ADVANCE COLORADO BROADBAND
Broadband Equity, Access, & Deployment

Draft Middle Mile Due Diligence and Strategic Roadmap Report

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0. Executive Summary

Colorado's current middle-mile broadband landscape is a mixture of independent regional networks, each developed out of necessity to address connectivity gaps where the private market has not delivered. While these networks, specifically in Regions 9, 10, and 12, provide vital local services, this fragmented approach has created structural barriers that limit scalability, constrain economic growth, and prevent the state from operating as a cohesive whole.

This report provides a due diligence assessment of the current state of the middle-mile network in those Regions and lays out a strategic roadmap for evolving toward a unified, sustainable statewide framework.

Key Findings

A Fragmented and Financially Unviable "As-Is" State

The due diligence assessment confirms that while the regional networks are run by capable, lean teams, their independence results in a system with significant limitations:

- **Fragmented Governance and Operations:** With no central coordination, each network operates with different technical standards, disparate tools, and independent decision-making processes. This prevents end-to-end network visibility, hinders the ability to offer statewide services, and creates inefficiencies that increase costs.
- **Inconsistent Financial Viability**: The financial health of the networks varies significantly. Some Regions operate at a deficit and are dependent on inconsistent grant funding for survival, a model that is not sustainable in the long term.
- **Barriers to Scalability and Investment**: The current structure makes it difficult to attract large-scale commercial customers, leverage economies of scale, or compete effectively for major federal and state grant opportunities that favor coordinated, statewide initiatives.

The Recommended Path Forward

A Phased Evolution to a Unified Model

To address these challenges, this report outlines a phased pathway to transition from the current environment to a fully integrated and financially independent statewide middle-mile network. An immediate, radical transition is not feasible; instead, a deliberate, multi-year evolution is required.

The core recommendations are to:

- **Activate Working Groups (Phase 1: Months 0-6):** Initiate regular touchpoints between the Regions and CBO to lay the foundation for a sustainable operating plan and a business model with transparent strategies by leveraging the outcomes of this report.
- **Establish a Coordinated Consortium (Phase 2: Years 1&2):** Formalize coordination between the existing regional networks through a structured consortium. This initial step will align technical standards, operating procedures, and commercial strategies, enabling the regions to begin acting as a more unified entity while retaining local ownership and control.
- **Deploy Priority Infrastructure (Phase 2: Years 1&2):** Concurrently, execute a data-driven investment plan to build out the highest-priority middle-mile corridors. The analysis evaluated 27 potential corridors, with seven emerging as top-tier candidates for near-term investment. Initial deployment will focus on the highest-scoring routes, such as key segments along US Highway 160 (connecting Southern Colorado from the Four Corners to the Kansas border) and State Highway 145, which are critical for improving connectivity and resiliency in the southwest.
- **Transition to a Consolidated Model with an OMC Partner (Phase 3: Years 3-5+):** Once the consortium model is proven and legislative enablement is secured, the initiative will transition to a more integrated structure: a consolidated statewide Governing Board that oversees an Operate-Maintain-Commercialize (OMC) partner. This transfers day-to-day operational risk to a specialized third party while ensuring public oversight and accountability.

- **Achieve Full Network Realization (Phase 3: Years 3-5+):** With a sustainable governance and operating model in place, the state can complete the build-out of the remaining corridors, creating a near-universal, self-sustaining middle-mile network that drives economic development and ensures equitable access for all Coloradans.

Conclusion and Next Steps

The successful execution of this roadmap aims to transform Colorado's fragmented infrastructure into a unified, financially self-sustaining digital asset. This statewide network will bridge the digital divide, enhance systemic resiliency, and catalyze long-term economic development across all regions.

To initiate this transformation, immediate next steps include mobilizing the foundational working groups, finalizing initial capital funding strategies (including BEAD and state allocations), and advancing the top-tier priority corridors toward Design-Build procurement.

The following sections present the comprehensive due diligence, the corridor prioritization data, and the step-by-step implementation plans required to bring this statewide vision to reality. Leadership and stakeholders are encouraged to review these detailed findings, which provide the concrete blueprint needed to confidently advance Colorado's digital future.

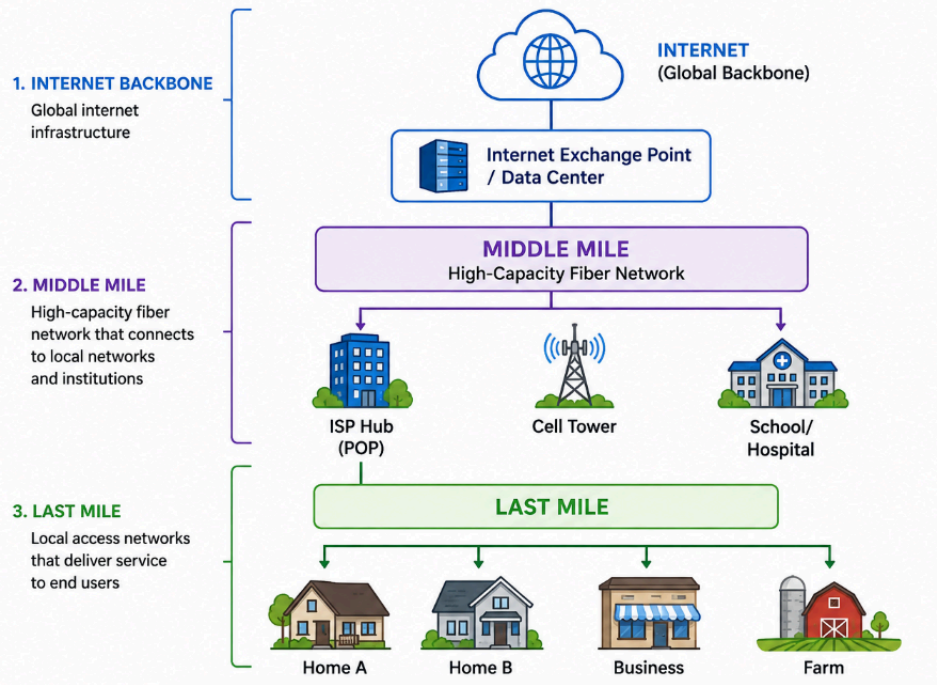
1. Initiative Overview and Colorado Middle-Mile Landscape

1.1 What is a Middle-Mile Network

Middle-mile broadband infrastructure is the portion of a broadband network that connects local access networks, such as fiber-to-the-home systems, cable networks, fixed wireless networks, schools, hospitals, public safety facilities, and cell towers, to major internet connection points, data centers, and regional or national backbone networks. Unlike last-mile infrastructure, which directly serves end users, middle-mile infrastructure provides the high-capacity transport paths that move large volumes of data between communities and the broader internet. It typically consists

of fiber-optic networks, transport electronics, aggregation hubs, and interconnection facilities designed to carry traffic over long distances at very high speeds.

Figure 1: Example of a Broadband Network Architecture



Middle-mile infrastructure plays a critical role in broadband availability, affordability, and reliability. By providing efficient connections between local networks and the internet backbone, it reduces the cost for internet service providers to deliver service, particularly in rural and underserved areas. Middle-mile networks also support essential community anchor institutions, public safety communications, and wireless infrastructure while improving network resiliency through redundant routes and regional connectivity.

1.2 Colorado's Current Middle-Mile Landscape

Colorado's current middle-mile landscape is characterized by deficient access to high-speed internet access across rural and underserved areas, where private network deployment has not fully reached all parts of the state due to financial challenges. These gaps impact a broad set of users, including last-mile providers, public-sector networks, community anchor institutions and other connectivity-dependent services.

In response, Colorado public-sector entities are independently deploying regional middle-mile networks, including Project THOR under Northwest Colorado Council of Governments (NWCCOG) and other networks in Regions 9 and 10, to close these access gaps and enable broader connectivity. These efforts are expanding coverage but remain regionally driven, independent, and not yet coordinated at a statewide level.

As broadband demand continues to grow, including through BEAD-funded last-mile deployment, the current middle-mile landscape—characterized by existing gaps and emerging but uncoordinated public networks—highlights the need for a more integrated approach to achieve statewide connectivity objectives.

1.3 CBO's Middle-Mile Initiative

An initial review of Colorado's current middle-mile landscape has highlighted the need for stronger alignment to support statewide broadband deployment and long-term connectivity planning. In response, the Colorado Broadband Office (CBO) launched the Middle-Mile Initiative that aims to develop a coordinated approach which builds on existing infrastructure and supports progress toward its goal of achieving 99% broadband coverage.

The initiative is centered on establishing a shared statewide framework for how middle-mile infrastructure can support last-mile deployment, improved community anchor connectivity, public safety, and economic participation across diverse geographies. CBO's approach focuses on coordination and integration of existing networks, with emphasis on sustainability, resiliency, and scalability. This approach was informed by input collected from regional and statewide stakeholders on current middle-mile network conditions, including what is working, key challenges, and immediate regional needs.

CBO's Middle-Mile Initiative focuses on the following areas:

- Establishing a statewide framework for integrating and aligning existing infrastructure.
- Achieving a financially and operationally sustainable network over time.

- Improving connectivity in rural areas and high cost to serve areas.
- Strengthening network resiliency and redundancy.
- Enabling a platform that supports public-sector and private-sector connectivity needs.
- Supporting a network capable of accommodating evolving demand and capacity requirements.

1.3.1 CBO's Middle-Mile Initiative Approach

The initiative is anchored in a phased approach, beginning with a strategic analysis to integrate Regions 9, 10, and 12, and later expanding to a broader statewide framework based on validated findings and implementation readiness.

The initiative consists of two primary components:

- **Due Diligence of Existing Middle-Mile Infrastructure**: This component establishes a baseline understanding of how networks in Regions 9, 10, and 12 are designed, operated, and utilized. It assesses technical, governance, operating, financial, and legal conditions, with a specific focus on evaluating how these networks can be coordinated and integrated into a single system. The objective is to identify dependencies and constraints that inform a scalable statewide model.
- **Statewide Strategy and Roadmap Development**: Building on the due diligence findings, this component defines a clear, actionable pathway to achieve an integrated statewide network. The roadmap outlines the evolution of governance, operating models, technical alignment, legal structure, and investment priorities required to move from regional coordination to a more integrated and scalable system over time.

1.3.2 CBO's Stakeholder Engagement

The approach is based on structured participation across core public-sector stakeholders and broader statewide input, with feedback used to refine both due diligence findings and the strategic roadmap.

To support this:

- **A Core Stakeholder Input Group** consists of public and governmental entities involved in ongoing development of the initiative. Participants include CBO, Colorado Department of Transport (CDOT), NWCCOG (Region 12), Region 9, Region 10, Department of Natural Resources (DNR), Department of Regulatory Agencies (DORA), Department of Local Affairs (DOLA), and the Southern Ute Indian Tribe. This group supports data sharing, validation of findings, brainstorming, providing feedback, and review of draft materials through regular working sessions.
- **A Broader Stakeholder Input Group** consists of over 400 public and private stakeholders providing input through surveys and a public comment process on the draft roadmap. This group was developed using CBO's existing BEAD stakeholder list and was further refined through input from the Core Stakeholder Input Group to ensure representation across public entities, providers, and other stakeholders with an interest in middle-mile infrastructure.

1.4 Purpose of this Report

Consistent with CBO's Middle-Mile Initiative, this report provides four core elements to CBO:

- A due diligence assessment of the current state (Section 2. Current State Assessment: Due Diligence Findings);
- A high-level statewide strategic roadmap (Section 3. Statewide Strategic Roadmap – Initial Structure);
- A strategic roadmap, focused on developing a statewide network (Section 4. Statewide Strategic Roadmap – Network Development and Investment Strategy); and
- A roadmap for the implementation of the new statewide governance structure (Section 5. Recommended Path Forward and Implementation Roadmap).

2. Current State Assessment: Due Diligence Findings

The due diligence assessment of Colorado's regional middle-mile networks in Regions 9, 10, and 12 reveals a landscape of independent and locally focused systems. While these networks effectively deliver services that support the status quo, they are unlikely to provide the scalability required for anticipated future use cases. Furthermore, this localized approach has resulted in a fragmented environment characterized by disparate governance structures, operating models, and technical standards. These inconsistencies create significant challenges for statewide coordination and integration. The following findings establish a detailed baseline of the current state, identifying the challenges and opportunities that will shape the path toward a unified middle-mile strategy.

2.1 Regional Middle-Mile Network Overview

The regional middle-mile networks serving Regions 9, 10, and 12 were developed to address connectivity gaps across their respective service areas. Each network reflects different approaches to infrastructure ownership, network design, and operating structure.

A foundational principle for evaluating these publicly supported networks is the concept of open access. For the purpose of this report, an open-access network is defined as one where the network owner or operator offers wholesale access to its infrastructure on fair, reasonable, and non-discriminatory terms. This model ensures that any qualified service provider—including last-mile internet service providers (ISPs), wireless carriers, and other entities—can utilize the infrastructure without facing anti-competitive barriers. Key attributes of this model include:

- **Non-Discriminatory Access:** All potential customers are offered access under the same pricing and terms.
- **Capacity Facilitation Focus:** The network operator primarily builds additional capacity for other providers rather than competing with them by selling retail services directly to end-users.

- **Transparency:** Pricing, service level agreements (SLAs), and interconnection policies are clearly defined and publicly available.

The following sections summarize the current state of each regional network and assess its operating model against these core principles of open access.

2.1.1 Region 9 Middle-Mile Network

Region 9 Economic Development District of Southwest Colorado, Inc. (Region 9) is a Colorado non-profit community economic development corporation that promotes and coordinates economic development efforts throughout Southwest Colorado. Its board of directors is comprised of 26 directors — 17 members from local government agencies throughout the region and nine members that represent the private sector in the five-county area. Currently, Region 9 has one member that manages broadband by acting as a point of contact for regional partners meeting monthly.

The Region 9 middle-mile network consists of a combination of existing fiber infrastructure across southwest Colorado, serving Archuleta, Dolores, La Plata, Montezuma, and San Juan counties, multiple municipalities, and tribal communities such as the Southern Ute Indian and Ute Mountain Ute tribes. The network builds on the Southwest Colorado Access Network (SCAN) segment, which connects community anchor institutions and government facilities.

Current network infrastructure in the region includes a mix of fiber assets owned by local jurisdictions and shared through regional partnerships. Connectivity between communities is achieved through a combination of existing fiber assets and leased capacity obtained through Indefeasible Rights of Use (IRUs), resulting in a network composed of multiple independently owned segments rather than a single fully integrated system.

Figure 2: Overview Map of Region 9 Middle-Mile Network

Ownership of the network is distributed across Region 9 and participating local jurisdictions, including counties, municipalities, and tribal entities. The network integrates both owned and leased infrastructure, with Region 9 planning to own equipment at Carrier-Neutral Locations (CNLs) while relying on leased dark fiber through long-term IRU agreements for portions of the broader network route.

The network supports wholesale middle-mile services, including point-to-point transport capacity, delivered to Internet Service Providers (ISPs) at regional access locations. This enables ISPs to interconnect with the network and extend last-mile services within the region. Additional offerings include dark fiber, lit transport, rack space, and colocation services for qualifying broadband providers.

Operational responsibilities are distributed across Region 9's participating jurisdictions and external partners. Region 9 provides coordination and oversight with certain functions including monitoring, equipment configuration, and provisioning of services being supported through contracted arrangements and regional partnerships.

From a financial perspective, the network relies on a combination of grant funding, in-kind contributions, and lease-based infrastructure arrangements. Current operations are revenue-negative due to the cost of leased infrastructure and a limited ISP customer base. Existing funding sources, primarily grant-based, do not provide sustained long-term support, requiring additional mechanisms to ensure ongoing financial sustainability of the network. Grant funding offsets operating costs; however, excluding grant support, operations are revenue-negative.

Alignment with Open Access Principles:

The Region 9 network is structured to function as an open-access model. It operates on a wholesale-only basis, offering services such as dark fiber, lit transport, and colocation to all qualifying last-mile providers on a non-discriminatory basis. As a non-profit entity governed by a board of public and private stakeholders, its core mission is to enable, rather than compete with, last-mile service providers, thereby adhering to the foundational principles of open access.

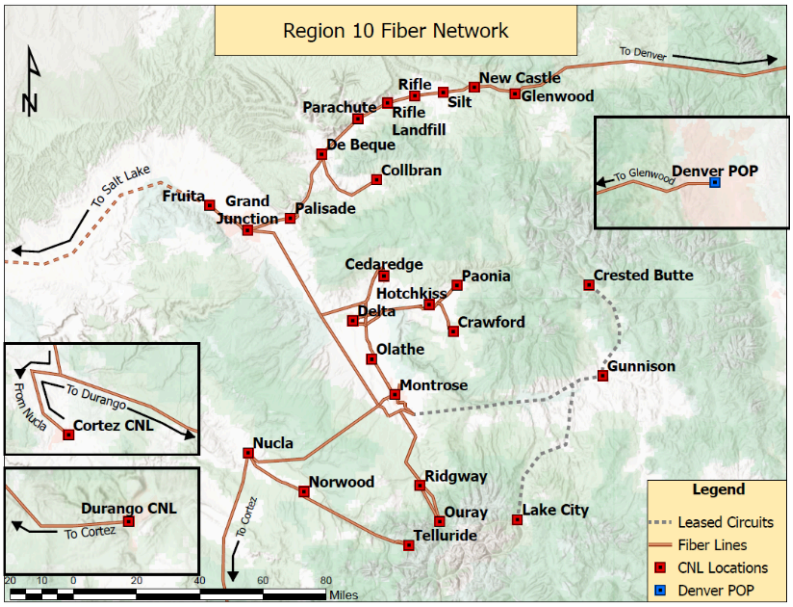
2.1.2 Region 10 Middle-Mile Network

Region 10 operates as a 501(c)(3) nonprofit that is supported by local and county governments. Region 10 supports 18 communities in 6 counties in western Colorado. Region 10 currently has approximately 15 employees with one team member dedicated to broadband.

The Region 10 middle-mile network is a regional broadband infrastructure developed to improve connectivity across western Colorado, particularly in rural and underserved areas across Delta, Montrose, Hinsdale, Gunnison, Ouray, and San Miguel counties, enabling Internet Service Providers (ISPs) and public-sector users to access middle-mile transport services and connect to major interconnection points, including Denver and Salt Lake City. The network has been developed over time through a combination of grant funding and regional investment and integrates a combination of owned and leased fiber infrastructure, including IRUs. Owned assets are concentrated at CNLs, while long-haul connectivity is supported through leased dark fiber under long-term IRU agreements. It is structured around a backbone network connecting major population centers, with extensions into local communities through designated

access points. The network supports both transport and routed services, operating as an integrated Layer 3 network with the ability to provide IP-based connectivity in addition to basic transport.

Figure 3: Region 10 Network Map



The network connects communities across the six counties, including Grand Junction, Montrose, Gunnison, and surrounding areas, with routes extending toward regional and out-of-region interconnection hubs. This structure enables ISPs to access regional aggregation points while leveraging shared middle-mile infrastructure. Network operations are supported through a combination of internal regional coordination and external service arrangements, reflecting reliance on leased infrastructure and vendor-supported network management functions.

From a financial perspective, the network operates with a revenue model primarily based on transport services and access to network facilities, with ISPs representing the primary customer base. Reported and forecast financials indicate that the network operates at a deficit at the operating level, with revenues increasing over time but remaining below total operating costs.

Based on available financial data, revenues are projected to grow from approximately $0.5 million to $0.8 million annually, while operating expenses remain higher, resulting in continued net operating losses.

Alignment with Open Access Principles:

The Region 10 network operates as an open-access system. It functions as a wholesale-only provider, offering middle-mile transport services primarily to Internet Service Providers (ISPs) and public-sector users, which enables last-mile competition. As a 501(c)(3) nonprofit supported by local governments, its structure is inherently aligned with providing fair and non-discriminatory access to its infrastructure.

2.1.3 Region 12 Middle-Mile Network (Project THOR)

The Northwest Colorado Council of Governments (NWCCOG) is a voluntary association of county and municipal governments that serves 30 member jurisdictions in a 6-county region of northwest Colorado. Programs run by NWCCOG span a wide range: Broadband, Economic Development, Elevator Inspection, Energy, Finance, Member Services, Northwest Loan Fund, Northwest Regional Healthcare Coalition, Mobility (transportation), Vintage (senior services), and Water Quality & Quantity. NWCCOG lists approximately 50+ staff and contractor positions across all its programs, with one employee that focuses on broadband mandate.

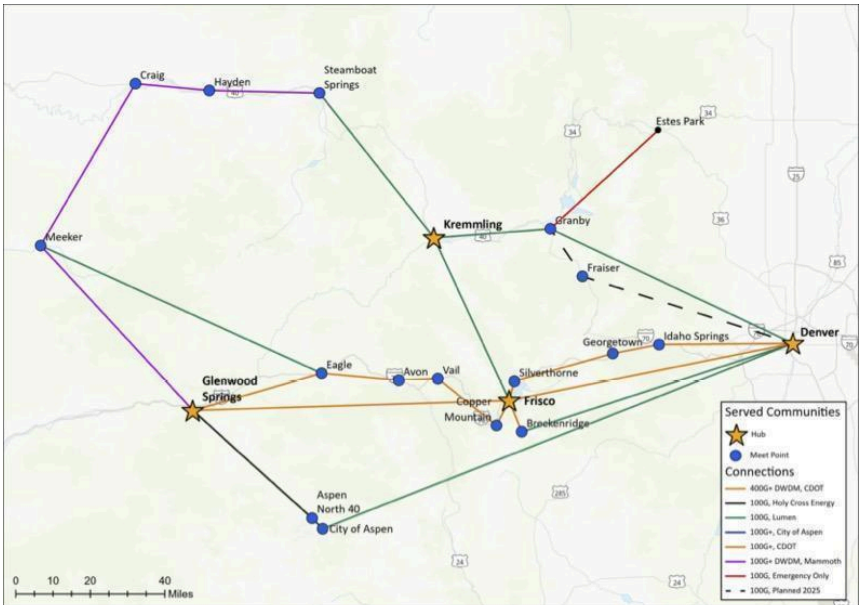
The Region 12 middle-mile network, known as Project THOR, is a local government-owned, open-access middle-mile transport network developed to enhance broadband connectivity across northwest Colorado. The network enables Internet Service Providers (ISPs), public-sector entities, and community anchor institutions to access high-capacity transport infrastructure and extend last-mile services into underserved areas. Project THOR is owned and coordinated by NWCCOG and operated by Aspen SmartNetworks.

The network spans approximately 400 miles of infrastructure and integrates publicly owned and commercially leased fiber assets. It is structured through regional aggregation points, including Meet Me Centers[1], which serve as access nodes for

[1] "Meet Me" centers act as connection point, or digital train stations where local governments, ISPs, and anchor institutions (like hospitals) plug into the Project THOR backbone. Source:

participating stakeholders and service providers. Project THOR provides transport infrastructure that supports ISPs in delivering broadband services to end users.

Figure 4: Project Thor Network Map



Project THOR operates as a cooperative network supported by a broad set of stakeholders, including counties, municipalities, utilities, healthcare entities, and private partners across northwest Colorado. Participating entities include communities such as Clear Creek, Summit, Pitkin, Eagle, and Rio Blanco counties, as well as municipalities including Vail, Avon, and Steamboat Springs. These stakeholders connect through shared infrastructure and local aggregation points, enabling coordinated access to middle mile transport capacity.

Network ownership and operations follow a hybrid model in which NWCCOG provides oversight and administrative coordination, while a mix of publicly owned and leased fiber infrastructure is operated through contracted service providers, including Aspen Smart Networks and designated local support resources.

From a financial perspective, the network reflects a structured, stakeholder-supported model with demonstrated operating performance. Initial development was

https://communitynetworks.org/content/project-thor-public-private-partnership-hammers-out-path-better-connectivity-colorado

supported through state grants, including Department of Local Affairs (DOLA) funding, matched by local contributions.

Based on reported financials, the network operates with positive net income across current and forecast periods, with revenues in the range of approximately $1.5 to 1.8 million annually and operating costs at a lower level. Ongoing operations are supported through a combination of participation-based cost sharing, transport service agreements, and recurring revenues, with Meet Me Center hosts representing a primary source of network utilization and revenue.

Alignment with Open Access Principles:

Region 12's network, Project THOR, is explicitly designed and operated as an open-access network. It is a government-owned, wholesale-only system that provides transport services to a wide range of stakeholders, including ISPs and public entities, on a non-discriminatory basis. Its cooperative structure, supported by participating municipalities and counties, ensures that its primary function is to enable last-mile competition and regional connectivity rather than to serve retail customers directly.

2.2 Governance Due Diligence Assessment

Governance is the framework that dictates how strategic decisions are made, who holds accountability, and how middle-mile networks align with stakeholder priorities. Our due diligence confirms that Colorado's regional networks are governed independently, a model rooted in local control and accountability. Each region's leadership team is responsible for setting its own strategy, managing operations, and planning future network expansions based on local priorities.

While this decentralized approach has enabled each region to effectively address its unique connectivity challenges, it also creates fundamental barriers to the coordination and integration required for a cohesive statewide network. There is currently no formal statewide governance body, and any cross-regional coordination occurs informally on a project-specific basis.

This assessment deconstructs the "As-Is" governance landscape to identify constraints that hinder integration and enablers that can be leveraged to build a more unified model for Colorado.

2.2.1 Constraints to Coordination and Integration

The autonomy of regional networks creates several structural barriers to effective statewide coordination:

- **Decentralized Decision-Making:** With no central authority, there is no mechanism to make or enforce binding cross-regional decisions on critical issues like technical standards, procurement, or investment priorities.
- **Informal and Ad-Hoc Coordination:** Lacking defined governance mechanisms, any collaboration is informal and inconsistent, limiting the potential for strategic alignment and creating complexity.
- **Divergent Planning and Investment:** Each region plans its network evolution independently, which can lead to divergent technical paths and missed opportunities for coordinated, cost-effective infrastructure deployment over time.
- **Fragmented Accountability:** Each regional entity reports to its own local stakeholders, which can create conflicting priorities and makes it difficult to align with a broader statewide mission. This could mean a future integrated model would require regions to report to both local stakeholders and a new statewide body, adding complexity.

2.2.2 Enablers for Coordination and Integration

Despite these constraints, the current model provides a strong foundation to build upon:

- **Established Regional Structures:** The existing governance bodies are well-established, with clear ownership and accountability at the local level. A future statewide model does not need to replace them entirely but can be introduced to coordinate their efforts.

- **Experienced Leadership:** The existing regional leadership teams possess deep operational experience and institutional knowledge, which is a critical asset for designing a practical and effective statewide framework.
- **Foundation of Informal Collaboration:** The existing informal coordination, while limited, demonstrates a willingness to collaborate and provides a foundation for more structured, formal alignment.
- **Clearly Defined Roles:** At the regional level, roles and responsibilities are generally well-defined, which will support the planning and implementation of a more integrated future-state model.

2.3 Operating Model Due Diligence Assessment

Regional middle-mile networks are operated independently, with each region responsible for day-to-day network operations, including monitoring, maintenance, service provisioning, and customer coordination.

Operating models are decentralized and region-led, with variation driven by differences in network scale, staffing capacity, and service requirements. Operational responsibilities are supported through a combination of in-house teams and region-specific subcontractors.

The operating approach varies across the Regions by staffing models, vendor arrangements, and tools. Functional responsibilities vary by how activities are performed and differences in reliance on in-house staff versus contracted support. All Regions reported resource constraints, which necessitate a lean operating approach.

Table 1: Current Operating Model Overview

Current Operating Model Overview	
Operating Model	• Lean regional models supported by small internal teams and contracted personnel • Region-specific subcontracting for targeted O&M services • Regions determine in-house vs outsourced functions
O&M Overview	• Regions manage day-to-day operations and coordination • Contractors provide monitoring, maintenance, and support services • No centralized operations function or shared NOC capability
Commercialization Overview	• Regions manage leasing, marketing, and customer relationships independently • Commercial strategies and pricing vary by region • No shared commercialization or business development function
Implications	• Regions retain full operational and performance risk • Coordination complexity increases as networks scale
Cross-regional Coordination	• Informal, not supported by standardized processes, shared systems, or centralized operational oversight.

Table 2 below outlines the difference in in-house and outsourced operational functions and activities for each Region.

Table 2: In-house vs Outsourced Operational Functions/Activities

Function/ Activity	Region 9	Region 10	Region 12 (NWCCOG)
Network Monitoring	Hybrid (in-house and subcontracted)	Subcontracted	Subcontracted
Network Maintenance	Hybrid (in-house and subcontracted)	Subcontracted	Subcontracted
Customer Coordination	In-house	In-house	In-house
Commercial / Marketing	N/A	N/A	N/A
Vendor Management	In-house	In-house	In-house
Administration / Back Office	In-house	In-house	In-house

2.3.1 Coordination and Integration Constraints

The decentralized and varied nature of regional operating models creates several practical constraints that hinder effective statewide coordination and integration.

Independent Operations Limit Cross-Regional Visibility: Because each region manages its network independently, there is no unified, end-to-end view of network performance. This creates significant challenges in service assurance and troubleshooting.

- Example: If a last-mile provider connecting to the Region 9 network experiences slow service to a data center in Denver, diagnosing the root cause is difficult. The issue could stem from the local network, an interconnection point, or a problem within the Project THOR network. Without shared monitoring tools, Region 9's support team cannot independently diagnose the fault, leading to a series of manual "swivel chair" escalations between regional teams and a longer Mean Time to Repair (MTTR).

Lack of Standardized Processes and Tools Increases Complexity: Each region has independently selected its own tools and developed unique processes for key

functions like incident management, service provisioning, and customer support. This fragmentation makes coordination inefficient and difficult to scale.

- Example: Region 9 may use one ticketing system for incident management while Project THOR uses another. When a cross-regional network event occurs, there is no automated way to link trouble tickets or share real-time updates. This forces manual communication between teams, increasing the risk of inconsistent data and miscommunication during an outage.

Lean Staffing Models Constrain Capacity for Expanded Coordination: The regional operating models are intentionally lean, with staff focused on day-to-day operations within their own network footprint. This leaves little to no capacity for the additional work required to design and implement a statewide strategic initiative.

- Example: The small technical team in Region 10 may be fully occupied with managing local network upgrades and customer turn-ups. They lack the available hours to participate in a multi-month working group to standardize routing protocols or develop a unified security framework, thus slowing down critical integration efforts.

2.3.2 Enablers for Coordination and Integration

Despite the constraints, the existing operating models provide a strong foundation and several key enablers for building a more integrated statewide framework.

Established Operational Experience within Each Region: Each region possesses years of hands-on experience in managing middle-mile infrastructure within its unique geographic and demographic environment. This deep institutional knowledge is a critical asset that can inform a more robust and practical statewide model.

- Example: The Project THOR team has extensive experience managing a cooperative, multi-stakeholder network and has already established effective cost-sharing and participation models. This existing framework can serve as a valuable template for developing the financial and operational structure of a statewide consortium, accelerating its design.

Clearly Defined Accountability for Operations and Maintenance: Within each region, there are established lines of accountability for network performance and maintenance, providing a clear structure to build upon.

- Example: Region 10 has a well-defined process for how its ISP customers report issues and escalate problems. This existing structure can be adopted and scaled into a standardized customer support model for a statewide entity, ensuring that proven, effective processes are not lost during integration.

Opportunity to Align Processes and Consolidate Vendors: The current fragmentation presents a clear opportunity for future efficiency gains. A coordinated model can introduce standardized, best-in-class processes and consolidate vendor contracts to leverage greater purchasing power.

- Example: While the regions currently use different monitoring tools, a coordinated effort could evaluate and select a single, best-of-breed platform. This would not only solve the visibility constraint mentioned earlier but could also reduce overall software licensing costs through a larger, consolidated contract.

Existing Operations Provide a Baseline for Future Evaluation: The performance of the current operating models serves as a crucial baseline for measuring the success of future integration efforts. This allows for data-driven decisions when designing the future-state operating model.

- Example: By benchmarking the current operating expenses (OPEX) per mile in each of the three regions, the future statewide entity can set a clear target for efficiency gains. This baseline data will be essential for building the business case for a more centralized operating model like an OMC.

2.4 Financial Due Diligence Assessment

The financial due diligence evaluates the current (“as-is”) financial baseline of regional middle-mile networks and its implications for coordination and potential integration.

2.4.1 Financial Baseline and Observations

Financial information was collected from participating regions and consolidated to provide a baseline view of current performance. Data reflects regional inputs as provided and does not incorporate adjustments or changes associated with coordination or integration.

Table 3: Financial Baseline Overview

Year	2025	2026 (forecast)	2027 (forecast)	Notes
Revenue	$2,475k	$2,190k	$2,710k	*Region 9 projections not available; values reflect continuation of recent trends*
OPEX	$2,210k	$2,260k	$2,410k	
Grants	$500k	$200k	$1,050k	
CAPEX	$480k	$130k	$130k	Capital *investment* varies by year
Net funds inflow / (outflow)	$285k	$0	$220k	*(Revenue + Grants) - (CAPEX + OPEX)*

Key Observations:

- Financial performance varies across regions, with some networks operating at a deficit and others more stable, reflecting differences in revenue models, customer base, and funding structures
- At a consolidated level, results indicate a net negative position in 2025, near break-even in 2026, and projected positive performance in 2027; however, this trajectory is partly supported by external funding and may not reflect fully self-sustaining operations
- Middle-mile infrastructure is not consistently self-sustaining under current models, with several regions relying on subsidies, grants, or external support, indicating that long-term financial sustainability may require continued public-sector support or structural changes

- These projections reflect regional input and do not incorporate structural changes to operating models, revenue generation, or funding approaches

Discussion:

Financial performance varies at the regional level and is influenced by demand conditions, customer base, pricing, and funding availability.

Revenue growth is constrained in some regions by limited market scale and existing service models. Operations are supported through a combination of service revenues, with approaches varying by region; for example, Region 9 financials include grant and match funding alongside service revenues, and baseline materials indicate several regions are not fully self-sustaining and rely on such supplemental sources.

2.4.2 Integration-Relevant Financial Observations

The financial baseline introduces several considerations for coordination and potential integration:

- Differences in revenue types and funding sources may require alignment of cost recovery and pricing models, including

  community contribution and “meet-me center” models

  service and collocation revenues from carrier-neutral locations

  dark fiber leasing and grant-supported infrastructure models

- Revenue growth is currently constrained by existing service delivery models and market structure, including reliance on ISPs or local stakeholders for customer access and limited ability to directly or collectively engage larger institutional and public-sector customers

- Existing revenue models reflect distinct and structurally different approaches across regions, including community-funded, service-based, and grant-dependent models—which may not be directly compatible under a unified financial and operating framework

- Constraints related to current entity structure and program eligibility (e.g., E-Rate) limit the ability of some regions to directly serve public-sector and anchor institution customers, including schools and government entities.
- Limited centralized business development and sales capability constrain revenue growth, with current models relying on decentralized or indirect customer engagement, resulting in limited coordinated demand generation and reduced ability to systematically expand the customer base across regions

At the same time, existing infrastructure, stakeholder relationships, and revenue streams provide a foundation for coordination and demand development.

These assets create a baseline platform that can be leveraged to improve utilization, expand customer access, and support more coordinated commercial activity under an integrated model.

2.5 Technical Due Diligence Assessment

The technical due diligence assesses current ("as-is") network characteristics and interconnectivity across regional middle-mile networks and evaluates how existing design and systems affect coordination and potential integration.

2.5.1 Current Technical Characteristics Observations

Regional middle-mile networks have been developed independently, resulting in differences in network design, interconnection approaches, and supporting systems.

Key observations include:

- **Independent network design approaches**: Regions are lacking a common statewide approach to network design or expansion
- **Limited interoperability framework**: Interconnections exist between networks, but there is no defined framework governing coordinated operation across regions
- **Differences across network layers (Layer 1, Layer 2, Layer 3):** Network implementation across regions varies at the physical layer (fiber infrastructure),

data link layer (transport and switching), and network layer (routing and traffic management), reflecting region-specific design and deployment approaches

- **Variation in monitoring systems and visibility**: Regions use different tools for network monitoring, with performance visibility maintained independently at the regional level

2.5.2 Integration-Related Observations

The current technical environment introduces dependencies that need to be addressed to support coordinated or integrated operation.

- **Interconnection alignment requirement**: Coordinated operation depends on alignment in how networks connect and exchange traffic across regions
- **System alignment requirement**: Coordination requires alignment of monitoring tools and supporting systems across regions
- **Common standards requirement**: Differences in network design and implementation would require alignment around shared technical standards
- **Defined coordination framework**: A consistent approach is required to manage cross-regional connectivity and network interaction

2.6 Legal and Regulatory Due Diligence Assessment[2]

Several legal and regulatory considerations are affecting CBO's ability to support a coordinated statewide middle-mile network, including ownership, operation, commercialization, and integration of regional networks. These legal dependencies inform subsequent analysis and strategy development.

[2] This section does not interpret legal authority, but identifies key areas for further validation:
- CBO's authority to own, operate, or participate in a statewide network
- Permissibility of service delivery models across public and private customer segments
- Legal considerations related to coordination and potential integration of regional networks
- State and federal requirements governing fiber deployment within CDOT rights-of-way

2.6.1 CBO Statutory Authority

CBO's current mandate focuses on broadband planning, coordination, and administration of statewide programs. While these responsibilities provide a foundation for statewide engagement, they do not define the full scope of activities required for an integrated and potentially commercial network. The scope of CBO's authority represents a key dependency for determining the structure and feasibility of a coordinated statewide model.

The following areas are gaps in CBO's enabling framework and need to be defined for further developing a governance model:

- **Ownership and asset participation**: Ability to own, hold, or participate in infrastructure assets
- **Operational responsibility**: Ability to operate network services directly or through third-party arrangements
- **Commercial activity and revenue generation**: Ability to provide fee-based services or support revenue-generating models
- **Customer eligibility and service delivery scope**: Ability to serve public-sector entities and private-sector customers

The above points need to be defined in alignment and under consideration of:

- applicable state statutes governing telecommunications and public entities
- constitutional and funding constraints (including TABOR considerations)
- requirements related to equitable and non-discriminatory access

These elements have not been evaluated against statutory language and require further legal validation and may require legislative enablement.

Under current Colorado Revised Statutes, the CBO's authority to provide direct technical assistance or grant funding is primarily oriented toward other governmental entities and applicants for state or federal grant programs. The legal analysis of a

future statewide middle-mile entity must consider that expanded authority to directly serve private-sector customers or act as a commercial entity itself may require specific legislative enablement.

2.6.2 Legal Considerations for Integration of Regional Networks

A coordinated statewide model requires alignment across existing regional networks, introducing legal considerations beyond individual network operations.

Integration may occur across a spectrum—from coordination to a structured alignment of operations, contracts, and assets—each with different legal implications.

Key considerations include:

- **Coordination and shared service delivery**: May require formal agreements, including intergovernmental agreements and defined roles.
- **Contractual arrangements**: Existing leases, IRUs, and vendor contracts may constrain modification, alignment, or assignment.
- **Potential future asset or contractual alignmen**t: Deeper integration may introduce requirements related to control of assets, governance, and consent.
- **Governance and decision authority**: Coordination requires clearly defined decision rights and signatory authority.
- **Revenue and cost allocation**: Shared models require legally supported mechanisms for distributing costs and revenues.

These considerations have not been validated against existing agreements. Integration feasibility depends on further legal and contractual review, and the governance model chosen to move forward under this middle-mile program.

2.6.3 CDOT Right-of-Way and Fiber Deployment Considerations

Use of CDOT right-of-way (ROW) for fiber deployment is governed by state statutes, CDOT rules and directives, and federal regulations.

The following state statutes, CDOT rules and directives, and federal requirements should be reviewed:

Figure 5: Federal, State, and CDOT Regulations

CDOT Rules, Directives, and Resolutions to Review	State Statutes to Review	Federal Statutes and Regulations to Review
2 CCR 601-18 (State Highway Utility Accommodation Code)	**C.R.S. § 43-1-1201 et seq.** (Public-Private Initiatives; equitable and neutral treatment)	**23 CFR § 1.23** (Rights-of-way)
Procedural Directive 1504.2 (Fiber governance)	**C.R.S. § 43-1-105** (Powers and duties of the CDOT Executive Director)	**23 U.S.C. § 116** (Maintenance)
Resolution 16-11-3 (Equity and comparability in PPI)	**Article XIV, Section 18** of the Colorado Constitution (Intergovernmental cooperation)	**23 CFR § 710.201** (ROW program management)
Resolution 1853 (Revenue allocation)	**C.R.S. § 38-5.5-102 through 109** (Telecommunications access to public ROW)	**23 CFR § 710.405** (ROW use agreements)
Resolution 1756 (ROW use for dark fiber exchange)	**C.R.S. § 38-5.5-102(5)** (Exclusions applicable to CDOT)	**23 U.S.C. § 111** (Interstate ROW restrictions)
Resolution 658 (PPI guidelines)	**C.R.S. § 43-1-210(5)** (Compensation / fair market value considerations)	**23 CFR § 710.403(b), (d)(1)**
	C.R.S. § 29-1-203 (Intergovernmental agreements)	**23 U.S.C. § 142(f)** (Availability of right-of-way)
	C.R.S. § 24-101-101 et seq. (State Procurement Code)	**23 CFR § 645.211** (Utility accommodation)
		Public Law 114-94 (FAST Act)
		FHWA Stewardship and Oversight Agreement

2.7 Current State Assessment Summary

The due diligence assessment reveals a collection of regional networks born out of necessity in areas where private-sector investment was financially not viable. Each regional network was developed independently to fill critical connectivity gaps, with a focus on providing essential services through lean, cost-efficient operating models.

While successful in meeting immediate regional needs, this independent evolution has resulted in a fragmented statewide ecosystem. There is no holistic strategic plan, no common operating framework, and no formal mechanism for coordination. As a result, significant variations exist across every domain assessed:

- **Governance:** Characterized by decentralized, autonomous decision-making that is accountable to local stakeholders, not a statewide body.
- **Operating Models:** Lean, independent teams use disparate tools and processes, limiting cross-regional visibility and operational efficiency.
- **Financial Performance:** Sustainability models vary widely, with some regions operating at a deficit and relying on grant funding, while others have more stable, stakeholder-supported revenue.
- **Technical Design:** Networks have been built with different architectures and standards, creating interoperability and integration challenges.

These differences create constraints to achieving a scalable, resilient, and economically sustainable statewide network. However, this assessment confirms that the existing regional infrastructure, governance structures, and deep operational experience provide a strong foundation for a more coordinated model.

The current state, therefore, presents both a clear need and a viable opportunity. The findings in this section identify the critical dependencies—from technical to financial to legal—that must be addressed to bridge the gap between today's fragmented reality and tomorrow's vision for a unified middle-mile framework. Section 3 builds directly on this evidence to define a structured, actionable pathway to achieve that vision.

3. Statewide Strategic Roadmap – Initial Structure

The due diligence findings in Section 2 confirm that while Colorado’s regional middle-mile networks are effective locally, their independent nature creates significant barriers to forming a cohesive statewide system. To address this, a target end state is required—one that supports long-term sustainability, enables operational scale, and unlocks greater value for the entire state.

This section outlines the initial strategic framework that was developed as a hypothesis for how to achieve that target end state. This initial structure was not created in a vacuum; it was synthesized from our due diligence findings, analysis of

best practices from other states, and an understanding of established public-private partnership models. The framework, encompassing governance, operating models, and financial strategy, was a robust starting point for structured discussions with CBO and core regional stakeholders.

The purpose of this section is to detail that initial testable hypothesis and present the foundational logic that guided its development. The models and pathways described herein served as the basis for the iterative engagement process that has since refined and validated the recommended path forward outlined later in this report.

Target End State: A coordinated statewide middle-mile framework that operates as an interoperable network, supported by defined governance, scalable operations, a sustainable financial model, and an enabling legal structure, with the ability to expand beyond the initial regions as readiness increases.

Building on the due diligence assessment in Section 2, this roadmap translates current-state constraints and enablers into a phased path forward. The roadmap is structured to (1) define the phased evolution for governance and operating models towards the desired end-state, (2) identify priority actions to improve financial sustainability and technical interoperability, and (3) outline legal and regulatory workstreams required to enable statewide implementation.

Advancing this roadmap requires CBO to align with stakeholders on key decisions and develop foundational inputs for implementation. A consolidated schedule and decision points for these workstreams will guide sequencing and accountability.

3.1 Governance Model

Section 2 established that while Colorado's regional governance models are effective locally, their independence creates significant barriers to statewide coordination. This section translates those findings into a clear, actionable solution: a phased governance pathway.

Rather than proposing an immediate and disruptive transition to a single statewide structure, a deliberate evolution is recommended. This approach allows stakeholders

to build trust, demonstrate value, and establish readiness at each stage. This section details that journey by:

- assessing three distinct governance models with increasing levels of coordination,
- outlining the recommended, sequenced evolution from one stage to the next, and
- defining the clear decision gates required to progress, ensuring that advancement is based on demonstrated readiness and stakeholder alignment.

3.1.1 Consortium (Coordination) Model

The Consortium (Coordination) Model is an advisory governance structure intended to formalize coordination across participating regions while preserving regional ownership and decision authority.

Table 4: Consortium (Coordination) Model Overview

Consortium (Coordination) Model Overview	
Governance Structure	• Advisory coordination across Regions 9, 10, and 12 • Regions retain ownership and decision authority • Core members include CBO and Regions 9,10, and 12 • Supporting members include CDOT, DORA, and DNR (as applicable) • Recommendations are non-binding • Specialized subcommittees to support coordination
Existing Networks	• Ownership retained by regions • Operating approach coordinated at consortium level
Future Networks	• Owned by regions • Planned and coordinated across regions
Advantages	• Preserves regional control • Enables structured coordination and alignment
Disadvantages	• Advisory nature limits enforceability • Limited economies of scale
Considerations	• Stakeholder alignment • Interoperability and coordination • Readiness for broader governance evolution

3.1.2 Governing Board (Consolidation) Model for Region 9, 10, and 12

The Governing Board (Consolidation) Model is a formal governance structure intended to enable coordinated and binding decision making across participating regions through a defined governing body.

Table 5: Governing Board (Consolidation) Model for Region 9, 10, and 12 Overview

Governing Board Overview	
Governance Structure	• Core members include CBO and Regions 9, 10, and 12 • Supporting members include CDOT, DORA, and DNR (as applicable) • Decisions are made through voting and are binding • Membership term is renewable every 3 to 5 years • Specialized subcommittees that provide technical, commercial, and operational coordination
Existing Networks	• Governance structure defines ownership and representation approach • Operating approach determined at the governing board level
Future Networks	• Planned and developed under a unified approach • Standardized planning, design, and coordination across regions • Built and owned by the Governing Board
Advantages	• Enables coordinated decision-making across regions • Supports standardization and interoperability • Allows for economies of scale
Disadvantages	• Requires transition and alignment across stakeholders • Introduces governance and operational complexity • Dependent on legal and structural feasibility
Considerations	• Stakeholder alignment and governance structure design • Legal feasibility • Transition approach and sequencing • Balance between regional representation and centralized authority

3.1.3 Statewide Governing Board (Consolidation) Model

The Statewide Governing Board represents the ultimate evolution of the governance structure, expanding the regional Governing Board model to encompass all of Colorado.

While the core principle of centralized decision-making remains the same, the fundamental shift in this model is one of scale. A single governing body assumes responsibility for statewide strategic planning, investment prioritization, and cross-regional policy.

Expanding the framework to include new regions introduces critical new complexities that must be addressed, including:

- **Evolving Representation:** How will the board's structure and voting rights adapt to equitably include new members?
- **Balancing Priorities:** How will the board balance statewide strategic objectives against the unique needs and priorities of individual regions?
- **Adapting Decision-Making:** How will processes be scaled to ensure efficient decision-making with a larger and more diverse group of stakeholders?

This model represents the fully realized application of the consolidated governance structure, transitioning the framework from a limited regional pilot to a durable, statewide platform.

3.1.4 Recommended Governance Approach – Target End State

Achieving this target end state requires significant alignment across legal feasibility, governance design, and stakeholder agreement on roles and authority. Because an immediate transition to a single statewide entity is impractical, the recommended approach is a phased governance evolution. This strategy builds readiness and consensus incrementally, sequencing coordination and consolidation over time.

The following diagram, Figure 6, illustrates this phased pathway, mapping the journey from current-state regional autonomy to the recommended target end state.

Figure 6: Illustrative Phased Governance Evolution (Summary) with Decision Gates

	Current State	Consortium (Coordination) Model	Governing Board (Consolidation) Model	Governing Board Model – Expanded to Entire State
Aim	Regional leadership governs networks to meet local and regional needs.	Establish a formal advisory structure to enhance coordination, alignment, and standardization across participating regions.	Unify networks under a shared governance framework to enable standardization, interoperability, and economies of scale.	Expand a validated governance model to support statewide middle-mile objectives.
Asset Owner-ship/ Control	Owned and Controlled by Regions	Owned and Controlled by Regions	Asset ownership and operational authority transferred to a governing board while regional representation and influence are preserved.	Governing board owns/ controls the assets Governing board builds and owns new fiber routes.
Geographic Focus	Region 9, 10, and 12	Region 9, 10, and 12	Region 9, 10, and 12	Additional regional networks, CO-wide.
Timeline	**Current**	**1-3 Years**	**3-5 Years**	**5+ Years**
	Implementation Decision (Gates)	**Advance to Consortium Model if:** Stakeholder buy-in, and clear operational and legal path forward	**Advance to Governing Board (Consolidation) Model if:** Consortium implementation proves value integration benefits outweigh potential challenges, legal statutory pathways are confirmed.	**Expand Statewide if:** Consolidation objectives are met and the Governing Board model demonstrate scalability, sustainability, and statewide value.

Progression between stages is not time-driven and is contingent on defined readiness conditions, including stakeholder alignment and participation, demonstrated value from coordination, established decision frameworks and governance processes, legal and regulatory feasibility, and operational readiness to support integration.

3.2 Operating Model

This section translates the operating model feasibility findings in Section 2 into a phased operating model pathway, including the models assessed, recommended sequencing, and associated actions to support coordinated network operations over time.

The operating models assessed represent increasing levels of coordination, centralization, and accountability in how operations, maintenance, and commercialization are delivered across regions.

3.2.1 Fully In-House Operations

Fully In-House Operations reflects an approach in which participating regions collectively operate the integrated network through internal capabilities, retaining direct responsibility for day-to-day operations and customer engagement.

Table 6: Fully In-House Operations Overview

Fully In-House Operations Overview	
Operating Model Overview	• Regions collectively operate the integrated network through in-house capabilities • Operational responsibilities remain within regional entities • Coordination occurs across regions through a shared operating approach
O&M Overview	• Regions jointly manage monitoring, maintenance, and network operations • Coordination required across regions to ensure service continuity
Commercialization Overview	• Regions retain responsibility for leasing, marketing, and customer relationships • Commercial approaches coordinated across regions where feasible
Advantages	• Maintains full control within regional stakeholders • Preserves institutional knowledge and local expertise • Enables coordinated in-house operations without significant structural change • Avoids reliance on external delivery models
Disadvantages	• Requires coordination across multiple regional teams • Limited standardization of tools, processes, and performance practices • Potential duplication of effort across regions • Economies of scale may be constrained relative to more centralized models

3.2.2 In-House Operations with Select Subcontracting

In-House Operations with Select Subcontracting reflects an intermediate approach in which regions retain operational responsibility while select functions are supported through coordinated subcontracting arrangements, enabling greater alignment in operating practices, vendor structures, and performance expectations.

Table 7: In-House Operations with Selected Subcontracted Activities Overview

In-House Operations with Selected Subcontracted Activities Overview	
Operating Model Overview	• Operations are aligned under a common operating framework across regions • Core operational responsibility remains within regional entities • Selected functions are supported through coordinated subcontracting arrangements
O&M Overview	• Regions retain direct responsibility for network operations and oversight • Subcontractors support targeted functions such as monitoring, maintenance, or specialized services • Increased coordination required to align processes, tools, and service levels
Commercialization Overview	• Regions retain responsibility for leasing, marketing, and customer relationships • Commercial approaches are aligned across regions where feasible • Subcontractors may support targeted marketing and customer engagement activities under regional oversight
Advantages	• Enables greater standardization of processes, tools, and performance metrics • Improves interoperability, coordination, and incident response

	• Supports shared services and operational efficiencies • Limits organizational change and transition risk • Retains institutional knowledge within regions • May reduce expenses through group contracting
Disadvantages	• Requires alignment of systems, processes, and vendor arrangements across regions • Increases coordination and vendor management complexity • Regions retain a significant portion of operational responsibility and risk • Efficiency gains may be incremental relative to more centralized models

3.2.2.1 Operation, Maintenance, and Commercialization (OMC)

The OMC model represents a centralized approach in which a single external partner is responsible for delivering network operations, maintenance, and commercialization activities, while regional stakeholders retain ownership and transition to oversight roles.

Under this structure, a portion of operational risk is transferred to the OMC partner, with performance-based incentives creating a direct financial stake in network outcomes. Regional stakeholders, through the governing structure, maintain oversight of operator performance and enforce service, pricing, and policy requirements through the contract, including performance-based enforcement mechanisms where applicable. Depending on performance, Governing Board may receive payments from the OMC entity through a revenue sharing model or make payments to the OMC entity to cover operational costs of the integrated network.

Table 8: Operation, Maintenance, and Commercialization (OMC) Overview

Operation, Maintenance, and Commercialization (OMC) Overview	
Operating Model Overview	• A single partner is contracted to operate, maintain, and commercialize the integrated network • Regions retain ownership and policy authority • Regions transition to oversight and performance management roles
O&M Overview	• The OMC partner performs all day-to-day network operations and maintenance • Responsibilities include monitoring, incident response, maintenance, and service restoration • Delivery is centralized under a single operating framework
Commercialization Overview	• The OMC partner leads leasing, marketing, and customer management activities • Pricing, eligibility, and service policies are defined by regions and enforced through contract • Commercial execution is centralized under a single delivery model
Advantages	• Transfers a significant portion of operational and commercialization risk to the OMC partner • Leverages private-sector capabilities, tools, and operating scale • Enables standardized operations and service delivery across the network • Supports scalability as network footprint and demand increase • Establishes clear accountability through a single service provider
Disadvantages	• Reduces direct regional involvement in day-to-day operations and customer engagement • Requires complex procurement, contract structuring, and ongoing contract management • Increases dependency on a single provider for service continuity • Introduces the highest level of transition complexity among evaluated models

3.2.2.2 Recommended Operating Model Approach

Target End State: Transition to an OMC model to enable coordinated service delivery, standardization, and clear accountability under a unified operating structure.

Given the current operating conditions, including decentralized operations, variation in tools and processes, and limited coordination capacity, an immediate transition to a fully centralized external OMC operating model is not feasible.

The recommended approach is to sequence operating model evolution:

Figure 7: Operating Model Evolution

	Current Model	In-House with Selected Subcontracting	External OMC
Operating Model Overview	Regions operate the network independently with shared coordination	Regions align under a common framework with selective subcontracting	A single operator manages the network under contract; regions provide oversight
O&M Overview	Regions manage monitoring, maintenance, and operations jointly	Regions manage core operations; subcontractors support targeted functions	OMC provider performs all operations and maintenance centrally
Commercialization Overview	Regions manage leasing and customer relationships independently	Regions retain customer ownership with aligned commercial approach and targeted support	OMC provider leads leasing and customer management; regions define policy
Advantages	Full regional control and preservation of local expertise	Improved coordination and standardization with limited transition risk	Greater scalability, efficiency, and clear single-provider accountability
Disadvantages	Coordination complexity, duplication of effort, limited scale	Increased coordination complexity with incremental efficiency gains	Reduced regional control and higher dependency on a single provider

- **Near term**: Implement In-House Operations with selected activities to be subcontracted to align operating practices, introduce shared services, and establish consistent performance frameworks.
- **Transition**: Progress to the OMC model within a 3 to 5-year horizon, subject to meeting defined readiness conditions and demonstrating coordination maturity.

Decision gates for progression include:

- Alignment on operating standards, processes, and performance metrics
- Ability to coordinate vendor management and service delivery across regions
- Established oversight and contract management capabilities
- Readiness to execute centralized operations through a single accountable entity

3.3 Financial Strategy and Sustainability

The primary financial objective of the coordinated middle-mile initiative is to support long-term financial sustainability, with reduced reliance on ongoing grant and state support over time.

Based on the financial baseline in Section 2, performance varies across regions, with some networks operating at a deficit and others maintaining more stable positions. At a consolidated level, projections indicate improvement over time; however, this reflects aggregation of regional inputs and does not capture structural changes to revenue or cost models.

Overall, the baseline indicates that long-term sustainability will depend on strengthening revenue stability and increasing network utilization, rather than relying on reductions to existing cost structures.

3.3.1 Implications of Integration in Financial Performance

Integration of regional networks affects both cost and revenue dynamics.

- **Cost considerations**: Coordination and integration introduce additional requirements related to alignment of operations, systems, and network

management. Given current lean operating models, opportunities for material cost reduction are limited, and coordination activities may increase short-term overhead.

- **Revenue considerations**: Integration enables a broader and more connected network footprint, supporting improved customer reach and a stronger value proposition. Opportunities to improve financial performance are primarily driven by revenue-related factors, including increased utilization, expanded customer access, and more coordinated commercial activity.

Overall, improvements in financial sustainability are more dependent on revenue growth and utilization than cost reduction.

3.3.2 Revenue Improvement Priorities

Improving financial sustainability requires a shift from region-specific approaches toward a more coordinated commercial model.

Key priorities include:

- **Expand addressable customer segments**: Improve the ability to serve public-sector and anchor institution customers, including schools, healthcare, and government entities. Current limitations related to entity structure and eligibility (e.g., E-Rate participation) constrain service delivery; addressing these requires alignment with state authority and may require legislative updates.
- **Coordinate business development and marketing**: Establish a shared approach to customer outreach, demand generation, and market engagement
- **Align pricing frameworks**: Introduce greater consistency in pricing structures to improve clarity, competitiveness, and customer engagement
- **Increase network utilization through integration**: Leverage a broader network footprint to aggregate demand and support multi-region connectivity
- **Leverage existing demand models:** Build on region-specific participation and stakeholder-based models—such as member-driven or publicly supported

structures—that provide baseline demand and contribute to revenue stability, where applicable

- **Optimize service mix and revenue model**: Prioritize service offerings that improve utilization and revenue generation across the network

3.3.3 Operating Model Financial Implications

Financial performance varies across operating models primarily based on how cost responsibilities and revenue opportunities are structured, including differences in commercial approach, customer access, pricing, and network utilization.

Table 9: Comparative Financial Impacts Across Operating Models

Comparative Financial Impacts		
Models	**In-House with Selected Subcontracted Services**	**Operate, Maintain, and Commercialize (OMC)**
Revenue	• Moderate increase driven by improved interconnection and network integration	• Greater potential increase driven by centralized commercial strategy and broader customer engagement
OPEX	• Generally stable with potential efficiency gains offset by coordination needs	• Potential efficiency gains from private-sector operations and procurement approaches
CAPEX	• Remains stable with potential increases due to integration and standardized requirements	• Remains stable with similar integration-related investment needs
Overhead	• Increases due to coordination, reporting, and expanded management responsibilities	• Remains more stable, with focus shifting to contract management and oversight
Transition and One-Time Costs	• Incremental, associated with process alignment and selective vendor integration	• Higher upfront, associated with onboarding, system integration, and contract mobilization

Key observations include:

- Under in-house models, operational responsibilities remain distributed, increasing coordination and overhead requirements
- Under the OMC model, operational responsibilities are centralized, shifting costs toward contracted services and reducing internal management burden
- Capital investment requirements remain broadly consistent across operating models

3.4 Technical Considerations

The technical approach focuses on enabling a coordinated statewide middle-mile network that operates as an integrated and interoperable system over time.

Achieving this objective requires alignment of network design, interconnection approaches, and supporting systems across regions. Progress toward this outcome is dependent on the maturity of the operating model and the ability to introduce standardization as coordination increases.

3.4.1 Technical Alignment and Interoperability Pathway

Progression toward a coordinated and interoperable network is expected to occur incrementally, aligned with the evolution of governance and operating models.

In the near term, regional networks will continue to operate independently, with targeted alignment of interconnection approaches and coordination of technical planning. As coordination matures, opportunities emerge to align network design, standardize technical approaches, and improve system integration across regions.

Over time, a more coordinated or centralized operating model enables consistent application of shared technical standards, improved network visibility, and more efficient management of cross-regional connectivity.

This progression reflects a transition from independent network operation toward a coordinated and interoperable statewide framework.

3.5 Legal and Regulatory Considerations

The legal and regulatory approach focuses on enabling a coordinated statewide middle-mile structure through a defined implementation pathway. This pathway addresses three core areas: establishing an appropriate legal structure, evaluating integration-related considerations, and aligning with requirements governing CDOT ROW.

3.5.1 Legal Considerations for Integration of Regional Networks

Coordination across existing regional networks introduces legal considerations related to governance, contracting, and shared operations.

Key considerations include:

- **Coordination mechanisms**: Establish legal frameworks for shared operations and coordinated service delivery
- **Contractual alignment**: Review existing agreements (e.g., IRUs, leases, vendor contracts) to identify constraints to alignment or modification
- **Governance and decision authority**: Define legal requirements for decision-making structures, signatory authority, and accountability
- **Revenue and cost allocation**: Evaluate legal considerations related to shared revenue models and cost distribution
- **Future integration considerations**: Assess legal requirements associated with deeper integration, including potential alignment of assets or contractual positions
- **Legislative Requirements:** Identify legislative requirements (or limitations) to reach an optimized legal framework

This working group will define the legal foundations required to support coordinated operation and future integration.

3.5.2 CDOT Considerations

A coordinated workstream with CDOT is required to define how state-controlled ROW and excess dark fiber can be integrated into a statewide middle-mile strategy.

This workstream focuses on establishing a consistent framework for accessing and using CDOT ROW and excess dark fiber in alignment with applicable state and federal requirements.

Key areas include:

- Clarifying ROW access and approval processes
- Defining ROW use agreement structures and terms
- Evaluating allowable approaches for fiber deployment and dark fiber utilization
- Aligning on compensation, access conditions, and participation frameworks
- Reviewing applicable state statutes, CDOT policies, and federal requirements

This effort requires coordination between CBO, CDOT, and relevant state legal and policy stakeholders to establish a defined access framework and support integration of CDOT assets into the statewide middle-mile network strategy.

3.6 Strategic Roadmap – Initiative Structure Summary

The strategic roadmap establishes a clear, phased pathway to transition from today's regionally operated middle-mile networks toward a coordinated statewide framework. This structured approach, spanning governance, operations, finance, and legal enablement, is designed not only to address the constraints identified in Section 2 but, more importantly, to unlock significant new strategic opportunities for Colorado.

By adopting a deliberate progression—rather than a disruptive immediate overhaul—the state can mitigate transition risks, build essential stakeholder trust, and leverage its existing regional infrastructure to realize substantial benefits that are structurally unattainable in the current fragmented environment. These core opportunities include:

- **Economies of Scale and Technical Standardization:** A coordinated approach enables the consolidation of critical technical and administrative functions, such as network monitoring, vendor management, and hardware procurement. This standardization drives operational efficiency and reduces duplicative capital expenditures across regions. Furthermore, unifying technical standards allows for a consistent statewide security posture, seamless cross-region traffic routing, and improved Mean Time to Repair (MTTR). These efficiencies ultimately allow the state to negotiate more favorable terms on larger enterprise contracts, maximizing the value of both public and private investments.
- **Access to New Markets and Sustainable Revenue Streams:** A unified, seamless statewide network is inherently more attractive to large-scale customers who currently face the friction of negotiating multiple, disparate regional agreements. By offering a single point of contact for service provisioning, unified Service Level Agreements (SLAs), and streamlined billing, the statewide network can unlock new markets. This includes multi-region enterprise clients, major wholesale transport carriers, and new data center or cloud providers. Capturing these high-value customers creates sustainable, diversified revenue streams that reduce the network's long-term reliance on public grant subsidies.
- **Enhanced Governmental, Legislative, and Grant Support:** A cohesive, statewide strategy provides a much stronger platform for securing critical public-sector backing. Legislatively, presenting a unified front strengthens the business case for pursuing new statutory authority, such as establishing a dedicated, self-sustaining Enterprise structure. Financially, federal and state broadband grant programs increasingly favor consolidated, high-impact statewide initiatives over isolated local projects. A unified model positions Colorado to aggressively and successfully compete for these large-scale funding opportunities by demonstrating strategic alignment and long-term viability.

Ultimately, the roadmap is anchored in a pragmatic, sequenced progression. It begins with near-term stakeholder alignment and advances through clearly defined decision gates toward deeper coordination. This methodical progression ensures that the development of consistent frameworks for governance, operations, and commercial

activity balances immediate technical feasibility with the long-term vision of a scalable, resilient, and financially sustainable statewide middle-mile network.

The initial structure detailed in this section provided a vital, evidence-based hypothesis that enabled productive dialogue with the CBO and regional stakeholders. Those discussions confirmed that a phased evolution toward a more coordinated model is the correct strategic direction.

With this foundational agreement on the "how" of governance and operations, the focus must now turn to the "where" and "what" of network investment. Section 4 transitions from this high-level strategic structure to the tangible work of network development. It outlines the data-driven approach used to identify and prioritize specific infrastructure gaps, evaluate the role of existing assets like CDOT dark fiber, and establish a clear investment strategy to guide the physical evolution of Colorado's middle-mile footprint.

4. Statewide Strategic Roadmap – Network Development & Investment Strategy

This section defines a structured approach to identifying, prioritizing, and sequencing middle-mile network investments, building on the due diligence findings and strategic roadmap outlined in prior sections.

The approach is focused initially on Regions 9, 10, and 12 and establishes a framework to assess existing infrastructure, identify gaps, evaluate the role of CDOT assets, and prioritize new deployments. Over time, this methodology is intended to be expanded to support statewide network development.

4.1 Statewide Middle-Mile Gap Analysis

The statewide middle-mile gap analysis evaluates existing infrastructure across Regions 9, 10, and 12 to identify areas where connectivity, capacity, or access gaps remain.

This analysis is focused on:

- identifying the corridors in the specified regions,
- prioritizing the corridors based on the prioritization frameworks, as explained below,
- identifying where CDOT or privately-owned open-access middle mile exists,
- making a high-level decision on build versus lease on these priority corridors, and
- projecting a high-level cost of construction and potential operationalization.

The results of this analysis establish the baseline for evaluating how existing infrastructure, including CDOT assets, can address identified gaps and where additional investment may be required.

This high-level analysis enables future steps towards a coordinated middle-mile program by providing inputs on

- data-driven decisions on the prioritization of the corridors across the state,
- build versus lease decisions for a given corridor, and
- budgetary level total cost of ownership per middle mile segment against the potential revenue.

4.2 CDOT Excess Dark Fiber Allocation

CBO is coordinating with CDOT to enable access to excess dark fiber capacity within CDOT right-of-way to support the statewide middle-mile initiative. This approach allows existing infrastructure to be leveraged as part of a coordinated network, reducing the need for new middle-mile construction.

Currently, access to CDOT dark fiber is formalized through an Intergovernmental Agreement (IGA), under which CBO[3] is responsible for managing and coordinating the use of these assets as part of the statewide framework.

The availability of CDOT dark fiber provides an opportunity to assess how existing capacity can address current network gaps across Regions 9, 10, and 12. This includes

[3] See description under section 2.6.1 CBO Statutory Authority

identifying corridors where deployment needs may be met using existing infrastructure, thereby reducing capital requirements and accelerating implementation.

In addition, CDOT dark fiber presents an opportunity to support revenue generation through utilization of available capacity. Evaluating the extent of this potential requires further analysis of demand, accessible routes, and service models.

As part of the broader network development strategy, CDOT dark fiber represents an existing asset base that can be integrated into statewide planning, subject to alignment on technical, legal, ownership, and commercial considerations.

4.3 Prioritization Framework, Criteria, and Screening Approach

Building on the due diligence assessment and the financial sustainability considerations outlined in prior sections, the Statewide Strategic Roadmap requires a structured approach to determine where and how to prioritize future middle-mile investments.

The due diligence identified gaps in connectivity, capacity, and service availability across regions. However, given the scale of infrastructure needs and resource constraints, not all gaps can be addressed simultaneously. As a result, a prioritization framework is required to support focused, phased investment decisions.

This framework is intended to evaluate and rank potential middle-mile segments based on a consistent set of criteria, enabling stakeholders to identify those segments that provide the greatest value relative to statewide objectives. These priorities will directly inform the sequencing of network deployment, including build-out schedule, timing, and investment focus areas.

Importantly, the prioritization framework is not intended to be static. Rather, it provides a structured basis for decision making that can be refined over time as additional data becomes available, stakeholder input is incorporated, and network conditions evolve. The framework distinguishes between two distinct levels of infrastructure planning:

- Corridors, high-level, macro-geographic routing pathways aligned with major state transit routes (e.g., the US Highway 160 Corridor) used for strategic prioritization, macro-feasibility, and assessing statewide network redundancy.
- Segments, granular sub-sections of a corridor defined by localized start and end points (e.g., the US Hwy 160 segment from South Fork to Walsenburg). Segments represent the physical, operational building blocks where detailed engineering, CAPEX budgeting, and construction procurement actually occur.

Corridors are comprised of multiple segments. Analyzing infrastructure at the segment level allows the CBO to identify and build only the "missing link" segments required to complete a fully redundant, continuous corridor without overbuilding existing regional assets.

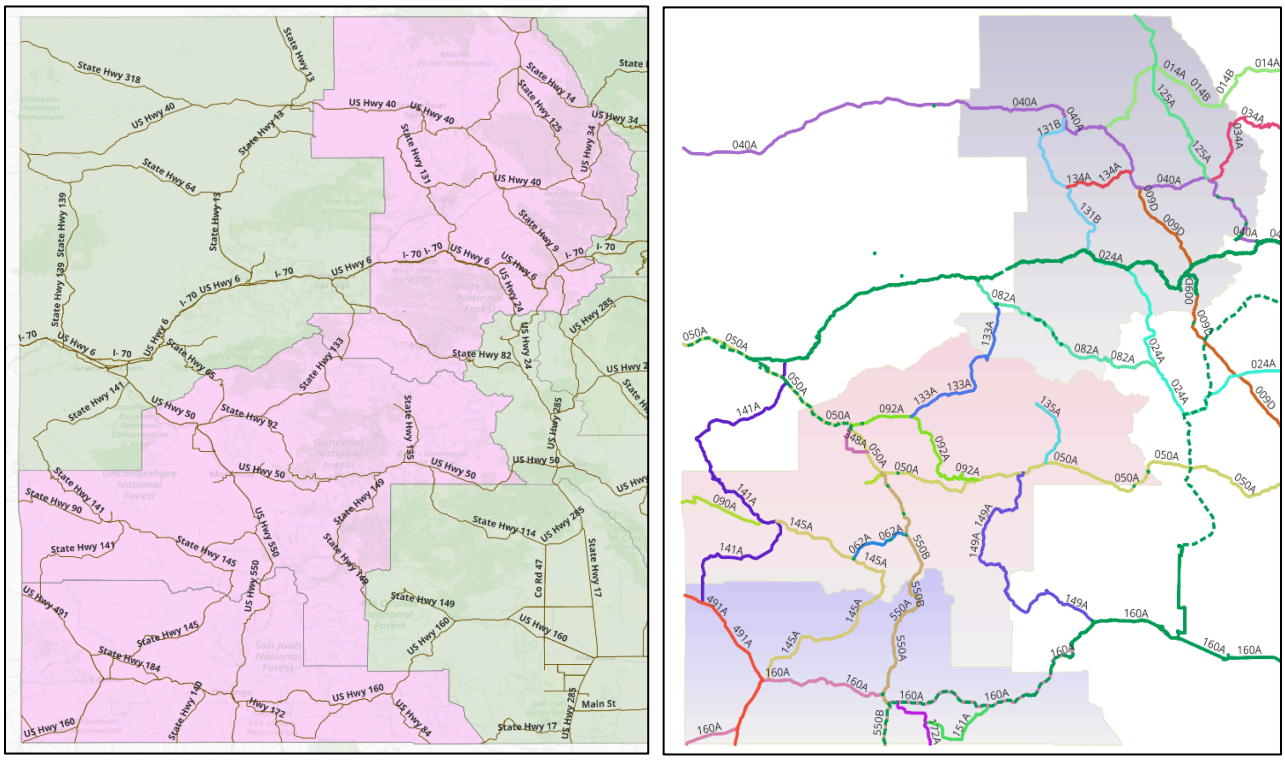
The sections that follow outline the proposed prioritization criteria and approach, which together establish a consistent method to evaluate network segments and guide deployment planning across the state.

To support consistent and objective decision making, a two-step prioritization approach is applied to evaluate potential middle-mile segments. This approach first identifies the middle mile corridors and prioritizes the corridors using the proposed structured scoring and filters segments that do not require intervention before deciding the construct or lease evaluation.

Step 1: Identify the Priority Corridors

Across the three regions, 27 corridors were identified. As shown in Figure 8 those corridors include interstate highways, state and county highways and may extend to multiple regions, such as US Highway-164. The following analysis considers only the sections of these routes that are part of the regions under consideration, although future reliability improvements (e.g., forming a loop with these route segments) may extend into other regions. See **Appendix B: Priority Corridors Detailed Map and Data** for further detail.

Figure 8: Priority Corridors Reviewed for Prioritization



(left: CO Interstate, State and County Highways across Regions 9, 10, 12; right: Middle Mile Corridors within highway ROW)

Step 2: Define Prioritization Criteria

As an initial step, segments are evaluated to determine whether sufficient private, open-access infrastructure or CDOT dark fiber already exists.

- If adequate infrastructure is present, the segment is excluded from further prioritization
- If gaps remain, the segment proceeds to detailed evaluation under the prioritization criteria; see Table 10.

Table 10: Prioritization Criteria

#	Prioritization Criteria	Definition
1	**CAI coverage**	• Number of CAIs located within a three-mile buffer of the middle-mile segment that currently lack access to 1 Gbps symmetrical connectivity.
2	**Underserved / unserved LEO and FWA coverage**	• Number of BEAD underserved / unserved BSLs to be served by LEO and FWA technologies within three miles from the proposed routes. • Aim is to build the infrastructure for potential future fiber
3	**Requested Middle-Mile by Core and Broader Stakeholders**	• Degree to which the segment has been requested by core and broader stakeholder groups
4	**Redundancy**	• Contribution to network redundancy by reducing single points of failure
5	**Number of smaller ISPs**	• Measures the number of smaller ISPs within a three-mile buffer as a proxy for future customer demand and enhanced market competition.
6	**Supporting advanced and emerging industries**	• Proposed middle mile's ability to enable advanced and emerging industries (e.g., quantum, AI, precision agriculture, IXPs, data centers)
7	**Cellular Connectivity**	• Number of 5G towers within a three-mile buffer of the middle-mile segment
8	**Attracting and Retaining Local Business**	• Number of enterprises that have less than 20 employees within three-mile buffer of the middle-mile segment

#	Prioritization Criteria	Definition
9	**Public Safety**	• Routes that improve network resilience and capacity for public safety agencies to ensure reliable communication during emergencies

To better assess the priority corridors selected under step 1, the prioritization criteria in the table above are grouped by three major considerations:

Table 11: Prioritization Criteria Grouping

Major Priority Considerations	Prioritization Criteria
Enable baseline deployments and derisking federal investments	Enable middle mile to **smaller operators** to succeed in their federal commitments.
	Offer **high availability** infrastructure to improve service offerings.
	Address access to higher number of **federally funded** (typically rural) locations.
Improve local economy and public safety	Offering **scalable broadband connectivity** through middle-mile to FWA and Satellite locations.
	Provide opportunities to improve **local business environment.**
	Improve **public safety** broadband infrastructure, enable better connections for Public Safety Access Points (PSAPs).
Serve communities and secure future opportunities	Address unserved **Community Anchor Institutions** (CAIs).
	Address communities' **local priority.**
	(In future) Address opportunities for future revenue sources (e.g., Data Centers etc.).

These criteria collectively provide a structured framework to evaluate potential investment areas based on connectivity gaps, demand indicators, and broader statewide objectives. The resulting prioritization will inform the sequencing of network deployment and guide investment decisions over time.

The 27 corridors are ranked based on prioritization determined by the above three consideration groups. Seven corridors with a prioritization score over or equal to 50 are selected for further cost analysis.

4.4 Priority Corridors

Based on the prioritization framework, middle-mile segments are evaluated and ranked to identify priority corridors for deployment.

This analysis focuses on:

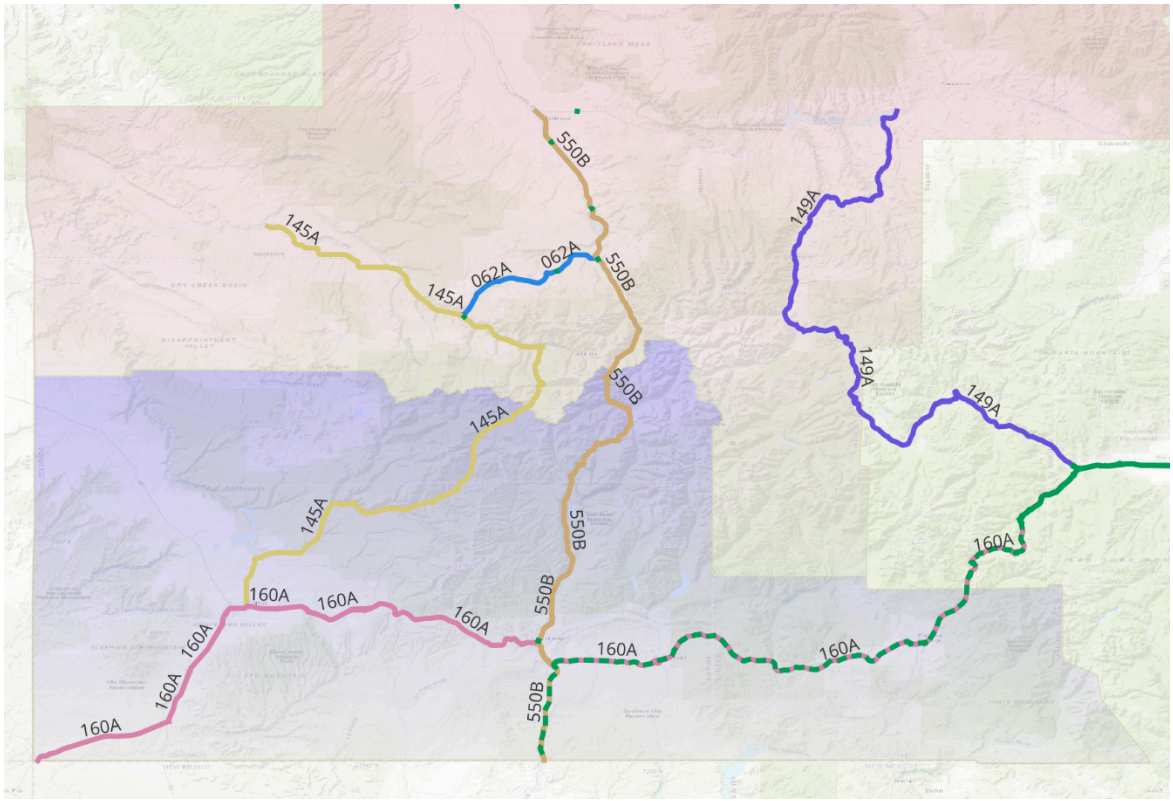
- Regions 9, 10, and 12 in the near term
- Focuses on the prioritization of the corridor per the criteria presented above
- Identify the segments that needed to be constructed versus leased
- Assessment for CDOT assets present on a given corridor, if they can be leased, or if the segments will be constructed

Figure 9: Selected Priority Corridors

Table 12: Selected Priority Corridors and Corridor Grouping

Corridor Segments	Priority Corridor
US Hwy 160 - South Fork to Walsenburg	160A
US Hwy 160 - Four Corners to South Fork	
US Hwy 160 - Trinidad to KS border	
State Hwy 145	145A
US Hwy 550	550B
State Hwy 62	062A
State Hwy 149	149A

Figure 10: Priority Corridors Detail



As shown in Figure 10, the CDOT middle mile assets (green dots) are present along the 160A and a portion of 550B corridors. We assume these segments of the corridors are leased, where the other corridors are constructed. The following CAPEX and OPEX analysis are based on this assumption.

4.5 High Level Deployment Phasing and Schedule

Following the prioritization of corridors detailed in Section 4.4, this section outlines a high-level, phased deployment schedule to sequence network investment and expansion over time. This approach enables a controlled and strategic build-out, aligning investment with demand, funding availability, and the operational readiness of the evolving statewide middle-mile entity.

The deployment is structured into three primary phases:

Near-Term Deployment (Years 1-3)

The immediate focus is on deploying a limited number of the highest-scoring priority corridors to address critical gaps and demonstrate the value of the coordinated model.

- **Initial Build-Out Focus:** The initial deployment will target the top two to three highest-priority corridors identified in the prioritization framework. This focused approach ensures that initial capital is directed toward segments that offer the greatest immediate value in terms of connecting unserved Community Anchor Institutions, enabling last-mile providers, and improving regional resiliency.
- **Coordination with Existing Infrastructure:** New builds will be explicitly designed to integrate with and leverage existing assets. This includes interconnecting with the networks of Regions 9, 10, and 12, as well as utilizing available CDOT dark fiber where feasible. This strategy maximizes the utility of prior investments and minimizes the need for duplicative construction.
- **Procurement and Delivery Model:** These initial corridors will be procured via a Design-Build (DB) model. This approach is anticipated to span approximately 18-24 months from procurement to completion and will serve as the initial test case for refining the state's delivery and contract management processes.

Medium-Term Sequencing (Years 4-5)

This phase will focus on deploying the remaining highest-priority corridors and beginning work on the next tier of network segments.

- **Continued Corridor Deployment:** Following the successful delivery of the initial corridors, the program will proceed with the build-out of the remaining corridors from the top seven identified in Section 4.4, while accounting for any build-outs made by the private sector in the interim.
- **Integration with Consolidated Model:** By this phase, the statewide initiative is expected to be operating under a consolidated governance structure and an Operate-Maintain-Commercialize (OMC) model. All new network segments will be constructed to seamlessly integrate into this unified operational and commercial framework from day one.

Long-Term Horizon (Years 6-10)

The long-term vision is to close remaining gaps across the state, expanding the network based on the established prioritization framework, demonstrated demand.

- **Systematic Expansion:** The long-term deployment plan will sequence the build-out of the remaining 20+ corridors over a multi-year horizon. The sequencing will be continuously aligned with the results of the prioritization framework, updated demand forecasts, interim private sector build-outs, and the availability of capital funding.
- **Alignment with Statewide Objectives:** This phased approach ensures that as the statewide network matures, each new investment is deliberate, controlled, and directly supports the ultimate goal of achieving a sustainable, near-universal middle-mile network for Colorado.

4.6 High Level Funding Requirements

The deployment of the prioritized middle-mile corridors, as outlined in the preceding sections, will require a clear and structured funding strategy. This strategy must address both the initial, one-time capital investment needed for network construction and the long-term operational costs required to run and maintain the infrastructure. The ultimate financial goal of this initiative is to create a fiscally self-sustaining digital asset for the state, minimizing long-term reliance on public subsidies.

This section outlines high-level funding considerations and strategic principles that will guide investment, while precise cost models are being developed.

4.6.1 Capital Investment (CAPEX) for Initial Build-Out

The initial deployment of priority corridors will require significant upfront capital investment. This funding will cover the direct costs of network construction, including fiber optic cabling, conduit, network electronics, and labor.

Primary Funding Sources: The primary sources for this initial CAPEX are expected to be federal and state broadband grant programs. A key near-term activity for the CBO is to finalize the strategy for leveraging available funds, including:

- BEAD Non-Deployment Funds: Confirming eligibility and securing available BEAD funds designated for middle-mile infrastructure.
- State-Level Capital Allocation: Utilizing Colorado state infrastructure funds.

The CAPEX estimates assume that 50% of 160A corridor and 5% of 550B corridor are supported by CDOT middle-mile assets. Based on industry benchmarks it was assumed that construction costs are around $80,000 per mile. Across the 5 priority corridors, capital costs are estimated to be close to $32M.

Table 13: Estimated CAPEX for Priority Corridors

Corridor Group	MM Owner	Middle-Mile %	Total Mileage	Estimated Construction Cost
160A	CDOT	50%	154.37	$6,175k
145A		0%	116.22	$9,298k
550B	CDOT	5%	108.22	$8,225k
062A		0%	23.32	$1,866k
149A		0%	75.08	$6,006k
Total CAPEX for Priority Corridors[4]				**$31,569k**

Additionally, CAPEX start-up cost will include approximately $5M for two small IXP facilities, onetime buildout cost, electronics, HVAC, racks, and other one-time cost items.

[4] Based on industry benchmark capital construction cost of approximately $80,000 per mile.

4.6.2 Operating Sustainability (OPEX)

A sustainable middle-mile network must have a clear plan to cover its ongoing operating expenses. These costs include network monitoring, maintenance and repair, service and vendor management, and administrative overhead. The strategy is to transition from initial public support to a fully self-sustaining model.

- **Initial Operational Support:** In the early years of operation, it is anticipated that a portion of OPEX may need to be supported by public funding or through contributions from founding regional members of the consortium.
- **Transition to Revenue-Driven Sustainability:** As the network becomes operational and commercial activities ramp up, OPEX will be increasingly covered by revenue generated from network services. The primary objective is to achieve full operational sustainability, where recurring revenues meet or exceed recurring costs, by the medium term (Years 4-5).

Additional OPEX will be driven by an assumed $5K per mile per year conduit leasing cost, and an operational overhead of three regional employees for the Middle-Mile governance and oversight that will add roughly $1.5M operational expenditure per year.

4.6.3 Potential for Revenue-Based Expansion

A key principle of the long-term financial strategy is that future network expansion should be funded by the network itself.

- **Reinvestment of Profits:** Once the network achieves operational profitability, net positive revenue will be strategically reinvested to fund the design and construction of additional middle-mile corridors, based on the prioritization framework.
- **Reducing Future State Burden:** This model ensures that the middle-mile initiative does not require continuous injections of new state or federal capital for future expansion. It creates a perpetual, self-funding mechanism for improving Colorado's digital infrastructure over the long term. Detailed projections for this model are pending the completion of the formal business case.

Based on industry benchmarks, assumed revenue from a small fiber operator would be around $3,000 per month and $300 per month from CAIs and PSAPs.

Revenue estimates take into account a take rate, which refers to the percentage of potential customers along a network route who actively subscribe to and purchase services from the available infrastructure. For the selected priority corridors, take rates are assumed to be between 25% (low case) and 50% (high case).

Yearly revenues are estimated to range between $684k (low case) and $1.34M (high case) based on a take rate between 25% and 50%, as detailed in Tables 14 and 15 below.

Table 14: Priority Corridors Low Case Revenue Assumption Based on 25% Take-Rate

Corridor	No. Small Operators in Corridor	Est. Revenue Per Provider	CAIs & PSAPs	Est. Revenue From CAIs & PSAPS
160A	6	$27,000	169	190,125
145A	3	$13,500	168	189,000
550B	3	$13,500	153	172,125
062A	3	$13,500	23	25,875
149A	3	$13,500	23	25,875
Sub-total est. annual revenue		**$85,500**		**$603,000**
Total est. annual revenue based on 25% take rate		**$684,800**		

Table 15: Priority Corridors High Case Revenue Assumption Based on 50% Take-Rate

Corridor	No. Small Operators in Corridor	Est. Revenue Per Provider	CAIs & PSAPs	Est. Revenue From CAIs & PSAPS
160A	6	$126,000	169	$304,200
145A	3	$63,000	168	$302,400
550B	3	$63,000	153	$275,400
062A	3	$63,000	23	$41,400
149A	3	$63,000	23	$41,400
Sub-total est. annual revenue		**$378,000**		**$964,800**
Total est. annual revenue based on 50% take rate		**$1,342,800**		

Note: As stated above, corridors 160A and 550B hold some portion of CDOT-owned fiber. These revenue estimates are not considering any potential revenue-share agreements with CDOT as part of the Middle-Mile build-out.

4.7 Network Development and Investment Strategy Roadmap Summary

Section 4 translates the statewide middle-mile vision into a concrete, actionable infrastructure investment plan. For the Colorado Broadband Office (CBO) and state leadership, this strategy provides a defensible, risk-mitigated blueprint for deploying capital and expanding the physical network.

By shifting from abstract structural models to targeted network development, this approach ensures that state and federal funds are deployed efficiently and yield the highest possible return on investment.

The core executive considerations driving this strategy are:

- **Objective Capital Allocation:** The identification of 27 middle-mile gaps has been filtered through a rigorous, data-driven prioritization framework. This ensures that all future infrastructure investments are insulated from subjective bias and strictly aligned with the state's strategic connectivity and resiliency goals.

- **Targeted Near-Term Execution:** Rather than attempting a simultaneous statewide build, the strategy isolates the top-tier priority corridors of the initial stakeholders for immediate action. Focusing initial Design-Build (DB) procurement on the top two to three segments allows the state to secure early wins, demonstrate the consortium model's viability, and establish critical connections without overextending initial resources.
- **Maximized Capital Efficiency:** The deployment plan explicitly mandates the integration of existing public and regional infrastructure. By systematically leveraging available CDOT dark fiber and interconnecting with the established networks in Regions 9, 10, and 12, the state will prevent duplicative overbuilding and drastically reduce required capital expenditures (CAPEX).
- **A Pathway to Financial Independence:** The high-level funding strategy bridges the gap between initial, grant-funded construction (leveraging BEAD and state allocations) and long-term operational sustainability. By establishing a revenue-based expansion model, the initiative is designed to eventually fund its own future growth through reinvested commercial revenues, ensuring it does not become a perpetual burden on state operational budgets.

Ultimately, this investment strategy gives CBO leadership a controlled, phased mechanism to expand Colorado's digital footprint. Section 5 translates this strategic blueprint into a tactical Implementation Roadmap, defining the immediate workstreams, timelines, and accountabilities required to execute the priority corridor build-out.

5. Recommended Path Forward and Implementation Roadmap

Building on the due diligence findings and strategic roadmap outlined in Sections 2 and 3, this section defines an actionable pathway for the CBO to advance a coordinated statewide middle-mile framework.

The recommended path forward is structured as a phased implementation roadmap that translates strategy into execution. It defines a sequence of coordinated workstreams across governance, technical and operations, financial, and legal.

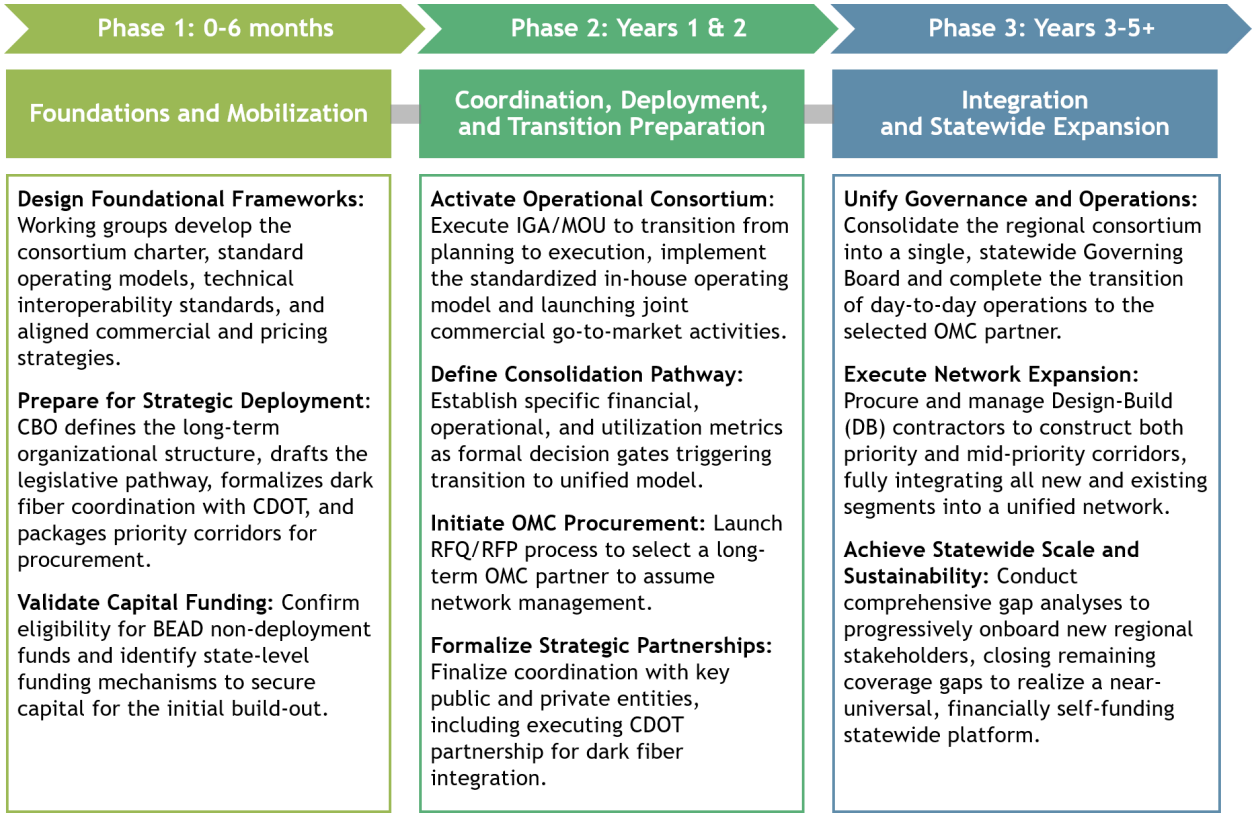
Implementation is structured to deliver near-term progress while establishing the foundations required for long-term integration and statewide scaling. Progression is dependent on stakeholder alignment and demonstrated readiness most importantly at the legal, operational, and financial levels.

5.1 Roadmap Overview

The implementation roadmap is structured across three phases, reflecting a progression from initial coordination to integrated statewide operation. Each phase builds on the prior stage, with advancement dependent on stakeholder alignment, demonstrated outcomes, and implementation readiness rather than fixed timelines.

A tabulated version of the roadmap is attached to this report as **Appendix A: Strategic Implementation Roadmap**.

Figure 11: Implementation Roadmap Overview



Within each phase, Implementation Actions are structured vertically into workstreams that are targeted towards achieving the objectives and outcomes of each phase.

Across the entire roadmap, horizontal categories structure the Implementation Actions. These categories are:

- Governance & Legislation
- Network Development & Deployment
- Operational
- Commercialization & Expansion Funding

Each Implementation Action has an assigned Lead, which is the entity that drives completion of the action and is accountable for the outcome. A Support entity is expected to provide input, documentation and facilitation to progress the Implementation Actions.

The Outcomes summarize the individual results of the Implementation Actions and serve as transition milestones from one phase to the next, or, in case of Phase 3, the long-term vision for the statewide structure.

5.2 Phase 1: 0–6 Months – Foundation and Mobilization

The first six months of the implementation initiative are dedicated to two workstreams focused on foundational planning and design. This phase is critical for establishing a comprehensive, data-driven, and consensus-based blueprint before any major implementation or capital deployment actions are taken. The primary objective is to produce an investment-ready and execution-ready plan that has been validated by all core stakeholders.

The workstreams during Phase 1 are:

- CBO Strategic Development, and
- Foundational Framework Design.

5.2.1 CBO Strategic Development

This workstream encompasses the critical, high-level strategic activities that must be driven by the CBO to ensure the legal, financial, and political viability of the

statewide program. These actions are designed to clear the path for long-term success.

Governance & Legislation:

CBO will lead the process of defining the optimal long-term legal and corporate structure for a statewide middle-mile entity. This involves a detailed analysis of options (e.g., public benefit corporation, state enterprise) and requires direct engagement with the Governor's Office, as well as state legal, tax, and policy stakeholders. The key deliverable of this effort will be a draft consortium charter, a formal recommendation and a draft legislative pathway, explicitly positioning the initiative for socialization in the 2027 legislative session, and introduction of enabling legislation in the 2028 session.

Lead: CBO | Support: State Agencies (Governor's Office, Legal, Policy)

Network Development & Deployment:

Building directly on the prioritization analysis from Section 4, CBO will transform the list of high-priority corridors into actionable, investment-grade business cases. This includes overseeing detailed network design, developing robust CAPEX and OPEX models for each corridor, and forecasting potential revenue and utilization. The outcome will be a set of clearly defined and shovel-ready projects packaged for the subsequent Design-Build procurement phase.

During this Workstream, CBO will also align with CDOT on available excess fiber and conduit within the CDOT ROW, to be considered for integration.

Lead: CBO, Regions (9, 10, 12) | Support: CDOT, Financial & Technical Advisor

Commercialization & Expansion Funding:

CBO will take the lead in finalizing the strategy to secure the necessary capital for the initial network build-out. This is a critical-path activity that involves two primary efforts:

1 Federal Funding: Formal engagement with the National Telecommunications and Information Administration (NTIA) to confirm the eligibility and process for

utilizing available Broadband Equity, Access, and Deployment (BEAD) Program non-deployment funds for middle-mile infrastructure.

2 State Funding: Coordination with relevant state agencies to define the framework and process for allocating capital from the state's Digital Equity fund and other available infrastructure programs.

3 Alternative Capital and Funding Resilience: Given the current regulatory uncertainty surrounding BEAD non-deployment allocations, CBO will proactively develop a diversified, alternative capital strategy. Rather than banking solely on BEAD, this effort will identify and evaluate secondary federal grants (e.g., USDA, EDA), state infrastructure banks, loans, bonds, and private P3 financing mechanisms to ensure the priority corridor build-out can proceed regardless of NTIA decisions.

Lead: CBO | Support: State Agencies (Governor's Office, Legal, Policy), Financial & Technical Advisor

5.2.2 Foundational Framework Design

To ensure the new statewide model is built on a foundation of regional expertise and stakeholder consensus, a series of focused working groups will be tasked with designing the detailed "blueprints" for how the coordinated consortium will function. This workstream is executed in parallel with the CBO's strategic development activities above.

Governance & Legislation:

Proactively design technical, financial, and legal workarounds to ensure statewide network viability if a foundational region delays or opts out of participation. This includes engineering alternative routing via CDOT dark fiber, restructuring baseline CAPEX/OPEX models for a smaller initial footprint, and drafting the Consortium Charter with modular "late-onboarding" provisions to prevent bottlenecks.

Lead: CBO | Support: State Agencies (Governor's Office, Legal, Policy)

Network Development & Deployment:

Technical Interoperability and Monitoring Standards: Define the physical and logical standards required to connect independent regional networks into a single statewide backbone. This includes establishing Layer 1 (physical fiber handoffs), Layer 2 (data transport), and Layer 3 (traffic routing) protocols, alongside unified network monitoring specifications to ensure seamless, end-to-end performance visibility across all regions.

Lead: Working Group | Support: Regions (9, 10, 12), CBO

Commercialization & Expansion Funding:

Establish Commercial and Funding Strategy: This sub-task is responsible for creating a unified and sustainable business strategy. It involves defining customer segments, aligning regional pricing into a consistent service catalog, developing a coordinated go-to-market (GTM) approach, and evaluating E-Rate constraints.

Lead: Working Group | Support: Regions (9, 10, 12)

5.2.3 Phase 1 Outcomes

By the conclusion of the six-month Phase 1 timeline, the coordinated efforts of the CBO, regional partners, and working groups will deliver three core outcomes to transition the initiative from foundational design to execution:

An Actionable Strategic Blueprint

A comprehensive, legally viable, and market-ready blueprint designed to secure the state's legislative, technical, and commercial path forward.

- **Legislative Readiness:** Delivery of a draft legislative concept memo, explicitly endorsed by the Governor's Office and key policy stakeholders, positioned for socialization during the 2027 legislative session, and introduction of enabling legislation in the 2028 session.
- **Procurement Packaging:** Packaging of all top-tier priority corridors (minimum of three) into formal Design-Build Request for Proposal (RFP) documents, complete with finalized engineering requirements and benchmarked CAPEX/OPEX models.

- **CDOT Asset Integration:** Execution of an updated Intergovernmental Agreement (IGA) with CDOT, backed by a comprehensive due diligence review of CDOT's existing fiber assets (including physical locations and available capacity) and clearly defining the commercial pathways and pricing structures for accessing excess dark fiber.
- **Commercial Revenue Model:** A draft revenue and marketability model to establish a sustainable business case for the commercialization of the statewide middle-mile network.

A Consensus-Driven Framework

A formalized, multi-region operational structure built on shared technical standards and collaborative decision-making models.

- **Governance Ratification:** Formal, written ratification of the initial Consortium Charter and Decision-Making Framework by the executive leadership of the participating regions.
- **Commercial Alignment:** Delivery of a unified, cross-regional Service Catalog and Rate Card that harmonizes pricing and service offerings across all participating regional footprints.
- **Technical Interoperability:** A documented agreement establishing baseline Layer 1, Layer 2, and Layer 3 technical standards to govern all future cross-region network interconnection, monitoring, and integration.

Capital Funding Readiness

A resilient and diversified capital strategy designed to secure initial deployment funding while actively mitigating regulatory and allocation risks.

- **NTIA Regulatory Clarity:** Written guidance from the NTIA confirming the eligibility criteria and compliance requirements for applying BEAD non-deployment funds to Colorado's middle-mile initiatives.

- **Financial Due Diligence:** A comprehensive financial due diligence analysis mapping out long-term network operations, maintenance, and expansion costs based on projected funding surpluses or shortfalls.
- **Alternative Capital Strategy:** Formal qualification of alternative, non-BEAD capital sources (including secondary federal grants, state-level infrastructure funds, state loans, and private capital/PPP) to ensure priority corridor deployment can proceed if BEAD funding is delayed or unavailable.
- **State Match Process:** A documented internal framework executed with key state agencies outlining the exact processes, compliance requirements, and timelines for drawing down state-level infrastructure matching funds.

5.3 Phase 2: Years 1 & 2 - Coordination, Deployment, and Transition Preparation

Following the foundational planning in Phase 1, the medium-term phase of the roadmap focuses on activating the consortium, beginning the critical process of deploying priority infrastructure, and preparing for the subsequent transition to a fully consolidated statewide model. This period marks the shift from strategy and design to tangible execution and data-driven refinement.

Implementation during this phase is structured across three parallel workstreams:

- Consortium & Operations Implementation
- Model Refinement
- Transition Pathway (Consolidation & OMC)

5.3.1 Consortium & Operations Implementation

This workstream focuses on formalizing the consortium's legal structure and operationalizing its governance, while continuing to advance the long-term legislative strategy.

Governance & Legislation:

- **Establish Governance and Formalize Consortium:** This action legally operationalizes and structures the coordination framework during the medium-term transition. It focuses on executing three sequential milestones:

  Legislative Realization: Establish the formal, permanent governance structure along the defined legislative pathway during the 2028 legislative session.

  Consortium Formalization: Execute binding agreements (Intergovernmental Agreements [IGAs] and Memorandums of Understanding [MOUs]) to legally formalize the cooperative consortium, its dedicated working groups, and specialized subcommittees.

  Operational Activation: Initiate and hold monthly meetings to actively drive and coordinate the consortium's core strategic and operational objectives.

Lead: CBO, Regions (9, 10, 12) | Support: Legal & Legislative

Network Development & Deployment:

- **Package Priority Corridors for Procurement:** Translate the Phase 1 corridor analysis into actionable, market-ready procurement packages. To focus resources and ensure execution capability, a maximum of three of the highest-priority, tier-one network corridors will be compiled with finalized engineering specifications, baseline CAPEX/OPEX models, and performance requirements to initiate the formal bidding process.

Lead: CBO | Support: Financial & Technical Advisor

Operational:

- **Deploy Standardized Operating Model and Procure Supporting Vendors:** Legally transition regional operations to the standardized in-house model established during Phase 1. This action focuses on procuring and onboarding targeted, specialized vendors to manage key operational functions—such as establishing a shared Network Operations Center (NOC)—strictly aligned with the Layer 2 technical and monitoring standards previously agreed upon by the consortium.

Lead: Consortium | Support: CBO, Regions (9, 10, 12)

Commercialization & Expansion Funding:

- **Launch Coordinated Commercial Activities and Unified Pricing:** Activate the joint business and revenue strategy across the regional networks to secure early commercial success. This action focuses on implementing the unified service catalog and aligned pricing structures across all participating footprints, launching coordinated marketing campaigns, and directly engaging key public-sector and community anchor institutions to drive early customer acquisition and network utilization.

Lead: Consortium | Support: Regions (9, 10, 12)

5.3.2 Model Refinement

As the consortium becomes operational, it is crucial to establish a data-driven process for continuous improvement. This workstream focuses on using the initial operational data and experiences from the activated consortium to continuously improve its governance, operational efficiency, and financial tracking.

Governance & Legislation:

- **Refine Consortium Governance and Regional Onboarding:** Actively evaluate and adjust the consortium's decision making processes, stakeholder representation, and accountability mechanisms based on early operational performance. In parallel, establish a formal, flexible onboarding framework designed to accommodate the gradual, phased integration of new regions as they reach readiness. Introduce or refine any necessary enabling legislation.

Lead: Consortium | Support: CBO, Regions (9, 10, 12), Legal, Legislative

Operations:

- **Optimize Operating Model and Activate Regional Support:** Formally assess the efficiency of the standard operating model, specifically analyzing the performance and cost-effectiveness of in-house vs. subcontracted functions. Concurrently, design and deploy a dedicated regional support program to provide immediate

technical or financial integration assistance to partner regions experiencing resource constraints.

Lead: Consortium | Support: Regions (9, 10, 12)

Commercialization & Expansion Funding:

- **Conduct Interagency Coordination for Government and Anchor Institution Services:** Formally establish and lead structured interagency coordination pathways with state agencies, local municipalities, school districts, and healthcare authorities. This initiative focuses on identifying public-sector facilities and Community Anchor Institutions (CAIs) positioned along the active network footprint, aligning public-sector service requirements with the consortium's unified service catalog, and executing streamlined service agreements. This ensures the public sector can efficiently buy from the network, driving early utilization and securing steady, predictable anchor tenant revenue.

Lead: Consortium | Support: Financial & Technical Advisor

- **Launch Coordinated Commercial Activities and Unified Pricing:** Activate the joint business strategy by implementing the unified service catalog and pricing structure across all consortium partners. The initial commercial focus will be on executing a coordinated go-to-market plan targeting governmental entities and Community Anchor Institutions (CAIs), in alignment with the CBO's current statutory authority. By securing early revenue from this core public-sector customer base, the consortium can demonstrate the network's value and financial viability, establishing a critical foundation for the transition to a full Enterprise model with broader commercial authority in 2028.

Lead: Consortium | Support: Regions (9, 10, 12)

- **Monitor Network Financial Performance and Formalize Funding:** Actively track, analyze, and report the financial impact of the unified commercial and pricing strategies against Phase 1 business case projections. In parallel, transition the capital strategy by executing formal agreements to secure the supplemental,

non-BEAD revenue streams and alternative funding mechanisms identified in the Phase 1 contingency plans.

Lead: CBO | Support: Consortium

5.3.3 Transition Pathway (Consolidation & OMC)

In parallel with operating the consortium, this workstream focuses on the critical, forward-looking activities, defining performance thresholds, and initiating the strategic procurements necessary to transition the network from a regional cooperative model into a consolidated statewide structure overseen by a specialized OMC private partner.

Governance & Legislation:

- **Formalize Access or Ownership of CDOT Excess Fiber:** Transition the strategic CBO-CDOT IGA with one-off SOWs for each CDOT asset into state-wide control or ownership of CDOT excess dark fiber assets by the consortium. This may include establishing a new corporate structure (e.g., Enterprise, PPP, etc.) and passing any required enabling legislation for the consortium to utilize excess state-owned dark fiber.

Lead: CBO | Support: CDOT

Network Development & Deployment:

- **Establish Transition Subcommittees:** Create dedicated, specialized subcommittees under the consortium to structure and plan the legal, administrative, and constitutional transition from the decentralized regional consortium to a single, consolidated Governing Board.

Lead: Consortium | Support: CBO

Operations:

- **Define Decision Gate Metrics for OMC Transition:** Formulate and formally ratify the precise, data-driven quantitative and qualitative performance thresholds that will serve as the official triggers for shifting to the consolidated OMC model. This involves defining specific metrics across three critical areas:

- **Financial**: Minimum recurring revenue and cost-recovery ratios to ensure network self-sustainability.
- **Utilization**: Required capacity demand and connection thresholds across the active regional footprints.
- **Operational**: Baseline service-level agreement (SLA) adherence, maintenance costs, and system uptime reliability under the regional consortium.

Lead: Consortium | Support: CBO, Financial & Technical Advisor.

Commercialization & Expansion Funding:

- **Advance OMC Procurement Planning:** Define the specific operational, maintenance, and commercialization scope of responsibilities to be transferred to the private sector. Based on this scope, formally draft and initiate the Request for Qualifications (RFQ) and Request for Proposals (RFP) processes to select the long-term OMC partner, ensuring the procurement timeline is strategically aligned with upcoming Design-Build construction completion dates.

Lead: Consortium | Support: CBO, Financial & Technical Advisor

5.3.4 Phase 2 Outcomes

By the end of this critical two-year phase, the combined efforts of the CBO, regional partners, and external advisors will deliver three key outcomes, ensuring the initiative transitions from a strategic plan into an active, data-driven operational entity prepared for long-term consolidation.

An Activated, Operational Consortium

The successful transition from a planning phase to an active, legally formalized cooperative that is executing joint marketing, operating under standardized in-house models, and managing shared network resources.

- **Legal Activation:** Execution of legally binding agreements by 100% of the initial participating regional partners (Regions 9, 10, and 12) by the end of Year 1.
- **Operational Integration:** Successful deployment of the standardized in-house operating model and foundational shared services (such as a consolidated Network

Operations Center), actively managing cross-region network traffic within 16 months of phase initiation.

- **Commercial Launch:** Launch of at least one unified, cross-regional marketing campaign and the successful execution of the first multi-region service contract with a public-sector or enterprise anchor institution by the second half of Year 2.

A Data-Driven Pathway to Consolidation

The establishment of ratified, measurable performance metrics (financial, operational, and utilization) to serve as official decision gates, ensuring the future transition to a unified OMC model is triggered by demonstrated readiness rather than arbitrary timelines.

- **Decision Gate Ratification:** Formal, written ratification by consortium leadership defining the exact quantitative thresholds—including financial stability ratios, network utilization rates, and operational SLAs—required to officially trigger the structural shift to a consolidated OMC model.
- **OPEX Optimization:** Delivery of formal quarterly financial performance reviews demonstrating a measurable reduction in redundant operating expenses (OPEX) across the regions, achieved through consolidated vendor management and integrated shared services.
- **Performance Tracking:** Consistent, compliant monitoring, aggregation, and reporting of standardized network reliability and service-level metrics across the entirety of the integrated regional footprints.

Strategic Procurement Readiness

The active management of major procurements and partnerships, positioning the state to confidently onboard a specialized long-term operating partner and leverage existing infrastructure assets.

- **OMC Partner Selection:** Official issuance of the OMC Request for Proposals (RFP) to the market, culminating in the successful selection and formal contracting of the preferred vendor by the end of Year 2.

- **CDOT Asset Activation:** Execution of the first operational work order under the finalized CBO-CDOT partnership, marking the successful lighting and integration of an initial segment of state-owned dark fiber into the active consortium network.

5.4 Phase 3: Years 3-5+ - Integration and Statewide Expansion

The long-term phase of the implementation roadmap marks the initiative's full transition into a mature, integrated, and statewide entity. Building on the operational success of the regional consortium and the readiness milestones achieved in the previous phase, this period focuses on three core objectives: consolidating governance and operations into the target-state model, completing the construction of all prioritized network corridors, and preparing for the final expansion to achieve near-universal coverage.

During this phase the operational risk will be transitioned to the OMC partner, the physical network footprint will be expanded, completing the evolution towards a financially self-sustaining statewide ecosystem.

Implementation during this phase is structured across three parallel workstreams:

- Integration and Statewide Expansion
- Corridor Deployment and Network Expansion
- Statewide Prep towards Full Network Realization

5.4.1 Governance and Operations Transition

This workstream represents the culmination of the strategic planning and transition preparation from the preceding phases. It is triggered by the successful achievement of the data-driven "decision gates" defined in Phase 2.

This workstream focuses on the structural handoffs required to formalize the long-term statewide operating and governance models.

Governance & Legislation:

- **Transition to Consolidated Governing Board:** Formally evolve the regional consortium into a single, consolidated Governing Board. This new entity will

assume statewide authority for middle-mile strategy and policy, while maintaining equitable representation for the founding regional stakeholders to ensure local interests remain protected.

Lead: Consortium | Support: CBO, State Stakeholders

Operations:

- **Transition to Centralized OMC Partner:** Execute the complete handover of day-to-day network monitoring, maintenance, and operational risk to the selected private-sector OMC partner. This critical step shifts the operational burden away from the state and regions.

Lead: CBO, Governing Board | Support: OMC Partner

Commercialization & Expansion Funding:

- **Provide Services to Anchor Institutions:** With the OMC partner in place, aggressively scale commercial delivery to state and local government buildings, educational institutions, and healthcare facilities. This action drives sustainable, recurring revenue into the network ecosystem.

Lead: OMC Partner | Support: Governing Board

5.4.2 Corridor Deployment and Network Expansion

This workstream focuses on the physical build-out of the priority infrastructure and the technical unification of all participating networks.

Governance & Legislation:

- **Advance DB Procurement for Priority Corridors:** Finalize the procurement process and officially award contracts to Design-Build (DB) contractors for the highest-priority network corridors.

Lead: CBO, Governing Board | Support: Procurement/Legal

Network Development & Deployment:

- **Manage DB Delivery (18-24 Months):** Actively oversee the engineering, design, and physical construction of the priority corridors, strictly managing contractors to ensure on-time and on-budget delivery.

Lead: CBO, Governing Board | Support: DB Contractors, OMC Partner

- **Deploy Mid-Priority Corridors:** Immediately sequence and continue the DB procurement and construction processes for the secondary, mid-priority corridors identified in the network prioritization framework.

Lead: Governing Board | Support: DB Contractors, OMC Partner, CBO

Commercialization & Expansion Funding:

- **Establish and Refine a Sustainable, Multi-Source Funding Model:** Transition the statewide network's financial structure into a permanent, mature, and self-sustaining funding mechanism. Led by the OMC partner, this model will be structured around three primary capital and operational revenue pillars:
  - Consortium-Generated Revenues: Maximize commercialization and wholesale lease revenues from telecom carriers, ISPs, state agencies, and community anchor institutions (CAIs) to generate robust, recurring operational income.
  - State and Federal Grants: Actively identify, apply for, and integrate ongoing federal programs (such as USDA ReConnect or future capital projects funds) and state-level digital equity matching grants.
  - State Appropriations: Structure a clear, backstop mechanism to secure limited state appropriations or loans, utilizing them strictly as a secondary, "if-needed" fallback to guarantee network continuity during unforeseen capital shortfalls.

Lead: Governing Board | Support: OMC Partner, Regions

5.4.3 Statewide Preparation towards Full Network Realization

In parallel with the final build-out of the initial regions, this workstream focuses on the strategic activities required to expand the model statewide. This final workstream focuses on scaling the middle-mile initiative beyond its initial footprint, establishing long-term regional support systems, systematically closing infrastructure gaps, and

onboarding new stakeholders to achieve a truly unified, statewide broadband platform.

Governance & Legislation:

- **Establish and Implement a Formal Regional Support Process:** Develop, codify, and launch a structured technical and financial assistance program. This process is designed to provide immediate operational safety nets, engineering resources, or matching-fund support to partner regions encountering sudden staffing, technical, or budgetary constraints, ensuring no single region falls behind.

Lead: CBO, Governing Board | Support: Procurement/Legal

Network Development & Deployment:

- **Conduct Statewide Gap Analysis and Year 5-10 Deployment Planning:** Execute a comprehensive, data-driven middle-mile infrastructure gap analysis for all Colorado territories outside of the initial regional footprints (Regions 9, 10, and 12). Translate these findings into a fully costed, prioritized, and phased Year 5-10 statewide deployment master plan.

Lead: Governing Board | Support: CBO, Financial & Technical Advisor

- **Execute Gap-Closure Procurements:** Based on the priorities established in the Year 5-10 master plan, launch and manage additional rounds of Design-Build (DB) procurements to systematically construct new middle-mile infrastructure and close remaining coverage gaps across the state.

Lead: Governing Board | Support: CBO

Operations:

- **Onboard and Align New Regional Stakeholders:** Actively engage with non-participating counties, regional councils, and local broadband authorities to assess their technical and legal readiness. Lead the structured onboarding negotiations required to integrate these new entities and their existing assets into the unified statewide platform.

Lead: Governing Board | Support: CBO, New Regions

- **Execute Full Technical Network Integration:** Oversee the final, end-to-end technical integration of all middle-mile assets. This action requires the OMC partner to seamlessly interconnect and unify all existing regional networks, newly constructed Phase 2/Phase 3 priority corridors, and state-owned CDOT dark fiber segments into a single, high-performance statewide core.

Lead: OMC Partner | Support: Governing Board, Regions

5.4.4 Phase 3 Outcomes

By the conclusion of this long-term integration phase, the collaborative efforts of the Governing Board, the CBO, and their strategic partners will deliver three transformative outcomes, realizing the ultimate target state of a unified, highly reliable, and self-sustaining statewide middle-mile network.

A Consolidated, Sustainable Operating Model

The successful transition from a decentralized consortium model to a mature, unified governance and operations structure that eliminates regional silos and ensures long-term financial independence.

- **Board Mobilization:** 100% of the consolidated Governing Board seats filled and operational bylaws formally ratified within 6 months of triggering the consolidation decision gate.
- **Operational Transition:** At least 95% of core operational and network management functions successfully transitioned to the centralized OMC partner within 6 months of contract execution, maintaining a seamless handover with <5% customer-reported service disruption incidents.
- **Self-Sustainability:** Achievement of full operational cost-recovery (OPEX coverage) by the end of Year 5, ensuring recurring commercial and wholesale revenues meet or exceed all ongoing network maintenance, administrative, and operational costs without reliance on state subsidies.

A Fully Integrated Core Network

The completion of major construction campaigns and the physical and logical unification of all state, regional, and newly built fiber assets into a high-performance backbone.

- **Deployment Performance:** At least 90% of priority corridor miles successfully constructed and delivered on or ahead of the 24-month Design-Build schedule, while maintaining a strict <10% cost variance against the initial approved CAPEX budget.
- **Technical Quality:** Achievement of a baseline 99.99% network uptime across the entire unified core network, demonstrating high-performance transmission with <20ms round-trip latency between any two major network interconnection points.
- **Anchor Institution Adoption:** Realization of at least 5% year-over-year compound growth in the total number of connected public-sector facilities and Community Anchor Institutions (CAIs) across the integrated statewide footprint.

A Blueprint for Statewide Scale

The establishment of the strategic, legal, and financial mechanisms required to expand the network's reach and systematically close remaining digital divide gaps across Colorado.

- **Long-Term Master Plan:** A fully costed, data-backed 10-year statewide deployment master plan formally approved by the Governing Board by mid-Year 5.
- **Statewide Onboarding:** Active, structured engagement initiated with non-participating jurisdictions, resulting in at least two new regional entities executing binding agreements to integrate their footprints into the unified statewide platform by the end of Year 5.
- **Capital Reinvestment:** Formal establishment of a dedicated Capital Reinvestment Fund, capitalized entirely by net positive commercial and operational network revenues, to systematically finance future statewide network expansion and gap-closure projects.

5.5 Recommended Path Forward - Summary

This section has defined a pragmatic and actionable three-phase implementation roadmap, translating the statewide middle-mile strategy into a sequence of concrete, time-bound objectives. The roadmap provides a clear pathway for the CBO and its regional partners to evolve from the current fragmented environment to a unified, sustainable, and scalable statewide network.

Rather than attempting a disruptive, immediate overhaul, the roadmap outlines a structured, coordinated evolution toward a robust statewide broadband organization:

- **Phase 1 (Months 0-6):** Intensive foundational work is completed to design the consortium's governance, operational, and commercial frameworks, ensuring the initiative is legally and financially investment-ready before major execution begins.
- **Phase 2 (Years 1 & 2):** The coordinated consortium is formally activated, and its models are tested and refined using real-world performance data, while the critical procurement and planning required for structural consolidation are advanced.
- **Phase 3 (Years 3-5+):** The initiative fully matures into its target state: a unified Governing Board overseeing a centralized OMC partner. With the core network built out, the organization leverages this integrated platform to expand and achieve near-universal statewide coverage.

Collectively, these phases represent a risk-mitigated strategy that deliberately builds operational capacity, demonstrates tangible value, and solidifies stakeholder consensus at every stage. With this step-by-step implementation plan established, the final section of this report will conclude by articulating the broader strategic necessity of this evolution and the transformative impact a unified middle-mile organization will have on Colorado's economic and digital future.

5.6 Strategic Refinements and Immediate Next Steps

While the implementation roadmap provides a comprehensive structural pathway, successfully transitioning from strategy to execution requires a deeper layer of detailed planning and risk mitigation. Based on stakeholder alignment and the complexities of statewide infrastructure deployment, several critical refinements must be prioritized as immediate next steps.

To elevate this roadmap into an executable program, CBO will advance the following targeted initiatives:

1. Governance and Legal Enablement

- **Comprehensive Legal Pathway Mapping:** The legal and legislative requirements for this transition are highly complex. A detailed legal pathway will be mapped across all three phases, including the systematic review and amendment of existing IGAs to align with the new consortium structure.

2. Alternative Funding Sources

- **Alternative Funding Strategy:** While BEAD non-deployment funds represent a significant potential capital source, the roadmap cannot rely solely on this mechanism. A comprehensive alternative funding strategy must be developed, identifying diverse federal, state, and private capital sources to ensure deployment can proceed regardless of BEAD allocations.

- **CAPEX and OPEX Benchmarking:** To secure stakeholder confidence, initial cost estimates must be replaced with rigorous financial models based on industry benchmarking. This includes analyzing comparable state-led middle-mile programs to define precise operational staffing models, equipment lifecycles, and network maintenance costs.

3. Execution Accountability and Performance Management

- **Roles, Responsibilities, and Accountability:** To ensure seamless execution, the high-level roadmap actions must be translated into a detailed RACI (Responsible, Accountable, Consulted, Informed) matrix. This will assign strict

ownership for every implementation action across the CBO, regional partners, and external vendors.

4. Risk Mitigation and Contingency Planning

- **Foundational Region Contingencies:** While Regions 9, 10, and 12 form the logical foundation of the network, CBO must develop formal backup plans and alternative deployment sequencing in the event that any foundational region delays participation or opts out of the consortium.
- **Flexible Expansion Models:** Statewide expansion must be treated as a flexible, opt-in opportunity. Frameworks must be designed to make joining the network highly attractive to new regions, without building financial models that depend on guaranteed statewide participation.

5. Dedicated Program Management and Execution Oversight

- Transitioning this roadmap from a strategic planning document to an active deployment requires dedicated, day-to-day leadership. To maintain momentum and ensure the synchronized execution of parallel workstreams, the CBO should onboard a dedicated Project Manager or establish a focused Program Management Office (PMO). This dedicated resource will be accountable for driving the roadmap's implementation, coordinating the activities of the regional working groups, tracking Phase 1 and Phase 2 KPIs, and ensuring strict accountability across all participating state and local stakeholders.

6. Conclusion

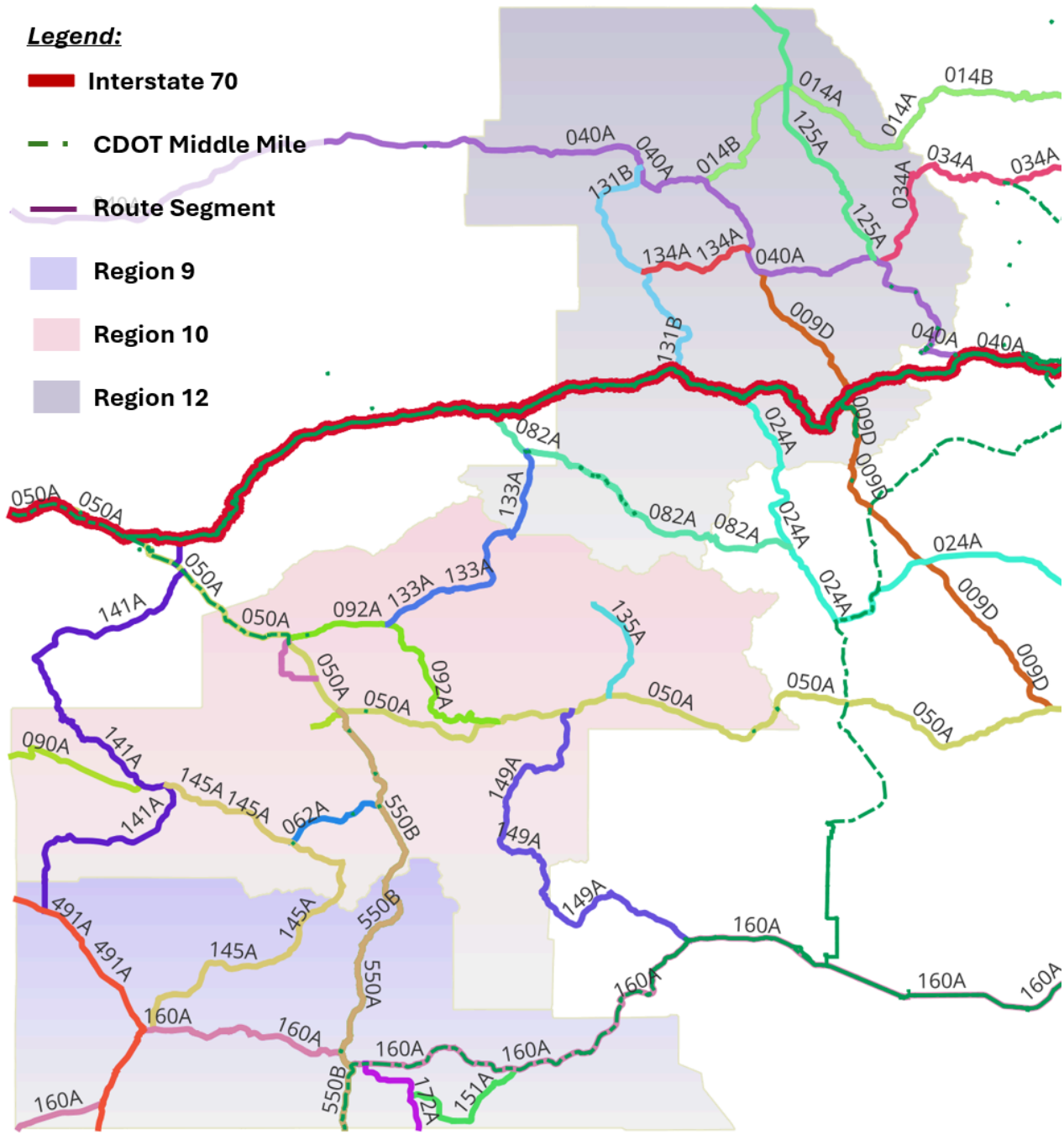
Colorado’s existing regional middle-mile networks were constructed out of local necessity, providing critical connectivity to underserved areas. However, this localized approach has resulted in a fragmented statewide ecosystem characterized by duplicated operational efforts, inconsistent technical standards, and a reliance on ongoing state subsidies. Maintaining these independently managed systems is not a viable long-term strategy for meeting the state's escalating demands for digital equity, economic competitiveness, and emergency communications resilience.

To realize the full value of its broadband investments, Colorado must transition from a decentralized collection of regional assets to a unified statewide platform. This transition requires a fundamental shift in governance and operations, moving toward a consolidated model managed by a specialized private-sector partner. By executing the phased roadmap outlined in this report, the state can systematically mitigate the risks of this transition while scaling commercial revenues. Ultimately, this coordinated approach will yield a financially self-sustaining, high-capacity middle-mile network capable of reducing costs for last-mile providers and delivering reliable connectivity to anchor institutions across the state.

Appendix A: Strategic Implementation Roadmap

CBO Due Diligence Report Appendix 1 - Strategic Implementation Roadmap_FirstLook_2026-07-21.xlsx

Appendix B: Priority Corridors Detailed Map and Data



Corridor ID	Highway Corridor	Segment Length [mi.]	Segment Name
160A	US Hwy 160	2.21	US Hwy 160 - South Fork to Walsenburg
160A	US Hwy 160	3.20	US Hwy 160 - Four Corners to South Fork
160A	US Hwy 160	2.70	US Hwy 160 - Trinidad to KS border
145A	State Hwy 145	1.93	State Hwy 145
550B	US Hwy 550	2.19	US Hwy 550
062A	State Hwy 62	0.39	State Hwy 62
149A	State Hwy 149	1.88	State Hwy 149
151A	State Hwy 151	0.55	State Hwy 151
092A	State Hwy 92	1.30	State Hwy 92
133A	State Hwy 133	1.09	State Hwy 133
141A	State Hwy 141	2.61	State Hwy 141
125A	State Hwy 125	1.19	State Hwy 125
082A	State Hwy 82	1.99	State Hwy 82
135A	State Hwy 135	0.43	State Hwy 135
131B	State Hwy 131	1.10	State Hwy 131
024A	US Hwy 24	1.49	US Hwy 24 - from Colo. Spgs to Limon
024A	US Hwy 24	3.40	US Hwy 24 - Minturn to Colo. Spgs
172A	Hwy 172	0.39	State Hwy 172
050A	E US Hwy 50	3.71	US Hwy 50 - Pueblo to KS border
050A	E US Hwy 50	2.45	US Hwy 50 - Poncha Spgs to Pueblo
050A	US Hwy 50	2.20	US Hwy 50 - Montrose to Poncha Spgs
050A	US Hwy 50	1.93	US Hwy 50 - Grand Junction to Montrose
040A	US Hwy 40	1.92	US Hwy 40 - Limon to KS border
040A	US Hwy 40	4.56	US Hwy 40 - UT border to Empire (I-70)
009D	State Hwy 9	2.30	State Hwy 9
034A	US Hwy 34	1.31	US Hwy 34 - Greeley to Wiggins
034A	US Hwy 34	1.88	US Hwy 34 - Wiggins to NE border
034A	US Hwy 34	1.84	US Hwy 34 - Granby to Loveland
134A	State Hwy 134	0.47	State Hwy 134
090A	State Hwy 90	0.73	State Hwy 90
491A	US Hwy 491	1.12	US Hwy 491

Corridor ID	Highway Corridor	Segment Length [mi.]	Segment Name
014A	State Hwy 14	1.78	State Hwy 14 - east of I-25
348A	State Hwy 348	0.28	State Hwy 348
014B	State Hwy 14	2.48	State Hwy 14 - west of I-25

Appendix C: Public Engagement Survey Summary

Survey Executive Summary

The Colorado Broadband Office (CBO) issued the Middle Mile Stakeholder Input Survey to assess the current state of middle-mile infrastructure, identify deployment barriers, and gather strategic input for a statewide middle-mile initiative. The survey yielded 26 detailed responses from a wide cross-section of the broadband ecosystem.

Analysis of the responses indicates a strong consensus on the critical deficiencies in Colorado's middle-mile network: a severe lack of route redundancy and prohibitively high wholesale transport costs. While there is universal agreement on the need for investment to close geographic gaps, respondents diverge significantly on the preferred execution model. Public entities, NGOs, and regional advocates strongly favor a state-coordinated, open-access model to ensure equitable pricing and rural access. In contrast, private-sector respondents strongly caution against government overbuilding and prefer the state to limit its role to funding infrastructure expansion through existing market participants.

This appendix summarizes stakeholder responses collected through the Middle Mile Stakeholder Input Survey. The survey asked respondents for input on existing middle-mile assets, utilization, redundancy, deployment barriers, corridor priorities, expectations for the Middle Mile Initiative, and potential state roles.

The survey included 26 responses. Respondents represented private sector internet service providers and telecommunications companies; local, state, or federal government entities; economic development organizations; associations; cooperatives; consultants; research and education stakeholders; and network vendors. Respondents identified as middle-mile network owners, middle-mile network customers, network expansion supporters or advocates, and related stakeholder roles.

Across the responses, stakeholders identified recurring needs and concerns related to route diversity, network redundancy, reliability, cost, pricing transparency, provider options, access to existing infrastructure, deployment barriers, and overbuild risk.

Respondents also provided corridor-specific input and described differing views on whether the state should set up an integrated statewide middle-mile network.

Key Survey Themes

The survey responses identified several recurring themes:

- **Existing assets and operating conditions vary by respondent.** Network-owning respondents described regional networks, government or municipal networks, cooperative-related infrastructure, consortium networks, leased routes, and local backbone assets. Some responses identified spare capacity or low to moderate utilization, while others identified constrained routes, single-leg connections, or remaining backhaul needs.
- **Redundancy and reliability were recurring priorities.** Respondents selected increasing route diversity and redundancy and improving network reliability as high priorities. Several responses connected improved redundancy to business and economic continuity, public safety communications, continuity of government services, healthcare, education, and utility network management.
- **Middle-mile customer challenges included access, cost, and performance concerns.** Customer responses identified lack of redundancy, lack of options, cost, pricing transparency, time to market, lack of coverage, frequent connectivity loss, and service performance as challenges.
- **Deployment barriers included geographic, regulatory, and cost-related factors.** Respondents identified mountainous terrain, difficult soil or rock conditions, long distances, sparse population, right-of-way access, permitting, pole attachments, easements, environmental or cultural sensitivity, funding limitations, material costs, and labor availability as deployment barriers.
- **Respondents expressed mixed views on state ownership or operation.** Providing funding through grants or subsidies was the most frequently selected state role. Several respondents also selected public-private partnership participation. Fewer respondents selected state ownership or operation, and some respondents selected that the state should have no direct involvement.

Survey Response Snapshot

Survey Item	Survey Response Summary
Total survey responses:	26 responses
Willing to participate in statewide strategy development:	21 Yes; 4 No; 1 blank
Support for state setting up an integrated statewide middle-mile network:	15 Yes; 11 No
Support for increased funding for the Middle Mile network:	18 Yes; 7 No; 1 blank
Most frequently selected state role:	Provide funding through grants or subsidies; several respondents also selected public-private partnership participation

Governance, Funding, and State Role

Respondents provided different views on the appropriate state role. The most frequently selected role was providing funding through grants or subsidies. Several respondents also selected public-private partnership participation. Fewer respondents selected state ownership or network operation, and some responses stated that the state should have no direct involvement.

Respondents were generally willing to participate in statewide strategy development, but responses were divided on whether the state should set up an integrated statewide middle-mile network. Open-ended responses included support for coordination, open access, regional input, and public-private partnership approaches, as well as concerns related to state ownership, state operation, overbuild, technical expertise, competition with existing networks, and long-term sustainability.

Risks and Challenges

Respondents identified risks and concerns related to a statewide or integrated middle-mile network. Common topics included overbuilding existing networks, insufficient inventory of existing or planned infrastructure, operational complexity,

state ownership or operation, market distortion, pricing, technical expertise, maintenance responsibilities, and the need for regional or local input.

Several respondents recommended that CBO inventory existing assets, coordinate with regional and private networks, focus on areas with documented gaps, support existing regional networks, avoid unnecessary overbuild, and use funding or partnerships to address access, redundancy, or resiliency constraints.

Capacity, Redundancy, and Reliability

Respondents identified route diversity, redundancy, and reliability as significant middle-mile considerations. Survey priority responses rated reaching unserved and underserved areas, increasing route diversity and redundancy, and improving network reliability among the most frequently selected high-priority areas.

Respondents also linked improved redundancy to public services and continuity needs. Selected activities supported by improved redundancy included business and economic continuity, public safety communications, continuity of government services, internet-based healthcare services, education, and utility network management.

Corridor Prioritization Feedback

Respondents provided feedback across interstate corridors, highway corridors, and existing fiber improvement areas. Corridor selections included combinations of High Priority, Public Benefit, Access Barriers, and Risk of Overbuild.

For existing fiber improvements, Southwest and Northwest received the highest number of high-priority selections. Front Range responses more frequently included Risk of Overbuild selections. Highway corridor comments referenced routes including US Hwy 160, US Hwy 550, State Hwy 145, State Hwy 82, US Hwy 50, US Hwy 24, State Hwy 9, and other regional corridors.

Several corridor comments described missing connections, limited redundancy, Western Slope or Southwest needs, mountain-community access, and links to public facilities or community anchor institutions. Other corridor comments emphasized that

existing or planned infrastructure should be identified before additional public investment is directed to a corridor.

Existing Network Assets and Access Considerations

Respondents that identified as network owners described a range of existing middle-mile assets and operating conditions. Responses included references to dark fiber, lit services, leased infrastructure, community or regional networks, consortium networks, CDOT or other public assets, cooperative infrastructure, and local government networks.

Several respondents stated that existing infrastructure is not always accessible or coordinated in a manner that resolves middle-mile constraints. Some comments focused on the availability of existing assets, while others focused on access terms, pricing, provider options, route diversity, or the need to avoid duplicating existing networks.

Deployment Barriers

Respondents identified deployment barriers related to Colorado's terrain, permitting processes, access requirements, funding, materials, and labor conditions. Frequently selected barriers included mountainous terrain, difficult soil or rock conditions, vast distances or sparse population, right-of-way access, securing permits, pole attachments or make-ready work, environmental or cultural sensitivity, easements, lack of funding, material costs, and labor availability.

Open-ended responses described these barriers in relation to rural, mountain, and regional deployment conditions. Several comments also referenced the need to coordinate with public rights-of-way, easements, utilities, regional networks, existing fiber owners, and state assets.

Middle-Mile Customer Challenges

Middle-mile network customers identified several challenges associated with existing middle-mile infrastructure. Responses included lack of redundancy, lack of options, cost, pricing transparency, time to market, lack of coverage, frequent network failure or connectivity loss, and service performance.

Several respondents also raised concerns about the cost or accessibility of existing infrastructure. Other respondents cautioned that investment decisions should account for existing private, public, or regional networks before new construction is considered.