



# **COLORADO**

## **Governor's Office of Information Technology**

**State:** Colorado

**Agency:** Governor's Office of Information Technology

**Award Category:** Digital Services: Government to Business

**Project Title:** Leading the Revolution in Broadband Mapping

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## EXECUTIVE SUMMARY

The demand for accurate and user-friendly broadband maps has never been higher. In June 2022, the [Colorado Broadband Office](#) (CBO) was tasked by Gov. Polis in [Executive Order D 2022 009](#) to connect 99% of Colorado households to high-speed broadband by 2027. To achieve this goal, it became evident that we needed comprehensive insight into high-speed internet service across the state and to make location-based data available to ALL stakeholders so they could develop accurate and effective broadband plans. Faced with this reality, our team recognized the urgent need for a significant overhaul of the Colorado Broadband Map.

On Feb. 16, 2023, the CBO launched the [Broadband Mapping Hub](#) (Hub), an easy-to-use mapping platform designed to serve the public, internet service providers (ISPs), schools, communities and businesses throughout Colorado for their broadband education and planning purposes.

Inside the Hub, stakeholders can access numerous interactive applications, maps and dashboards dedicated to broadband resource exploration and mapping discovery:

- [Colorado Broadband Map](#)
- [Grant Awards Dashboard](#)
- [Grant Discovery Portal](#)
- [Grant Review Mapping Experience](#)
- [Speed Test and Survey](#)

The Hub uses multiple data sources so stakeholders can find analytics and access reports that help them make informed decisions and develop grant applications based on the same data the state uses. The Hub has also changed how the Broadband Deployment Board (BDB) makes state broadband funding awards, reviews grant applications. The BDB uses the Hub's dashboards and interactive maps to make well-informed decisions.

## IDEA

In 2023, the CBO received \$826.5 million from the National Telecommunications and Information Administration (NTIA)'s Broadband Equity, Access and Deployment (BEAD) program and \$113.5 million from the U.S. Treasury's Capital Projects Fund (CPF) to deliver high-speed internet across Colorado. Additionally, to date, the BDB has obligated \$104.8 million in broadband funding to provide broadband access to 39,682 rural households across the state. The maps supporting these programs must be accurate and easy to use. There is potential for additional federal and state funding programs.

New developments in broadband mapping are revolutionizing the way we connect people to the internet. Previous broadband maps created by the CBO were inadequate for navigating the complex landscape of broadband coverage and making informed decisions about grants. This is especially concerning given the influx of unprecedented funding. The old map failed to meet the needs of our stakeholders, as evidenced by the persistent inquiries on how to utilize and interpret it effectively. Recognizing this, we identified a need for improved mapping and data discovery, giving stakeholders the tools to gain a deeper understanding of their broadband situations and helping them to make better decisions.

Our idea was to create a platform that brings together all the necessary data, tools, and information in one place, which isn't only comprehensive and informative but also user-friendly for people without GIS expertise. CBO aimed to generate improved maps with connectivity metrics along with relevant grant program data, enabling decision-makers to work together toward narrowing the digital divide in their respective communities.

Specifically, CBO's new maps address our stakeholders' needs for both grant reviewers and private industry project planners:

- Providing a current and comprehensive view of existing broadband service.
- Displaying the level of service offered at each location.
- Offering map layers of other sources of awarded funding, which can be overlaid on the map

The Hub features data sourced from the FCC Broadband Data Collection (BDC), which is recognized as the authoritative source for broadband data at a federal level. Our data team transforms this data into a user-friendly format and provides analysis to enhance users' understanding of Colorado's broadband landscape. Since our maps are built upon this nationally mandated dataset, the Colorado Broadband Maps are universally understood and can serve as a model for other broadband programs.

Our Mapping Hub offers:

- A well-organized and user-friendly landing page that serves as a central hub for all maps, applications and dashboards.
- The **Colorado Broadband Map** is the state's most accurate and reliable broadband coverage map. The "search service in my area" feature enables users to find internet service, grant applications and awards, and speed test data specific to their address.

- The **Grant Awards Dashboard** displays broadband grant information, including applications and awards, with metrics, graphs, maps and data tables. Grant information is broken down and filterable by fund, year, geographic area and application number.
- The **Grant Discovery Portal** is a tool stakeholders can use to prepare funding applications. Grant applicants can view program eligibility data, find resources to prepare applications, and access state and federal broadband grant layers, broadband coverage data and demographic data. Users can also query broadband coverage data for further analysis and upload GIS Data to support CBO grant program applications.
- The **CBO Speed Test and Survey** allows residents to test their home or business internet speed and share valuable information directly with the CBO. Survey results can be used to report locations with no service and conduct speed tests at specific locations.

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Our new Hub stands out as both innovative and unique in the field of state broadband mapping. Since launching the Hub in 2023, feedback tells us it has become a model for other states as they begin developing their broadband mapping programs. Unlike other state broadband maps, which often offer only a single map displaying basic data requiring users to decipher information, Colorado's new Broadband Maps are more comprehensive and experience-based to suit each type of user (resident, grant reviewer, applicant, decision-maker, legislator, etc.). The combination of maps and dashboards designed to meet diverse user needs and to allow for user analysis is unique in this field.

## IMPLEMENTATION

The CBO data team worked on developing the Hub for over a year. We conducted numerous brainstorming sessions to conceptualize a resource that meets the need for a transparent, user-driven, discovery-oriented mapping tool to help facilitate and support the distribution of historic amounts of broadband funding from our office.

Given the significant federal funding to be distributed by our office in the next few years, the Hub will be continuously assessed by a wide range of users. Because the Hub directly supports CBO funding decisions, it offers a constant internal measure of its effectiveness. External users, such as ISPs, residents and decision-makers, rely on these maps to inform broadband planning and infrastructure implementation-related decisions. Our office works with these external stakeholders regularly and holds check-in meetings to ensure we are meeting their needs. Consequently, the Hub undergoes continuous scrutiny and assessment, internally and externally.

The Hub has also changed how the Broadband Deployment Board (BDB), which makes state broadband funding awards, reviews grant applications. The BDB uses the Hub's dashboards and interactive maps to make well-informed decisions.

The Hub was designed to adapt to changing user needs and to easily integrate with new systems. For example, we are in the process of integrating our Hub with a new CBO-designed Salesforce Grant Management Portal. This integration will enhance geographic data communication between the grant programs and the stakeholders.

We used input from various stakeholder groups throughout this project's development and implementation:

- Internal CBO members (advocates, oversight, end-users and beneficiaries): During project conception, we held meetings and brainstorming sessions with CBO grant staff, compliance officers, communications, etc. who use our maps to support their work. We asked what functionality they needed in the new maps and asked what wasn't working with our old maps. As the project progressed, we continuously checked in with these CBO members to ensure we captured their needs accurately. Before the project launch, CBO members participated in user testing to provide user experience feedback.
- Colorado Governor's Office (end-users and beneficiaries): From conception to testing, we worked with the Governor's Office to ensure that our product aligned with and supported the Governor's goals and mission.
- Vendors (implementation): We worked with a mapping vendor to ensure that our ideas and vision for this project were represented and that our new maps were intuitive and easy to use for all potential users. Our success with this project equated to a job well done for our vendor.
- Industry and Community Leaders (end-users, beneficiaries): We worked with leaders in the broadband space and incorporated their feedback throughout the project. We developed marketing strategies geared toward building trust and encouraging the adoption of our new maps. Securing the support of external stakeholders, such as the public, is crucial for the success of the project.

This project required significant financial, time and human resources. Funding was secured through federal sources that supported [OIT's FY21-22 Rural Broadband Wildly Important Goal \(WIG\)](#). Aside from procuring project and administrative tasks associated with securing our vendor, the data team invested considerable effort in developing the Hub. For six months, the five-person data team dedicated at least 1.5 hours a week to meeting with our vendor for planning and product development. The data team also spent many hours creating content, gathering feedback, developing data and workflows, conducting user testing and planning for the product launch. Following the launch, we dedicated time to testing, knowledge transfer, and stakeholder awareness and training.

Our team has attended numerous training sessions to gain foundational knowledge on how best to improve upon and creatively enhance our current product. We are utilizing the most current and cutting-edge geospatial visualization programs and methodologies. We constantly push the envelope, not only on what we can produce, visually or functionally but also on discovering new, creative ways to approach a problem that makes the most sense for our team and goals.

## IMPACT

Why does this project matter?

- To effectively deploy nearly \$1 billion of federal funding for broadband infrastructure and accessibility in Colorado, we need to pinpoint where the need exists.
- Our stakeholders rely on us to get the maps right.
- Mapping broadband coverage and tracking progress are crucial steps toward achieving high-speed internet coverage for 99% of Colorado households.
- Coloradans deserve to be informed and to have a voice in this massive undertaking.
- Over the past 12 months, the site averages 500 users per month and the BEAD Challenge portal has averaged 460 users.

Colorado's previous broadband coverage map had limited functionality and required users to possess a certain level of geospatial savviness to derive useful information. This led to misinformation and confusion. With the new Hub, we have simplified the process and have built experiences and dashboards to prioritize user stories and ease of navigation.

The Hub highlights the CBO's commitment to achieving Governor Polis's goal of connecting 99% of Coloradans to high-speed internet by providing clear and concise data visualizations, data management, sharing and analytics. We have successfully transformed broadband data into actionable insights for decision-making. The Hub allows us to better communicate with those who rely on our work by reducing questions surrounding the "where" of broadband service and grant funding and enhancing the options for "how." The Hub will support the work of the CBO throughout the next decade by providing a foundational, transparent and accurate representation of broadband coverage in Colorado. This tool will facilitate decision-making and assist our grant staff in effectively awarding and monitoring state and federal investments, ensuring efficient allocation of resources.

The Hub was designed to be scalable for future needs and initiatives. The Hub's improved maintenance and workflows have already enhanced the CBO data team's daily operations, allowing for improved data management practices and fostering innovation. In 2023, we leveraged our work on the Hub to develop an extension called the [BEAD Challenge Portal](#). This portal was created to meet program requirements of the NTIA BEAD program, through which Colorado received \$826.5 million. The BEAD Challenge Portal, like the Hub, features interactive applications, dashboards and maps; entirely focused on providing users with all the resources needed to prepare for and participate in the BEAD challenge process. Colorado was the first state to run a challenge process using a portal built entirely in-house, setting us apart from other states that rely on contractors. Now, the data team facilitates monthly calls to share our processes and BEAD Challenge Portal design concepts with other states taking a similar approach.

## Positive feedback!

Since the Hub's launch a year ago, we have received positive feedback from numerous media outlets and stakeholders including:

- GovTech, a leading publication in government news, called the Mapping Hub "...platform offers a complete resource for stakeholders". [What's New in Digital Equity: Colorado Launches Broadband Mapping Hub](#)
- StateScoop, another top resource for government news, highlighted the fact that the Mapping Hub "...comes as the result of consultation with community leaders and industry representatives" and will make finding broadband funding easier for Colorado Communities. [Colorado Broadband Office launches online hub to find funding](#)
- Route-Fifty's article begins with "Thanks to its detailed data on household internet availability and speed, Colorado has been able to make the most of federal broadband funding opportunities" and acknowledges the years of work that went into creating the Mapping Hub. [Inside one state's decade-long effort to map broadband availability](#)
- Broadband Deployment News YouTube Channel (2.7k subscribers) reviews the Mapping Hub and says other states should use the Colorado model when building their maps. [A Look at Colorado's State Broadband Hub and Map](#)
- Journalists are covering the state of broadband in Colorado using the Mapping Hub's coverage map as the most reliable source of broadband coverage information, as seen in this article on the \$826.5 Broadband, Equity, Access and Deployment (BEAD) announcement made last year. [Some areas of Colorado still don't have high-speed internet, but new funding could change that](#)

## Testimonials

"The thing we at Backcountry Broadband value the most: efficiency. The fact that the CBO has taken the time to ingest data in the same format as BDC data provided to the FCC makes it a no-brainer to submit information to the State, too. This not only minimizes fat-fingering errors and makes data more consistent, but significantly streamlines the process so that data is not post-processed and tracked in multiple ways. We can easily dump all our internal GIS data and meet both Federal and State initiatives. Win-win." -Andrew Ragone, Backcountry Broadband

"I have been part of the Colorado Broadband Deployment board since its inception. I am constantly amazed at how much the state mapping system has improved over the years. We are now able to make grant funding decisions based on address-level data that takes into account existing providers as well as recent state and federal awards. When we started, our board decisions would be appealed regularly because our decisions were made on less than ideal information. The amount of decisions that are appealed has dropped significantly because our data is so much more accurate. Every time I speak with our OIT mapping team, I tell them thank you for making our board's job easier." -Jeremy Weathers, Chair of the Colorado Broadband Deployment Board