BROADBAND ASSET MAPPING & MANAGEMENT

A GUIDE FOR STATES AND LOCALITIES

Overview

Communities rely on a variety of infrastructure, such as utility poles, buried conduit, streetlights, and towers. However, information on these assets is often publicly unavailable, scattered across entities and databases, outdated, incomplete, not digitized, or difficult for others to use due to differing formats, scales, and taxonomies. **Asset mapping and management** is the process of collecting, organizing, and tracking data on relevant infrastructure assets that can be utilized for broadband deployment.

Why Map Assets

For wired or terrestrial wireless broadband deployment, the majority of capital expenditure (CapEx) is for construction of passive infrastructure. If providers could leverage existing assets rather than install new ones, they could significantly reduce the cost of broadband deployment. State, county, and local governments that want to accelerate broadband deployment can **develop a centralized record of relevant assets** to:

Leverage IIJA funding

Governments that map asset data can conduct more impactful long-term infrastructure planning that considers how to utilize potential broadband assets. Critically, this will help them more effectively leverage upcoming IIJA funding for broadband and non-broadband projects, as asset mapping data can aid in identifying opportunities to share construction costs or combine projects.

Reduce deployment costs

By identifying and mapping assets that providers can leverage, states and localities can help reduce the cost and length of construction. Moreover, governments can encourage more private broadband investment by centralizing asset data in one place, allowing them to better identify which public assets are available to share with or lease to providers (e.g., space on water towers for fixed wireless cells, publicly owned conduit for fiberoptic or coaxial cable).

Streamline permitting

An accurate and user-friendly asset mapping system can make it easier for governments to complete permitting tasks. An accelerated permitting process would make it more affordable for providers to quickly deploy broadband, particularly in unserved and underserved areas.

Avoid unintentional damage

Centralizing existing data and sharing it with providers where appropriate prior to construction can help them reduce the risk of damage to existing assets (the "backhoe risk"), which disrupts vital services and creates costly delays. Solid data can also support "call before you dig" services.

Improve government services

Governments can use asset mapping data to strengthen and expand their own broadband networks, which provide public services. In addition, this data can inform tax records and even grow the tax base, as some broadband assets may be taxable per local code. Finally, asset mapping data can facilitate public use of private broadband networks, especially those with open access agreements.

Broadband Assets to Map

Governments can map **a range of potential broadband assets**. Their relevance to each broadband deployment may depend on the project owner's goals, types of existing broadband infrastructure (e.g., buried and aerial assets), and local circumstances (e.g., topography, population density, asset availability).

Broadband asset classes	How providers can leverage them
Existing broadband networks (e.g., public, open-access, wholesale, private)	• Access networks through infrastructure sharing arrangements, leases, or indefeasible rights of use (IRUs)
Available conduit or duct systems and dark fiber	• Access excess capacity of dark fiber through leases or IRUs • Run fiberoptic or coaxial cables through existing conduit or ducts
Public ROW, including roads and bridges	• Use existing ROW without the need to obtain new or perfect existing easements (though would still require permits) • Use existing conduit or planned new conduit along roads • Provide wireless antenna support on bridges or other public structures

Utility infrastructure (e.g., utility poles, water distribution, waste systems)	• Run fiberoptic or coaxial cables via/through:
	  • Utility pole attachment rights
	  • Existing sewer or storm drain infrastructure
	  • Water or gas distribution ROW

Anchor organizations (e.g., universities, libraries, government buildings)	• Serve as an area node • Mount wireless antennas, install fiberoptic cable, radio, and other network equipment, and connect to power
Tall infrastructure (e.g., towers, water tanks, streetlights, buildings)	• Mount wireless antennas, install radio and other network equipment, and connect to power

Where possible, governments can also map the location of existing or future construction projects and track their progress to identify opportunities for asset owners to share costs and assets, such as conduit.

Information To Collect

For each asset mapped, state, county, and local governments can consider the **type and granularity of information to collect**. The data requirements for each element of infrastructure can include:

- **Location:** Collect physical addresses, GPS coordinates, asset height or depth

- **Ownership:** Record name and contact information for each entity that owns the asset

- **Age and condition:** Capture the age and condition of all assets mapped using a simple classification system; note whether the asset was designed for expansion or scheduled for update or replacement

- **Utilization of the asset:** Where possible, document whether the asset is in use, as well as whether it has existing sharing or leasing arrangements in place and, if so, which entities are involved

- **Access constraints:** Note assets with security provisions (e.g., locked access)

- **Legal constraints:** Some ROW may be in easements that would require further rights perfection to utilize for telecommunications purposes; some assets may have restoration requirements

Key Operational Considerations

Prior to beginning an asset mapping project, the jurisdiction should **develop a plan** that considers the following:

PROJECT LEADERSHIP

One office (e.g., DoT, planning) should lead the asset mapping process. Key considerations for selecting project leadership include:

- Access to or ownership of public assets and data
- Existing relationships with relevant partners
- Data collection, curation, and visualization expertise

PARTNERSHIPS & PROJECT TEAM

The project leader should bring together a project team with partners who can provide additional resources, knowledge, and connections. This will ensure that the project team captures all relevant assets and, thus, all potential cost savings. Executive buy-in from government leaders is helpful to encourage cooperation and raise the project's profile.

DATA MANAGEMENT

Successful projects involve several data management tasks:

Managing the process: The project leader should clearly communicate to stakeholders the ask, costs involved, and the data collection and transfer process. They should also listen to stakeholders and adjust processes as needed.

Data collection: The project team should assess the assets already collected, such as existing geographic information systems (GIS) data. A key part of this work is digitizing paper records, which usually requires multiple agencies to provide access to the project team. In addition, the project team can tag physical records and conduct field measurements of assets they can access on their own.

Software: The project team should be able to access GIS and data visualization capabilities to share information bi-directionally with stakeholders through data transfer or APIs and support manual queries. Critically, they should have appropriate cybersecurity, data integrity, and privacy provisions. They should also have a system to document the provenance of third-party data.

DATA USE AND ACCESS

Once the asset map is developed, the project team needs to decide how to use and maintain the resource. The project team should determine which information is appropriate to share with users, taking into consideration critical infrastructure security concerns and proprietary business data. One potential solution is to have an internal version that includes all data and a public version with sensitive data removed.

ASSET MAP FEATURES

An ideal asset mapping system would:

- Have a publicly accessible version that is either free or available at nominal cost
- Be interactive, offer user-friendly query capability, and have downloadable data
- Integrate with other GIS information, such as broadband access and availability, to create visual overlays
- Offer a companion training guide
- Be updated on a regular basis with data sources and dates tagged, as frequently as feasible as projects are completed

Every asset mapping project is subject to real-world constraints. Project teams need to determine which features best fit their needs and resources. One option is to build out a system and capabilities over several projects.

Government mapping capabilities

Most governments have geospatial data mapping capabilities in planning departments or GIS offices. Historically, they have lacked the time and resources to map assets beyond roads and some permitted infrastructure. Furthermore, they may face data quality and useability issues, especially non-digitized records, incomplete data, or multiple data formats that are incompatible.

Key Stakeholders

Asset mapping benefits from the participation of several key **public and private sector stakeholders**:

STATE GOVERNMENT

State government can map and share data with localities through data exchanges. Key agencies:

- **Department of transportation (DoT)** often manages key assets, such as assets along highway or state road rights-of-way (ROW)
- **Higher education institutions** may offer data collection and analysis resources
- **CIO's office** may assist with mapping

⚠️ Data access and sharing can be difficult when multiple agencies manage multiple databases

COUNTY & LOCAL GOVERNMENTS

Asset mapping occurs most frequently at the county and local level. Key agencies:

- **Planning, GIS and public works** map assets the jurisdiction owns and operates
- **County assessors** maintain interactive maps with real estate and tax information
- **Public safety agencies** (e.g., police, fire) usually operate closed radio networks

Counties and localities may also own physical assets (e.g., towers, power, buildings) that providers can leverage

DEDICATED BROADBAND OFFICES

Broadband offices within all levels of government are crucial partners and potential data users. One of their key roles is to **assist grantees** in accessing asset map data and information on deployed assets

PROVIDERS

Telecoms and cable providers, cooperatives, and municipalities map their assets. Key roles:
- **Partner with governments** to provide data
- **Use asset maps** to identify assets to leverage
- **Share assets with or lease to** other providers

Some private providers may view their data and assets as proprietary and may be less likely to share data

THIRD-PARTY ASSET OWNERS

Potential asset owners are in energy, agriculture, healthcare, education, and others. Key roles:
- **Reach lease or sharing agreements** with providers to use assets where feasible
- **Partner with governments** to provide data

Potential assets include siloes and grain elevators, utility poles, steeples, clocktowers, microgrids, and land

Additional federal resources & technical assistance

The Homeland Infrastructure Foundation-Level Data (HIFLD) is a catalog of public domain geospatial data for telecommunications and other infrastructure run by the Department of Homeland Security (DHS) (link).

811 is a nationwide "call before you dig" number for contractors and anyone preparing to excavate. It is a central clearinghouse for information on underground assets (link).

Upcoming technical assistance: NTIA recognizes that this guide is not a comprehensive overview of asset mapping. Following the Notices of Funding Opportunity (NOFO) for IIJA broadband programs, NTIA will provide technical assistance to states to support grant application submissions.

Want to learn more?

To stay up to date on the latest available information, including Notices of Funding Opportunity when released, visit our website.

🖥️ ntia.gov
broadbandusa.ntia.gov

✉️ BroadbandForAll@ntia.gov