and were matched with grantee funds of over \$10.8 million to serve over 5,200 locations.

Not only did the success of this program improve the lives of those living and working in the thirteen counties and 5,200 locations, it also provided direct benefit to several State of Tennessee Departments. Because these previously underserved areas have the ability to connect online, they can now access electronic State services. With access to broadband service, citizens can complete State business transactions online such as: purchasing licenses, completing registrations, renewing driver's licenses, paying taxes, etc., Also rural banks and businesses are now better able to maintain key filings, store and transfer important documents, and modernize their business practices. Overall, with the increased access to broadband, efficiencies of processes have greatly improved throughout the State of Tennessee. Because of the success in this effort, many other State of Tennessee Departments are seeking to partner with one another on future initiatives that will provide mutual benefits.

Links to Publications/References

- <https://www.tennessean.com/story/news/local/williamson/2018/10/18/tennessee-rural-broadband-internet-deserts/1020304002/> (article)
- <https://www.tennessean.com/story/opinion/2017/01/30/tennessee-rural-development-depends-broadband-plan/97182758/> (article)
- <https://www.tn.gov/ecd/rural-development/tnecd-broadband-initiative.html> (TNECD - Broadband Initiative)
- <http://tnmap.tn.gov> (STS GIS)
- https://broadbandmap.fcc.gov/#/location-summary?version=dec2017&place_name=Tennessee,%20United%20States&lat=36&lon=-86&tech=acfosw&speed=25_3&vlat=37.132323709822046&vlon=-86.56024076057383&vzoom=5.630042801327998 (FCC – TN Maps)