Best practices for local and Tribal government permitting and facilitation of broadband deployment
State of New Mexico

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Synopsis: Given the importance of permitting, its role in deploying broadband infrastructure, and how permitting will affect the ability of local and Tribal governments to capitalize on federal funding, the state has created this guidance for local and Tribal governments on how permitting can support middle-mile and last-mile broadband deployment in their communities.

Contents

Introduction

This guidebook offers best practices and strategies for permitting and related processes that may enable communities to prepare for broadband investment. The Office of Broadband Access and Expansion (OBAE) developed this guidance in recognition of the unprecedented funding currently available for broadband deployment in the state[1]—including from the federal Broadband Equity, Access, and Deployment (BEAD) Program—and the role that permitting can play in enabling that deployment.

This guidebook reflects the priorities of the State of New Mexico as expressed in the state's Three-Year Broadband Plan (2024) and BEAD Five-Year Action Plan (2023), which lists "addressing permitting requirements" and "accessing the rights-of-way" among the potential obstacles that OBAE will seek to mitigate as it awards grant funding to entities that will deploy new infrastructure across the state.[2]

This guidebook focuses on a variety of efforts local and Tribal governments can make to facilitate broadband project development—with or without public funding, and at varying levels of complexity. It presents a menu of options that are considered best practices for permitting and related processes under certain circumstances.

While many of these options are generally recommended, the approaches are not all appropriate for all communities—nor would any given community be likely to adopt every practice described here. Rather, the guidebook presents a set of options a local or Tribal government can evaluate in light of its public policy priorities, its community's unique circumstances, and its residents' needs.

The best practices are organized within a framework of three primary strategies for improving a broadband deployer's costs and timelines, thereby making a local or Tribal broadband project more efficient and attractive to deployers:

1. **Enhancing permitting processes**: Best practices for enhancing permitting processes to improve coordination with applicants, leverage local resources, and clarify expectations and requirements for project deployment
2. **Facilitating access to assets:** Best practices for maximizing access to fiber, conduit, real estate, or other facilities that would make broadband infrastructure deployment less costly
3. **Creating equitable access to information:** Best practices for sharing information (such as detailed maps) relevant to broadband planning among a wide range of potential deployers

A final note: The strategies and best practices presented in this guidebook are intended to enable New Mexico's local and Tribal governments to receive value in return for the efforts they make to enable a

[1] Broadband funding includes more than $675 million allocated to New Mexico through the federal Broadband Equity, Access, and Deployment (BEAD) Program, as well as $100 million from Senate Bill 377 (2021) for the Connect New Mexico Program and $117 million from the American Rescue Plan Act (ARPA) Capital Projects Fund (CPF) designated by New Mexico for the Connect New Mexico Pilot Program.

[2] "Five-Year Action Plan," Office of Broadband Access and Expansion, August 2023, https://connect.nm.gov/uploads/1/4/1/9/141989814/new_mexico_bead_five-year_action_plan_-_final_20230828.pdf. *See also:* "Three Year Broadband Plan (New Mexico Broadband Plan Update)," Office of Broadband Access and Expansion, January 2, 2024, https://connect.nm.gov/uploads/1/4/1/9/141989814/state_of_new_mexico_three-year_broadband_plan_1-2-24_version_1.0.pdf.

broadband deployer's efforts. That value may be financial (such as a lease payment in return for access to a city's fiber network) or it may be less tangible (such as a commitment by the partner to deliver broadband service to low-income residents in return for access to a city's excess conduit). Either way, the locality or Tribe will facilitate broadband deployment in partnership with the deployer; the relationship should not favor the deployer over the public interest.

Overview of the strategies

New Mexico has distinctive qualities that offer both challenges and opportunities for the deployment of broadband infrastructure. Notably, New Mexico's checkerboard of land jurisdiction and ownership can require extensive broadband projects to receive a large number of permits to build. For example, one project mentioned in the state's 2023 broadband "Data Collection Annual Report" requires contact with more than 940 permit agencies to build the infrastructure.[3]

Not all projects will require that number of permits, of course, but it is not unusual for a provider to be involved with multiple federal, state, local, and Tribal entities in order to receive approval for its project.

Accordingly, this guidebook describes ways that local and Tribal governments can enhance their individual permitting processes so they run more quickly and smoothly, including by sharing accurate information about the permit process, optimizing permitting workflows, scaling up staffing when needed, and facilitating access to key assets like public infrastructure or private telecommunications poles.

A particular focus of this guidebook is New Mexico's smaller and rural communities that require greater investment and infrastructure for broadband. These entities often do not have the experience or staffing capacity to manage a large number of permit applications. Accordingly, the strategies presented here aim to help these smaller local and Tribal governments manage the workload related to broadband deployment processes.

And because companies seeking to deploy new broadband infrastructure in New Mexico may face challenges with pole access, licenses, and fees, this guidebook offers several potential strategies to address pole access issues. For example, localities and Tribes can seek to collaborate with pole owners and facilitate aerial construction by using the 'make-ready' and 'housekeeping' strategies in this guidebook.

[3] "State of New Mexico Data Collection Annual Report," Connect New Mexico (Office of Broadband Access and Expansion), October 2023, https://connect.nm.gov/uploads/1/4/1/9/141989814/new_mexico_data_collection_annual_report_-_10022023.pdf.

Guiding principles

The recommendations in this guidebook are suggestions that may vary depending on a community's needs. In every situation, however, considering the following reliable principles can help facilitate local broadband deployment processes:

- **Transparency** with respect to all parts of the process helps deployers plan for their applications, permits, fees, workflow, and construction to facilitate efficient projects.
- **Accountability** regarding the commitment to help ensure processes run as promised and provide opportunities for the locality to improve its approach over time.
- **Coordination** between private companies, Tribes, localities, state and federal agencies, and other stakeholders encourages efficiencies, avoids repeating work, and increases involvement from crucial partners.
- **Access** to public resources and infrastructure—and potentially reciprocated access to privately built infrastructure—encourages deployers by reducing costs and creates more efficient networks by encouraging sharing.
- **Communication** that is clear and responsive prevents mistakes, delays, and misunderstandings. Good communication also facilitates other important principles listed above, such as transparency and coordination.
- **Balanced priorities** between efficiency and the protection of public interests can ensure that the project is done to a high standard, on schedule, and with the desired impact.

Broadband strategies checklist

1. **Strategies for enhancing permitting processes**

Best practice: Developing and sharing information about relevant permitting and processes

Develop clear construction design standards and regularly update the standards with industry and expert input

Develop a telecommunications permitting manual

Publish permit timeline expectations and metrics

Create a mechanism for receiving feedback from applicants on the application process

Best practice: Optimizing permitting for broadband projects

Establish a single point of contact for broadband permitting

Create a dedicated telecommunications permit

Distinguish between major and minor broadband permits

Develop an online permitting portal

Develop a batch permitting process

Coordinate permitting policies and procedures among jurisdictions in the region

Develop relationships with Tribal leaders and officials

Best practice: Staying up to date with changing state and federal rules and programs

Revisit all policies periodically to comply with state and federal rules

Learn about federal and statewide permitting, right-of-way, and pole attachment programs and updates

Best practice: Developing strategies for scaling up staffing and support

2. **Strategies for facilitating access to key assets**

Best practice: Creating access to public assets for new deployment

Enable leasing of public assets to ISPs

Trade or swap access to public assets for access to private infrastructure

Use more efficient techniques such as microtrenching

Build new assets where feasible

Best practice: Creating conditions that make deployment of private assets more likely

Require conduit installation in new developments and during major renovations

Facilitate aerial construction by encouraging pole owners to facilitate make-ready

Best practice: Encouraging deployment of public and private assets

Develop a “Build Once” policy

Develop a “Dig Once” policy to promote conduit and fiber construction

3. Strategies for creating equitable access to information

Best practice: Making public GIS datasets available where possible

Best practice: Documenting public fiber assets

Best practice: Documenting public conduit assets

Best practice: Coordinating telecommunications infrastructure mapping across permitting agencies

4. Approaches to undertaking these strategies

Best practice: Creating a cross-agency taskforce with executive leadership

Best practice: Making broadband part of local or Tribal government strategic planning and coordination

Initiate collaborative big-picture planning

Build broadband into planning and staffing of all relevant agencies

1. Strategies for enhancing permitting processes

Best practices for enhancing permitting processes to improve coordination with applicants, leverage local resources, and clarify expectations and requirements for project deployment

Efficient and transparent processes around permitting, rights-of-way access, and inspections can help with broadband buildout and deployment by streamlining application processes, keeping applicants accurately informed, and committing to helpful practices.

Given New Mexico's patchwork of land jurisdiction, enhancing permitting processes at all levels will facilitate broadband infrastructure construction. These processes can save time and money for both localities and deployers. Most localities have experience in this regard, whether in terms of broadband or some other type of public infrastructure like roads, school buildings, or traffic cameras.

Subject to the needs of the community to protect public interests and public safety, as well as the resources available to the locality, the strategies presented here focus on enhancing existing processes for the benefit of the community and broadband deployers.

Best practice: Developing and sharing information about relevant permitting and processes

Develop clear construction design standards and regularly update the standards with industry and expert input

Developing design standards for aerial and underground fiber and conduit promotes consistent and safe construction practices across broadband deployments. Standards can help enhance the permitting application and review processes, and design requirements can help a community maintain certain aesthetic standards.

These design standards should follow engineering best practices and industry input; this expert input is especially important for localities with little experience in broadband infrastructure. They should also be publicly accessible and transparent.

For example, the Maricopa Association of Governments (MAG) in neighboring Arizona encouraged safe and consistent construction for government public works projects and their contractors by publishing design standards and uniform standard specifications and details for construction, including telecommunications and broadband construction, with a new revision released yearly.[4] Localities could publish a similar set of construction and design standards to help streamline approval of permits and increase the quality of applications.

In California, the government of Santa Clara County sought to facilitate safe and consistent construction and to reduce design review timelines. To that end, the county published design standards including:

- Right-of-way diagrams and typical utility locations
- Typical utility trench construction and pavement restoration

[4] "Specifications and Details," Maricopa Association of Governments, https://azmag.gov/Programs/Public-Works/Specifications-and-Details.

- Pole and conduit bonding

Following the publication of the standards, county staff reported quicker review times and more uniform aesthetics thanks to the standards.

As with any standard broadband-related infrastructure, design requirements need periodic reviews (e.g., every three or five years) to ensure they remain strong. Regularly updating design standards with industry and expert input will help ensure the standards adapt to evolving construction best practices. This approach also promotes efficient and cost-effective construction practices.

Considerations

- How to allocate staff and resources to updates
- Process for gathering industry and expert input

Develop a telecommunications permitting manual

Collecting all telecommunications deployment information in a broadband permitting manual (which could also take the form of a website or online portal that aggregates requirements, application forms, standards, process workflows, fee lists, and so on) will allow internet service providers (ISP), subcontractors, administrators, and the public to understand broadband deployment from start to finish.

The manual should be written clearly to be accessible to a potentially inexperienced audience and should be located prominently on the broadband, city planning, and/or permitting section of the Tribe or locality's website. Manuals that explain all types of broadband permit applications with their rationales and clear explanations of how to apply for them are especially useful.

Full transparency about these processes is perhaps the single most effective means by which to enable the communications industry to expeditiously plan and deploy networks.

OBAE plans to write a permitting, right-of-way, and pole attachment (PROP) manual for the state in 2024; [5] once completed, this manual will be useful for localities to distribute to clients and for them to emulate and include in their own local telecommunications permitting manuals.

Full transparency about these processes is perhaps the single most effective means by which to enable the communications industry to expeditiously plan and deploy networks. Centralizing this information also improves the process for updating technical details.

Considerations

- Developing a manual may take considerable time and resources
- How to develop mechanisms to routinely update the manual with industry and public feedback

[5] "Three Year Broadband Plan (New Mexico Broadband Plan Update)" Office of Broadband Access and Expansion, January 2, 2024, https://connect.nm.gov/uploads/1/4/1/9/141989814/state_of_new_mexico_three-year_broadband_plan_1-2-24_version_1.0.pdf.

Publish permit timeline expectations and metrics

Publishing expected durations for each step in the permitting process—along with average and maximum timelines in practice—creates transparency and accountability. For example, whether your community commits to review permit applications within three days, 10 days, or 20 days, that commitment should be publicized and then consistently met.

Localities have limited resources, and sometimes several different companies and industries can require local permit review and other types of local support at the same time. Thus, local needs and resources will determine how long each process will take, while transparency about and commitment to the amount of time will meet the needs of the private sector broadband provider. The provider may wish for a faster process, but at a minimum it will have the benefit of a transparent and open process with a predictable timeframe under which it can plan its project.

Such timeline expectations can be published in a table or in a flowchart, as seen in Figure 1. A timeline is most effective when it contains expectations for each sub-step of the permit review process, as seen in the example.

The need for transparency and communication is mutual: much as the locality should be open about its processes, the private deployer should do the same and should stage its buildout to maximize cooperation with the locality. Pre-construction conferences, for example, allow private providers and localities to understand and coordinate each other's plans and timelines.

This kind of cooperative planning enables a willing provider to stage permit and inspection requests rather than filing for an overwhelming number of permits at one time.

For localities where this approach may be feasible, establishing expected timelines can also help the local or Tribal government assess its permitting timelines and measure the impact of changes in permitting policy and procedure.

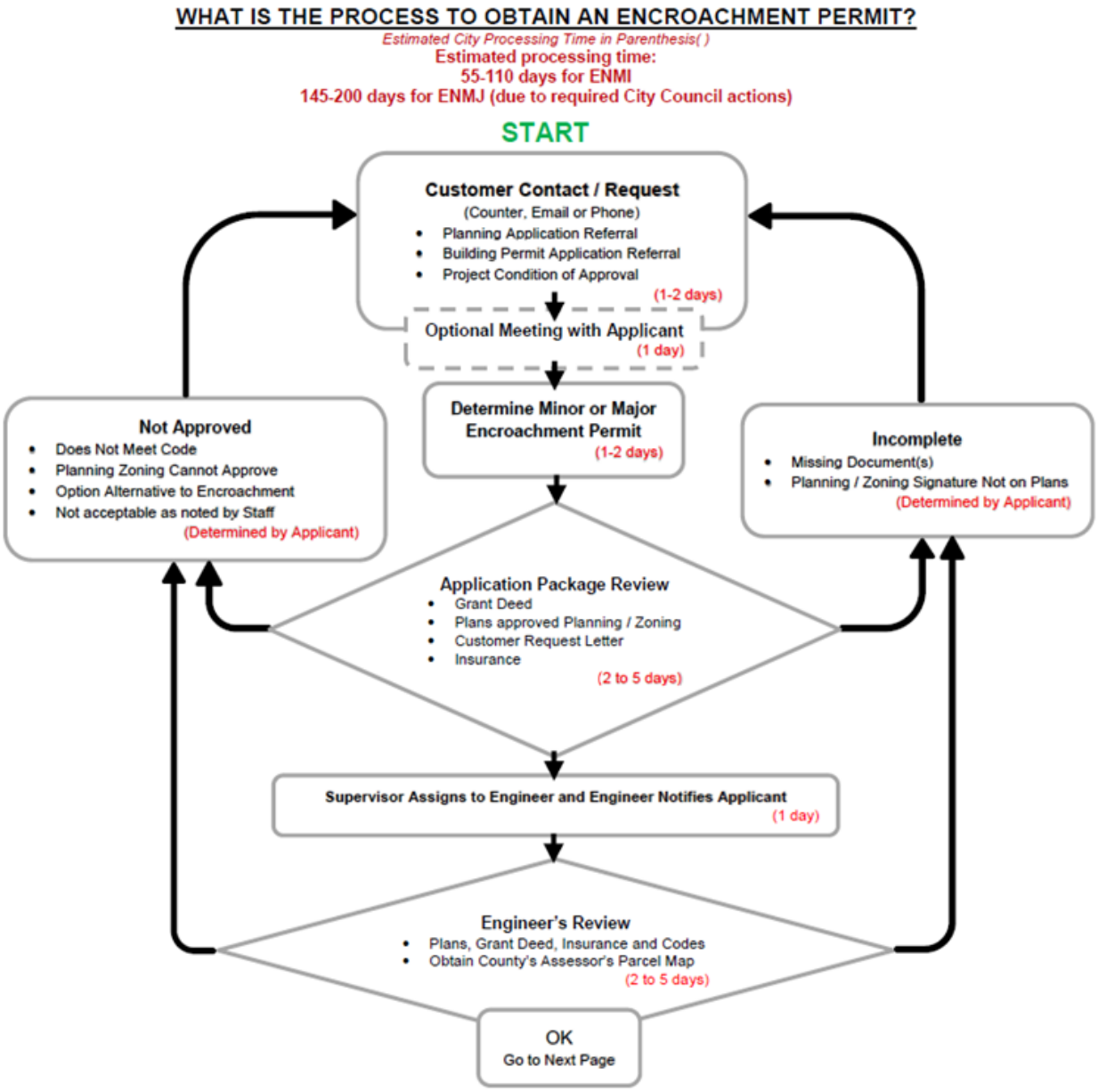
This action is similar to the "shot clock" permitting process discussed in OBAE's Initial Proposal for the Broadband Equity, Access, and Deployment (BEAD) Program.[6] In a "shot clock" approach, timelines are set and limit the timeframe of the application review in order to mandate faster processing of permits and other projects. Failure to adhere to the timeline in a "shot clock" process can result in a refund of a portion of the applicant's permit fees or the automatic acceptance of the application.

Considerations

- Need to allocate staff or hire a consultant to assess permitting timelines
- Need to map the permitting process workflow
- Need to understand provider's staffing

[6] "Initial Proposal Volume II [Draft for Public Comment]," Office of Broadband Access and Expansion, November 2023, https://connect.nm.gov/uploads/1/4/1/9/141989814/bead_nm_initial_proposal_v2_final_20231112_rev1.pdf.

Figure 1: Example permitting process and timeline (City of Oakland, California)



Create a mechanism for receiving feedback from applicants on the application process

Seeking feedback on the permitting process is a way that localities can foster relationships with broadband deployers—and also gather valuable information about how they might further optimize their processes. A local or Tribal government might include survey questions in the permit application, send applicants a post-application survey after a permit is issued, convene focus groups, or conduct one-on-one interviews with applicants to inform process improvement.

This can be especially helpful for localities with small staff and few resources, since stakeholders can help inform the process and develop ideas for the locality without the locality having to expend as much time

and resources to develop the ideas itself. That said, each locality should examine feedback and ensure it aligns with the locality's public interest and not solely the interest of one stakeholder.

These approaches might enable a Tribe or locality to receive direct, formal feedback on the permitting process with a goal of identifying and addressing inefficiencies (which affect both the local or Tribal government staff and the applicants).

Considerations

- Establish key performance indicators to track processes
- Develop a series of standard questions with measurable outcomes
- Embed the survey in the application process
- Assess staffing and capacity requirements so as to be able to sufficiently resource the effort
- Consider whether technology supports such as online portals for communication can address capacity issues

Best practice: Optimizing permitting for broadband projects

Experience shows that well-planned projects tend to be initiated, executed, and concluded more quickly. For example, the efficiency of a procurement process will often determine the success of a technology project that requires services or equipment. The same is true in a broadband project, and that is the case whether the entity building the broadband facilities is a local or Tribal government or a private entity.

However, a locality or Tribe, unlike a private sector partner, cannot optimize for only one goal in a broadband project; it must focus its internal processes and efforts on multiple objectives. Localities that are considering broadband-related permits are simultaneously juggling a range of considerations, including that: (1) broadband projects can impact other areas of local responsibility, such as the need to manage rights-of-way so commerce and movement are not disrupted; (2) broadband process efficiency efforts will entail public costs, such as the hiring of new staff; and (3) other local interests and projects compete with broadband projects for localities' resources and attention. As a result, optimization of permitting must be mindful of a locality's diverse considerations in addition to being rigorously planned for efficiency.

The Navajo Nation has coordinated permitting with the Bureau of Indian Affairs to gain authorization to grant a permit to access the right-of-way for Tribal enterprises and plans to establish a streamlined online permitting system. These measures allow for the Nation to optimize permitting in a way that aligns with its own priorities.[7]

[7] "Resources & Development Committee authorizes tribal access regulations without BIA approval for Navajo enterprises," 24th Navajo Nation Council Office of the Speaker, June 8, 2020, https://www.navajonationcouncil.org/wp-content/uploads/2020/09/RDC_approves_new_streamlined_ROW_rules_PR.pdf; "Broadband Initiative on Navajo Nation Notes Summary," meeting summary published by Coconino County, Arizona, October 27, 2022,

In this context of understanding the totality of local needs and projects, all clamoring for the same resources, the strategies presented here are intended to enable localities to facilitate broadband projects without sacrificing the localities' ability to simultaneously attend to other projects and priorities.

Establish a single point of contact for broadband permitting

Assigning one staff member (or, potentially, a small team within the relevant government agency or department) to broadband permitting can optimize elements of the permitting process for both the locality and applicants—while retaining the protections and critical value of the permitting process.

By clearly identifying a single point of contact for broadband permit planning and applications, a locality or Tribe can reduce the time applicants wait for responses to questions; increase the efficiency of the permit application review process; develop expertise among the locality's permit technicians; and potentially reduce the impact of the permit application caseload on staff members who do not have direct responsibility but who previously would have fielded calls and spent time tracking down answers for applicants.

Considerations

- Organizational structure
- Training and professional development
- Funding

Create a dedicated telecommunications permit

A dedicated permit can facilitate permitting, communications, and data collection around telecommunications projects. For localities with the capacity to do so, a dedicated permit can create a separation and specialization in staffing for permitting staff who focus on broadband-related permits and staff who focus on the other types of permitting common to local oversight.

In tandem with a single point of contact for broadband permitting issues and some of the other best practices identified here, a dedicated permit could optimize the permitting process for ISPs and other entities seeking to deploy broadband infrastructure.

Distinguish between major and minor broadband permits

Distinguishing between major and minor permits allows the permitting agency to expedite smaller or routine broadband projects. Taos County, New Mexico, for example, distinguishes between minor building permits and other building permits;[8] a similar distinction could be made for specific minor broadband projects and other more significant broadband constructions.

https://www.coconino.az.gov/DocumentCenter/View/54482/Broadband-Initiative-on-Navajo-Nation-Notes-102722.

[8] "Applications and Forms," Taos County, https://www.taoscounty.org/197/Applications-Forms.

In neighboring Arizona, the City of Tucson has developed four "Permit Review Lanes" that result in designated faster review times for specific permit types, including an "Express Lane," "Fast Lane," "Standard Lane," and "Complex Lane." This approach combines efficiency and transparency: certain projects are designated specific review timeline targets, such as 15 days for the "Fast Lane." [9]

New Mexico case study

Taos County distinguishes between minor building permits and other building permits to facilitate the permitting process.

The City of Oakland, California, as well, distinguishes between major and minor permits as follows:

- Minor encroachment: "…an encroachment into the public right-of-way resting on or projecting into the sidewalk area, but which is not structurally attached to a building, such as flowerpots, planter boxes, clocks, flagpole sockets, bus shelters, phone booths, bike racks, fences, non-advertising benches, curbs around planter areas, displays of flowers, fresh fruits and vegetables."
- Major encroachment: "…anything attached to a structure or constructed in place so that it projects into the public right-of-way such as basement vaults, kiosks, covered conveyors, crane extensions, earth retaining structures, and structure connected planter boxes, fences, or curbs. Projections over any public street, alley or sidewalk in excess of the limitations specified in the Oakland Building Code shall also be classified as major encroachments, including theater marquees, signs suspended above the sidewalk, oriel windows, balconies, cornices and other architectural projections."

This approach has enabled an enhanced permitting process that reduces the application timeline while still protecting local interests (e.g., distinguishing between commercial arteries and residential roads).

Although this approach in Tucson and Oakland applies for all permits, not just broadband permits, a similar approach could be taken for different types of broadband projects only.

Another type of difference in construction that should be addressed while considering the permitting process is the difference between broadband projects undertaken within the public road right-of-way (often accomplished through an encroachment permit) and those outside the right-of-way—and among the latter, the difference between projects on public property (often accomplished through a lease) and those on private property (often accomplished through a building and/or grading permit).

Considerations

- How to determine the threshold between major and minor (e.g., cost, type of project, mileage)
- How to allocate alternative staff for application review (e.g., field offices)
- How to optimize the different processes necessary for permits associated with construction in any of the following: in the public rights-of-way, on other public property, and on private property

[9] "Permit Review Lanes," City of Tucson, https://www.tucsonaz.gov/Departments/Planning-Development-Services/Permits/Permit-Review-Lanes.

Develop an online permitting portal

An online location for all permit submissions can enhance applicants' experience with the permitting process and create opportunities for departmental and interdepartmental collaboration. By eliminating the manual processes associated with permit intake and data entry, an online portal—if it is feasible for a locality to implement, given the budgetary and staffing resources required—could decrease permitting timelines and speed time to deployment.

New Mexico case studies

- The Navajo Nation has planned to develop a cloud-based right-of-way application review system
- Las Cruces uses a digital Citizen's Portal for permit application information, submission, and tracking

Further, because an online portal could be configured to capture all elements of an application in a central database, such an approach would have additional benefits in terms of the locality's record-keeping, mapping, and planning.

The Navajo Nation General Land Department planned to develop a cloud-based right-of-way system that allows for a streamlined process for application and review. The system, referred to as a One Stop Shop (OSS), involves three tiers of review and sends application submissions to the relevant departments for each review in sequence and follows a set timeline of a 10-day review period for each department.[10]

Efforts underway at the state government level offer a potential model for local and Tribal government planning. The New Mexico Department of Transportation (NMDOT) is establishing an ePermit portal to request and track the right-of-way approval process. That portal is anticipated to "improve permitting process transparency and consistency across all NMDOT districts."[11]

Another best practice may be having a single database for all project applications, including for transportation, construction, and other planning permits, which enables applicants to submit all permit application materials in one place.

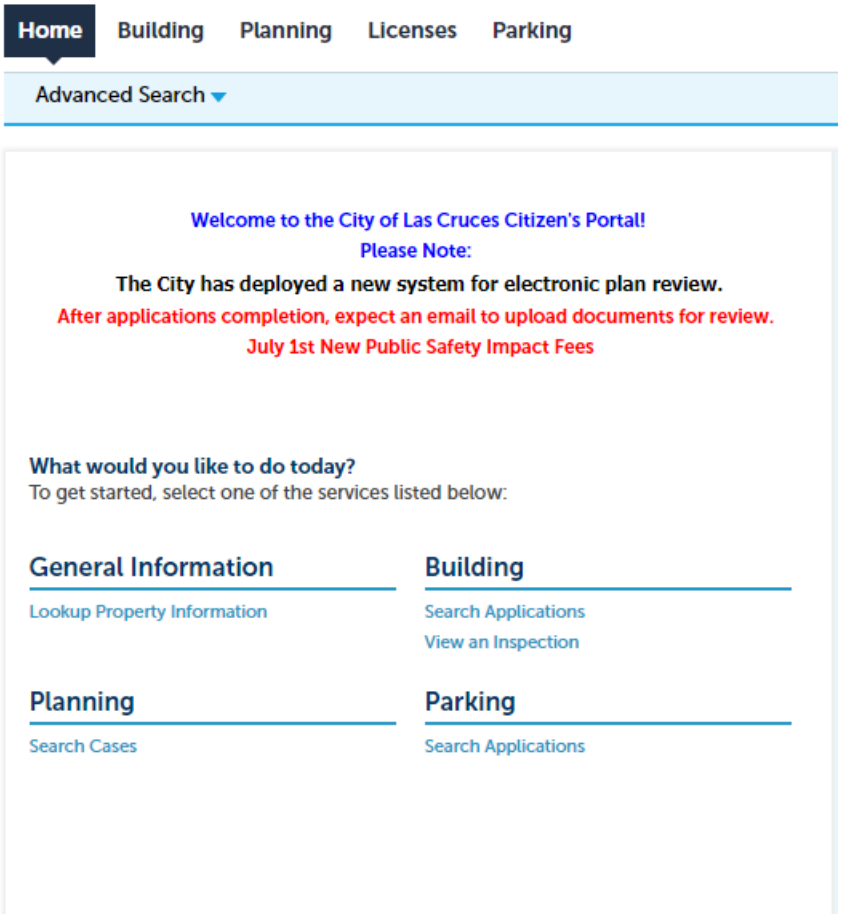
The City of Las Cruces, New Mexico, uses a Citizen's Portal[12] for application submittal, status updates on projects and permits, inspection requests, and payment submittal. It also includes guidance on different types of permits, including commercial and special use permits, with different review timelines for different kinds of projects. See Figure 2 for a screenshot of the Citizen's Portal.

[10] "Broadband Initiative on Navajo Nation Notes Summary," meeting summary published by Coconino County, Arizona, October 27, 2022, https://www.coconino.az.gov/DocumentCenter/View/54482/Broadband-Initiative-on-Navajo-Nation-Notes-102722.

[11] "Three Year Broadband Plan (New Mexico Broadband Plan Update)" Office of Broadband Access and Expansion, January 2, 2024, https://connect.nm.gov/uploads/1/4/1/9/141989814/state_of_new_mexico_three-year_broadband_plan_1-2-24_version_1.0.pdf, p. 61.

[12] "Welcome to the City of Las Cruces Citizen's Portal," City of Las Cruces, https://aca-prod.accela.com/lascruces/Default.aspx.

Figure 2: Las Cruces Citizen's Portal for permitting



Considerations

- Which permits, departments, and jurisdictions to include under one roof
- Governance and data sharing

Develop a batch permitting process

For localities anticipating large broadband-related projects that will require extensive but potentially repetitive permit applications, batch permitting might allow applicants to request a single permit that would cover a project typically subject to multiple permit applications. As with some of the other strategies presented here, a batch permitting process might reduce the permit application caseload, decrease the permit processing timeline, and improve a broadband deployer's timeline.

The City of Long Beach, California, for example, developed a bulk permitting process in 2020 for small cell wireless facilities that allows up to 10 sites to be grouped under a single permit. Applicants must negotiate specifications before submitting the application, and sites must all be either Tier A (commercial arterial) or Tier B (residential roads). This enhanced permitting process has improved the city's timeline while still protecting local interests (e.g., distinguishing between siting locations proposed on commercial arteries and residential roads).

Considerations

- Determining permit boundaries (i.e., limiting bulk permits to a certain number of projects or a certain geographic area)
- Allocating staff for dedicated application review

Coordinate permitting policies and procedures among jurisdictions in the region

Regional alignment on permitting policies and procedures is an innovative opportunity to standardize permitting processes, thereby enhancing the application process. In such coordination, regional organizations like councils of governments or economic development districts establish regional standards for broadband permitting policies and procedures that localities would ascribe to.

A primary benefit of this approach, to the extent it is feasible to implement, is that it creates a straightforward and predictable permitting process for applicants—which might otherwise apply for a single permit they believe will meet all requirements, only to discover at a later point that their project actually requires additional permits from other local, regional, or state entities with potentially different application processes and requirements.

In Arizona, for example, the Maricopa Association of Governments developed design standards and uniform standard specifications for construction; the association then encouraged all the localities in the Maricopa area to publish and promote the same standards, thereby coordinating requirements across jurisdictions.[13]

New Mexico case study

The Navajo Nation coordinated with the Bureau of Indian Affairs to obtain the authority to approve its own rights-of-way for Tribal enterprises, thereby simplifying the permitting process.

This approach could be especially helpful for New Mexico localities, given the patchwork of ownership and jurisdictions across the state, including federal agencies such as the Bureau of Land Management, National Forest Service, and Bureau of Indian Affairs (BIA); state agencies such as the Department of Transportation and State Historic Preservation Office; Tribes and Pueblos; and localities.

For example, the Navajo Nation is located in northwest New Mexico, where it is bordered by other reservations and Tribal nations, other categories of Tribal land (including allotments and Tribal ranches), Bureau of Land Management land, Forest Service land, rural localities, and a National Historical Park.[14] And within the Navajo Nation, different Tribal nation and BIA regional agencies administer different areas.[15] Given the complex array of permits that would be required to deploy broadband infrastructure in this area, coordination among as many jurisdictions as possible could benefit broadband deployers.

The Navajo Nation has worked on updating rules and regulations for telecommunications in order to minimize the need for BIA approval on its own rights-of-way. It obtained the authority to approve its own

[13] "Specifications and Details," Maricopa Association of Governments, https://azmag.gov/Programs/Public-Works/Specifications-and-Details.
[14] "Navajo Nation," https://www.arcgis.com/home/webmap/viewer.html?webmap=70d7b2a7a13d4a9d8859c2a0e2fcb0e3 (accessed January 4, 2024); "Administrative Boundaries," Indian Country Grassroots Support, https://dinelanduse.org/boundaries/.
[15] "Administrative Boundaries," Indian Country Grassroots Support, https://dinelanduse.org/boundaries/.

rights-of-way with a document submission to the BIA rather than requiring BIA approval, thereby streamlining its ability to conduct right-of-way activities on its own surface sources.[16] This streamlining and coordination with respect to other jurisdictions and agencies is particularly helpful for Tribal nations.

Some other approachable ways for localities to standardize permitting policies and procedures include allowing permitting processes to run in parallel; eliminating prerequisite permits or processes; and modeling permitting requirements on other state or federal applications so the process is similar to other processes in which the deployer is engaged.

Considerations

- How to promote regional collaboration (e.g., a resource hub on the locality's website, a regional taskforce, leadership from elected officials)
- How to incorporate localities, special jurisdictions, and councils of government
- How to resolve policy disagreements

Develop relationships with Tribal leaders and officials

Broadband infrastructure that crosses both Tribal and non-Tribal land requires multiple approvals and permits. As a result, developing relationships with neighboring Tribes may help local governments streamline such projects.

Misalignment with Tribal governments' processes and priorities can also prevent a broadband project from serving communities effectively and respectfully. Aligning and collaborating with Tribal governments is crucial for both Tribal and non-Tribal entities, as broadband projects can extend through multiple jurisdictions, multiple Tribes or Pueblos, and multiple types of Tribal land.

Relationships with neighboring Tribal leaders and officials can ensure that a deployer, Tribal government, or local government respects neighboring Tribal goals, priorities, and needs in its broadband deployment projects and shares useful broadband information with them, as described in other parts of this guidebook. It also may facilitate the approval process: If the relevant entities and leaders are involved from the beginning, delays for approval or reconsideration based on Tribal feedback are less likely.

This practice aligns with the Connect NM PROP working group's objective to strengthen relationships with Tribes and Pueblos, developing "collaborative approaches and shared resources to develop permits and rights-of-way."[17]

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[16] "Resources & Development Committee authorizes tribal access regulations without BIA approval for Navajo enterprises," 24th Navajo Nation Council Office of the Speaker, June 8, 2020, https://www.navajonationcouncil.org/wp-content/uploads/2020/09/RDC_approves_new_streamlined_ROW_rules_PR.pdf; "Broadband Initiative on Navajo Nation Notes Summary," meeting summary published by Coconino, Arizona, October 27, 2022, https://www.coconino.az.gov/DocumentCenter/View/54482/Broadband-Initiative-on-Navajo-Nation-Notes-102722.

[17] "Three Year Broadband Plan (New Mexico Broadband Plan Update)," Office of Broadband Access and Expansion, January 2, 2024, https://connect.nm.gov/uploads/1/4/1/9/141989814/state_of_new_mexico_three-year_broadband_plan_1-2-24_version_1.0.pdf.

While the BIA generally approves right-of-way applications for Native lands and Tribal nations, it is directed to defer to Tribes and Native owners in determinations. For the Navajo Nation, the Navajo Land Department can grant Tribal right-of-way authorization access for Navajo enterprises without requiring BIA approval.[18]

If localities and Tribes have solidified relationships with neighboring Tribal leaders, officials, and organizations, localities can provide connections to deployers to partner with Tribal utilities, co-ops, companies, and organizations in deployment. In such collaborations, permitting and access to streamlined programs are facilitated by Tribal partnership and Tribal entities receive more contributions for their infrastructure.

Best practice: Staying up to date with changing state and federal rules and programs

Revisit all policies periodically to comply with state and federal rules

Regularly revisiting permitting processes can help ensure compliance with current federal and state requirements. Such periodic reviews and revisions may also minimize delays related to questions from applicants. This approach also will help ensure that permitting processes and timelines follow the evolving set of state and federal regulations.

State and federal agencies publish rules and program guides on their websites, including NMDOT's Right of Way Bureau page that includes handbooks and guides from NMDOT and other state and federal agencies.[19] The State Land Office also publishes rules, forms, policies, and procedures on its website.[20]

Other resources provide information on the range of relevant rules at different levels of government. The National Telecommunications and Information Administration (NTIA) publishes a federal permitting guide that describes multiple agencies' requirements and processes.[21] The New Mexico Municipal League shares bulletins and updates about state legislative news, including on issues related to infrastructure and related areas.[22] Municipal and county ordinances can be found through the University of New Mexico library guide.[23] Revisiting these pages periodically can help a locality or Tribe be aware of changes to rules or policies.

Considerations

[18] "Resources & Development Committee authorizes tribal access regulations without BIA approval for Navajo enterprises," 24th Navajo Nation Council Office of the Speaker, June 8, 2020, https://www.navajonationcouncil.org/wp-content/uploads/2020/09/RDC_approves_new_streamlined_ROW_rules_PR.pdf.
[19] "Right of Way Bureau," New Mexico Department of Transportation, https://www.dot.nm.gov/infrastructure/right-of-way-bureau/.
[20] "Rights of Way," New Mexico State Land Office, https://www.nmstatelands.org/divisions/commercial-resources/rights-of-way/.
[21] "Federal Permitting," Broadband USA (National Telecommunications and Information Administration), https://broadbandusa.ntia.doc.gov/resources/federal/federal-permitting.
[22] "Legislative News & Information," New Mexico Municipal League, https://nmml.org/180/Legislative-News-Information; see also "Summaries of Laws," New Mexico Municipal League, https://nmml.org/Archive.aspx?AMID=40.
[23] "New Mexico Legal Research Guide: Municipal & County Ordinances," University of New Mexico School of Law, https://libguides.law.unm.edu/c.php?g=244202&p=1692906.

- Identify a staff or department to be tasked with following developments in telecommunications law, such as a City Attorney's Office or County Counsel
- Resources available from NTIA's BroadbandUSA site,[24] the New Mexico Office of Broadband Access and Expansion,[25] the New Mexico Department of Transportation,[26] the State Land Office,[27] the University of New Mexico School of Law,[28] and the New Mexico Municipal League[29]

Learn about federal and statewide permitting, right-of-way, and pole attachment programs and updates

OBAE established the permitting, right-of-way, and pole attachment (PROP) working group with subject matter experts to develop and advocate for policies and initiatives to streamline the broadband deployment process. PROP initiatives have resulted in statewide changes and policies that improve permitting, fees, and other aspects of deployment.

Local and Tribal governments could notify local deployers about these state policies designed to facilitate broadband projects. For example, the New Mexico Transportation Commission has the ability to waive right-of-way fees and other administrative and annual fees for broadband projects to serve unserved and underserved locations, per broadband legislation passed in 2023.[30] Legislative language extending utilities' easements and rights-of-way was drafted by the PROP working group and will be reviewed in the 2024 legislative session.[31]

OBAE has stated in its BEAD Initial Proposal that the State Land Office, too, intends to reduce fees for access to rights-of-way on state lands as part of its support for BEAD-funded

Resources

- Connect NM PROP working group
- Statewide Transportation Improvement Program portal to coordinate "Dig Once"
- Federal FAST-41 program for large or Tribal projects
- NMDOT right-of-way certification course
- Connect NM Tribal Working Group
- New Mexico Transportation Commission waiver of right-of-way fees (per HB 160)

[24] "Federal Permitting," Broadband USA (National Telecommunications and Information Administration), https://broadbandusa.ntia.doc.gov/resources/federal/federal-permitting.
[25] OBAE's publications (including a mailing list) and website contain information and updates about broadband initiatives and programs in New Mexico. See "Office of Broadband Access & Expansion (OBAE)," ConnectNM, https://connect.nm.gov/about-obae.html.
[26] "Right of Way Bureau," New Mexico Department of Transportation, https://www.dot.nm.gov/infrastructure/right-of-way-bureau/.
[27] "Rights of Way," New Mexico State Land Office, https://www.nmstatelands.org/divisions/commercial-resources/rights-of-way/.
[28] "New Mexico Legal Research Guide: Municipal & County Ordinances," University of New Mexico School of Law, https://libguides.law.unm.edu/c.php?g=244202&p=1692906.
[29] "Legislative News & Information," New Mexico Municipal League, https://nmml.org/180/Legislative-News-Information; see also "Summaries of Laws," New Mexico Municipal League, https://nmml.org/Archive.aspx?AMID=40.
[30] "New Mexico Broadband Legislation," Connect New Mexico, https://connect.nm.gov/nm-legislation.html.
[31] "Three Year Broadband Plan (New Mexico Broadband Plan Update)" Office of Broadband Access and Expansion, January 2, 2024, https://connect.nm.gov/uploads/1/4/1/9/141989814/state_of_new_mexico_three-year_broadband_plan_1-2-24_version_1.0.pdf.

infrastructure projects.[32] A Statewide Transportation Improvement Program portal[33] publicly discloses future highway construction projects to facilitate the planning of parallel broadband projects by following "Dig Once" principles.

The Department of Transportation is developing policies to allow private providers to be considered utilities and to receive expanded access to rights-of-way as a result.

Permitting points of contact could take the NMDOT Right-of-Way Bureau's certification course in permitting and right-of-way issues. Learning NMDOT right-of-way processes and procedures from the Department itself can be invaluable to know the procedures required for any projects in the point of contact's jurisdiction. For some federal funding for Tribal and local public agencies, completion of the certification may be required to receive funding.[34]

Each of the policies and initiatives above—and others like them that are in development—are useful for a locality or Tribe to know and communicate to deployers in local handbooks, websites, and meetings to encourage more efficient projects.

Similar policies and updates are expected to continue, emphasizing the importance of receiving and reading materials from PROP and other statewide broadband information sources.

Localities can sign up for the PROP mailing list to stay up to date on news of further changes to the deployment process; interested participants can attend PROP meetings every other week.

Other processes are available specifically for Tribal projects or projects sponsored by Tribal entities. One example is the FAST-41 program, which sets a federal commitment to a timeline for review and authorization by federal agencies and waives its requirement regarding the size of the project (which normally must be $200 million or more) for projects with Tribal sponsorship.

New Mexico case study

The Pueblo Education Network participates in the federal FAST-41 program and benefits from greater accountability and transparency for timelines and processes.

One Tribal project that has taken advantage of the FAST-41 program is the Pueblo Education Network (PEN), which is being developed by the Santa Fe Indian School and is planned to connect Tribal schools, homes, businesses, and anchor institutions. Thanks to the FAST-41 program, the federal

[32] "Initial Proposal Volume II [Draft for Public Comment]," Office of Broadband Access and Expansion, November 2023, https://connect.nm.gov/uploads/1/4/1/9/141989814/bead_nm_initial_proposal_v2_final_20231112_rev1.pdf.
[33] "Statewide Transportation Improvement Program (STIP)," NMDOT, https://estip.dot.state.nm.us/.
[34] "Tribal/Local Public Agency Handbook 2019," NMDOT, https://realfilef260a66b364d453e91ff9b3fedd494dc.s3.amazonaws.com/076909fb-8499-4894-8f11-167f945f0527?AWSAccessKeyId=AKIAJBKPT2UF7EZ6B7YA&Expires=1705090821&Signature=vq0Au%2Fp1MUGwJUx1GMnX3YaXKL4%3D&response-content-disposition=inline%3B%20filename%3D%22T-LPA%20Handbook%20for%20Federal%20Projects.pdf%22&response-content-type=application%2Fpdf, pp. 85-86.

government guarantees the PEN greater accountability and transparency for permitting timelines and processes.[35]

A Tribal entity can stay up to date on state and federal programs and on relevant Tribal considerations through the Connect New Mexico Tribal working group[36] and the NTIA Tribal Broadband Leaders Network,[37] as well as all other state groups including the Connect New Mexico PROP working group.

Considerations

- How to engage with the PROP working group, given limited time and staffing resources

Best practice: Developing strategies for scaling up staffing and support

Attempts to enhance local processes frequently conflict with the need for resources to enable the processes—particularly for large short-term projects such as a broadband network deployment. The need to issue many permits and assess numerous job sites in a short timeframe can challenge localities and Tribal governments if they do not have sufficient permitting staff. On the other hand, it is not financially feasible for localities to maintain sufficient staff for such intensive short-term efforts, because those staff members will have little or nothing to do during the interim periods when large projects are not underway.

This challenge is particularly relevant for small, rural, or Tribal localities, who have smaller staff workforces to draw from. As such, many localities in New Mexico may need to develop strategies for scaling up staffing and support, including the potential solutions below.

This significant public sector challenge affects both the locality and the private broadband provider, with both needing deployment to proceed as quickly and efficiently as possible. One potential solution is for the locality or Tribe to find means by which local processes are respected but the broadband provider can use its own resources to supplement public sector staff.

For example, a Tribal government or locality can undertake a procurement process in which it prequalifies contractors with the experience and the independence to serve as third-party inspectors of new broadband facilities. Through the preclearance process, the locality qualifies companies that can be contracted by a broadband provider to supplement the locality's own inspection staff.

The locality's own staff can check a sample of the contractor's inspection work and verify its quality and validity to ensure that the contractors remain independent and meet the locality's needs, even as the contractor is hired and paid by the provider. Any contractor whose inspections do not meet the locality's standards must be removed from the list of approved vendors—a penalty that incents the vendor to work appropriately and enables the locality to maintain quality control and quality assurance.

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[35] "Santa Fe Indian School Broadband," Permitting Dashboard Federal Infrastructure Projects, https://www.permits.performance.gov/permitting-project/fast-41-covered-projects/santa-fe-indian-school-broadband (accessed January 5, 2024); "First-Ever Tribal and First Broadband Project Receives FAST-41 Coverage," Permitting Council Press Office, May 9, 2023, https://www.permits.performance.gov/fpisc-content/first-ever-tribal-and-first-broadband-project-receives-fast-41-coverage.

[36] "Tribal Working Group," Connect New Mexico, https://connect.nm.gov/tribal-working-group.html.

[37] "Tribal Nations," NTIA Broadband USA, https://broadbandusa.ntia.gov/resources/tribal-nations#StateEngagement. "Tribal Nations," NTIA Broadband USA, https://broadbandusa.ntia.gov/resources/tribal-nations#StateEngagement.

This mechanism was used effectively during the large cable upgrades of the late 1990s. Some local governments allowed cable operators to pay third parties (either directly or by reimbursing the locality) to independently verify compliance with design and construction standards, thus enabling fast approval of the operator's design and construction even where the locality did not have the necessary internal resources for the entire process.

In its Three Year Broadband Plan update for 2024, OBAE announced plans to develop a specialized support structure that may help small utilities handle permitting-related tasks related to broadband construction in local communities. The program, which OBAE aims to deploy in 2024, will provide supplemental resources to assist with permit-related technical tasks such as surveys, engineering, and evaluations. The support may entail assistance from specialized vendors; access to expert consultants, information, or tools; or supplemental staffing.[38]

Considerations

- Administration to negotiate agreement terms
- Oversight of independent inspectors
- Concerns of small companies that cannot afford inspectors

[38] "Three Year Broadband Plan (New Mexico Broadband Plan Update)" Office of Broadband Access and Expansion, January 2, 2024, https://connect.nm.gov/uploads/1/4/1/9/141989814/state_of_new_mexico_three-year_broadband_plan_1-2-24_version_1.0.pdf, p. 61.

2. Strategies for facilitating access to key assets

Best practices for maximizing access to fiber, conduit, real estate, or other facilities that would make broadband infrastructure deployment less costly

One of the primary challenges to deploying broadband infrastructure is the high capital cost of network construction. Localities own assets that can reduce the need to construct some elements of new networks and thereby reduce total up-front capital costs. A locality or Tribe may improve the investment scenario for a potential deployer if the locality can make assets like fiber optic cables, conduit (i.e., a protective tube installed underground through which fiber can be pulled at low cost), and secure space in government-owned buildings (i.e., for locating a provider's network electronics) available for private use.

As with all of the strategies and best practices presented in this guidebook, the intent here is for the locality to receive value in return for the efforts it makes to enable a broadband deployer's efforts. That value may be financial (such as a lease payment in return for access to a city's fiber network) or it may be less tangible (such as a commitment by the partner to deliver broadband service to low-income residents in return for access to a city's excess conduit). Either way, the locality will facilitate broadband deployment in partnership with the deployer; the relationship should not favor the deployer over the public interest.

Best practice: Creating access to public assets for new deployment

The capital cost of deploying broadband can be reduced through access to three types of public assets:

1. **Unlit (dark) fiber optic strands**, either underground or on utility poles, such as excess fiber that a city may have constructed to meet its public safety or internal networking needs; because each fiber cable has dozens or hundreds of separate fiber strands, and each fiber optic strand holds enormous capacity, a locality can sell or lease excess strands within a fiber bundle without compromising the original purpose of the fiber
2. **Excess capacity in underground communications conduit**, which a deployer could use to install new fiber
3. **Real estate**, such as public buildings with secure rooms or cabinets where networking equipment can be located—or small parcels of land where network equipment huts can be constructed

Fiber and conduit are particularly valuable assets where construction is most costly or difficult, such as urban areas; crossings of bridges, waterways, and rail lines; key building entries; and alongside major roads.

Enable leasing of public assets to ISPs

Leasing excess strands in a local network can help in establishing an ISP's network backbone. If a Tribe or locality's fiber widely covers the community, it can provide an immediate way to establish a point of presence in key areas (such as near unserved apartment buildings or on the edge of rural, unincorporated land).

A locality's available conduit can also assist in broadband deployment. Pulling new fiber cables through a locality's existing conduit can reduce a provider's need for construction—lowering its capital costs and time to build. [39]

In leasing existing fiber or conduit, the Tribe or locality benefits by speeding broadband deployment, reducing damage and disruption to the rights-of-way, and minimizing impacts on vehicular and pedestrian traffic; it may also earn lease revenue. As a result, the New Mexico Department of Information Technology (DoIT) recommended leasing existing and future fiber to ISPs as a strategy to facilitate broadband acceleration.[40]

And while not all communities have built their own fiber or conduit, almost all localities and Tribes own real estate in locations that can help make a new broadband network more feasible. Localities may be able to reduce the cost and complexity of an ISP's deployment by providing access to secure spaces for network equipment. For example, a secure room in a city building with sufficient power access and ventilation might be used for a data center or network operations center.

A county-owned plot of land or right-of-way might host a hut—designed to blend in to the neighborhood's aesthetics—for the network equipment and edge computing devices that must be placed in or near the neighborhoods where homes and businesses are connected to a new fiber or wireless network.

Experience indicates that access to assets such as these may decrease a network deployer's initial capital costs by up to about 10 percent, depending on the extent of the community's infrastructure. In all such cases, however, it is important to note the locality's need to consider present and future uses of public property before making it available to any private party.

Similarly, any asset leases must comply with state laws and local ordinances pertaining to leasing public property—and improvements installed on public property must also comply with all applicable legal requirements (such as prevailing wage and/or competitive bidding, when triggered).

Considerations

- Requires a database[41] of public assets' locations and other criteria needed by telecommunications providers
- Project management staffing may be needed
- Requires a leasing agreement and term sheet

[39] Pulling new fiber through an existing conduit route is significantly less expensive than the underground construction required to install new conduit and fiber.
[40] "Legislative Finance Committee," NM Department of Information Technology, June 23, 2021, https://www.nmlegis.gov/handouts/ALFC%20062221%20Item%208%20LFC%20Broadband%20Presentation%20vF062221.pdf; "Local Broadband Planning Guide," New Mexico Office of Broadband Access and Expansion, January 2022, https://www.doit.nm.gov/wp-content/uploads/sites/4/2022/03/NMBBP_Local_Broadband_Guidance_Final.pdf.
[41] A GIS database is ideal but not critical.

Leasing fiber and conduit

Fiber and conduit leasing represents another best practice and successful strategy used by many localities and states. A leasing program is designed to create access to broadband infrastructure where none otherwise exists on the market—often in the "middle-mile" that extends from a global internet connection point (typically in a large city) to a local community—thus reducing the cost for ISPs to build "last-mile" connections to customers' homes and businesses.

A fiber or conduit leasing program can be structured to be competitively neutral and open to all providers. To protect the locality's own long-term flexibility and use of the assets, and to ensure opportunity by the private sector, leasing of available assets by any single entity can be limited to a fixed percentage of available capacity.

Leasing programs can be managed internally or through contractors. To further broadband public policy goals, pricing for assets can be developed to encourage investment in unserved areas or credits can be given following private investment in such areas.

An ISP does not necessarily require a large number of middle-mile fiber strands to enable it to serve customers in a new area. For this reason, leasing excess capacity on an existing public network—even where there may only be a dozen or so spare fibers—is frequently one of the most feasible, effective steps a community can take to help a broadband deployer.

Similarly, a locality or Tribe can lease conduit and provide considerable capacity for a network provider (which would install its own fiber in the conduit). For example, a 3-inch conduit can be physically segmented into three parts by installing innerducts (basically a tube within the tube), each of which can carry a cable with hundreds of strands of fiber.

Conduit can be made available to an ISP by granting access at a designated manhole or in a public building. The service provider or the locality can be responsible for the maintenance of the conduit.

As with fiber, a conduit system with community-wide continuity can provide an immediate, cost-effective way to reach throughout the locality, even if a partner's construction is starting in another part of the locality. Also, like fiber, conduit is more valuable if it helps avoid expensive construction across a major road or bridge, or in another costly or difficult-to-build area.

One advantage of leasing conduit, relative to fiber, is that it affords the locality more separation from the operations of the ISPs that might use that infrastructure. Once the locality assigns a conduit and access points, it coordinates with the ISP less frequently for maintenance or repair than it would with a fiber lease.

However, conduit leases also pose disadvantages relative to leasing fiber. One is that conduit and conduit banks are less able to be segmented and therefore provide less flexibility than fiber. A fiber cable has dozens and potentially hundreds of fiber strands, any of which can be used by the locality, leased, or kept in reserve. In contrast, there are rarely more than a few conduits in a route (sometimes only one) and only a few possible segmentations of each conduit—so it is easier to run out of conduit over a given route.

The conduit strategy has been used effectively by the City of Mesa, Arizona, which pioneered underground communications conduit infrastructure in the 1990s. The city's joint trenching projects

enabled construction of conduit in the least disruptive manner and offered low-cost construction opportunities for commercial providers and businesses. The city also capitalized on every opportunity to add new conduit; it evaluated the feasibility of construction cost-sharing for all underground trenching and boring opportunities, such as roadway widening, gas or utility pipeline installation, and commercial fiber optic construction (such "Dig Once" strategies are discussed in detail below). As a result, the city cost-effectively built robust conduit rings in key parts of the city—then made the conduit available to private parties.

In its 2024 update to the New Mexico Three Year Broadband Plan, OBAE recommended statewide conduit sharing and leasing policies and established conduit sharing policies as a key action item. These plans are in development as part of OBAE's broader planning efforts around BEAD and facilitating broadband infrastructure deployment.

Leasing facility space

Network providers require secure, accessible, and suitable spaces for their electronic equipment. Ideally, these spaces should be evenly geographically distributed through a service area. Availability of secure space relatively near customers' homes and businesses enables greater performance and variety of service—and offers the provider more flexibility to cost-effectively build or upgrade its network. For these reasons, local or Tribal governments that lease such space (or create a mechanism for predictably and cost-effectively obtaining space) can reduce providers' deployment costs and enable new technology benefits.

Local or Tribal government-owned buildings and their adjacent land can be logical locations for communications infrastructure. Such buildings include public safety buildings, schools, and libraries—all of which tend to be located in neighborhoods throughout a community, in a geographically even manner.

Localities can inventory their infrastructure to determine where space and access may be available for use by broadband providers, and then make this information available to private deployers. In addition, in planning areas of new development, localities can plan in light of the need for suitable locations in or near public buildings where a provider can locate equipment, in the same way it might plan for power transformers or water or sewer locations.

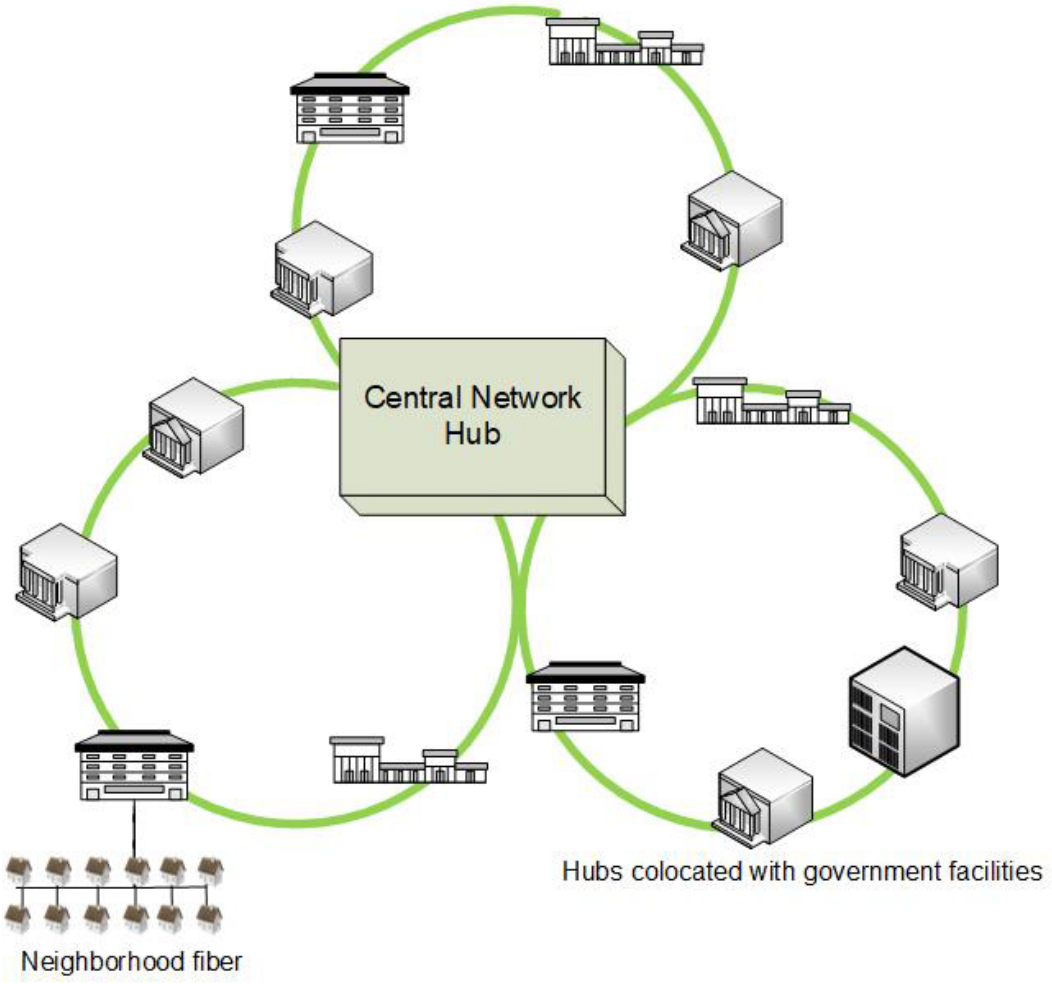
In an optimal scenario, the locality can identify and lease secure, accessible space for the hub locations in government facilities (primarily government buildings, public safety facilities, public housing, libraries, and schools). In some scenarios, the locality may also be able to provide rooftop access for wireless antennas that a provider can use to extend wireless internet service to customers living where fiber cannot be cost-effectively built.

The benefits to the new broadband provider can be significant. First, if it is able to collocate its central hub facility or data center with a hardened government facility such as an emergency communications center, the provider has the benefits of a secure facility; backup generator and battery power; multiple utility entry/exit points; and proximity to external networks.

To activate a hub facility that is collocated with a government facility, the provider would need only to place racks, upgrade and expand power and cable distribution, and purchase the network-specific equipment. A hub facility can house electronics, management and content servers, and the network's

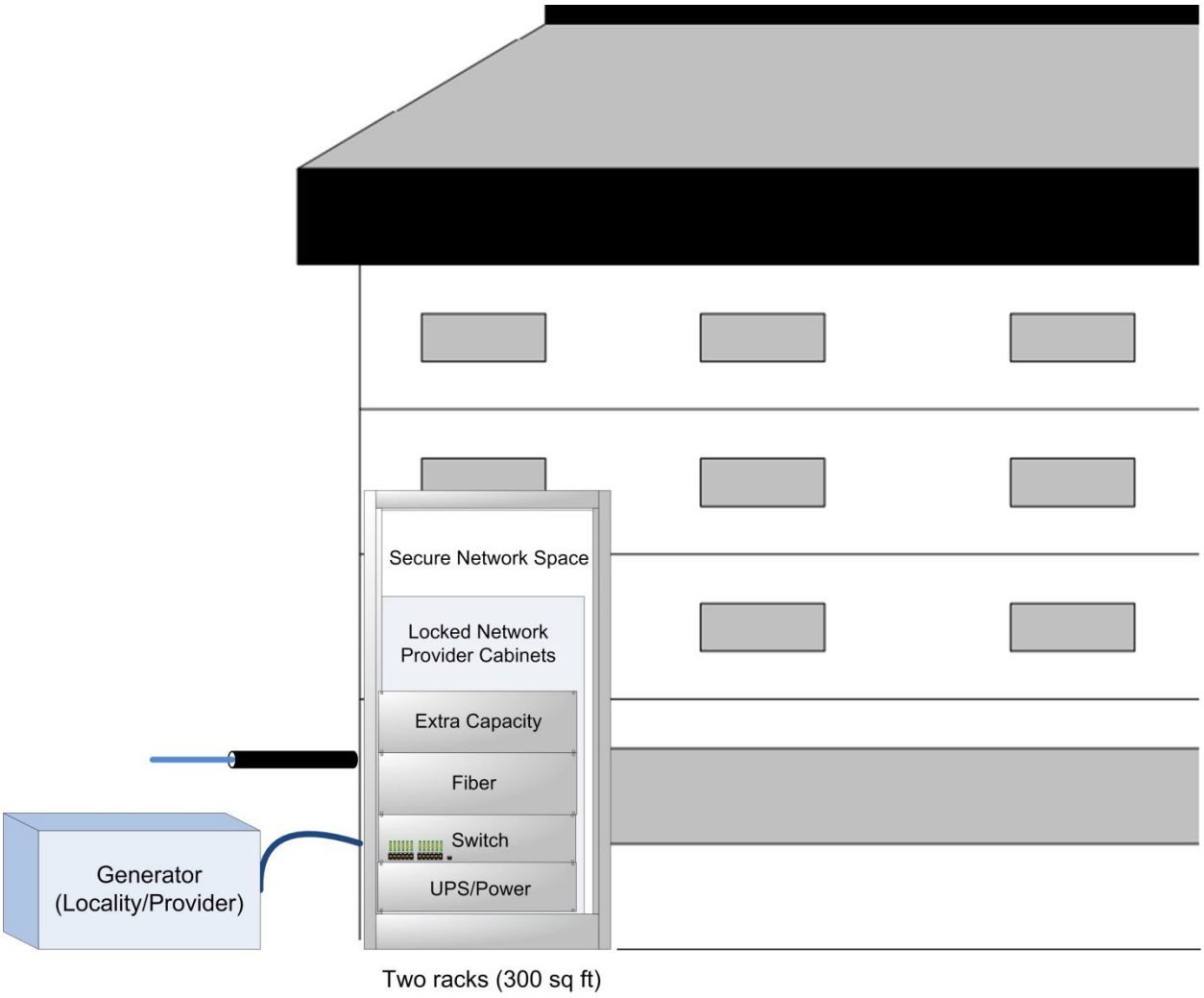
interconnection with external backbone networks (see Figure 3). It requires 1,000 to 3,000 square feet, depending on the system size and services provided.

Figure 3: Sample scenario for government-provided facilities



Second, the new provider also benefits if it can lease space in public buildings to serve as remote hub locations. In each of these, a smaller amount of space is necessary (see Figure 4), ideally collocated with the local or Tribal government facility's network room or telecommunications closet. The service provider can install local switching and routing equipment capable of providing any speed service.

Figure 4: Illustration of private provider use of government buildings



The Tribe or locality also benefits from this leasing arrangement: speeding new network deployment; maximizing use of government facilities that are optimized for such benefits as backup power and security; and potentially realizing lease revenues.

There exist operational benefits for the local or Tribal government, too: because the network provider's hub infrastructure is present in many major government facilities, the locality can inexpensively connect individual buildings to the network and can locate its servers and data on the provider's network (i.e., "on-net"). As a result, access to public buildings can be a boon to providers.

Absent access to public buildings, providers may encounter difficulty obtaining permission to install generators or may not be able to secure appropriate in-building space at all.

Leasing real estate

Where public buildings are not available, a Tribe or locality might also lease land suitable for a provider to construct a standalone hub facility. This would achieve the same ends as leasing space in an existing facility—and could even make access easier for the ISP.

In the absence of publicly owned space for lease, a new provider would need to lease indoor space from private landlords or build huts on leased private land. This can be more challenging than leasing public property: Premium space, well located, must be found and leased or purchased in the private marketplace. The network provider needs also to install generators, backup power, racks, interconnection with external backbone networks, core electronics, management and content servers, and staff offices.

Trade or swap access to public assets for access to private infrastructure

As a means of making public assets available where leasing is not feasible, consider how in-kind payment could make the locality's assets accessible to broadband deployers while advancing public goals. Trades or swaps for fiber, conduit, or real estate could be considered as alternatives to monetary payments.

A trading strategy would allow providers to use the locality's conduit or fiber in exchange for the providers allowing the locality to use a negotiated amount of conduit or fiber from the provider's network in areas where needs facilities for its own internal use. Trading between entities does not necessarily have to entail conduit or fiber, though these may be the most common form of trade. Access to other local or Tribal government facilities, such as hub sites, could also be explored as trade opportunities.

An asset swapping or trading strategy can enable the efficiencies of a multi-use infrastructure environment and effectively multiply the impact of every mile that the locality constructs, because excess capacity in government-constructed areas can be traded for capacity that other providers have constructed, or that they will construct in the future. Security and control issues can be managed through contract terms and robust enforcement, based on engineering best practices and industry standards.

Resources

- NMDOT fee waiver program for fiber or conduit trade programs

One example of an access exchange is the Utah Department of Transportation's (UDOT) access tracking and swapping system, which includes a portal where assets and existing rights-of-way are shared through a point system exchange. OBAE has established an objective of emulating this functional system and set a 2024 objective to work within the New Mexico Administrative Code to develop "a program for sharing passive infrastructure in New Mexico to include establishing clear legal frameworks, mandating infrastructure sharing, developing a central database, implementing streamlined procedures, encouraging infrastructure collaboration, setting pricing guidelines, and monitoring and enforcing the requirements."[42]

[42] "State of New Mexico Data Collection Annual Report," Connect New Mexico (Office of Broadband Access and Expansion), October 2023, https://connect.nm.gov/uploads/1/4/1/9/141989814/new_mexico_data_collection_annual_report_-_10022023.pdf, p. 41.

The New Mexico Department of Transportation (NMDOT) and the PROP working group have developed a fee waiver program for in-kind fiber or conduit contribution, which reduces right-of-way fees for a deployer in exchange for reduced pricing for the state's use of the deployer's broadband service or for the state's "Dig Once" access to the construction project. Localities should encourage deployers to participate in this program and could develop similar programs in their jurisdiction.

Considerations

- May require an enabling local ordinance
- Benefits from the development of a broadband office, broadband strategic plan, public asset portfolio, and public asset lease program

Use more efficient techniques such as microtrenching

Microtrenching is typically a more cost-effective and efficient method of underground facility construction than the conventional techniques of trenching, horizontal drilling, or plowing. Jobs of up to 3,000 feet can be completed in one day, thus causing only short-term disruption to the surroundings. As a result, microtrenching has increasingly become the fiber construction method of choice in urban settings, where it is employed in a variety of underground construction situations—ranging from direct burials of thin fiber optic drop cables under driveways to installations of conduits of up to 2 inches in diameter under paved roadways and sidewalks.

Microtrenching is usually performed with a rotary cutting saw that opens a slit or a narrow trench of ½ inch to 2 inches in width and no more than 2 feet in depth. Ground material excavated during construction is removed instantaneously. Once fiber cables are placed in the ground, the trench is typically backfilled and sealed with a concrete slurry or polymer substances, depending on the existing surface conditions. As microtrenching is usually conducted on previously disturbed grounds, temporary and long-term environmental impacts and disturbance to the surroundings are minimal.

The Arizona Department of Transportation (ADOT) won a regional award in 2023 for using microtrenching to install fiber along the shoulder of an interstate highway, reporting that it "helped address challenges posed by hard rock next to the highway and deliver the project in a safer, faster and more cost-effective manner with minimal impacts on the public."[43]

Cities can incorporate standards and requirements for microtrenching into their public works codes. Los Angeles County, for example, is known for its well-established microtrenching code, which is mostly applicable to commercial network implementation in urban environments. This code is often referenced as one of the most clearly defined microtrenching policies. Updates to the code in 2019 refined the initial requirements, lowering the barriers to fiber installation by means of shallow trenching.[44]

Many local jurisdictions, however, have no prior experience with microtrenching. Consequently, their public works codes do not include special provisions for this type of fiber construction.

[43] "I-17 project installing fiber-optic infrastructure wins regional award," ADOT, September 12, 2023, https://azdot.gov/news/i-17-project-installing-fiber-optic-infrastructure-wins-regional-award.
[44] "Ordinance No. 186444," Los Angeles Municipal Code, https://clkrep.lacity.org/onlinedocs/2019/19-0986_ORD_186444_01-02-2020.pdf.

Municipalities tend to embrace microtrenching as a viable construction choice when insufficient broadband connectivity becomes a pressing public issue. In the absence of specific standards for microtrenching, collaborative partnerships between fiber operators and motivated authorities have proved most beneficial to support expedient permitting and successful project execution. Lessons learned in the process may help city engineers tailor the public works code to address microtrenching.

For example, in 2017, the City of San Antonio, Texas launched a well-orchestrated pilot project that was coordinated with city officials and closely monitored by city engineers.[45] This pilot provided an education on the process and paved the way to expedited permitting for microtrenching in the years following.

Despite its many advantages, however, the use of microtrenching must be carefully weighed against potential risk factors jeopardizing the infrastructure's longevity. For example, placing cables in deteriorating pavements may lead to stress in the fiber or to water intrusion in the conduit system—possibly causing service impairments in the future. Also, fiber cables placed in very shallow trenches tend to be pushed up closer to the surface over time, leaving them vulnerable to the environment.

Build new assets where feasible

To the extent possible, localities should consider constructing fiber and conduit where it anticipates a need for capacity, including in conjunction with other planned capital improvements in the rights-of-way. By taking advantage of these opportunities, a Tribe or locality can create over time an asset that can support the local or Tribal government's internal needs and the ability of broadband deployers to serve the community.

Building middle-mile fiber

Excess fiber strands in a local network can help in establishing a network backbone. If the locality's fiber covers the key parts of the community, it can provide an immediate way to establish a point of presence in those key areas. A middle-mile model provides fiber in a backbone configuration, instead of comprehensively on every street to every home and business. A network provider will need middle-mile connectivity from the public network backbone to its key network facilities, and to connect its network to new service areas. The network provider then constructs "last-mile" fiber to homes and businesses—or, in some cases, provides wireless last-mile services. The network provider can access the fiber at outdoor enclosures (see Figure 5) or locate its equipment in public buildings (see Figure 6).

[45] "Micro Trench Pilot Program Update," San Antonio Transportation Committee, December 14, 2017, https://www.sanantonio.gov/Portals/0/Files/TCI/Services/Google%20Micro%20Trench%20Pilot%20Program%20Presentation%2012%2014%2017.pdf?ver=2017-12-14-154306-953.

Figure 5: Transition between government and provider fiber at outdoor enclosure

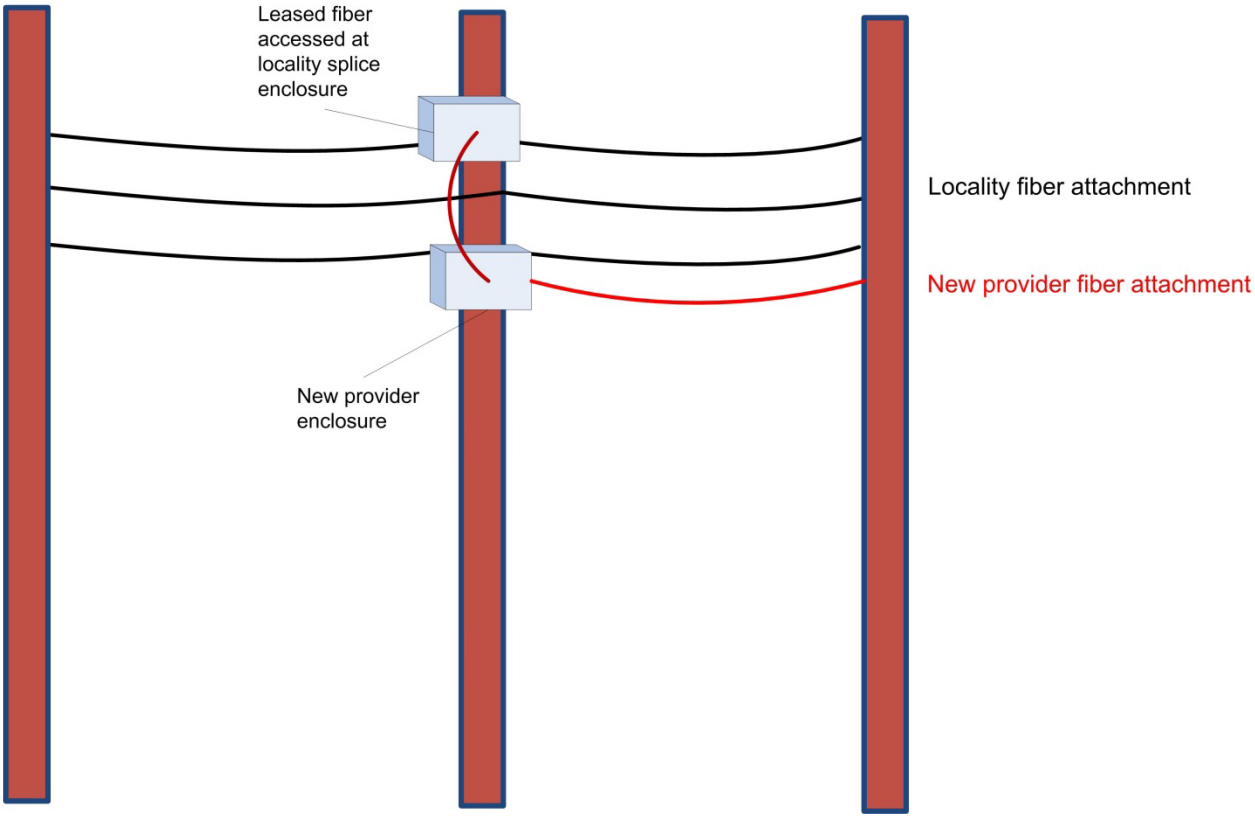
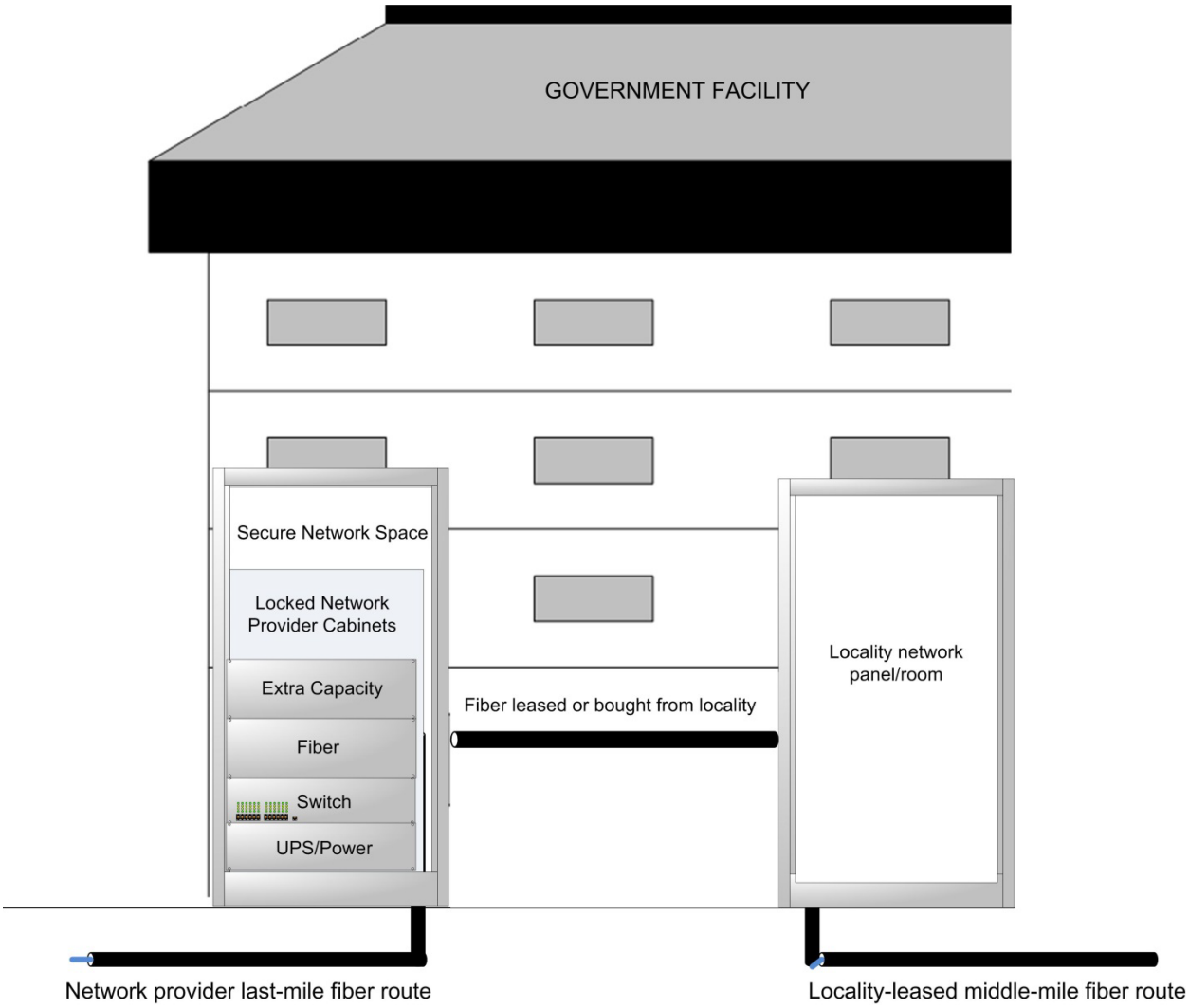


Figure 6: Transition between government and provider fiber inside government facility



If a community is building new fiber, it could consider installing a higher count than would be justified by its immediate needs in order to ensure there is capacity for growth. For example, the relatively low incremental cost of additional fiber in a cable may justify constructing a 288-count fiber cable instead of a 144-count cable in some cases.

This model has been extensively used in hundreds of communities in Sweden—most notably in Stockholm, where the city built extensive fiber over 15 years to most of its multi-dwelling buildings and made that fiber available to the private sector—substantially reducing the cost to private sector competitors of providing service in that market.

Building conduit

Conduit exists in a wide range of sizes, deployment scenarios, and topologies. Localities install conduit for a wide range of connectivity purposes, including:

- Community-wide communications
- Power
- Traffic signals (both from the signal to the cabinet, and from the cabinet to the communications network)
- Antennas and sensors (traffic, SCADA)
- CCTV cameras

Conduit is also installed to interconnect buildings (e.g., in a campus environment) and to provide capacity alongside public infrastructure, such as roads and canals.

The ideal conduit for communications networks has the following characteristics:

- Continuity over a long distance
- Sufficient size (diameter)
- Proximity to locations of interest
- Handholes or manholes at regular intervals
- Empty, or segmented with spare innerduct
- Unobstructed
- Sealed
- Separated from power
- Accessible
- Accurately and completely documented

Best practice: Creating conditions that make deployment of private assets more likely

Require conduit installation in new developments and during major renovations

Providing broadband services to homes and businesses requires extension of high-speed networking infrastructure to and within the premises. In apartment buildings and multi-tenant office buildings, this requires extension of fiber optic cables from the right-of-way to a central telecommunications distribution point in the building, and from there to individual units. Lack of an affordable cable pathway from the right-of-way or to an apartment or office unit increases the cost of serving potential customers in a large building—and constructing a pathway during other construction or renovation can be done at a small percentage of the cost of retrofitting later.

For these reasons, a government can improve services to its residents and businesses if it requires by code—or creates an incentive for developers to build—additional pathways from the public rights-of-way to a demarcation point in apartment and office buildings. Furthermore, it can require standards-compliant cabling or cable pathways inside new construction or major renovations to cost-effectively connect each unit.

This approach effectively lays the foundation for last-mile broadband deployment by reducing the cost of construction. By extension, it may reduce future public investment, such as grant funding, which might otherwise be needed to incentivize broadband buildout in unserved and underserved areas.

Considerations

- Can be required by code or encouraged by incentives to developers
- Requires standards-compliant cabling or cable pathways inside new construction or major renovations to cost-effectively connect each unit
- Local decision needed as to whether to mandate or incentivize buildout
- Local decision needed as to whether to support conduit installation with new developments through public-private partnerships and/or require it through a statute

Ensuring the availability of conduit from the street to the building

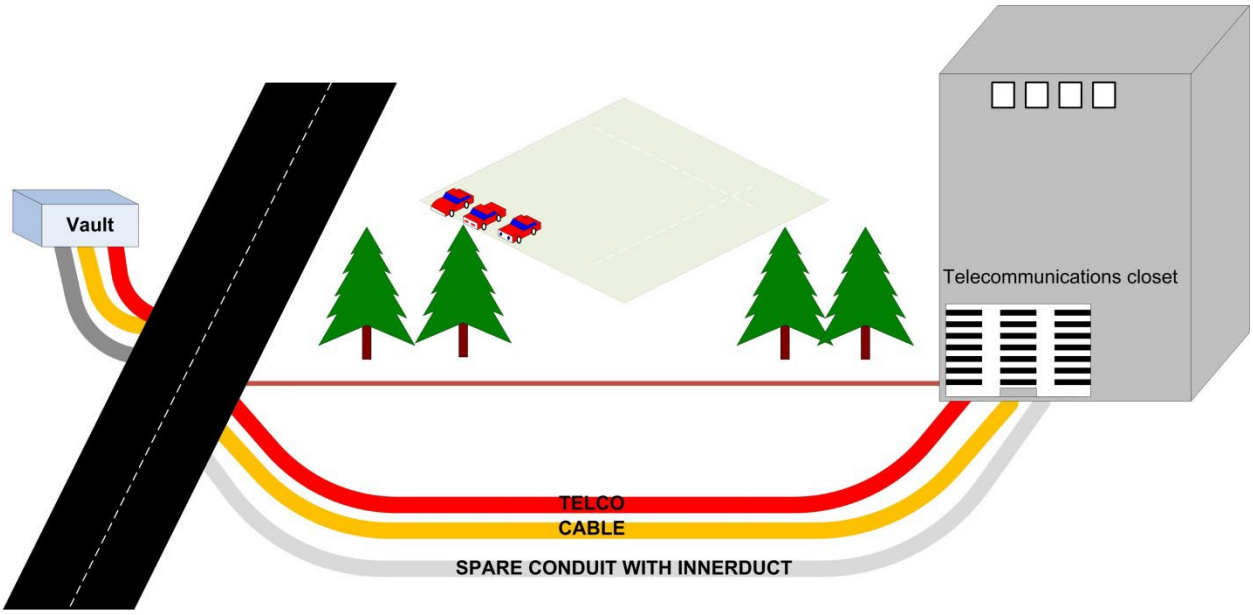
One significant factor for deployment by a new network provider is the physical entry into buildings. Ensuring the availability of spare conduit into buildings can reduce installation time, risk, and cost for new service providers.

Developers and builders are already accustomed to providing pathways for telephone, power, and cable TV from the property line to a room designated for utility services within the building. Typical practice for many developers is to coordinate with incumbent ISPs at the time of construction or renovation. The developer installs conduit from the room location to the exterior of the building, typically either encased in the slab or under floors, to and through the exterior wall. The developer then trenches conduit to the property line, where it is properly marked so the various utilities can determine which conduit is for their service.

Although the conduit requirements will vary by the size of the building, a typical approach might be the installation of two 4-inch conduits for the phone and cable companies, and up to three 4-inch conduits for the electric utility. Conduit counts should reflect, to the extent feasible, anticipated future needs for fiber capacity.

The developer's incremental cost is minimal to add an additional 4-inch conduit for fiber optic cable in the same trench as the other utilities' conduit (see Figure 7). To make the conduit even more valuable, an innerduct can be installed during construction to subdivide the conduit into cells to create spare capacity.

Figure 7: Example of requirement for developers to install conduit from public right-of-way to building



In contrast, the cost for new construction of the same route might be up to five times as much if a network provider needs to create a new entry path that is not coordinated with initial construction. The higher cost is realistic if the right-of-way is on the opposite side of a major road, if the provider needs to cross under a parking lot or driveway, and if restoration (both in the outdoors and the building) is sensitive and expensive.

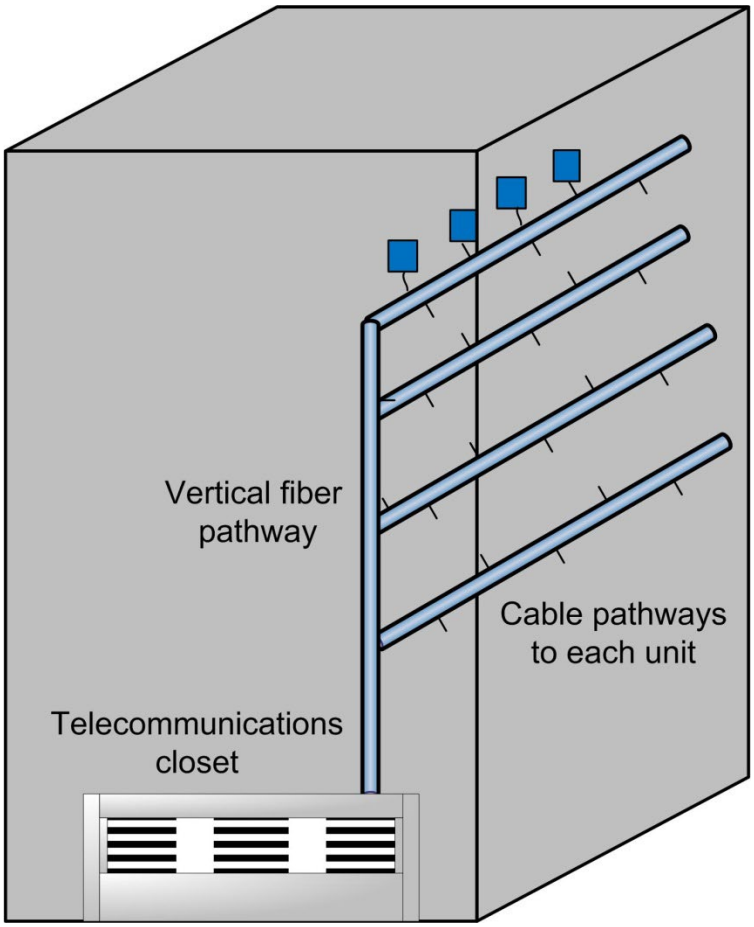
Constructing a new route into a building may also involve days or weeks of delay for permitting, engineering, design, utility location, and coordination with the building owner. These are delays that would be avoided if conduit already exists when a provider is ready to begin connecting customers.

Ensuring the installation of in-building pathways and cabling

Indoor cabling is one of the largest costs and areas of uncertainty for a network service provider. This problem is especially pronounced in apartment buildings and office buildings, where the provider must cable long distances to reach individual customers.

A locality or Tribe can reduce costs and speed deployment by requiring in its code that developers or building owners place cable pathways or standardized cabling to each unit as part of construction or renovations (see Figure 8). The pathways need to meet industry standards (such as TIA/ANSI) so that bend radius, distances, clearances, and locations of termination points are correct for the potential range of technologies that might be installed. Also, there should be secure telecommunications closets of appropriate size and number, based on the number of units and the distances between the units and risers.

Figure 8: Example of requirement for developers to install cable pathways to apartments or offices



Indoor fiber optic cabling in an apartment building costs from $300 to $750 per unit, depending on the design of the building, the availability of false ceilings and cable pathways, the existence of wiring closets, and permission to attach moldings or other materials. The cost per unit can be reduced by half if there is sufficient capacity for the new fiber in the horizontal riser, and there is conduit, duct, or raceway from the riser to individual units. Pricing and challenges are similar in multi-tenant office buildings. For both apartments and offices, each building is different and requires new strategies.

Another strategy is to require developers or building owners to install fiber optic or other broadband cable as part of new construction or renovations. As with installing conduit, this strategy reduces costs by eliminating the need for a new provider to pull cables through a raceway or conduit—but it is better suited to communities where broadband providers are already connecting customers according to a specific standard (e.g., single-mode fiber pair to each unit). Given the diversity of potential service approaches (e.g., non-fiber technologies to the unit), installing fiber to every unit may lead to a significant stranded investment if no fiber provider serves the building, or if the service provider insists on using another type of cabling to the unit.

Facilitate aerial construction by encouraging pole owners to facilitate make-ready

A critical item for building new broadband facilities is access to utility poles, which allows for aerial construction that is much less costly than underground construction. However, many existing utility poles either do not have sufficient space for attachment of new communications providers or have existing communications providers attached in an inefficient manner, requiring those attachments to be moved to accommodate the new provider.

Moving existing utilities as part of the "make-ready" process is costly and time-consuming, requiring weeks or months to coordinate providers and perform the move. Furthermore, the inefficient make-ready process has to be repeated each time a new entity wants to attach.

In one New Mexico project, two of the last unconnected schools in the state were planned to be connected to the internet using aerial fiber. However, as the broadband project progressed, pole make-ready costs and pole attachment fees grew beyond the project cost allocation, causing the project to be scrapped. The project was restarted with underground trenching, even though the project is in a difficult and costly trenching area. This amounted to a five-year delay impacting hundreds of students and teachers at the two schools.[46]

In another example of make-ready costs and pole fees negatively impacting New Mexico's broadband prospects, a key broadband project was awarded a Capital Projects Fund grant for the areas of Lake Roberts and Gila River. After the grant recipient was determined, the recipient examined make-ready costs and pole attachment fees and decided to refuse the award and abandon the project. As a result, 11 rural communities will remain unserved or underserved for at least four more years.[47]

Localities can help ensure that these obstacles and delays do not occur moving forward. Local or Tribal government permitting departments may be able to improve the availability of broadband by encouraging pole owners to partner with deployers to facilitate make-ready.[48] Localities have relationships with the pole owners that frequently allow them some influence. Localities can use that influence on behalf of their broadband goals by encouraging pole owners to facilitate the process of the new broadband provider attaching to the poles.

Some broadband advocates believe that new network buildout can be eased through state or local requirements that new entrants be allowed to attach to privately owned poles. Indeed, some cities require shared use of facilities in the localities' rights-of-way as a function of their authority to promote the health and welfare of citizens and their authority to adopt reasonable requirements for right-of-way occupants to minimize disruption and hazards. From a technical standpoint, such shared access opportunities would assist both localities and broadband deployers in cost-effectively and quickly constructing new broadband facilities.

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[46] "State of New Mexico Data Collection Annual Report," Connect New Mexico (Office of Broadband Access and Expansion), October 2023, https://connect.nm.gov/uploads/1/4/1/9/141989814/new_mexico_data_collection_annual_report_-_10022023.pdf.

[47] Ibid.

[48] Pole owners control the timetable, cost, and procedures of attaching to their poles. In most American communities, the locality does not own the poles and has little or no control over those poles; rather, the poles are owned by electric utilities and telephone companies that do not answer to the locality.

Pole attachment by a new broadband builder can be expedited if the pole owner:

1. Has a standard, predictable process for attachment
2. Commits to a schedule for each part of the process
3. Provides reasonable and consistent pricing for make-ready
4. Consolidates its own infrastructure on the poles and removes unused attachments
5. Requires existing attachers to consolidate attachments and remove unused attachments
6. Allows use of extension arms or overlash to increase capacity

There exist considerable benefits to quick and efficient make-ready or easily available pole space. A service provider can enter a community and begin constructing its infrastructure in a matter of weeks instead of months. The provider can focus its construction purely on meeting customer need and demand, rather than being heavily biased toward areas of easier construction. It can also potentially double its speed of deployment, especially at the outset of construction. Finally, efficient make-ready can reduce costs by as much as 50 to 75 percent, according to engineers working on fiber construction

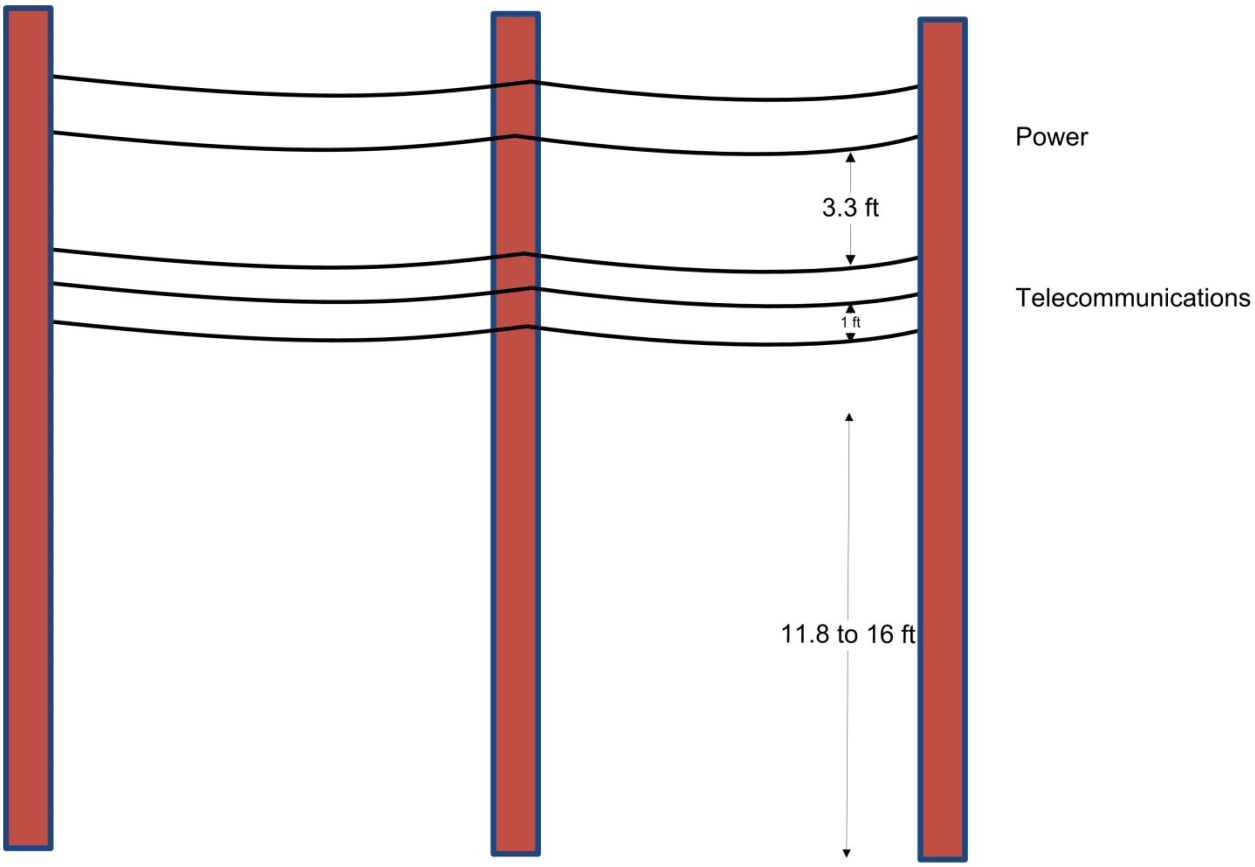
The following sections suggest strategies and best practices that can help lower per pole costs.

Facilitating make-ready to enhance pole access

"Make-ready" is an essential step in being able to attach new cables to existing poles. The term refers to the process of preparing utility poles for the attachment of an additional utility in compliance with electrical code. In most cases, this means that existing utilities must be moved to accommodate a new entrant with the required clearance from electrical lines and the ground, and clearance between the communications utilities. If there is insufficient space to add a new attachment, a pole may need to be replaced, usually at the expense of the new entrant.[49] Figure 9 illustrates a pole with required clearances between power, telecommunications utilities, and the ground.

[49] In some cases where the pole owner requires replacement of the entire pole, costs can be so excessive that the network deployer chooses to change the design to underground or reroute the fiber rather than pay for replacing the pole.

Figure 9: Basic pole diagram for make-ready



- Telecommunications utilities must have clearance from power, ground and each other
- No space for new provider

The make-ready process typically starts with the entity seeking attachment (i.e., the new service provider) applying for and obtaining an agreement to attach to the poles, and meeting with the staff of the pole-owning utility. This establishes an understanding of the timeline, the process, the fees, and the likely speed at which the necessary work will be completed.

At the same general time, the new provider works on network design and routing. Sometimes, in early stages of network design, the provider may encounter "show-stopper" problems—these include exorbitant pricing for make-ready, a very slow or uncertain schedule, or, in the worst case, a refusal to allow attachment. OBAE's Annual Data Collection Report states that in New Mexico, there have been instances of pole surveys and make-ready cost estimates being conducted after a project is funded and revealing increases in expected costs or permit and licensing timeframes.[50]

[50] "State of New Mexico Data Collection Annual Report," Connect New Mexico (Office of Broadband Access and Expansion), October 2023, https://connect.nm.gov/uploads/1/4/1/9/141989814/new_mexico_data_collection_annual_report_-_10022023.pdf, p. 40.

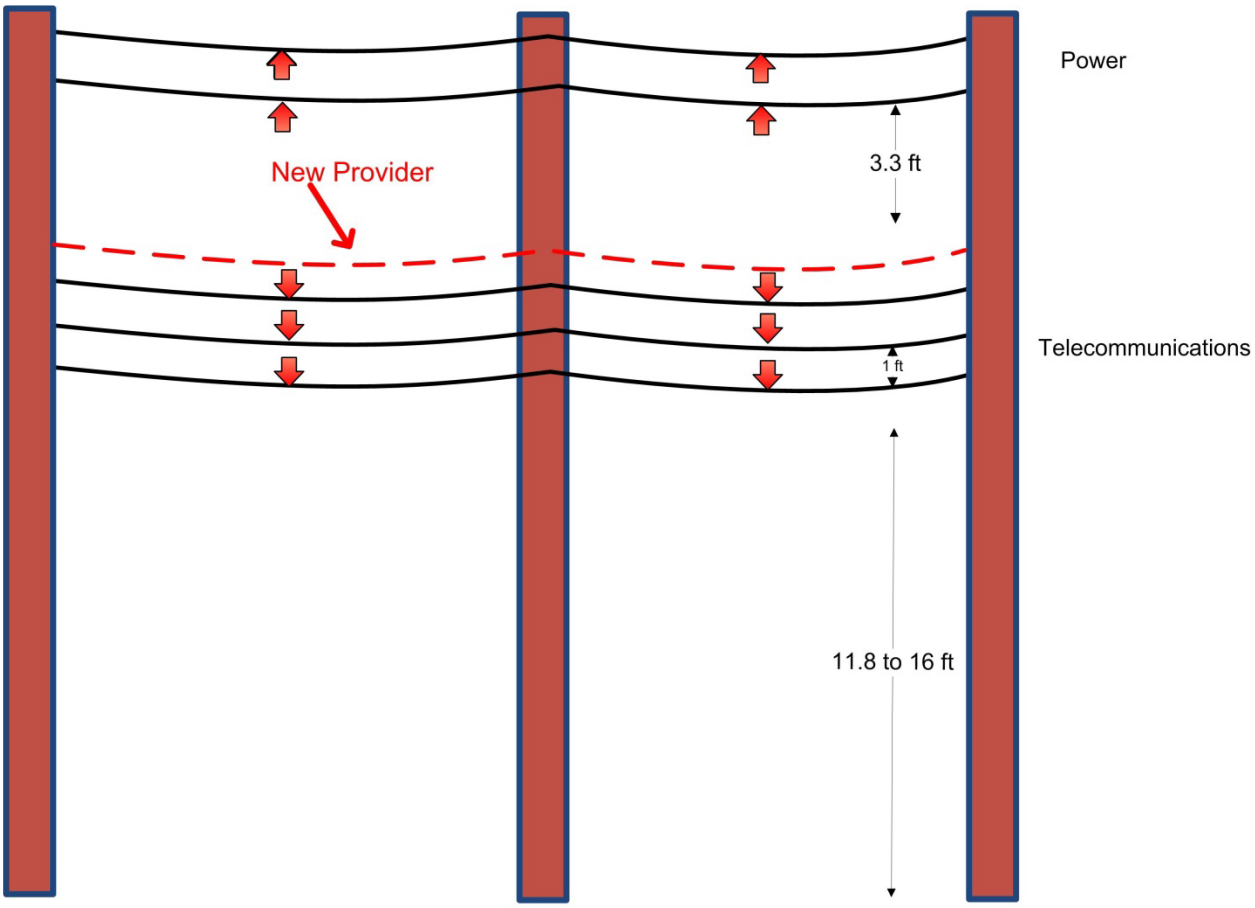
It is at this stage that local or Tribal government intervention can be critical—because the problem is not technical, it is a matter of the pole owner's business decisions. Even though the locality is not typically a direct regulator of the pole owner, the relationship with the local or Tribal government is usually important to the pole owner, and the Tribe or locality can have significant influence—either directly or through the state (because regulation of the pole owner is often at the state level).

Local influence may encourage the pole owner to work cooperatively with the new entity or may lead to a creative resolution of the problem—such as a strategy to share costs to augment the utility's staff if the utility is burdened by the new entrant's needs.

Assuming the show-stopper problems are addressed, the new entrant then performs a survey of the poles. This process will differ in complexity depending on such local circumstances as the age of the poles, the density of the area, and other matters. To facilitate the process, new providers sometimes seek out an engineer who has worked with this utility—who knows both the formal and informal rules of the pole owner and the geographic area, and who has relationships with the appropriate individuals at the pole-owning entity. The locality can often help a new network entrant understand the unwritten customs and practices in the area and identify individuals who have been helpful in the past.

The engineer identifies the types of moves that need to happen on each pole. Figure 10 illustrates a typical set of moves required to make room for a new attachment.

Figure 10: Example of make-ready requirement for new provider



- Make ready: Power moved up, Telco and Cable TV moved down
- New space at top of telecommunications space for new provider

Make-ready timing is another hurdle for new entrants. While the make-ready process differs from community to community, it typically includes a multiparty walk-out of the route with representatives of all utilities on the poles. The walk-out may take weeks or months to schedule. Because some pole owners may not be incented to expedite a competitor's construction, the locality or Tribe can encourage all parties to expedite their work, both for the walk-out and the moves. (Make-ready timing may be impacted by state or federal requirements and other terms of access, so these issues may be addressed through existing regulations.)

The actual make-ready work may also take weeks or months to complete. The individual attachers sometimes move their own facilities, or the pole owner can have a third party perform the work and pass the costs on to each attacher.

Federal, state, and local regulators have been adopting "One-Touch Make-Ready" rules.[51] In general, these focus on "simple" moves, which do not involve proximity to power or moving power infrastructure. Connect New Mexico's PROP working group is currently developing the implementation of "One-Touch Make-Ready" across the state in accordance with FCC rules, the state's BEAD Initial Proposal, and the New Mexico Three Year Broadband Plan. The working group also plans to develop a pole replacement fund; fair, predictable, transparent make-ready charges; and expedited pole dispute resolution. These policies are being developed as of January 2024.[52]

Eliminating the need for make-ready to speed pole access

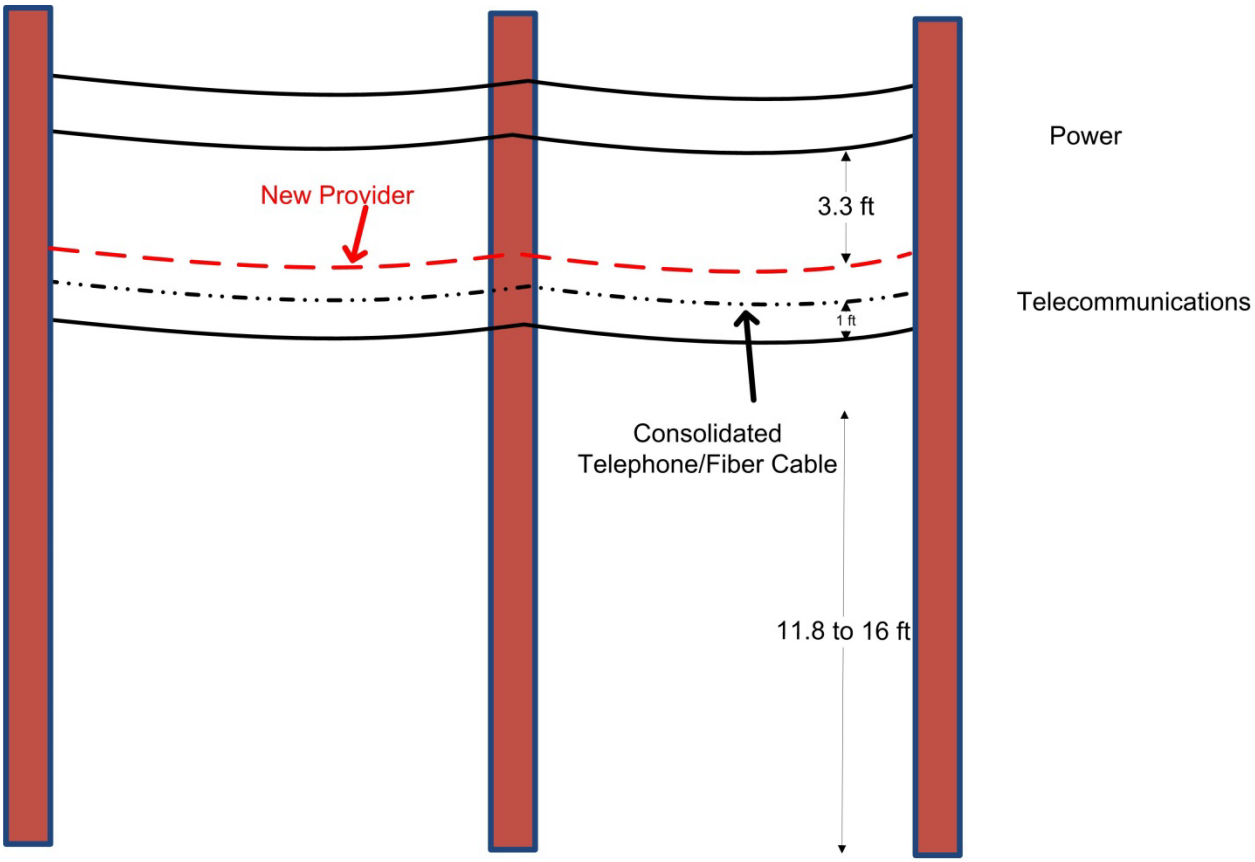
Even more efficiency results if additional space is already available on the pole. Several relatively simple strategies can enable better access to available space: first, "housekeeping" and consolidation of existing attachments to make space for new entrants; second, reservation of space for new entrants; third, allowing new attachers to use extension arms that create new room on the pole; and fourth, allowing and requiring "overlash" of new cables on existing attachments so as to efficiently use existing space.

First, pole owners can make space by undertaking "housekeeping" of their own infrastructure—for example, by consolidating power conductors, removing unused telephone cables, and consolidating telephone and fiber cables to the same attachment (see Figure 11). The pole owner can require other attachers to do the same or can create incentives for them to do so; for example, it can structure attachment fees to encourage efficient use of space and consolidation.

[51] See, for example: "One-Touch-Make-Ready Rules for Pole Attachments Effective May 20, 2019," Federal Communications Commission, DA-19-445, https://www.fcc.gov/document/one-touch-make-ready-rules-pole-attachments-effective-may-20-2019.

[52] "Three Year Broadband Plan (New Mexico Broadband Plan Update)" Office of Broadband Access and Expansion, January 2, 2024, https://connect.nm.gov/uploads/1/4/1/9/141989814/state_of_new_mexico_three-year_broadband_plan_1-2-24_version_1.0.pdf.

Figure 11: Example of make-ready involving cable consolidation



- Telephone company consolidates two cables to one attachment (or removes unused cable)
- New space at top of telecommunications space for new provider

Second, pole owners can designate a space of at least 12 vertical inches, intended specifically for attachment by new service providers. If poles are full and space does not exist, this policy can be implemented when poles are replaced, or as part of regular maintenance. In many older neighborhoods, this will require the pole owner to install taller poles.

Twelve vertical inches is sufficient for one additional attachment. Each attachment can support two or three fiber optic cables, each of which can contain hundreds of fiber strands, enabling any sort of middle-mile or last mile fiber network to enter the community.

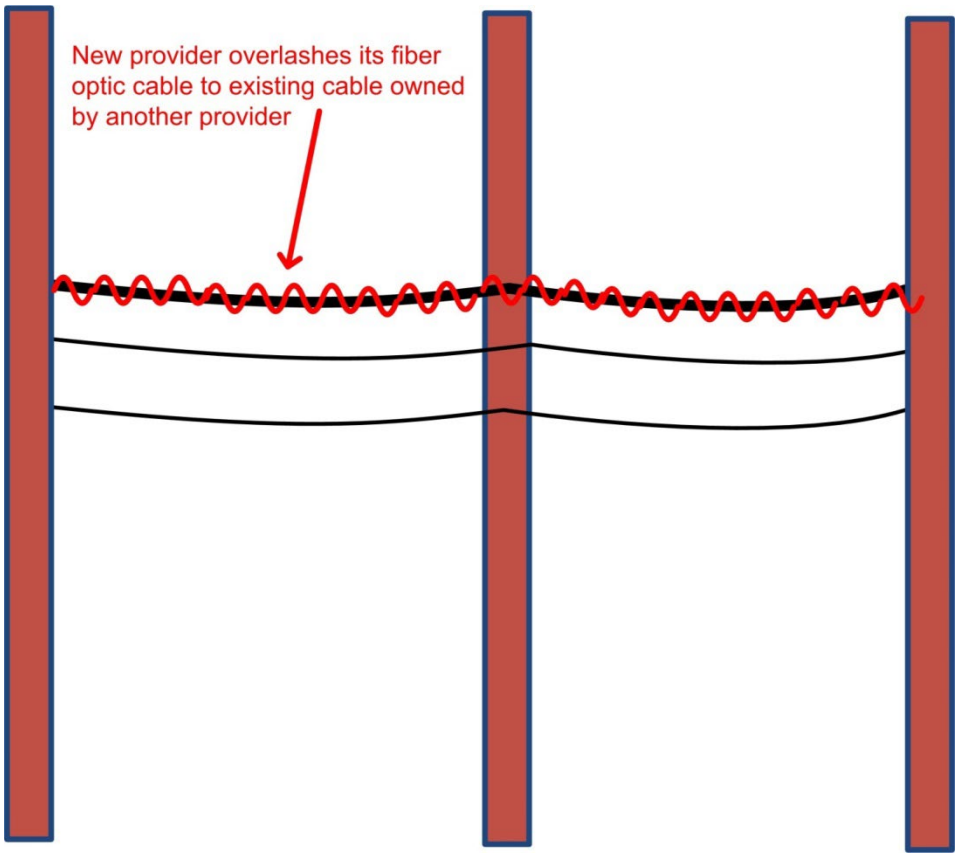
Third, new entrant construction can be greatly facilitated if pole owners allow use of extension arms to increase capacity in the communications space. Because the National Electrical Safety Code (NESC) requirements for clearance allow for horizontal as well as vertical clearance, one way to increase communications capacity on a utility pole is to install horizontal extension arms from the pole and install cables on the arm (see Figure 12). Extension arms are about 2 feet to 5 feet in length and are bolted to the utility pole. They are strong enough to support communications cables and are commonly used in congested environments. Not all pole owners allow extension arms despite their compliance with NESC requirements and their widespread successful use.

Figure 12: Example of extension arm on pole, enabling horizontal expansion of capacity

Fourth, make-ready can also be avoided if new providers are able to "overlash" their cables to existing cables on the utility poles (see Figure 13). Overlash is significantly less costly than creating a new attachment on the poles. It also does not typically require make-ready, so it entails significantly less time and coordination with the pole owner. Overlashing new cable to existing aerial strand costs on average about $15,000 to $60,000 per mile (materials and labor) depending on the fiber count. In comparison, new construction can cost as much as hundreds of thousands of dollars per mile depending on labor costs and the complexity of the build.[53]

[53] Management of overlashing can be complex and the pole owners may not look favorably upon it. The integrity of the poles and the attached cables requires a clear model of responsibility for the attachment. These issues are, however, manageable and, in our experience, a number of models exist for this allocation of responsibility. In one model, which is most consistent with current attachment practices, the first provider to attach in this space is responsible to the pole owner for the attachment, including fees and compliance with loading, clearance rules, and maintenance; entities that overlash to the first cables are sub-lessors. In another model, a pro rata fee model is created in advance by the pole owner or the government managing the rights-of-way, and the overlashing entities coordinate their work and maintenance with the pole owner, or a joint pole authority.

Figure 13: New provider overlashes new cable to existing cable



Best practice: Encouraging deployment of public and private assets

Develop a "Build Once" policy

To the extent that such approaches align with a localities' needs and resources, there exist strategies for identifying opportunities to invest in conduit and fiber infrastructure assets to meet a local or Tribal government's own operational requirements while potentially facilitating broadband expansion goals by enabling private sector use of excess capacity.

Importantly, this "Build Once" approach is distinct from the "Dig Once" policies discussed later; "Build Once" focuses on the locality planning the construction of its own communications infrastructure, while "Dig Once" types of policies seek to enable the locality to obtain conduit or fiber capacity from entities building in the rights-of-way.

The primary purpose of a "Build Once" approach is to support the locality's internal communications and technology requirements. But with foresight and planning, the "Build Once" approach can expand the benefit of those communications infrastructure projects, and increase the return on the locality's investment, by adding capacity at low incremental cost that can then serve a range of other purposes and support external stakeholder requirements.

A locality's investment in new infrastructure in its rights-of-way could connect last-mile providers to unserved markets more reliably and cost-effectively; support expansion of existing middle-mile networks; accommodate connectivity requirements for other state agencies; and support wireless providers' expansion or improvement of mobile services.

Develop a "Dig Once" policy to promote conduit and fiber construction

Many localities have adopted some form of "Dig Once" policy that opens streets and rights-of-way to utility construction when related projects are underway. Such policies protect roads and sidewalks and minimize traffic and other disruptions related to utility construction—and also create a more uniform and efficient means of constructing network infrastructure by giving multiple entities, including the Tribe or locality itself, the opportunity to place fiber or conduit inexpensively.

> "Dig Once" policies open rights-of-way to utility construction when related projects are underway. "Dig Once" policies can reduce construction costs, reduce crowding in the rights-of-way, and minimize traffic and other disruptions. When it works for a given locality, "Dig Once" can incentivize infrastructure growth and provide a uniform and efficient means of constructing network infrastructure.

To build or expand a fiber footprint, localities can place conduit during all capital improvement projects to dramatically lower the cost of network construction.[54] Most communities are well situated to install conduit any time a capital improvement project requires breaking ground in the public right-of-way. To maximize the benefit of this strategy, localities can maintain awareness of opportunities to install or obtain fiber and conduit through activities in the rights-of-way and discover and pursue these opportunities by way of explicit, formal procedures.

Localities can also adopt guidelines addressing conduit construction so that they can quickly work with a potential partner to add conduit to a project and integrate with existing community conduit. Standards should be prescriptive, but there should be sufficient flexibility to modify them if impractical or unsuitable in certain circumstances. These documents can serve as references in developing, for instance, site plan conditions for utility- or developer-provided infrastructure.

New development areas, for example, offer important fiber and conduit placement opportunities. As the roads are developed, conduit can be installed and documented, enabling the locality to place fiber when needed at a very low cost relative to the cost of retrofitting those roads for fiber infrastructure. Conduit burial during construction could enable the community to lease fiber to private providers or deploy services itself, as the need arises. The incremental cost of the conduit during construction is negligible relative to the cost of building fiber later, after the development is complete.

The City of Lawrence, Kansas, for example, has used this strategy for a number of years. As opportunities have arisen, the city has expanded its network infrastructure by installing fiber or conduit to support

[54] See "Brief Engineering Assessment: Efficiencies available through simultaneous construction and co-location of communications conduit and fiber," White Paper, CTC, 2009. http://www.ctcnet.us/CoordinatedConduitConstruction.pdf.

important internal needs, or in concert with a broadband deployer.[55] In Lawrence, the IT department, city engineer, traffic supervisor, and public works department have demonstrated, through collaborative effort and cooperation, the potential to realize efficiencies by placing conduit during other projects. The city engineer and IT department have developed a well-functioning process to take advantage of capital improvement projects in the rights-of-way to place conduit, and the city engineer reports that the incremental cost of the conduit placement has been negligible relative to the broader cost of the capital improvement project.

Neighboring Arizona's statewide "Dig Once" policy is targeted specifically at expanding broadband access to rural communities. The policy states that during rural road construction projects, the Department of Transportation can coordinate with telecom companies to install conduit and lease the conduit to telecom providers at a cost-based rate.[56] Arizona also authorizes the Department of Transportation to require providers to adhere to "Dig Once" when installing telecommunications infrastructure in the same area.[57] Similar "Dig Once" policies can be effective at the locality level.

Localities can also watch for opportunities to install or obtain fiber and conduit through activities in the rights-of-way and discover and pursue these opportunities by way of explicit, formal procedures or ordinance. These opportunities may include grant-funded initiatives for particular departments; road construction; road widening; undergrounding of utilities; and construction of new and existing utility infrastructure (electric, telephone, cable, water, sewer).

Localities can maintain contact with local utilities and service providers to be aware of their upcoming plans. Likewise, entities performing construction in the rights-of-way can provide sufficient information in the permitting process for the locality to judge if a co-location opportunity is available and provide sufficient time for the locality to coordinate adding conduit and vaults as part of the construction.

In New Mexico, the Statewide Transportation Improvement Program portal[58] provides opportunities for localities to be aware of construction projects planned on NMDOT rights-of-way and take advantage of opportunities to implement "Dig Once" construction.

The County of Santa Fe began to apply its "Dig Once" policy to new road construction in 2023.[59] As more construction

Resources

- Statewide Transportation Improvement Program portal to coordinate "Dig Once" efforts
- Fee waiver program for conduit or fiber in exchange for "Dig Once" access for the State

[55] "Fiber Policy Resolution No. 7097," Lawrence, Kansas, https://assets.lawrenceks.org/documents/dark-fiber/Fiber_Policy_Resolution_7097.pdf.
[56] "Dig Once: The Digital Divide Solution," BroadbandNow, November 17, 2023, https://broadbandnow.com/report/dig-once-digital-divide.
[57] "Arizona Admin. Code S17-3-603," Casetext, https://casetext.com/regulation/arizona-administrative-code/title-17-transportation/chapter-3-department-of-transportation-highways/article-6-effective-1012023-telecommunication-facilities/section-r17-3-603-installation-maintenance-operation-and-relocation-of-telecommunication-facilities.
[58] "Statewide Transportation Improvement Program (STIP)," NMDOT, https://estip.dot.state.nm.us/.
[59] Claudia Silva and Nicholas Gilmore, "County hopes construction of connector roads leads to growth south of city," Santa Fe New Mexican, January 23, 2023, https://www.santafenewmexican.com/news/local_news/county-hopes-construction-of-connector-roads-leads-to-growth-south-of-city/article_c28bc552-96b4-11ed-99f3-834ebea8e28b.html.

projects are deployed that adhere to this policy, there will be increased opportunities for facilitated broadband infrastructure installation.

Furthermore, OBAE is actively coordinating with NMDOT on "Dig Once" implementation to include conduit and possibly fiber in suitable road construction projects by identifying upcoming projects that can accept trenches, fiber, and conduit. A form of "Dig Once" is already available through the NMDOT fee waiver program for in-kind contributions, in which the state can waive right-of-way charges in exchange for "Dig Once" access for the state.[60] Further plans are underway between OBAE and NMDOT to create broader "Dig Once" policies and practices.[61]

In the 2024 update to the Three Year Broadband Plan, OBAE recommended that Tribes work with NMDOT to develop "Dig Once" mechanisms on Tribal lands, including transparency for third parties seeking to use rights-of-way to install broadband infrastructure.[62]

To ensure that all entities have the opportunity to place conduit or fiber during other entities' construction, a Tribe or locality can put in place processes to alert itself of "Dig Once" opportunities. It can set up capture points to bring new construction to the attention of the appropriate party—including through requests for permitting antennas, permits for rights-of-way construction, discussions in trade or business journals, coordination with other governments in the region, and discussions with regional economic development entities.

The potential benefits of this coordinated approach to conduit and fiber installation extend not only to public agencies but also to private providers. A coordinated fiber network design can provide capacity for dozens of separate service providers. This strategy has the benefit of maximizing long-term value and minimizing the potential for future disruption.

One approach is to construct a high-capacity conduit bank connected to manholes at regular intervals according to a standardized design. The primary manholes then connect in turn to lower-capacity conduit, which is connected to residential or business service drops or to wireless infrastructure. Small manholes or handholes can be managed by particular service providers for their proprietary access and service to particular customers.

Considerations

- Developing criteria for "Dig Once" opportunities (i.e., project length and location requirements)
- Identifying priority areas for "Dig Once" policies (e.g., road projects)

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[60] "State of New Mexico Data Collection Annual Report," Connect New Mexico (Office of Broadband Access and Expansion), October 2023, https://connect.nm.gov/uploads/1/4/1/9/141989814/new_mexico_data_collection_annual_report_-_10022023.pdf.

[61] "Three Year Broadband Plan (New Mexico Broadband Plan Update)" Office of Broadband Access and Expansion, January 2, 2024, https://connect.nm.gov/uploads/1/4/1/9/141989814/state_of_new_mexico_three-year_broadband_plan_1-2-24_version_1.0.pdf.

[62] "Three Year Broadband Plan (New Mexico Broadband Plan Update)" Office of Broadband Access and Expansion, January 2, 2024, https://connect.nm.gov/uploads/1/4/1/9/141989814/state_of_new_mexico_three-year_broadband_plan_1-2-24_version_1.0.pdf.

- Developing a notification system to coordinate with excavators
- Recording as-built information after construction is complete
- Enabling all qualified parties, including government agencies, to take advantage of "Dig Once" opportunities

Enabling all parties to take advantage of "Dig Once" opportunities

Once a provider initiates construction in an area covered by a "Dig Once" plan, all providers and the locality or Tribe should be made aware so that they can be ready to take advantage of the opportunity. Each individual provider can place its infrastructure while the "trench" is open (or use directional boring techniques to place the conduit), and the locality can build infrastructure for future growth (or require that another provider do so).

Once construction is complete, a multi-year moratorium along the path reduces disruption and wear-and-tear to the rights-of-way—and simultaneously incentivizes private carriers to place conduit efficiently and promptly while the road is open.

Providers can reduce both the cost and the use of underground space by placing conduit as part of the same construction project. By placing their conduit at the same time, the providers can also reduce the instances of one conduit "wrapping around" another one—which occurs when a bore operator avoids existing conduit that is not readily seen. This reduces the complexity of repairs and reduces the risk of damaging infrastructure.

This notification strategy has been successful in the City of Hong Kong, where private providers that open a road or sidewalk to build infrastructure are required to notify all other fixed service providers, including their competitors. Those entities are then provided with a set time interval in which they can place their own underground infrastructure. Once construction is complete, a multi-year moratorium along the path reduces disruption and wear-and-tear to the rights-of-way—and simultaneously incentivizes private carriers to place conduit efficiently and promptly while the road is open.

Placing conduit bank in congested areas

In highly congested and valuable areas, localities can construct uniform conduit bank with sufficient capacity for all current and future providers. Uniform conduit banks use space more efficiently because conduit can be more tightly packed together and share manholes and handholes. Such banks can be maintained and managed by a single entity, whether the locality or a designated contractor.

Banks of conduits constructed simultaneously, or large conduits segmented with innerduct, provide multiple pathways for the installation of multiple fiber optic cables located in close proximity, as well as the ability to remove, add, or replace fiber optic cables without disturbing neighboring cables. Providers can select different colors for easier identification and repair. In contrast, rights-of-way that are crowded with conduit offer limited space and more costly options for adding infrastructure.

3. Strategies for creating equitable access to information

Best practices for sharing information (such as detailed maps) relevant to broadband planning among a wide range of potential deployers

Local or Tribal governments routinely collect and maintain maps, permitting data, and other information related to their rights-of-way and other infrastructure in their communities. Some larger cities and counties collect extensive data and share it on open data portals, accessible to anyone; smaller communities tend not to collect as much information—and not to have the resources to make it publicly available.

The strategies presented here focus on gathering data that might help facilitate broadband planning and design and making the data available to ISPs or other potential partners. (Local or Tribal governments themselves also benefit from developing and maintaining detailed, accurate information about broadband-enabling infrastructure.)

These steps include documenting existing infrastructure and planning to capture details on future expansions. Examples include the location of existing fiber and conduit, the condition of that infrastructure, and how fiber strands are being used.

In each of these approaches, the locality would ensure that appropriate privacy and security standards are maintained.

Best practice: Making public GIS datasets available where possible

An organized government database of geographic information greatly increases efficiencies and reduces costs for the government itself and for the organizations with which it does business. Access to relevant data reduces the cost and time required to plan and build broadband infrastructure—whether by the locality itself or a broadband deployer. DoIT developed and maintains the New Mexico Broadband Statewide Maps and the Interactive Broadband Map in part to achieve these same ends at a state level.[63]

Geographic information systems (GIS) are advanced mapping systems with high-resolution detail. GIS databases can be accessed for a range of purposes—many never considered by the creators of the system or the individuals who entered particular resource information (e.g., the location of streetlights or characteristics of private property in the locality).

While local data are not necessarily collected for the primary purpose of facilitating broadband construction, the following data sets can be extremely helpful in that regard:

- Addresses
- Streets
- Rights-of-way and easements (local or Tribal government, NMDOT, and others)
- Building footprints
- Streetlights

[63] "Broadband Statewide Maps," NM Department of Information Technology, https://www.doit.nm.gov/programs/broadband/mapping/broadband-state-maps/ (accessed January 2, 2024).

- Neighborhood boundaries
- Parcels
- Utility poles
- Overhead strand
- Conduit (both locality-owned and belonging to other utilities)
- Fiber (both locality-owned and belonging to other utilities)
- Manholes and handholes
- Zoning
- Existing underground utilities

With this information, it becomes easier, faster, and cheaper to conduct the high-level planning phase of a large-scale broadband construction project in which the prospective builder examines options and determines what assets are needed to plan and to build. Much of this information, especially for small, rural, or Tribal localities or complicated urban localities, is not available from publicly available statewide datasets at the level of detail needed to plan broadband construction.

This kind of detailed and transparent information can enable a prospective broadband provider to plan efficiently in a range of areas. First, the provider can learn what resources exist (such as space in the rights-of-way space, manholes, poles, and conduits) that are usable and leasable for the project and who to contact about leasing those resources. Second, the provider can develop more accurate forecasts of construction costs and schedules and identify in advance areas of risk and critical path items, such as easement access and bridge crossings. Third, the builder can create a large percentage of the outside plant design from the existing information, reducing the time and effort needed for fieldwork.

Incumbent broadband providers frequently are reluctant to add their data to such databases for business reasons. GIS systems enable the locality or Tribe to protect particular layers of a map for internal use only, or limit access to authorized individuals and keep proprietary information from potential competitors.

Best practice: Documenting public fiber assets

Public fiber's utility is frequently only as good as the documentation that enables the locality (or a broadband deployer) to understand where and how it is built and maintained. Initiatives such as community fiber optic construction, utility improvements, and community development require high-quality documentation and GIS mapping as part of the initial and lifecycle budgets. For example, a public fiber network is a classic example of an asset that benefits from appropriate documentation from the outset and loses reliability if it ages without that documentation.

Local or Tribal government-owned fiber is often documented on paper maps, in computer-aided-design (CAD) drawings, and with ad-hoc spreadsheets. At first, when there are only a few routes and no real complexity, these techniques appear to suffice. However, after a few changes, re-routings, and additions, the de facto documentation exists only in the memories of the fiber team. The result may be re-work,

fiber damage, accidental service outages, wasted time and money, and lack in confidence in the community's own infrastructure.

Lack of documentation has led some communities to doubt their own fiber assets to the point that they decline to use it for public safety purposes because of concerns regarding failure rate and reliability. These same communities decline to lease their fiber because of concerns that they could not meet contract terms for managing it or for uptime. They sometimes find that their fiber counts are insufficient to meet their needs because lack of documentation has led to over-leasing or use of inefficient electronics.

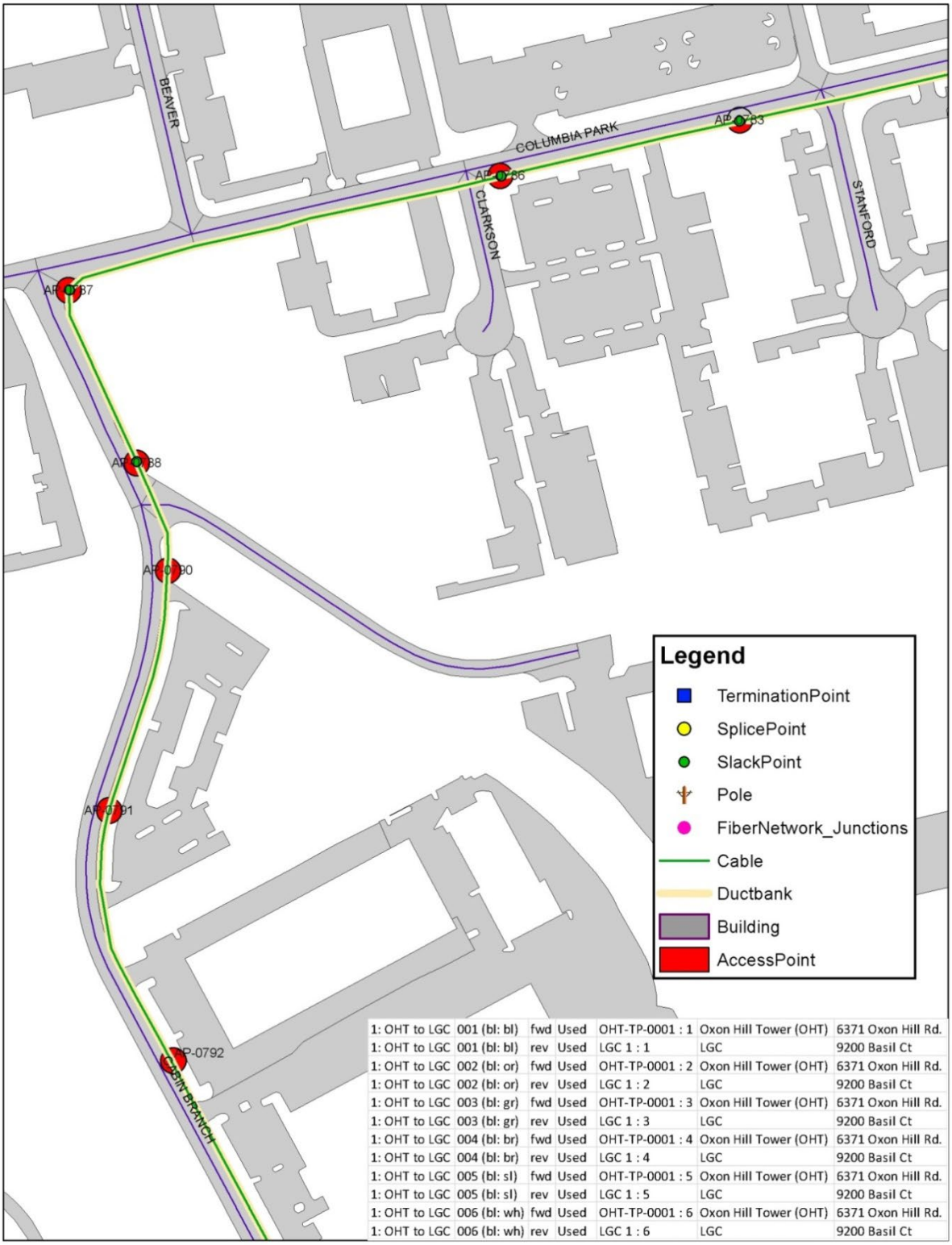
In order to create value, fiber documentation should indicate where the fiber is, whether it is aerial or underground, and where it is located spatially on a pole or underground. Effective documentation also includes conduit color, fiber count, pole locations, and location of asset points.

Figure 14 illustrates a sample GIS map of a fiber route, including physical fiber placement, termination points, splice points, poles, duct banks, access points, and the endpoints of each strand of fiber. Even more detailed information can be generated within the GIS system, including the path of a single strand of fiber through the entire network. GIS systems also offer localities the ability to determine the optimal fiber assignment and splicing for a particular route, and the ability to quickly generate "what-if" scenarios for future planning.

Considerations

- Develop an in-house fiber management system or outsource the responsibility

Figure 14: Comprehensive GIS mapping of fiber route



1: OHT to LGC	001 (bl: bl)	fwd	Used	OHT-TP-0001 : 1	Oxon Hill Tower (OHT)	6371 Oxon Hill Rd.
1: OHT to LGC	001 (bl: bl)	rev	Used	LGC 1 : 1	LGC	9200 Basil Ct
1: OHT to LGC	002 (bl: or)	fwd	Used	OHT-TP-0001 : 2	Oxon Hill Tower (OHT)	6371 Oxon Hill Rd.
1: OHT to LGC	002 (bl: or)	rev	Used	LGC 1 : 2	LGC	9200 Basil Ct
1: OHT to LGC	003 (bl: gr)	fwd	Used	OHT-TP-0001 : 3	Oxon Hill Tower (OHT)	6371 Oxon Hill Rd.
1: OHT to LGC	003 (bl: gr)	rev	Used	LGC 1 : 3	LGC	9200 Basil Ct
1: OHT to LGC	004 (bl: br)	fwd	Used	OHT-TP-0001 : 4	Oxon Hill Tower (OHT)	6371 Oxon Hill Rd.
1: OHT to LGC	004 (bl: br)	rev	Used	LGC 1 : 4	LGC	9200 Basil Ct
1: OHT to LGC	005 (bl: sl)	fwd	Used	OHT-TP-0001 : 5	Oxon Hill Tower (OHT)	6371 Oxon Hill Rd.
1: OHT to LGC	005 (bl: sl)	rev	Used	LGC 1 : 5	LGC	9200 Basil Ct
1: OHT to LGC	006 (bl: wh)	fwd	Used	OHT-TP-0001 : 6	Oxon Hill Tower (OHT)	6371 Oxon Hill Rd.
1: OHT to LGC	006 (bl: wh)	rev	Used	LGC 1 : 6	LGC	9200 Basil Ct

Best practice: Documenting public conduit assets

Underground fiber optic conduit is a valuable asset, particularly where construction is costly or difficult, such as urban areas, bridge crossings, rail crossings, and key building entries.

Many localities have conduit available as part of telecommunications, traffic, or other utility efforts. These range from mature, community-wide networks with consistent design and substantial capacity, to scattered conduit near traffic cabinets.

Well-documented conduit, like well-documented fiber, requires effort and consistency, and needs to be regularly updated. Effective conduit documentation includes the path, size, location (vertical and horizontal), access points, and design specifications (bends, availability of pull strings, composition).

While some communities may have a regularly maintained, reliable inventory of their conduit and a clear assessment of its usefulness and value, others, as with fiber, have only scattered documentation. Conduit information might be stored on paper maps or standalone CAD files of individual site plans or traffic intersections, or may be on separate permit applications (which may not be retained over time).

Moreover, the conduit itself might be crushed, blocked, full, or otherwise inaccessible. Also, conduit built for one purpose (twisted-pair copper, power) might not be suitable for broadband. In the case of conduit built for copper, the bend radius might not support fiber cables. In the case of conduit built for power, there may not be sufficient clearance from power lines to safely use for fiber.

Sufficient documentation can enable localities to track and understand these issues and plan accordingly.

Best practice: Coordinating telecommunications infrastructure mapping across permitting agencies

Coordination of telecommunications mapping can support the broadband planning and deployment process through enhanced information availability on the part of public and private entities—and strategic planning among participating public entities.

DoIT has taken a lead role in this regard at the state level by developing and maintaining the New Mexico Interactive Broadband Map.[64] Additionally, NMDOT has developed the Statewide Transportation Improvement Program access portal to publicly disclose other construction projects in highway rights-of-way for broadband planning purposes. At a local level, to the extent that multiple agencies or departments are involved in permitting processes, a concerted effort to identify and aggregate data and maps can have the same types of benefits. At the local level, too, coordinated mapping can create benefits for the permitting process itself.

Resources

- New Mexico Interactive Broadband Map
- Statewide Transportation Improvement Program portal to coordinate “Dig Once”

Where it is feasible for a Tribe or locality to coordinate its infrastructure mapping and record-keeping, the aggregated data can help simplify permit applications (for the applicants and the government reviewers) and permit record-keeping. In the long term, maintaining a clearer record of the location of infrastructure in the right-of-way (including broadband and non-broadband-related underground

[64] “Interactive New Mexico Broadband Map,” https://nmbbmapping.org/mapping/.

installations) can enable the assessment of broadband infrastructure availability in the community. This, in turn, could enable the locality to identify areas of low broadband investment for strategic planning purposes.

Once it has a process for gathering and collating map data, a locality would have options for creating maps with various levels of access, depending on the user. For example, it could create:

- A public map that shows the location of jurisdiction-owned infrastructure
- A map that is only accessible by permit applicants that shows the location of pending and approved permits
- An internal map that shows more detailed information about each pending and approved permit application

Considerations

- Local decision as to what entity will maintain the infrastructure map
- How to encourage buy-in among participating public entities
- Determining what level of detail is appropriate for public view
- Incorporating the findings of the map into broadband strategic planning

4. Approaches to undertaking these strategies

Local or Tribal government leaders and their staffs are accustomed to long-term strategic planning around infrastructure investments to meet their residents' economic, social, public safety, and other needs. As with any initiative of this import, best practices related to broadband deployment require analysis to ensure they are appropriate to a locality's own needs and requirements.

Best practice: Creating a cross-agency taskforce with executive leadership

Broadband planning at the local or Tribal government level also requires strong executive leadership. A mayor, county executive, Tribal leader (such as a president, governor, or superintendent), or similar leadership role will be a critical player in implementing these strategies—with collaboration and coordination among relevant agencies and departments, potentially including the development of a programmatic environmental impact report. With leadership and cross-agency coordination, a locality can undergo significant efforts to improve broadband processes, including comprehensive review efforts to analyze and optimize the full range of permitting and related processes.

Effective leadership will ensure that a locality's staff are aligned in their understanding of public policy goals and their focus on a given set of outcomes.

Best practice: Making broadband part of local or Tribal government strategic planning and coordination

Initiate collaborative big-picture planning

A local or Tribal government permitting agency can be a catalyst among local and regional government agencies, ISPs, and unserved communities by facilitating discussion and information sharing regarding broadband deployment efforts. Consultation with critical stakeholders could include existing and potential new-entrant ISPs, as well as public and nonprofit entities that may want to meet the needs of their communities and stakeholders as last-mile broadband providers.

New Mexico case study

The Navajo Nation has initiated collaboration between departments to coordinate permitting processes and to develop new ideas to facilitate processes.

The Navajo Nation Land Department is collaborating between different Navajo Nation departments to coordinate and expedite approval processes not only for telecommunications but also for other departments' needs, and to develop big-picture ideas for solutions to facilitate approvals and permitting.[65]

The City of San José, California, facilitated regular weekly meetings between the broadband point of contact and ISPs, and quarterly meetings between telecommunications executives and departmental leaders. This regular feedback mechanism led to the development of permit application templates and other process efficiencies. The city better understood ISPs' concerns about permitting timelines—and the city had a platform for suggesting infrastructure builds that aligned with its digital equity initiatives.

[65] "Broadband Initiative on Navajo Nation Notes Summary," meeting summary published by Coconino County Arizona, October 27, 2022, https://www.coconino.az.gov/DocumentCenter/View/54482/Broadband-Initiative-on-Navajo-Nation-Notes-102722.

Integrating broadband into a local or Tribal government's overall strategic planning (whether as part of a broadband strategic plan or a more general planning approach) creates a platform for collaboration, process improvement, and investment. Such an approach can prioritize broadband as a policy goal, with implications for access to public and private resources.

Considerations

- Frequency of meetings
- Levels of interaction (high-level, strategic conversations between executives; tactical conversations between permitting staff and applicants)
- How to coordinate mapping efforts
- Whether to initiate one-on-one information sharing agreements

Build broadband into planning and staffing of all relevant agencies

Another strategy is to address organizational silos within the locality—separations between information technology, permitting, engineering, and utility departments, for example—and again require that local infrastructure be documented as part of upgrade and improvement projects and regular maintenance.

As with fiber, the entities and agencies managing conduit may be separated from broadband and network planning agencies by internal reporting structures, and there may need to be leadership intervention for these entities to share and collaborate.

Localities might consider developing processes and structures that formalize the roles of department leadership in broadband planning, and ensure that any broadband opportunity is identified, receives proper review, and is acted upon promptly. Similarly, localities that take this approach might establish a single point of contact and durable reporting and accountability structures that do not rely on successful working relationships and ad-hoc communications of existing staff.

Processes and structures will work best if they are mandated by the community's legislative body, and the process is widely understood as a means of getting more for the locality or Tribe as a whole. To that end, a best practice is to inform elected leaders and staff about progress or activity in broadband, which can create a positive feeling about the value of the process.

A strong coordination process has the following elements:

- A clear point of entry
- Applicability to small and large projects
- Review by expert individuals
- Consultation with all relevant departments
- Speed
- Accountability
- Transparency

- Support of local leaders

A successful identification, review, and action plan may have the following elements:

1. Relevant broadband opportunities must be submitted as soon as possible to a central clearinghouse, such as a help desk. These opportunities to be submitted include new public facilities, new opportunities involving telecommunications available through grants, new applications that intensively use public networks, new services to be offered through the community networks (for example, substantial upgrades to GIS), and new construction projects and build opportunities in the locality.

   In the case of build opportunities, a best practice is for local or Tribal government departments to inform the help desk as soon as they are aware of a service provider or developer. (Some construction projects considered "targets of opportunity," such as emergency repairs on utilities and co-location opportunities discovered close to the time of construction, must be acted on more quickly than others.)

2. The clearinghouse identifies items for technical review by a team representing the relevant departments (e.g., information technology, public safety, public works, facilities, transportation). Team members will be informed of the key facts, along with the urgency level of the review.

3. The clearinghouse identifies items for policy and legal review as needed and again forwards those to a team handling these issues.

4. On the due date of the review, the technical and policy/legal teams convene and present the review to the project manager, who review the information, request supplementary information, and approve the completed analysis.

5. Project management submits the reviewed information to the appropriate decision-makers—the council, the manager, or department directors—for approval.

The end result of the process is a qualified technical review within a specified interval of time. There is accountability for the proposed initiative at each stage. The individuals who review the initiative provide written feedback, and decision-makers can see what was considered in the review and why.

Appendix A: Relevant state and federal programs and resources

Numerous federal and statewide programs are designed to facilitate infrastructure projects:

- OBAE's **Permits, Rights-of-Way, and Pole Attachments (PROP) working group** develops policies and programs to facilitate permits and access to infrastructure for broadband projects. They have developed:
    - Group meetings allowing stakeholders to coordinate and plan PROP-related projects and initiatives
    - Ongoing efforts for implementation of **"One-Touch Make-Ready"** policies
    - **Fee waiver programs for in-kind** fiber or conduit contribution, reducing right-of-way charges in exchange for "Dig Once" access for the state or for reducing the price of broadband services for the state
- The New Mexico Transportation Commission can **waive right-of-way administrative and annual fees for installation of infrastructure for the public good** (including providing broadband to unserved or underserved locations) and removes economic obstacles for smaller ISPs, per HB 160 (2023).[66]
- The New Mexico Department of Transportation (NMDOT) facilitates broadband projects with a number of programs:
    - The Statewide Transportation Improvement Program access portal[67] **publicly discloses future highway construction projects for broadband planning purposes**
    - The NMDOT Right Of Way Bureau provides an **online certification course in permitting** that points of contact in the locality should take
    - The NMDOT ePermit **online portal** is being developed to facilitate right-of-way permit requests and track the approval process.
    - Other right-of-way management policies are being developed to allow private broadband entities to be treated as utilities and **allow those providers to have access to public rights-of-way**
- State agencies have distributed **locality planning guides** for broadband: OBAE published a "Local Broadband Planning Guide;"[68] and has promoted an NTTA "Pathways to Success" broadband

[66] "2023 Regular Session – HB 160," New Mexico Legislature, https://www.nmlegis.gov/Legislation/Legislation?chamber=H&legType=B&legNo=160&year=23.
[67] "Statewide Transportation Improvement Program (STIP)", NMDOT, https://estip.dot.state.nm.us/.
[68] "Local Broadband Planning Guide," Office of Broadband Access and Expansion, January 2022, https://www.doit.nm.gov/wp-content/uploads/sites/4/2022/03/NMBBP_Local_Broadband_Guidance_Final.pdf.

reference guide[69] and a "Tribal Broadband Planning Toolkit"[70] on its website. Native organizations have prepared similar planning guides for broadband and right-of-way planning.[71] While not all of these resources provide information on permitting, they can facilitate more efficient broadband planning.

- OBAE has recommended or planned changes consistent with recommendations in this guidebook, but they have not yet been adopted: establishing a "Dig Once" policy; adopting conduit sharing policies; leveraging ePermit to streamline permitting; and developing a New Mexico PROP manual.
- The federal **FAST-41 program** sets timelines for review and authorization by federal agencies; projects over $200 million qualify, but the size of investment requirement is waived for projects with Tribal sponsorship, qualifying all Tribal entities' projects.

These programs are most useful for deployers, but localities can play a role in connecting deployers to these opportunities to facilitate projects or by adopting similar strategies locally, as described previously.

[69] "Pathways to Success: An NTTA Broadband Reference Guide," NTTA, https://connect.nm.gov/uploads/1/4/1/9/141989814/pathways_to_success_an_ntta_broadband_reference_guide.pdf.
[70] "Tribal Broadband Planning Toolkit," BroadbandUSA, https://connect.nm.gov/uploads/1/4/1/9/141989814/tribal_broadband_planning_toolkit__pdf__1.pdf.
[71] "Rights of Way on Indian Land," Indian Land Tenure Foundation, August 18, 2021, https://iltf.org/wp-content/uploads/2021/08/ILTF-ROW-Presentation-Aug-2021f.pdf.

Appendix B: Broadband glossary

Aerial construction – fiber cables installed on utility poles in a dedicated vertical space near other telecommunications cables and physically separated from electric power cables.

Conduit – a tube installed underground to protect fiber optic cables; conduit can be physically subdivided using innerduct.

Dig Once – a policy of coordinating the installation of multiple entities' fiber or conduit in certain circumstances when underground construction occurs in a community.

Fiber – a fiber optic cable is an extremely high-capacity broadband technology; a fiber cable can include hundreds of individual fiber optic strands—each of which has the capacity to deliver high-speed broadband services. The fiber is "lit" when network electronics are installed at both ends of a network route; cables installed without electronics are called "dark fiber."

Geographic information system (GIS) – a computer application that enables users to create and analyze maps based on geographic location data; the New Mexico Broadband Interactive Map[72] is an example of a GIS-based tool.

Hub site – a small standalone hut or a secure room in an existing building that houses network electronics.

Internet service provider (ISP) – a public or private entity that delivers broadband service to customers.

Last-mile – in networking, the final part of a network connection to a home, business, or community institution.

Make-ready – the work required to create space on a utility pole for the attachment of a new fiber optic cable; make-ready includes physically moving other cables that are already attached to a pole to create the vertical clearances required by national safety standards. Make-ready may require replacing a utility pole with a new, taller pole to accommodate the new fiber cable.

Middle-mile – in networking, the connection from the global internet networks (e.g., located at a data center or point of presence, often in a large city) to a last-mile network segment (e.g., at a network hub near a community served by an ISP); some projects in New Mexico have received federal grants and funding for middle-mile infrastructure.[73]

Underground construction – fiber or conduit installed in the ground, typically in the public right-of-way.

[72] "New Mexico Broadband Map," NM DoIT Offices of Broadband and Geospatial Technology, https://nmbbmapping.org/mapping/.

[73] For example, a middle-mile project in rural Eastern New Mexico from ENMR-Plateau received funding from the NTIA Middle Mile Program, and the Navajo Tribal Utility Authority received a grant to build middle-mile and last-mile broadband across the Navajo Nation in the 2010s ("Navajo Tribal Utility Authority," NTIA, https://www2.ntia.doc.gov/files/grantees/NavajoTribalUtilityAuthority.pdf; "NTIA Middle Mile Program Awards," NTIA, https://www.arcgis.com/apps/dashboards/4fc111c466a34528b54e462b6df184db; "Broadband Grantees," NM DoIT, https://www.doit.nm.gov/programs/broadband/grantees/.)