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An Evaluation of Approximate Locations with Broadband Service below a Defined Speed Threshold – A Brief Process Paper

Analysis Problem Definition: Using existing sources and records representing housing/business site locations and corresponding reported broadband service levels, develop an approximate gap analysis for broadband service in the State of Maine at the following thresholds as reported by those service providers either directly to the ConnectME Authority or indirectly through the FCC form 477:

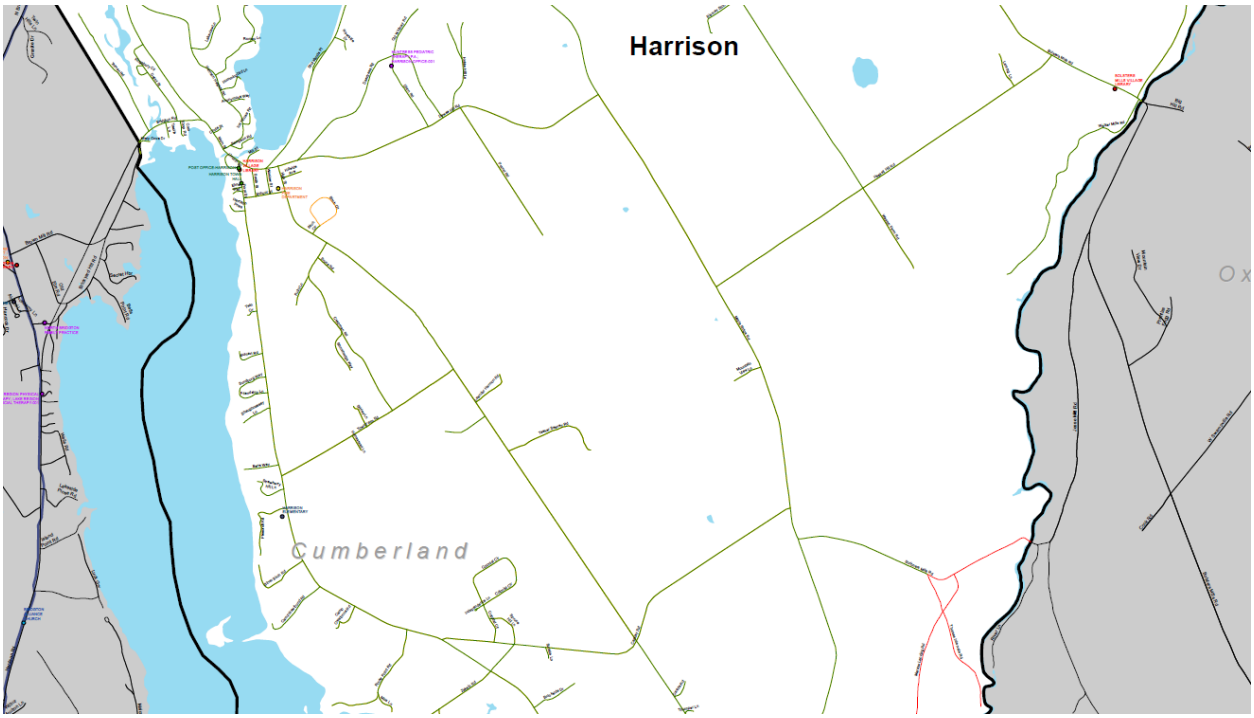
- **10 Mbps download x 1Mbps upload speed**
- **25 Mbps download x 3Mbps upload speed**

Process Overview

Creating a representative report of where there are either gaps in internet connectivity or locations where connectivity is less than the thresholds defined starts with creating a representative GIS data set of the service reported by the operators. The data developed is based on reported service rates provided either directly to the ConnectME Authority or to the FCC in the form of the required Form 477 periodic reports. These items are reported using either a US Census block region, a street name and address range, or specific served address locations as the reference to an area or locations served by that operator.

Using GIS tools and data techniques, the information has been normalized for visualization using the Maine E911 street centerline data set that is publically available. Using this base we are able to illustrate approximate transitions and gaps in the broadband service operators have reported across the region and turn that into maps that can be shared and viewed. This is a process established by the ConnectME Authority since 2009. The following illustration is a typical representation of that street level information.

Offices nationwide
sewall.com
136 Center Street
P.O. Box 433
Old Town, Maine 04468
207 827 4456
fax: 207 827 3641
800 648 4202

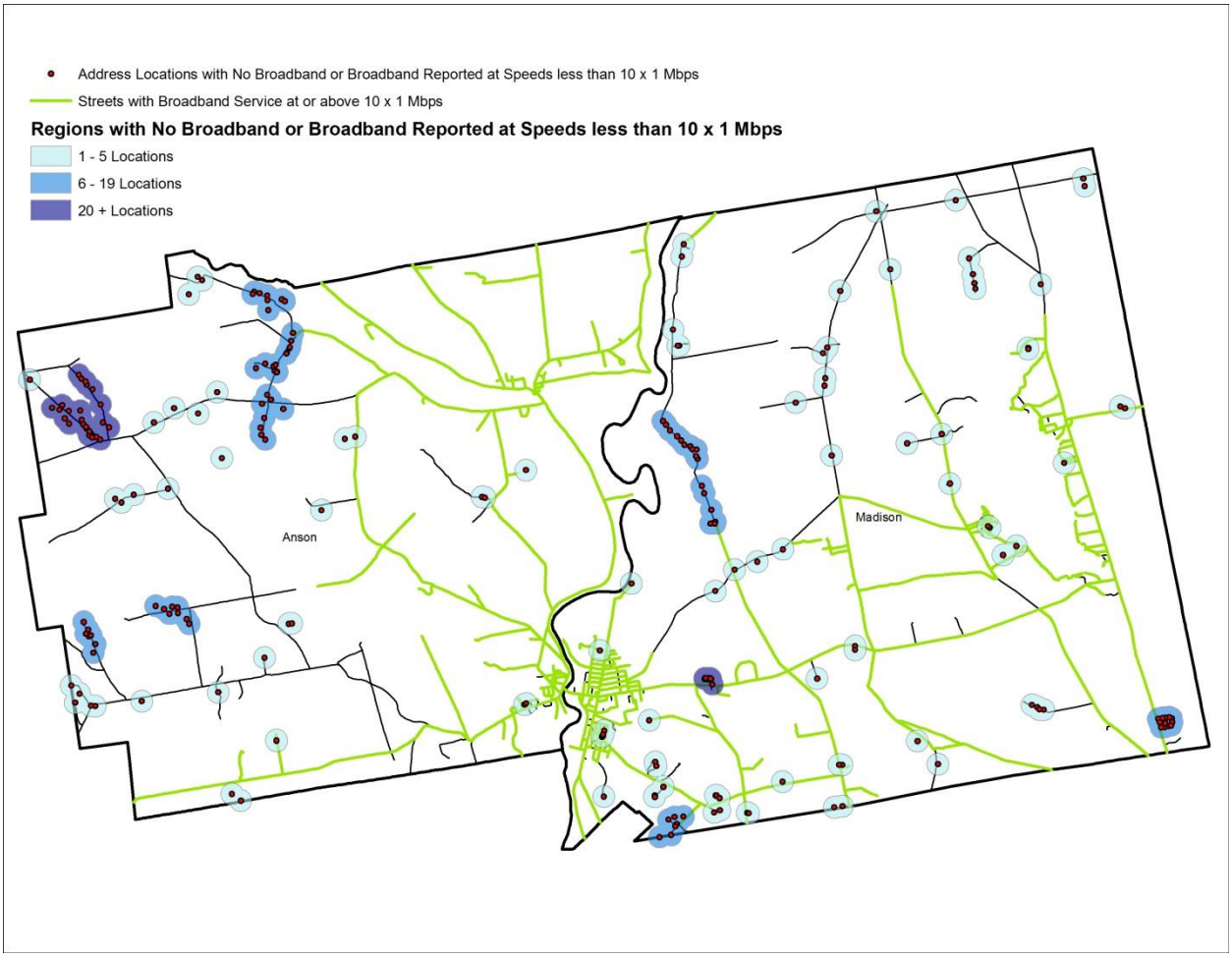


Typical representation of broadband service levels

In this partial representation for the town of Harrison, green colored roads represent broadband service at speeds of 25 Mbps x 3 Mbps or greater and the red colored segments are reported as having no internet connectivity.

For this analysis exercise we analyzed two populations of service. The first grouped locations where service is reported below 10 Mbps download by 1 Mbps upload speed. The second grouped locations where service is reported below 25 Mbps download by 3 Mbps upload speed. The transition locations where these service levels changed are approximated based on either the boundaries of census blocks referenced in the Form 477 data or the address locations where some operators reported specific speed – address relationships.

With the service areas mapped out, the next part of the requested exercise is to develop using existing data a town-by town listing of the approximate street address ranges where service is below the measure threshold and estimate the number of units (locations designated for occupancy) on those streets. To accomplish this address location data from the State of Maine which approximates the locations intended for human occupancy is utilized to perform the analysis and develop the data indexed in the spreadsheets provided to ConnectME. The ranges and counts are developed by performing a GIS database relationship between the address locations and the street centerline segments previously coded for broadband service. The following graphic illustrates an example of the output resulting from the relational database process.



Graphic output of analysis for locations in the towns of Anson and Madison, Maine

Once this analysis is complete, the database is then normalized and output into a spreadsheet report that summarizes the street segments (name and address ranges) and approximate location counts on those segments where service was below the threshold for the analysis. It must be noted that this not necessarily a comprehensive listing of all locations and that this data is intended as a starting guide to identify potential areas for improved levels of service. The objective of this exercise is to develop a visualization of high probability areas that could be candidate regions for a broadband project. There are known gaps in the address data locations that are cost prohibitive to close on a state wide basis, but should be confirmed and added to a regional data set during the initial stages of planning a service enhancement project.

This document is authored by
Clarence Young,
Senior GIS Consultant

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