Why Broadband Expansion Requires Better Location Data

Accurate and timely coverage maps are crucial to closing connectivity gaps.

The COVID-19 pandemic focused attention on closing broadband internet service gaps that hinder access to vital online services and information. Now, the federal government is making significant funding available to states and localities to improve internet access. Still, broadband expansion poses a quandary for government leaders: How do they connect the most people at the lowest cost to taxpayers?

Analyzing real estate and address data is one way to ensure the effective allocation of public dollars for broadband expansion. But state and local agencies often lack accurate location data to guide their efforts.

One state offers an early success story for addressing this crucial issue: Montana published a statewide broadband availability map[1] early in 2022 to accurately identify underserved areas and target new broadband investments.

Montana provides a compelling test case. America's fourth-largest state ranks 48th in population density. Still, vast distances and the sparse population didn't stall the opening phase of its broadband expansion initiative, thanks to structure-level location data and mapping technologies.

"We had the map up and running within 60 days," says Chad Rupe, who served as Montana's broadband program manager until June 2022.

Each U.S. jurisdiction will chart its own route to broadband expansion, but Montana's experience illustrates many of the obstacles they will face and the advantages they will gain by embracing advanced location data technology.

Critical Challenges to Broadband Expansion

Millions of American farms, ranches and remote residences lack access to broadband internet connectivity.[2] The Infrastructure Investment and Jobs Act, signed into law in November 2021, commits $65 billion[3] to expand broadband access across the nation, motivating state and local agencies to explore ways to narrow the digital divide.

But states that secure this funding will confront fundamental challenges:

The last mile. Connecting homes to the internet backbone accounts for about 80 percent of the cost of expanding broadband access, says Bill Price, vice president for government solutions at LightBox, a location data and analytics firm working with Montana on the state's broadband initiative. Jurisdictions need detailed information to fully understand last-mile costs and related issues. Sprawling ranches have barns and outbuildings that don't need connectivity. But the primary residence does. The house's

distance from the road is crucial data. "Is it set back, costing an additional $3,000 to get to," Price says, "or is it right on the road?"

Inaccurate data. The Federal Communications Commission created maps based on Census blocks that offer ballpark estimates of broadband connectivity. But these maps lack the detail states need to understand last-mile issues and other factors. Moreover, broadband maps must adapt to constant population changes and evolving rules. "The map's credibility is always a question," Rupe says.

Finite funding. Even with billions of dollars coming to states, there probably won't be enough money to connect every remote or underserved residence. State officials must determine which investments will provide the most significant connectivity gains. Accurate data is central to these determinations.

Building a Better Map

Sophisticated cloud technologies and geographic information systems (GIS) can give state and local jurisdictions detailed location data to target broadband activities accurately. These technologies also track population changes, relocations, construction activity, business openings and other factors to ensure location data stays up to date.

"One of the benefits is that you can get down to the address level," Rupe says. "That is one of the hardest things to get right."

Montana's broadband program, known as ConnectMT, worked with state librarians to produce broadband availability maps that clearly show coverage and help broadband grant applicants assess a site's suitability for investments in broadband expansion.

"You take a satellite image of an area, and you try to identify where people need fixed wireless or wireline service," Rupe says. Using location data technology from LightBox, state officials overlaid additional details and functionality to turn satellite imagery into usable information that can be displayed in user-friendly formats like Montana's broadband availability map.

The map shows statewide download and upload speeds advertised by internet providers. Montana residents can compare promised speeds in their area to actual at-home results. "That sheds light on what is advertised versus what is actually delivered," Rupe says. This information helps the state determine which providers perform well and which need improvement.

Cloud-based location data solutions also provide analytics and reporting to help government leaders develop a deeper, richer understanding of the communities they serve. In addition, they can offer household-level details to 911 calls and other emergency services to help states identify and address public safety issues.

Follow These Best Practices

Based on real-world experiences in Montana and other areas, experts offer these best practices for implementing location data services and creating broadband coverage maps:

Even with billions of dollars coming to states, there probably won't be enough money to connect every remote or underserved residence. State officials must determine which investments will provide the most significant productivity gains.

Simplify ISP data collection. Start with relatively straightforward activities like integrating providers' service-availability data into your state's location database. States often partner with dozens of internet providers, each of which has datasets of addresses they can serve. States using advanced location data services will have a dataset of almost every serviceable address. Integrating these datasets helps identify unserved locations.

Also, try to limit the amount of information you request from broadband service providers to keep the process moving, Price says. "If you ask providers for 80 pieces of information, that will diminish their willingness to participate."

Implement ISP Protections. Because broadband providers are often direct competitors, states must protect proprietary data. Providers may also want a shield against public-records disclosure laws. State leaders, lawmakers and providers should consult to ensure all interests are covered.

Use a flexible data fabric. Because populations and regulations change frequently, states need solutions and approaches that are flexible enough to keep broadband expansion maps up to date. Montana uses cloud technology, agile methodologies and an iterative process to get this kind of flexibility. "That allowed us

to take good information in a good fabric and then improve upon it," Rupe says.

Work with experienced partners. Choose data and technology providers with a proven track record in implementing advanced location data solutions. Combine your organization's internal skills with expertise in data mining, mapping and other specialties from experienced partners. Effective collaboration among all parties is essential.

Start Fast and Create an Impact

Closing the digital divide is one of today's significant challenges. States with structure-level location data, experienced partners, and a strategy to engage ISPs stand a better chance of effectively using broadband expansion funds to bridge this gap.

With the right mix of information, technology and expertise, states can positively impact residents in a tight time frame.

"I'm very impressed with the agile approach and the flexibility of everyone who came together and solved the problem so quickly," says Rupe. "The speed of deployment was phenomenal."

This piece was written and produced by Government Technology with information and input from Lightbox.

[1] https://mslservices.mt.gov/legislative_snapshot/Broadband/Default.aspx#Maps
[2] https://broadbandnow.com/research/fcc-broadband-overreporting-by-state
[3] https://www.governing.com/finance/infrastructure-ill-allots-65-billion-for-broadband-expansion