



Research Report

Michigan Department of Transportation

**Revenue Opportunities
from MDOT Fiber
Infrastructure and
Other Utility Types**

Research Contract No. 2024-0242

Project/Job No. CS – JN 23-012

OR No. 23-012

Report No. SPR-1773

Submitted by:
KPMG LLP

May 25, 2026

kpmg.com

Abstract page

Technical Report Documentation Page

1. Report No. SPR-1773	2. Government Accession No. N/A	3. Recipient's Catalog No. N/A
4. Title and Subtitle Revenue Opportunities from MDOT Fiber Infrastructure and Other Utility Types		5. Report Date May 25, 2026
		6. Performing Organization Code N/A
7. Author(s) Iain Tester Tunc Kulaksiz		8. Performing Organization Report No. N/A
9. Performing Organization Name and Address KPMG LLP 1801 K Street Northwest #12000 Washington, DC 20036		10. Work Unit No. N/A
		11. Contract or Grant No. Contract #2024-0242
12. Sponsoring Agency Name and Address Michigan Department of Transportation (MDOT) Research Administration 8885 Ricks Road P.O. Box 33049 Lansing, Michigan 48909		13. Type of Report and Period Covered Final Report, 5/27/2025 – 5/25/2026
		14. Sponsoring Agency Code N/A
15. Supplementary Notes Conducted in cooperation with the U.S. Department of Transportation, Federal Highway Administration. MDOT research reports are available at www.michigan.gov/mdotresearch .		

16. Abstract

This study evaluates potential non-vehicle-related revenue opportunities associated with Michigan Department of Transportation (MDOT) infrastructure assets within highway right-of-way (ROW), with particular focus on fiber-based commercialization. The research evaluates a range of revenue concepts for alignment with MDOT's financial, operational, and connectivity objectives.

The study employed a two-phase approach. First, a qualitative literature review and peer agency assessment examined a range of alternative revenue mechanisms, including solar photovoltaic installations, electric vehicle (EV) charging, Intelligent Transportation Systems (ITS) data, air rights leasing, telecommunication tower leasing, right-of-way occupancy compensation, and fiber-based infrastructure. Based on alignment with MDOT objectives and implementation feasibility, the analysis advanced fiber commercialization—specifically the leasing of existing fiber and conduit assets and the development of new middle-mile fiber infrastructure—for more focused evaluation.

Second, a planning-level commercialization assessment was conducted to estimate the indicative scale of market opportunity across selected corridors using assumptions related to demand, competition, and cost. Results indicate that both leasing of existing assets and new middle-mile fiber development demonstrate meaningful but distinct commercial potential. New middle-mile deployment exhibits higher long-term indicative opportunity due to broader corridor coverage and access to a larger addressable market, while leasing existing assets offers more limited but near-term value opportunities. Results are presented as illustrative ranges based on conservative assumptions and are not intended to represent investment-grade forecasts.

The study concludes that fiber commercialization represents a viable opportunity for MDOT. The report outlines implementation considerations—including market validation, governance and procurement structuring, and asset inventory development—to support informed decision-making regarding whether, how, and when fiber commercialization strategies may be pursued.

17. Key Words • Fiber Optics • Public Private Partnerships • Public Utilities • Revenues • Right of way (Land) • Alternative revenue • Fiber infrastructure • Middle-mile fiber • Fiber commercialization • Right-of-way (ROW) utilization • Infrastructure monetization • Non-vehicle revenue sources • Commercialization potential • Telecommunications infrastructure • Intelligent Transportation Systems (ITS) • Corridor-based infrastructure • Connectivity and mobility		18. Distribution Statement No restrictions. This document is also available to the public through the Michigan Department of Transportation.	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 66	22. Price N/A
Form DOT F 1700.7 (8-72)	Reproduction of completed page authorized		

Research report disclaimer

This publication is disseminated in the interest of information exchange. The Michigan Department of Transportation (hereinafter referred to as MDOT) expressly disclaims any liability, of any kind, or for any reason, that might otherwise arise out of any use of this publication or the information or data provided in the publication. MDOT further disclaims any responsibility for typographical errors or accuracy of the information provided or contained within this information. MDOT makes no warranties or representations whatsoever regarding the quality, content, completeness, suitability, adequacy, sequence, accuracy or timeliness of the information and data provided, or that the contents represent standards, specifications, or regulations.

This material is based upon work supported by the Federal Highway Administration under SPR Revenue Opportunities from MDOT Fiber Infrastructure and Other Utility Types research project. Any opinions, findings and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the Federal Highway Administration.

If you require assistance accessing this information or require it in an alternative format, contact the Michigan Department of Transportation's (MDOT) Americans with Disabilities Act (ADA) coordinator at www.Michigan.gov/MDOT-ADA.

Table of Contents

1. List of Tables	7
2. List of Figures	8
3. Executive Summary	9
4. Introduction	11
4.1 Background	12
4.2 Purpose of the Study	12
5. Literature review	15
5.1 Review of previous research	15
5.2 Summary	32
6. Methodology	35
6.1 Corridor Selection and Prioritization	35
6.2 Build and Commercialize Middle Mile: Indicative Demand and Revenue Analysis	36
6.3 Lease Existing Fiber and Conduit: Indicative Demand and Revenue Analysis	40
6.4 Summary of Data Inputs	41
7. Findings	44
7.1 Corridor Selection and Prioritization Results	44
7.2 Build and Commercialize Middle Mile Indicative Commercial Potential	44
7.3 Lease Existing Fiber and Conduit Indicative Commercial Potential	49
7.4 Summary of Findings	51
8. Discussion	52
8.1 Alternative Revenue Assessment	52
8.2 Interpretation of Commercial Opportunity and Commercialization Pathways	52
8.3 Factors Affecting Analysis and Results	55
9. Conclusions	59
9.1 Conclusions from the Study	59
9.2 Recommended Actions	60
10. Bibliography	63
11. Appendices	65
11.1 List of Acronyms, Abbreviations and Symbols	65

1. List of Tables

Table 1 – ADOT ROW Occupancy Compensation.....	25
Table 2 – Maryland DOT Conduit/Fiber Lease.....	27
Table 3 - Illustrative Middle-Mile Customer Segments and Use Cases.....	37
Table 4 - Potential Addressable Customers – I 75 (Sample Corridor).....	45
Table 5 - Fair Share Results	47
Table 6 - Build & Commercialize Middle Mile [3-Mile Buffer].....	49
Table 7 - Lease Existing Fiber / Conduit [3-Mile Buffer]	50
Table 8 - Indicative Commercial Potential across six corridor	53
Table 9 - Fiber Value Generation Approaches	54

2. List of Figures

Figure 1 - Corridor Selection and Prioritization Results	44
Figure 2 - I-94 Addressable Market [3-Mile Buffer]	46
Figure 3 - I-75 Addressable Market [3-Mile Buffer]	46
Figure 4 - Existing 3rd Party Owned Fiber within 3-Mile Buffer of I-94	47
Figure 5 - Delivery Model Continuum: Risk Transfer and MDOT Revenue Share	57

3. Executive Summary

This study evaluated a range of non-vehicle-related alternative revenue opportunities associated with Michigan Department of Transportation (MDOT) right-of-way (ROW), with the objective of identifying options that both align with MDOT's mission and present the potential to generate supplemental revenue without compromising transportation operations. The assessment was conducted in two phases:



A qualitative, literature-based review of alternative revenue opportunities, and



An indicative commercialization assessment of fiber infrastructure within MDOT ROW.

MDOT initiated this study to evaluate alternative, non-vehicle-related revenue opportunities that could complement traditional funding sources in response to long-term structural changes affecting transportation revenues.

The analysis assessed a range of potential opportunities associated with MDOT's infrastructure assets and ROW, including solar development, air rights, data-related concepts, and telecommunications. Through this comparative evaluation, fiber-based infrastructure was advanced for further analysis based on its alignment with MDOT's objectives: it enables the use of existing corridor assets to support alternative revenue generation; it supports transportation operations through communications infrastructure; and it contributes to connectivity outcomes through deployment along highway corridors.

Based on this outcome, the analysis focused on two primary pathways for fiber commercialization: the leasing of existing MDOT fiber and conduit assets and the development and commercialization of new middle-mile fiber infrastructure. These pathways were assessed at a planning level to understand the scale of potential opportunity and how value may vary across approaches.

The results indicate that fiber commercialization represents a measurable and differentiated opportunity across two distinct pathways:

- New middle-mile fiber development and commercialization: approximately \$685 million to \$1.2 billion in indicative nominal gross commercialization potential over a 25-year period, which, after accounting for indicative capital expenditures (CAPEX) and operating expenditures (OPEX), results in approximately \$190 million to \$504 million in indicative nominal net commercialization potential over the same period

- Leasing existing fiber and conduit assets: approximately \$86 million to \$132 million in indicative nominal gross commercialization potential over a 25-year period, which, after accounting for associated operating and implementation costs at a feasibility level, results in approximately \$27 million to \$50 million in indicative nominal net commercialization potential over the same period

These findings indicate that both approaches present viable opportunities, with outcomes differing based on the scope of assets considered, level of deployment, and underlying assumptions. The results provide a directional understanding of potential value.

The analysis demonstrates that a viable alternative revenue opportunity exists that is compatible with MDOT's operating environment and infrastructure base. Fiber-based infrastructure provides a pathway that can leverage existing assets while also enabling potential expansion along transportation corridors over time.

Advancement of this opportunity requires further evaluation to inform how it may be structured and implemented. This includes additional assessment of market interest, commercial and delivery models, asset readiness, and consideration of applicable legal and regulatory frameworks governing ROW and telecommunications infrastructure.

In summary, the study confirms that an alternative revenue pathway exists that aligns with MDOT's objectives and has the potential to generate value over time. At this stage, the analysis establishes a foundation for further validation and decision-making regarding how the identified opportunity may be advanced.

4. Introduction

MDOT is responsible for sustaining a safe, efficient, and reliable transportation system across the State of Michigan. Funding for transportation infrastructure has historically relied on vehicle-related revenues, including fuel taxes and registration fees. Structural changes in travel behavior, vehicle technology, and fuel efficiency are creating long-term pressure on these traditional funding sources.

At the same time, MDOT manages extensive highway ROW. These corridors may present opportunities to support MDOT's transportation mission while complementing traditional funding sources through non-vehicle-related revenue approaches.

This study evaluates alternative revenue opportunities associated with MDOT ROW, with particular attention to fiber infrastructure and other uses that may be located within or adjacent to highway corridors. The research is structured as a phased assessment, beginning with a qualitative review of alternative revenue opportunities and advancing to a more focused evaluation of selected opportunities that align with MDOT operational needs and implementation considerations.



4.1 Background

Transportation infrastructure funding has historically relied on vehicle-based revenue sources, including fuel taxes and registration fees. Changes in vehicle fuel efficiency, travel patterns, and the adoption of alternative fuel vehicles are expected to affect these revenue streams over time.

In response, transportation agencies are examining alternative approaches to support long-term financial sustainability. These approaches focus on identifying non-vehicle-related revenue opportunities that can complement traditional funding sources while remaining consistent with transportation operations and public-sector responsibilities.

MDOT's highway ROW represents a controlled asset base that may accommodate compatible uses, including telecommunications infrastructure, utilities, renewable energy installations, and other applications. These uses vary in scale, technical requirements, and interaction with transportation operations, requiring structured evaluation.

4.2 Purpose of the Study

The purpose of this study is to assess non-vehicle-related revenue opportunities associated with MDOT ROW and identify options that are compatible with transportation operations.

4.3 Objectives

This study applies an evaluation framework aligned with MDOT's priorities across three areas:

- Financial objective: assess opportunities that may support diversification of revenue sources beyond traditional vehicle-based funding
- Operational objective: evaluate compatibility with transportation operations, including communications systems and ITS
- Connectivity objective: assess how infrastructure deployed within MDOT ROW may support broader connectivity outcomes

4.4 Study Scope, Approach, and Organization

The scope of this study is limited to opportunities that may be implemented within or along MDOT ROW, consistent with transportation operations.

The analysis is conducted at a planning-level stage to provide an indicative understanding of potential opportunities and does not include detailed engineering design, investment-grade financial modeling, or legal determinations.

The study is structured as a phased assessment consisting of two components:

Broader Alternative Revenue Assessment:

The first phase evaluates a range of non-vehicle-related revenue opportunities across MDOT ROW to identify those appropriate for further consideration. This phase includes:

- Identification of potential revenue opportunities
- Review of peer practices and published research
- Comparison of alternatives based on feasibility, scalability, and interaction with transportation operations
- Screening of opportunities for further evaluation

This assessment establishes context and informs the selection of opportunities for more detailed analysis.

Fiber Infrastructure Assessment:

Based on the results of the broader assessment, the second phase includes a focused evaluation of fiber infrastructure within MDOT ROW.

This phase evaluates:

- Opportunities to expand telecommunications infrastructure within MDOT ROW
- Delivery approaches for fiber deployment
- Integration with transportation operations, including ITS
- Commercial and partnership structures that enable deployment and use

4.4.1 Report Organization

This report is structured to present the analysis and supporting considerations in sequence:

- **Section 5 – Literature Review:** qualitative assessment of alternative revenue opportunities
- **Section 6 – Methodology:** analytical framework, assumptions, and evaluation approach
- **Section 7 – Findings:** results of corridor-level and commercialization analysis
- **Section 8 – Discussion:** interpretation of findings and key considerations
- **Section 9 – Conclusion:** summary of findings and considerations for further evaluation

4.4.2 Statement of Hypotheses

This research is guided by the following hypotheses:

-  MDOT's existing and potential fiber infrastructure and ROW assets may support non-vehicle-related revenue opportunities without compromising transportation operations or safety.
-  Strategic deployment of fiber infrastructure along MDOT ROW has the potential to provide operational benefits to MDOT and value to third-party users.
-  Viable business and partnership models may exist that enable MDOT to participate in or facilitate telecommunications and utility deployment while managing financial, operational, and implementation considerations.
-  Revenue opportunities associated with fiber and other utility uses along MDOT ROW may supplement, but not fully replace, traditional transportation funding sources.
-  A structured, qualitative screening approach can assist MDOT in identifying opportunities that balance public benefit, financial considerations, and implementation feasibility.

5. Literature review

This literature review provides a qualitative assessment of alternative revenue opportunities associated with MDOT ROW and related infrastructure assets. It synthesizes findings from publicly available studies, peer agency practices, and relevant reference materials to evaluate a range of non-vehicle-related revenue mechanisms at a high level.

5.1 Review of previous research

The review examines potential alternative revenue mechanisms available to transportation agencies, with a focus on associated revenue potential and the legal, operational, and practical considerations that influence feasibility. The analysis is not intended to quantify revenue potential; rather, it provides a consistent basis for comparing alternatives and identifying those aligned with MDOT's transportation mission and operating context.

Each revenue mechanism is evaluated using a consistent qualitative framework, drawing on case studies, policy guidance, industry publications, and prior research, supporting comparison across alternatives based on implementation characteristics, constraints, and observed outcomes.

The alternatives are reviewed in the following order:

 Solar Photovoltaic Panels	 Electric Vehicle (EV) Charging Stations	 Intelligent Transportation Systems (ITS) Data	 Air Rights
 Telecommunication Tower	 ROW Occupancy	 Existing Conduit and Fiber	 New Fiber Build

5.1.1 Solar Photovoltaic Panels



Solar photovoltaic (PV) panels installations on transportation-controlled property represent a potential use of highway ROW and other DOT-owned facilities to support energy generation while preserving core transportation functions. These installations are typically sited on land or structures associated with transportation uses, such as parking facilities, maintenance areas, and other operational sites. [\(1\)](#)

Common configurations include ground-mounted arrays and elevated systems, such as canopy or carport structures, which allow solar generation to be co-located with existing uses. Depending on site conditions, these installations may offset agency electricity consumption or generate value from underutilized property.

Feasibility, scale, and outcomes of solar installations are dependent on site-specific, regulatory, and market conditions. As a result, implementation approaches and outcomes vary across agencies.

Transportation agencies generally use three development models that differ by ownership structure, risk allocation, and use of generated electricity:

- Direct ownership, where the agency finances and operates the system to offset internal energy use;
- Third-party ownership, where a private partner develops and operates the system and the agency purchases electricity under a long-term agreement; and
- Hosting arrangements, where a private developer installs and operates the system on agency property, typically providing lease payments or other compensation to the agency. (1)

Case Studies

Michigan Department of Transportation (MDOT)

In 2012, MDOT implemented a PV solar canopy on transportation-controlled property at the I-96 and M-44 interchange in Grand Rapids, Michigan. At the time of installation, the project was the first PV solar canopy of its kind in the state.

The installation consists of 385 panels mounted above a park-and-ride facility, providing shade and weather coverage for approximately 45 parking spaces. The PV system produces approximately 106,000 kWh annually, offsetting MDOT electricity consumption and generating additional value through net metering. Annual generation from the project is estimated to offset approximately 80.6 tons of carbon dioxide, aligning MDOT objectives related to cost savings, clean energy generation, and reduced environmental impacts. (1) (2)

Massachusetts Department of Transportation (MassDOT)

The Massachusetts Department of Transportation initiated its solar energy development efforts with an 80-kW pilot project that became operational in 2012. Building on this pilot, MassDOT issued a request for proposals in 2013 to develop solar PV generation on multiple parcels within the state highway ROW, allowing for up to 6 MW of total capacity, under which approximately 2.5 MW of solar installations were developed.

The solar installations are located on MassDOT-controlled property, including areas within highway ROW as well as rooftops and parking facilities where solar canopies can be constructed. These sites reflect a multi-location deployment approach across transportation assets while maintaining their primary operational functions.

MassDOT delivered the projects using a third-party ownership and power purchase agreement (PPA) model. Under this structure, a private developer finances, owns, operates, and maintains the solar facilities, while MassDOT purchases the electricity

generated at a predetermined rate through 20-year PPAs. Electricity generated by the systems is used to offset MassDOT energy needs, with excess generation exported to the grid and credited through net metering.

The project structure includes land lease payments to MassDOT for use of transportation property, with lease rates calculated based on the installed generating capacity of each solar facility. Over the contract term, the projects are projected to generate electricity cost savings relative to utility purchases, as well as lease revenue from use of MassDOT land. Under the third-party ownership structure, available tax incentives and renewable energy credits are realized by the system owner and reflected in the electricity pricing provided to MassDOT under the power purchase agreements, while enabling the deployment of solar PV on ROW property. [\(2\)](#) [\(3\)](#) [\(4\)](#)

Qualitative Review

The following discussion highlights key advantages and limitations identified in the literature and observed peer practices, to support high-level comparison across alternative revenue mechanisms.

Pros	Cons
• Solar installations within highway ROW represent an established use of transportation-controlled property that has been implemented by multiple public agencies. • Use of publicly owned ROW can reduce the need for new land acquisition and may limit interactions with surrounding private development, subject to transportation and safety constraints. • Depending on project structure and site conditions, solar installations may support energy cost offsets, lease-based revenue, or a combination of both. • In certain contexts, solar facilities may contribute to energy resiliency objectives for transportation operations.	• Solar generation is dependent on environmental conditions and typically requires substantial land area to achieve meaningful energy output, making feasibility site specific. • Project development may involve multi-year timelines and can require coordination with utilities and other external stakeholders. • Revenue outcomes can vary widely by location, system size, and delivery model and may be modest relative to other infrastructure-based revenue mechanisms evaluated in this study.

MDOT-Specific Considerations

MDOT’s prior experience with solar canopy installation provides a foundation for understanding implementation considerations associated with solar development on

transportation-controlled property. That experience offers practical context for identifying key factors relevant to delivery structure and operational integration.

As noted in the qualitative review, revenue outcomes vary by location, system size, and delivery model and may be modest relative to other potential revenue sources. Solar development is dependent on site-specific conditions, including land availability, shading, and proximity to electrical infrastructure.

If MDOT elects to further explore solar as a potential revenue option, consideration may be given to site-level screening of transportation-controlled property based on physical and operational characteristics. Relevant factors may include the availability of unshaded land, compatibility with existing transportation uses, and proximity to existing electrical infrastructure. Additional considerations may include coordination with electric utilities and evaluation of third-party delivery structures that limit upfront capital commitments.

5.1.2 Electric Vehicle (EV) Charging Stations



Electric vehicle (EV) charging infrastructure has been explored by transportation agencies as part of broader efforts to support vehicle electrification and alternative fuel adoption. Federal law places restrictions on commercial activity within Interstate highway ROW. Title 23, United States Code, Section 111, prohibits the construction or operation of automotive service stations and other commercial establishments serving motor vehicle users within the Interstate ROW. As a result, EV charging stations located within the Interstate ROW may not be operated as commercial, revenue-generating facilities by state departments of transportation. (5)

Under current law and federal interpretation, EV charging stations sited within Interstate ROW may be provided only on a non-commercial basis. Any such installations must be offered free of charge and cannot be operated as a revenue-generating activity, regardless of whether the infrastructure is installed by a public agency or a third-party partner. (5)

Given that commercial EV charging is not permitted within Interstate ROW under current federal law, the following case studies illustrate how states have implemented EV charging infrastructure on a non-commercial basis, including free-to-use installations at highway rest areas, as well as MDOT initiatives that support EV charging and emerging technologies outside of the Interstate ROW context.

Case Studies

Michigan Department of Transportation (MDOT)

MDOT has engaged in EV charging initiatives consistent with federal constraints on Interstate ROW use. Charging stations associated with Michigan's Alternative Fuel Corridors are deployed along Interstate and major highway corridors and, consistent with FHWA guidance, are sited "near national highways." These deployments are intended to expand statewide EV charging access and support mobility and electrification objectives. (6) (7)

In parallel, MDOT supported a wireless EV charging pilot in Detroit's Michigan Central district. The pilot involves the installation of an inductive charging roadway on a 0.25-mile segment of 14th Street, where coils embedded beneath the pavement wirelessly transfer energy to equipped electric vehicles as they drive. The project is being implemented as a research and demonstration effort to test emerging charging technology in a real-world, urban environment. The pilot was conducted on a city roadway rather than a highway facility, and no commercial operating model or revenue component has been established. (8)

California Department of Transportation (Caltrans)

California provides an example of EV charging installations within highway ROW that are offered on a non-commercial basis. Caltrans has installed Level 3 DC fast charging stations at select highway rest areas, including locations along Highway 395 in Inyo County and Highway 58 in Kern County. These chargers are available to the public free of charge, with no time limit, and are intended to support mobility, emissions-reduction, and statewide electrification goals rather than to generate revenue. (9)

Washington State Department of Transportation (WSDOT)

Washington State has implemented EV charging stations at selected safety rest areas along Interstate 5. For example, the Custer Safety Rest Area (I-5 Southbound, exit 269) includes Level 2 electric vehicle charging infrastructure. According to site-specific information published under the West Coast Electric Highway program, charging at this rest area is provided free of charge to EV drivers, with electricity supplied through partner organizations. This example illustrates how EV charging infrastructure can be integrated into Interstate safety rest areas on a non-commercial basis, consistent with federal restrictions on commercial activity within Interstate ROW. (10)

Qualitative Review

The following discussion highlights key advantages and limitations identified in the literature and observed peer practices, to support high-level comparison across alternative revenue mechanisms.

Pros	

without committing to large-scale deployment.

questions related to scalability, interoperability, and long-term maintenance.

MDOT-Specific Considerations

Under current federal law, EV charging does not represent a viable revenue source for MDOT when limited to Interstate ROW. MDOT's existing activities are focused on non-ROW deployments and pilot initiatives. Continued monitoring of policy developments and technology performance may help inform future considerations.

5.1.3 Intelligent Transportation Systems (ITS) Data



Transportation agencies collect and manage large volumes of data to support traffic operations, planning, and asset management activities. These ITS datasets include traffic volumes, speeds, travel times, probe vehicle data, connected vehicle data, pavement condition information, and other operational data generated through sensors, detectors, and traffic management systems. (11)(12)

MDOT collects ITS data through programs such as its traffic monitoring and connected vehicle initiatives and makes portions of these datasets available to the public in unprocessed or minimally processed formats through its website and established dissemination channels. Additional data may be accessed through applicable public information request processes. These practices support transparency, research, and operational use and are consistent with how state transportation agencies typically manage public data assets. (11)(12)

While transportation agencies generally focus on public dissemination and operational use of ITS data, private sector entities aggregate, analyze, and enhance transportation data to develop value-added products for commercial users. Publicly available sources reviewed as part of this study do not identify formal DOT-led programs specifically dedicated to the leasing or commercialization of ITS data. However, private sector firms have commercialized traffic and mobility data through analytics, benchmarking, and decision-support products, demonstrating established market demand for enhanced transportation data beyond raw datasets. (13)

Qualitative Review

The following discussion highlights key advantages and limitations identified in the literature and observed peer practices, to support high-level comparison across alternative revenue mechanisms.

Pros



- Leverages existing investments in traffic management systems, sensors, and data collection infrastructure.

Cons



- Public agencies are generally required to make raw data available, limiting exclusivity and revenue potential.

- | | |
|--|--|
| <ul style="list-style-type: none"> • Value-added analytics and visualization capabilities represent a commercialization pathway for transportation data. • Private sector examples indicate market demand for transportation data among logistics, insurance, real estate, and mobility-related users. | <ul style="list-style-type: none"> • Data privacy, anonymization, and governance requirements introduce legal, operational, and reputational considerations. • Developing commercial data products requires specialized technical and commercial capabilities. • Established private data providers already operate in this space, creating competitive barriers for public sector offerings. |
|--|--|

MDOT-Specific Considerations

Based on the literature review and available documentation, ITS data commercialization is not a commonly implemented revenue mechanism among state transportation agencies. If MDOT elects to explore this concept further, any evaluation would likely focus on inventorying existing data assets, assessing data quality and governance requirements, and considering value-added data products rather than the leasing of raw datasets. Such exploration would represent an extension of existing data management practices rather than a near-term revenue opportunity.

5.1.4 Air Rights



Air rights leasing refers to the use of space above or below highway ROW for non-transportation purposes while maintaining the safety and operational integrity of the highway facility. Under federal law, state departments of transportation may permit the use of airspace within highway ROW, provided that such use does not impair highway operations, interfere with traffic flow, or compromise safety. [\(7\)](#) [\(14\)](#)

Transportation agencies have pursued air rights development primarily in urban and otherwise constrained environments where developable land is limited. Typical applications include commercial, residential, office, or mixed-use developments constructed on structural platforms spanning highways or rail corridors. These arrangements are commonly structured as long-term leases, easements, or joint development agreements, rather than outright transfers of property ownership.

All air rights agreements within Interstate ROW are subject to federal oversight and must comply with requirements related to FHWA approval, fair market valuation, and preservation of present and future transportation needs. Lease revenues generated from air rights use must be applied to eligible transportation purposes or other FHWA-approved uses in accordance with federal regulations. [\(7\)](#) [\(14\)](#)

Case Studies

Nevada Department of Transportation – Reno I-80 Air Rights Project

The Nevada Department of Transportation (NDOT) entered an air rights use agreement allowing private development above Interstate 80 in downtown Reno.

The project initially involved construction of a concrete-and-steel structural deck over the highway to support a proposed hotel-casino development. After the deck was completed, financing for the original development was withdrawn, and the air rights lease was transferred among private parties over an extended period without development.

Ultimately, a retail tenant secured a sublease to rehabilitate the existing deck and construct a commercial facility above I-80 without disrupting highway operations. The agreement generates approximately \$31,000 per year in lease revenue for NDOT over a long-term lease period, with total projected revenues of approximately \$2.3 million over the life of the agreement. (15)

District Department of Transportation / Capitol Crossing

Capitol Crossing is a large-scale air rights development constructed over Interstate 395 in Washington, DC. The project consists of a mixed-use development built on multiple platforms spanning the highway, restoring connections between neighborhoods separated by the original freeway construction. The development was privately financed and implemented through long-term agreements with transportation agencies following an extended planning and development process. (16)

Ohio Department of Transportation – Cap at Union Station

The Cap at Union Station project involved construction of bridge-like structures over Interstate 670 to support commercial development and reestablish connections between downtown Columbus and the Short North neighborhood. The project was carried out using three parallel bridge structures spanning the highway, with commercial buildings located on the outer structures and through-traffic maintained on the central span.

Public investment was required to construct bridge platforms and supporting infrastructure, with private commercial development proceeding once the platforms were completed. Rather than relying on market-rate lease payments, the development agreement provided for a \$1-per-year lease payment combined with a share of ongoing project profit. (17)

Qualitative Review

The following discussion highlights key advantages and limitations identified in the literature and observed peer practices, to support high-level comparison across alternative revenue mechanisms.

Pros	Cons
Enables use of otherwise constrained space in urban or developed areas.	Air rights developments are capital-intensive and typically require

- | | |
|--|--|
| <ul style="list-style-type: none"> • Can generate long-term lease revenue without transferring public ownership of ROW. • May align with broader urban connectivity and redevelopment objectives. • Allows flexible commercial structures, including fixed lease payments, revenue sharing, or easement-based agreements. | <p>strong market demand and long project timelines.</p> <ul style="list-style-type: none"> • Construction over active highways introduces significant design, safety, and staging complexity. • Projects often require coordination among DOTs, FHWA, municipalities, utilities, and private developers. • Lease revenues may be modest relative to project complexity, particularly outside dense urban markets. |
|--|--|

MDOT-Specific Considerations

The case studies indicate that air rights leasing has been pursued primarily in dense urban settings with strong real estate markets and clear development demand. If MDOT were to further evaluate air rights opportunities in the future, consideration would likely focus on locations where highway expansion needs are limited, market interest is demonstrable, and long-term maintenance and operational responsibilities can be clearly defined. Any such evaluation would also need to account for project-specific design constraints, coordination requirements, and extended development timelines

5.1.5 Telecommunication Tower



Telecommunication tower leasing refers to arrangements that allow wireless service providers to locate, operate, and maintain wireless communications infrastructure—such as macro cell towers, colocation equipment, and supporting facilities—on publicly owned property. These arrangements may involve ground leases, use of existing structures, or other authorized use of public land, subject to applicable state and federal requirements. [\(20\)](#) [\(21\)](#)

In Michigan, telecommunication tower leasing on state-owned property is implemented through a centralized, statewide program administered by the State of Michigan. The State of Michigan Towers Program manages wireless tower colocation and new tower development across multiple state agencies, providing a coordinated and standardized framework for supporting wireless coverage and capacity expansion. As part of this statewide approach, towers located on property controlled by MDOT are included within the broader State of Michigan tower portfolio and are managed through the centralized program. While MDOT retains control of the underlying property, the leasing and coordination of wireless tower facilities are handled through the State of Michigan's program rather than through a standalone MDOT-specific leasing initiative. [\(18\)](#) [\(19\)](#)

Within highway ROW, MDOT separately accommodates wireless facilities through established permitting processes that implement state statutes and MDOT's Utility

Accommodation Guidance. These processes govern the placement, construction, operation, and maintenance of wireless facilities within highway ROW and are administered as standardized regulatory approvals. (20) (21)

Given that telecommunication tower leasing is already occurring through existing State of Michigan programs, this potential alternative revenue mechanism is included in this literature review solely for completeness and contextual understanding. It does not represent a new, incremental, or discretionary opportunity for MDOT, and is not evaluated further as a distinct revenue opportunity within the scope of this study.

5.1.6 ROW Occupancy



ROW occupancy compensation describes how transportation agencies assess fees when private entities install, operate, or maintain non-transportation facilities within highway ROW. These fees are typically administered through permits or occupancy approvals and are intended to address administrative oversight, inspection, and management of facilities located within ROW.

Practices vary across states. Some agencies apply standardized permit fees established in statute or administrative rule, while others assess recurring charges for long-term occupancy of highway ROW. The examples below summarize documented approaches used by selected states, based on publicly available information.

Case Studies and Observed Practices

Arizona Department of Transportation (ADOT)

ADOT assesses ROW occupancy compensation for new longitudinal telecommunications installations in state highway ROW under a statutory and regulatory framework adopted in 2021. ADOT applies per-linear-foot compensation rates that vary by highway type, with options for annual or long-term agreements (e.g., 20- or 30-year terms). Compensation applies to new longitudinal installations and explicitly distinguishes between longitudinal access and transverse crossings, which are exempt. (22)(23)

Table 1 – ADOT ROW Occupancy Compensation

Example: New Installation of 5 Miles of Underground or Aerial Conduit Along Different Highway Types						
Type of Highway	Rate (2023)	Annual (Per Year)	20-Year*	Actual Effective Rate**	30-Year*	Actual Effective Rate**
Interstate (I-10)	\$1.00/ft	\$26,400	\$224,758	\$0.28/ft	\$248,871	\$0.31/ft
Controlled Access (SR-303)	\$0.50/ft	\$13,200	\$112,379	\$0.14/ft	\$124,435	\$0.16/ft
Non-Controlled Access (SR-64)	\$0.25/ft	\$6,600	\$56,190	\$0.07/ft	\$62,218	\$0.08/ft
*Incentivizing Long-Term Agreements: 10% Discount Rate applied to Net Present Value (NPV) formula **Effective Rate: Actual rate per foot after the Discount Rate is applied to 20- and 30-Year Agreements						

Indiana Department of Transportation (INDOT)

INDOT administers broadband and utility use of highway ROW through a structured framework established in the Indiana Administrative Code under the state’s “dig once” rule. This framework applies specifically to fiber optic cable and conduit installations within limited-access highways, and establishes requirements for permitting, agreements, and compensation. (24)

Consistent with federal requirements, the rule indicates that fair market value must be charged for use of the ROW, in accordance with applicable federal guidance.

Within this framework, compensation for longitudinal installations is defined through standardized, corridor-specific fee schedules:

- \$500 per mile per year for longitudinal fiber or conduit installations in limited-access highways (excluding Interstate 465)
- \$581 per mile per year for longitudinal fiber or conduit installations along Interstate 465
- No broadband access permit fee is required for installation within limited-access highways
- \$55 permit fee applies to maintenance and repair activities associated with installed facilities

Qualitative Review

The following discussion highlights key advantages and limitations identified in the literature and observed peer practices, to support high-level comparison across alternative revenue mechanisms.

Pros 	Cons 
• Enables revenue generation without capital investment, leveraging existing ROW occupancy • Provides a structured and predictable mechanism for cost recovery, including administrative and corridor management functions • Captures ongoing value from long-term ROW use • Relatively simple to implement and administer, typically relying on standardized permit and fee schedules	• Compensation levels are typically fixed by statute or regulation, limiting flexibility in pricing and structure • Revenue is constrained by fixed fee schedules • Growth is dependent on additional ROW occupancy • Changes to fee structures often require legislative or policy action, slowing adaptation to evolving conditions

Michigan-Specific Considerations

In Michigan, use of highway ROW by utilities and telecommunications providers is governed through a permit-based framework established under Public Act 368 of 1925 and administered by MDOT. Access to ROW is granted through permits issued under statutory authority, which define how facilities may be installed and maintained within highway corridors.

For longitudinal installations within limited-access highway ROW, Michigan law provides for a one-time installation permit fee, rather than recurring or usage-based charges. Specifically, the State may charge:

- Up to \$1,000 per mile for longitudinal installations
- A minimum total fee of \$5,000 per permit

This structure reflects a one-time installation permit fee, rather than recurring or usage-based charges, applied at the point of installation. This approach centers on the administration and processing of permits associated with ROW use, with fees tied to the act of installation rather than ongoing use or occupancy. ([25](#))

5.1.7 Existing Conduit and Fiber



Existing conduit and fiber leasing refers to arrangements in which transportation agencies lease excess capacity within existing, DOT-owned communications infrastructure, such as spare conduit or unused (“dark”) fiber strands. These assets are typically deployed to support transportation and operational needs, including ITS, traffic management, and agency communications.

Under this model, agencies do not construct new fiber assets for third-party use but instead allow access to available capacity where it does not conflict with operational

requirements. Leasing is typically implemented through standardized pricing schedules, permitting processes, or public-private agreements.

Case Studies and Observed Practices

Colorado Department of Transportation (CDOT)

CDOT operates a statewide fiber optic backbone developed to support ITS and traffic operations. CDOT enables third-party access to this infrastructure by allowing entities to lease excess dark fiber capacity within its existing network.

CDOT documentation indicates that third parties may access this excess capacity as part of arrangements that provide value to the agency, consistent with its transportation mission. Leasing is limited to unused (“dark”) fiber strands within CDOT’s existing conduit infrastructure.

These arrangements allow public and private entities to utilize available fiber capacity along ROW, supporting connectivity while leveraging infrastructure originally deployed for operational needs. Access is provided in a controlled manner, with use limited to available capacity within the existing network. (26) (27)

Maryland Department of Transportation

The Maryland Department of Transportation operates a fiber optic resource sharing program that allows third parties to utilize state-owned conduit and fiber infrastructure, including access to dark fiber where available. The program is governed by a publicly available Standard Pricing Schedule, which establishes rates for the use of conduit, installed fiber, and state-owned dark fiber.

The pricing framework differentiates charges based on asset type and location characteristics, including distinctions between standard corridors and premium environments such as tunnels and bridges. Rates are defined on a recurring basis and include both usage-related charges and associated maintenance costs.

The Standard Pricing Schedule further defines pricing formulas for fiber usage, conduit access, and dark fiber leasing, along with applicable maintenance fees, escalation rates, and base agreement terms. These provisions are outlined in detail in Table 2. (28)

Table 2 – Maryland DOT Conduit/Fiber Lease

Using State Property to Install Fiber or Conduit	Annual RATE
All Areas minus Tunnels and Bridges	
Fiber Rate Calculation = (Rate X (Strands/432)) X linear feet	\$3.50
Empty Conduit = (# Conduits * Linear Feet * Rate)	\$3.00
** Minimum default rate not less than	\$0.50
All Tunnels and Bridges *PREMIUM **	
Fiber Rate Calculation = (Rate X (Strands/432)) X linear feet	\$5.75
Empty Conduit = (# Conduits * Linear Feet * Rate)	\$5.00
** Minimum default rate not less than \$0.50 LF	\$0.50

Company Using State Owned "Dark Fiber"	
Per Linear Foot (1 to 5279 feet)	
Dark Fiber Rate = (Strands X Linear Feet X Rate)	\$0.03
Per Mile 1 +	
Dark Fiber Rate = (Strands X # Miles X Rate)	\$150.00
Annual Maintenance Cost Per Mile	\$250.00
Distance 1 Mile = 5,280 feet	
Rent Escalation Rate	3.00%
Base RSA Term	10 Years
Renewal Option	(2-3) 10-year options

Utah Department of Transportation (UDOT)

UDOT operates a statewide fiber optic network developed to support ITS and statewide communications. The network includes a combination of UDOT-owned and resource-shared infrastructure developed in partnership with telecommunications providers.

UDOT provides access to this infrastructure through resource-sharing arrangements, under which telecommunications providers may utilize existing conduit or fiber in exchange for cash, in-kind contributions, or a combination of both.

Under this model, UDOT may install conduit or fiber as part of roadway construction projects and subsequently enter into agreements that allow providers to use available infrastructure or provide network assets and services in return. [\(29\)](#) [\(30\)](#)

Qualitative Review

The following discussion highlights key advantages and limitations identified in the literature and observed peer practices, to support high-level comparison across alternative revenue mechanisms.

Pros	Cons
- Leverages existing DOT communications infrastructure, avoiding new capital deployment - Lower implementation risk than new fiber development, as infrastructure is already in place and operational - Can be administered through established permitting and pricing mechanisms, enabling structured access to existing assets	- Revenue potential is constrained by availability of excess capacity, which varies across corridors - Opportunities are location-specific, as leasing is limited to corridors with existing infrastructure and available capacity - Requires ongoing coordination and asset management, including mapping, capacity tracking, and integration with transportation operations

- | | |
|--|---|
| <ul style="list-style-type: none"> • Supports broader connectivity objectives through use of infrastructure originally deployed for transportation operations, where excess capacity is available | <ul style="list-style-type: none"> • Excess capacity may decline over time as operational demands on DOT networks increase |
|--|---|

Michigan-Specific Considerations

As described in Section 6.4.1, MDOT maintains an existing network of fiber optic and conduit infrastructure deployed to support transportation operations, including ITS, traffic management, and agency communications.

Based on assumptions developed as part of this study, a portion of this infrastructure may be considered excess capacity that could be made available for third-party use. Consistent with practices observed in other states, such excess capacity may enable MDOT to provide access to existing infrastructure through leasing or resource-sharing arrangements, subject to operational requirements and technical feasibility. Under this approach, value may be generated from infrastructure originally deployed for transportation purposes without requiring new capital investment.

5.1.8 New Fiber Build



Existing conduit and fiber leasing relies on pre-existing DOT assets and is inherently opportunistic, dependent on the availability of excess capacity. This approach does not require transportation agencies to assume construction risk or significantly expand responsibilities beyond asset management and permitting.

By contrast, new fiber build and commercialization involves the intentional development of additional communications infrastructure along ROW. Under this model, agencies undertake or enable capital investment with the objective of supporting transportation operations while allowing excess capacity to be used for broadband and related services.

New middle-mile fiber build refers to the planning, construction, and operation of new fiber infrastructure, typically along highway ROW. Unlike existing asset leasing, which is limited to excess capacity, this approach involves purpose-built infrastructure designed to support both operational requirements and broader connectivity objectives.

State transportation agencies have pursued new middle-mile programs to address expanding needs related to ITS, traffic management, connected and autonomous vehicle readiness, and system resiliency, while also supporting statewide connectivity objectives. These programs may be delivered directly by the public sector or implemented in partnership with private entities, depending on program structure and objectives.

State Case Studies (New Middle-Mile Build)

Several states have advanced new middle-mile fiber programs to develop communications infrastructure along ROW to support operations and expand broadband access in underserved areas.

The following case studies highlight four representative examples where states have deployed new fiber networks and established frameworks to enable the use of excess capacity for private-sector connectivity. These programs demonstrate how transportation agencies have implemented infrastructure to support operational needs while facilitating broadband deployment.

KPMG has supported these state agencies in the development and procurement of their middle-mile fiber programs, including advising on program structure, delivery approaches, and commercialization strategies.

Georgia Department of Transportation (GDOT)

GDOT implemented a statewide middle-mile program deploying approximately 1,400 miles of conduit and fiber along interstate ROW. The network supports transportation systems, including ITS, while allocating dedicated capacity for commercial broadband use across the state.

The program uses a long-term partnership model in which a private-sector entity operates, maintains, and commercializes the network, with defined allocation between transportation and commercial capacity. The approximately 25-year agreement links payments to revenues generated from commercialization, establishing a revenue-sharing structure aligned with network performance. [\(31\)](#)

North Carolina Department of Transportation (NCDOT)

NCDOT delivered a middle-mile fiber program spanning approximately 580 miles along major highway corridors, including I-95, U.S. 70, and U.S. 74. The network provides connectivity for transportation infrastructure, including agency facilities and ITS, while enabling commercial use of excess capacity along the corridor.

The program integrates long-term operations, maintenance, and commercialization under a single arrangement with a private-sector partner responsible for managing the network and its commercial deployment. The agreement spans approximately 30 years, combining a construction period with long-term operations, creating a structure that supports sustained revenue generation from commercial use of the network. [\(32\)](#)

Arizona Department of Transportation (ADOT)

ADOT developed a middle-mile program centered on installing fiber-optic conduit along interstate corridors, including I-17, I-19, and portions of I-40, representing an estimated ~400 miles of middle-mile deployment supporting transportation systems and broadband expansion in rural and underserved areas.

The program was implemented through a 25-year public-private agreement under which a private-sector entity was procured to operate, maintain, and lease access to the conduit network installed along state highways. This arrangement enables internet service providers to utilize available capacity to extend broadband infrastructure, while

the same system supports transportation applications such as traffic cameras, message boards, and related technologies. (33)

Pennsylvania Turnpike Commission

The Pennsylvania Turnpike Commission implemented a middle-mile fiber program spanning approximately 550 miles along the Turnpike ROW to modernize communications infrastructure across the system. The network supports tolling systems, administrative facilities, and ITS, while also enabling broadband expansion into underserved areas.

The program is structured through long-term operations, maintenance, and commercialization agreement under which a private-sector entity manages both network operations and commercial deployment. Under the approximately 25-year agreement, the partner provides services including dark fiber leasing, conduit access, and network expansion within the ROW.

The model incorporates a revenue-sharing structure, enabling the Commission to generate value from commercialization of excess capacity while supporting operational needs and generating non-toll revenue. (34)

Qualitative Review

The following discussion highlights key advantages and limitations identified in the literature and observed peer practices, to support high-level comparison across alternative revenue mechanisms.

Pros	Cons
• Enables deployment of scalable infrastructure specifically developed for long-term transportation and connectivity needs • Provides greater long-term commercial potential compared to leasing existing assets, with the ability to establish sustained revenue streams • Supports integration with transportation systems, including ITS, connected vehicle infrastructure, and future operational technologies • Facilitates structured private-sector participation, including operations and commercialization, leveraging external technical expertise and market capabilities	• Requires substantial upfront capital investment, whether delivered publicly, privately, or through shared funding structures • Involves extended planning, procurement, and delivery timelines compared to approaches based on existing infrastructure • Introduces increased complexity in program design and governance, including procurement strategy, risk allocation, and revenue-sharing arrangements • Exposes the program to market risk, where anticipated demand for commercial capacity may not fully materialize

Michigan Specific Considerations

Implementation of a new middle-mile fiber program would involve the development of additional communications infrastructure along ROW, designed to support both operational needs and broader connectivity use.

Examples from other states demonstrate that these programs can support transportation systems—such as ITS and agency communications—while enabling the commercial use of excess capacity under structured agreements, including potential for long-term, non-transportation revenue generation.

Relative to leasing of existing assets, which is inherently limited by available capacity, development of new infrastructure enables greater flexibility in network design, scale, and commercialization structure, and may allow for more sustained value generation over time.

Given MDOT's corridor footprint, a similar approach could provide a mechanism to expand communications capabilities while establishing a structured framework for potential commercialization, subject to program design, funding, and policy considerations.

5.2 Summary

This literature review assessed a range of ROW-based revenue mechanisms available to transportation agencies, including renewable energy uses, tower and wireless infrastructure, data-related services, air rights, and fiber infrastructure. Based on a comparative qualitative review and benchmarking of peer state practices, fiber infrastructure emerged as the primary candidate for deeper analysis due to its alignment with ROW-based applications and MDOT's financial, operational, and connectivity objectives.

Compared to other alternatives, fiber commercialization can simultaneously function as: (i) a potential revenue source linked to ROW; (ii) an enabler of transportation operations and technology modernization; and (iii) a communications backbone supporting broader public-interest outcomes. Other mechanisms are often constrained by regulatory limitations, site-specific conditions, or limited ability to generate sustained revenue, particularly where applications are localized or dependent on third-party market conditions.

As a result, fiber commercialization is advanced as the alternative revenue pathway most aligned with MDOT's objectives and is therefore carried forward for further evaluation in subsequent sections.

Alignment with MDOT's Financial, Operational, and Connectivity Objectives

The evaluation of middle-mile fiber infrastructure indicates alignment with MDOT's core objectives across financial sustainability, transportation performance, and statewide connectivity.

Financial Objectives

The MDOT Road Use Charge study notes that *“the amount of revenue generated by gas tax is expected to fall in the coming years as internal-combustion vehicles continue to become more fuel efficient and electric vehicles become more prevalent. At the same time, the gap between available funding and required upkeep costs is expected to rise.”* (35)

Literature review and peer examples indicate that development of middle-mile fiber infrastructure can enable revenue generation from commercial use of excess capacity, providing a potential mechanism to supplement transportation funding. In this context, middle-mile fiber commercialization represents a potential long-term revenue stream associated with ROW assets that is not dependent on fuel consumption.

Operational Objectives

The MDOT Transportation Systems Management and Operations (TSMO) Implementation and Strategic Plan states that the department’s objective is to *“operate and manage an optimized, integrated transportation network by delivering high-quality services for safe and reliable mobility for all users.”* (36)

The plan further identifies key strategic areas of focus, including *“integrate the operations of ITS and signals”* and *“adapt processes, products, and training to advances in technology.”* (36)

MDOT also defines core operational business areas that include *“Connected and Automated Vehicle (CAV) Systems”* and *“Data Collection, Storage, Utilization, Analytics and Decision Support Systems.”* (36)

Complementing this framework, the MDOT ITS Strategic Plan identifies program focus areas including *“ITS/Signal Program Integration”* and *“Emerging Technologies,”* which guide integration and advancement of transportation systems across the network. (37)

The MDOT Connected and Automated Vehicle Strategic Plan further defines connected vehicle functionality, noting that such systems are equipped to share and receive information with other vehicles, other travelers, and roadside equipment such as traffic signals. (38)

Taken together, these plans establish that MDOT’s operational framework is centered on integrated systems, data-driven capabilities, and the exchange of information across vehicles and infrastructure. In this context, development of middle-mile fiber infrastructure may support these operational requirements by enabling coordination across systems, field devices, and emerging transportation technologies.

Connectivity Objectives

The Michigan Mobility 2045 plan notes that MDOT’s mission is *“serving and connecting people, communities and the economy through transportation.”* While this mission is centered on physical connectivity, MDOT’s transportation system also provides the foundational platform for communications infrastructure. The statewide network of transportation ROW and associated assets enables the deployment of fiber infrastructure, which can support access to advanced telecommunications technologies

and services for remote communities, helping ensure they remain vital and prosperous.
(40)

Integrated Strategic Value

Alignment across financial, operational, and connectivity considerations indicates that middle-mile fiber infrastructure can support multiple MDOT objectives. Fiber infrastructure supports operational needs while enabling commercial use of excess capacity, with distinctions between utilizing existing assets and developing new infrastructure resulting in different timelines, scales, and implementation considerations.

Two fiber-related mechanisms are advanced for further evaluation:

- Existing Fiber and Conduit Leasing, which assesses the potential to utilize available capacity within current MDOT assets; and
- New Middle-Mile Fiber Build and Commercialization, which assesses the development of new middle-mile fiber infrastructure designed to meet operational needs while enabling commercial use of excess capacity.

Subsequent sections examine these pathways in greater detail, including market considerations, indicative commercial potential, and key implementation factors.

6. Methodology

A structured, multi-step analytical approach was applied to evaluate MDOT's existing fiber and conduit assets and potential new middle-mile fiber deployment scenarios at a corridor level. The methodology was designed to support corridor selection and prioritization, followed by planning-level assessment of indicative demand, costs, and potential commercial outcomes.

The analysis is organized around three core components:

- corridor selection and prioritization to define the geographic focus of the assessment;
- evaluation of indicative commercial potential associated with new middle-mile deployment; and
- evaluation of indicative commercial potential associated with leasing existing excess fiber and conduit assets, reflecting the differing cost structures and market dynamics of existing infrastructure.

Results are presented in a consistent format to support comparison across corridors and commercialization approaches.

6.1 Corridor Selection and Prioritization

A three-step, funnel-based corridor selection approach was used to narrow the statewide highway network to a focused set of corridors for detailed analysis. The approach progresses from broad screening to more refined evaluation, ensuring that subsequent analysis is concentrated on corridors most relevant to MDOT's existing assets and potential commercialization considerations.

6.1.1 Initial Screening – Presence of MDOT Assets

The corridor selection process began with a statewide review of interstate and state highway corridors to identify locations where MDOT already owns fiber or conduit infrastructure. Only corridors with documented MDOT-owned fiber or conduit, based on MDOT-provided mapping, were carried forward for further consideration.

This initial screening step established a baseline set of corridors grounded in existing assets and ensured that subsequent analysis focused on locations where MDOT infrastructure is present.

6.1.2 Preliminary Corridor Evaluation

The baseline corridor set was then evaluated using a set of factors to support comparative screening and prioritization. These factors were selected to reflect conditions that influence potential middle-mile commercialization opportunities at a planning level and included:

- Characteristics of the existing addressable market,
- Potential for market growth or expansion,

- Presence and continuity of MDOT-owned fiber assets, and
- Degree of existing fiber competition along the corridor.

Each corridor was reviewed using these factors to identify a smaller set of corridors with relatively stronger commercial potential for subsequent analysis.

6.1.3 Final Corridor Selection

This step integrated the screening results with additional quantitative inputs, including high-level market-share considerations reflecting existing competition, alongside MDOT-provided inputs and programmatic considerations. This review assessed whether analysis should be conducted at a full-corridor level or focused on specific corridor segments, depending on asset continuity and market conditions.

The resulting set of corridors represents the geographies advanced for detailed assessment of indicative commercial potential, including both new middle-mile deployment scenarios and leasing opportunities associated with existing MDOT fiber and conduit assets, as described in the following sections.

6.2 Build and Commercialize Middle Mile: Indicative Demand and Revenue Analysis

Following corridor selection and prioritization, a structured four-step analytical framework was applied to assess the indicative demand and revenue potential associated with a potential new middle-mile fiber deployment. The analysis was conducted at a planning level to support relative comparison across corridors rather than to produce implementation-ready forecasts.

The framework is designed to answer four fundamental questions that shape potential commercial outcomes for a new middle-mile deployment:

- (1) Relevant use cases and customer segments;
- (2) Relative scale of addressable market along each corridor;
- (3) Competitive context influencing potential capture; and
- (4) Portion of indicative commercial potential that may reasonably be associated with MDOT.

Each step is described in further detail in the subsections that follow.

6.2.1 Use Case Exploration

Use case exploration was conducted to identify, at a high level, the types of customers that may be served by a potential new middle-mile fiber network and the connectivity services typically associated with each group. This step focuses on how fiber infrastructure deployed along corridors can support common middle-mile functions, such as long-haul transport, enterprise connectivity, data transport, and wireless backhaul. The analysis considers a representative set of customer segments based on typical market practices across wireline and wireless connectivity services. While additional use cases may exist, the focus on a limited number of widely observed

segments supports a planning-level feasibility assessment rather than an exhaustive evaluation of all potential applications. These segments provide the foundation for subsequent steps in the analysis, including addressable market estimation, competitive context, and indicative commercial potential.

Table 3 summarizes the customer segments and representative middle-mile use cases considered in the analysis.

Table 3 - Illustrative Middle-Mile Customer Segments and Use Cases.

Segment	Brief Description	Use Case Example
Carriers	National, regional, and local wireless carriers, as well as fiber connectivity companies and national fiber wholesalers	Carriers lease conduit, which allows them to pull their own fiber along the proposed corridors and, in turn, build connectivity
	Transport carriers offer long-haul fiber connectivity to move cellular data over long distances	
Enterprises	Both large and small- and medium-scale businesses having dedicated IT departments, and high bandwidth needs	Enterprises lease both dark and lit fiber for quality bandwidth and to build connectivity between two different locations
	Includes governmental, educational, and medical entities	
Data Centers	Data hosting providers and data warehouses that directly use or own fiber, as they require ultra-high bandwidth and redundant fiber connections to ensure connectivity	Data centers lease dark fiber to build connectivity between multiple data center locations
Tower Operators	Companies that own towers which are leased or rented out to wireless carriers under long-term contracts	Tower operators invest in building backhaul connectivity provided by fiber infrastructure to support carriers' networks
Small Cell Operators	Usually owned by carriers, small-cell sites consist of small radio equipment and antennas used to transmit data to and from a wireless device	Small-cell operators want cell-site backhaul connectivity by connecting fiber strands to small cell-nodes

6.2.2 Addressable Market

Following use case exploration, the addressable market was assessed to estimate the relative scale of potential demand across customer segments and service categories along the selected corridors. The objective of this step was to understand the overall magnitude of potential market opportunity by corridor, rather than to estimate how much of that demand MDOT may ultimately capture.

Potential customers associated with each segment were identified within standardized three-mile and five-mile buffers along each corridor to support consistent corridor-level comparison. Customer counts were used to characterize the presence and relative distribution of relevant customer types along the selected corridors.

For each customer segment, representative service types—such as conduit access, dark fiber, and lit services—were associated based on typical middle-mile use cases. Indicative pricing inputs were then applied using a volume × rate approach, where volume reflects the number of addressable customers and rate reflects assumed service pricing. Specific rate values are not presented, as the analysis is intended to support planning-level comparison rather than detailed market forecasting.

The resulting addressable market estimates represent total potential market size by corridor, independent of current service provision, competitive capture, or delivery feasibility. These estimates provide a high-level view of relative market scale and inform subsequent analysis of competition and indicative commercial potential.

6.2.3 Competitive Landscape

While the addressable market assessment provides insight into the overall scale of potential demand along each corridor, not all demand can reasonably be served by a new middle-mile deployment. Accordingly, a competitive landscape assessment was conducted to understand existing fiber competition and to estimate, at a planning level, the portion of market opportunity that may be realistically available to MDOT.

The competitive assessment focused on evaluating the presence of existing fiber infrastructure in proximity to the selected corridors and understanding how that infrastructure overlaps with identified customer locations. The intent of this step was to incorporate competitive context into the analysis in a structured, consistent manner, supporting relative comparison across corridors rather than detailed market share prediction.

To translate total addressable demand into a competition-adjusted opportunity, the competitive landscape analysis followed a four-step process, summarized below.

- **Step 1: Create Corridor Segments:** Each selected corridor was divided into one-mile segments. Three-mile and five-mile buffers were applied on both sides of each segment to define the geographic area used for consistency in subsequent analysis.
- **Step 2: Identify Competing Fiber Networks and Customers:** Existing fiber infrastructure overlapping each buffered segment was identified, and its presence was quantified based on the extent of fiber networks and the number of associated customers within each segment.

- **Step 3:** Quantify Fiber Network Overlap: The degree of overlap between the proposed middle-mile corridor and existing fiber networks was assessed at a segment level to understand competitive conditions along each corridor.
- **Step 4:** Calculate Competition-Adjusted Opportunity: Segment-level results were combined using weighted averages across customer categories to develop an indicative, competition-adjusted view of potential market opportunity by corridor.

Together, these steps convert total addressable demand into an indicative, competition-adjusted market opportunity that serves as an input to the subsequent assessment of commercial potential for MDOT.

6.2.4 Market Potential for MDOT

Market potential represents an indicative, planning-level estimate of commercial opportunity associated with a potential new middle-mile fiber deployment along selected corridors. The analysis is intended to support relative comparison across corridors and scenarios and to inform MDOT's strategic understanding of potential opportunity. It does not represent an investment-grade forecast or a determination of project feasibility under a specific delivery or financing structure.

As described earlier in the report, outcomes were evaluated under conservative and optimistic scenarios to reflect uncertainty in market conditions, pricing dynamics, competitive response, and delivery considerations. Results were developed using both three-mile and five-mile buffer assumptions to assess geographic sensitivity; to maintain conciseness and present a conservative view, only three-mile buffer results are presented.

The market potential assessment distinguishes between gross commercialization potential and net commercialization potential, representing successive stages in evaluating indicative outcomes.

Gross Commercialization Potential

Gross commercialization potential represents the portion of the total addressable market that may be reasonably accessible after accounting for existing competitive conditions along each corridor. It reflects an indicative view of potential revenue opportunity prior to consideration of capital investment, operating costs, or delivery structure.

$$\text{Gross Commercialization Potential} = \text{Addressable Market} \times \text{Fair Share}$$

Net Commercialization Potential

Net commercialization potential represents gross commercialization potential adjusted for indicative costs associated with constructing and operating a new middle-mile fiber network. This measure provides a high-level view of potential value after accounting for anticipated build and operating expenditures.

$$\text{Net Commercialization Potential} = \text{Gross Commercialization Potential} - \text{CAPEX} - \text{OPEX}$$

Net commercialization potential is presented at a planning level and does not account for financing costs, transaction structures, procurement approaches, or commercial terms that may apply under specific implementation models. Accordingly, it reflects an indicative assessment of commercial capacity rather than project-specific financial viability.

Interpretation of Results

Results are presented in nominal and net present value (NPV) terms to support interpretation of potential future value relative to today's dollars. Underlying assumptions were developed as part of the analytical process and are not disclosed in this report.

These outputs provide a conservative and transparent view of indicative commercial potential, enabling comparison across corridors and commercialization approaches while recognizing the limitations inherent to a planning-level assessment.

6.3 Lease Existing Fiber and Conduit: Indicative Demand and Revenue Analysis

The indicative commercial potential associated with leasing MDOT's existing fiber and conduit assets was assessed using the same core analytical approach applied to the new middle-mile deployment analysis. This ensures methodological consistency and supports planning-level comparison across commercialization approaches.

While the overall analytical structure remains unchanged, inputs and assumptions were adjusted to reflect the distinct characteristics of existing infrastructure. These adjustments recognize that the commercial potential of existing fiber and conduit may differ from that of newly constructed assets due to factors such as asset continuity, available capacity, condition, and market positioning. The market value of existing assets was not formally assessed, as no physical inspection or detailed condition review of the fiber or conduit was conducted as part of this study.

The same set of prioritized corridors identified through the corridor selection and prioritization process was evaluated for existing fiber and conduit leasing opportunities. However, unlike the new middle-mile analysis—which evaluates commercialization potential assuming a continuous, corridor-wide deployment scenario for planning and comparison purposes—the existing asset analysis is limited to discrete corridor segments where MDOT-owned fiber or conduit is currently present. Where assets are fragmented or discontinuous along a corridor, the resulting indicative commercial potential reflects this reduced serviceable footprint and may therefore be lower than comparable new-build scenarios.

6.3.1 Methodology Adjustments for Existing Fiber and Conduit

The following refinements were applied to adapt the methodology for existing asset commercialization. These refinements affect inputs and assumptions only; the underlying analytical sequence remains consistent with the new middle-mile analysis.

- **Commercial Focus:** The evaluation is limited to leasing MDOT-owned fiber and conduit assets already deployed within the ROW, rather than constructing new infrastructure.
- **Corridor Scope:** Analysis is restricted to corridor segments where MDOT-owned fiber or conduit assets are present, based on MDOT-provided mapping.
- **Addressable Market Definition:** Addressable market estimates are constrained to customers adjacent to segments with existing assets, resulting in a narrower geographic scope relative to the new middle-mile deployment analysis.
- **Competitive Context:** Market capture assumptions were adjusted to reflect competitive conditions applicable to existing infrastructure and the reduced geographic reach of fragmented assets.
- **Service Assumptions:** Service-level expectations were adjusted to reflect potential differences in competitiveness between existing infrastructure and newly constructed middle-mile assets. These adjustments are indicative and do not constitute a pricing assessment.
- **Available Capacity:** Only excess fiber strands and conduit capacity, after accounting for MDOT operational requirements and reserved capacity, were considered available for commercialization.
- **Capital Expenditures (CAPEX):** Only minor, asset-specific costs potentially required to enable leasing—such as segregation or accommodation of MDOT operational fiber—are reflected at a planning level.
- **Operating Expenditures (OPEX):** Operating and maintenance assumptions were adjusted to reflect the higher relative administrative, repair, and asset-management requirements typically associated with leasing existing infrastructure.
- **Scenarios and Geography:** As with the new middle-mile analysis, existing asset commercialization was evaluated under conservative and optimistic scenarios and across three-mile and five-mile buffer assumptions. To maintain consistency and brevity, only three-mile buffer results are presented in this report.

These adjustments aim that the analysis reflects the more constrained indicative commercial potential typically associated with leasing existing fiber and conduit assets, while preserving a consistent methodological framework for comparison with potential new middle-mile deployment scenarios.

6.4 Summary of Data Inputs

The following subsections describe the primary data inputs used in the assessment, which inform corridor selection, market evaluation, and indicative commercialization modeling.

6.4.1 MDOT Existing Fiber and Spare Conduit Assets

MDOT provided information describing the location and extent of existing fiber infrastructure within the state highway ROW. Available information was provided in the

form of summary fiber maps and corridor-level depictions; geospatial data files (e.g., KMZ or GIS formats) were not available for use in this assessment. The information identified MDOT-owned fiber infrastructure along selected highway corridors in three primary geographic areas.

MDOT-owned fiber infrastructure is shown along the following highway corridors, based on the information depicted in the provided maps:

- West Michigan Fiber: Major corridors including US-131, I-96, I-196, M-6, and M-37
- Southeast Michigan Fiber: Major corridors including I-94, I-96, I-69, I-275, I-696, M-8, M-10, M-14, and M-59
- Lansing Area Fiber: US-127

The corridor-level fiber information was used as an input to corridor selection and prioritization, informing which segments were evaluated further. The same asset descriptions were subsequently used to assess the indicative commercial potential of leveraging existing MDOT-owned fiber and associated conduit infrastructure, consistent with MDOT's interest in understanding opportunities related to existing assets.

6.4.2 Market Context and Commercial Assumptions

Understanding potential demand and competitive conditions along the evaluated corridors is a key input to the commercialization assessment. This includes characterizing broad customer categories, general demand patterns, and the presence of existing fiber providers near the corridors to support estimation of indicative addressable market and relative positioning.

For purposes of this analysis, aggregated market information and industry reference data were used to inform corridor-level market context. These inputs were applied at a high level to assess relative market scale, competitive density, and potential uptake, supporting comparative analysis across corridors rather than detailed market forecasts or identification of individual providers or customers.

Pricing-related assumptions were developed to support indicative modeling under different scenarios. These assumptions addressed factors such as service categories, indicative pricing levels, contract duration, adoption patterns, and potential pricing evolution over time. Consistent with the intent of this study, these inputs were used to illustrate relative ranges of commercialization potential and to compare outcomes across corridors and approaches, rather than to define specific pricing strategies or commercial terms.

6.4.3 New Middle Mile Construction Cost

Indicative middle-mile construction cost estimates were used to support evaluation of the potential commercialization of new fiber deployment along selected corridors. Costs were applied at a high level to enable comparative analysis and scenario evaluation, rather than to develop project-specific engineering or budgeting estimates.

Construction cost assumptions were informed by nationally recognized fiber deployment benchmarks published in the Fiber Broadband Association's Fiber Deployment Annual

Report (2024). The report summarizes construction cost experience across a broad range of deployment environments and methods and was used to establish order-of-magnitude cost assumptions for aerial and underground middle-mile construction. Actual construction costs may vary based on corridor-specific conditions, design requirements, permitting, and implementation approach. ([41](#))

6.4.4 Scenario Analysis Inputs and Variables

The analysis presented in this report is intended to provide an indicative view of commercial potential rather than precise forecasts or implementation-ready estimates. Given uncertainty related to market behavior, pricing dynamics, competitive response, delivery structures, and policy considerations, results are expressed as ranges rather than single point estimates.

To reflect this uncertainty, the analysis incorporates two layers of variability. First, key inputs and assumptions were evaluated under two scenarios—a conservative (low) case and an optimistic (high) case—to illustrate how outcomes may vary across differing demand, pricing, and competitive conditions.

Second, the analysis considers geographic sensitivity by evaluating addressable market and indicative market share under different proximity assumptions. Potential customers were identified within both three-mile and five-mile buffers on either side of each corridor. While larger buffer distances increase the pool of addressable entities, they also reflect greater competitive presence, which can reduce indicative market share.

Accordingly, analytical outputs were developed for both buffer distances and both scenarios. To maintain focus and conciseness, only results based on the three-mile buffer are presented. This approach reflects a more conservative view of indicative commercial potential and provides a consistent basis for comparing corridors and commercialization approaches.

7. Findings

Building on the data inputs and analytical framework described in the preceding section, this section presents the results of the corridor-level commercialization assessment.

7.1 Corridor Selection and Prioritization Results

Application of the corridor selection and prioritization process resulted in a focused set of corridors advanced for detailed analysis. Following initial screening, preliminary corridor evaluation, and final corridor selection, the following corridors were identified:

- Selected Interstates: I-75, I-94, I-96, I-69, and I-196
- Selected State Highway: US-131

The selected corridors reflect those that demonstrated relative strength across multiple high-level considerations, including surrounding market characteristics, potential scale of commercial demand, competitive conditions, and MDOT-provided inputs and policy considerations. These corridors were carried forward based on their suitability for planning-level evaluation of indicative commercial potential under both new middle-mile deployment and existing asset leasing scenarios.

For US-131, analysis was limited to the segment between Grand Rapids and Kalamazoo, consistent with MDOT's input applied during final corridor selection. Other segments of US-131 were not included. All selected interstate corridors were evaluated across their full corridor length.

These corridors were carried forward into subsequent analytical steps, including use-case exploration, addressable market assessment, competitive landscape analysis, and indicative cost and revenue estimation.

7.2 Build and Commercialize Middle Mile Indicative Commercial Potential

This section presents the indicative commercial potential results for a hypothetical new middle-mile fiber build and commercialization scenario along the selected corridors. The results follow the same analytical sequence described in the methodology, moving from use-case exploration to addressable market estimation, to competitive landscape assessment, and ultimately to indicative commercial potential.



Figure 1 - Corridor Selection and Prioritization Results

The results are intended to support planning- and feasibility-level comparison across corridors, rather than detailed design, delivery, or investment evaluation. They illustrate how indicative commercial potential varies by corridor based on differences in market characteristics, competitive conditions, and geographic coverage assumptions.

Given the number of corridors evaluated and the breadth of underlying analytical outputs, results are presented selectively to support clarity and readability. Representative examples are shown for select corridors, with summary results incorporated into subsequent corridor-level analyses.

7.2.1 Use Case Exploration

Based on the customer segments and use cases defined in the methodology, potential customers were identified and quantified to establish the total pool of addressable customers that could be served by a hypothetical new middle-mile fiber build along the selected corridors.

Potential customers were identified within standardized three-mile and five-mile buffers extending from each corridor to reflect geographic proximity to a corridor-based fiber alignment and potential serviceability. Customer identification was performed at the segment level, consistent with the use cases defined earlier in the report and subsequently aggregated to represent the total potential customer universe at the corridor level assuming a new middle-mile network were available.

For presentation purposes, Table 4 presents the resulting potential addressable customer counts for I-75 by customer segment. The same customer identification and aggregation approach was applied consistently across all selected corridors, with results for other corridors incorporated into subsequent analyses and corridor-level summaries.

Table 4 - Potential Addressable Customers – I 75 (Sample Corridor)

I-75 Overview		
Potential Addressable Customers	3-Mile Buffer	5-Mile Buffer
Existing Third-Party Fiber (miles)	7,753	10,760
Carriers (Conduit, Dark Fiber, Lit Fiber)	34	34
Large Enterprises (Dark Fiber)	434	552
Data Centers (Dark Fiber)	10	13
Small & Medium Enterprises (Lit Fiber)	5,547	7,180
Towers (Lit Fiber)	167	215
Small Cell Installations (Lit Fiber)	TBD	TBD

While small cell operators were identified as a relevant customer segment during use-case exploration, statewide data on the number and location of small cell deployments are limited. As a result, small cell installations are not reflected in the quantified customer counts presented above. This limitation does not affect the overall analytical framework and is addressed conservatively in subsequent steps of the analysis.

7.2.2 Addressable Market

The addressable market results illustrate the relative scale and distribution of potential demand that could be served by a corridor-based middle-mile fiber network. These results reflect the total magnitude of potential opportunity by customer segment and service type prior to any competitive adjustment or financial evaluation.

Addressable market estimates were developed by applying indicative service pricing constructs to the customer counts identified within standardized corridor buffers. Results are presented on a three-mile buffer basis to reflect a conservative proximity assumption, consistent with the approach described earlier in this report. While five-mile buffers were also evaluated, only three-mile results are shown to maintain conciseness and present a conservative view of potential demand.

Spatial Distribution of Addressable Market

The spatial distribution of addressable market is illustrated through corridor-level heat maps for I-75 and I-94, shown as representative examples. The figures demonstrate that addressable demand is not uniformly distributed along corridor length. Higher concentrations are observed near major population centers and regional economic hubs, with lower densities in more rural segments.



Figure 2 - I-94 Addressable Market
[3-Mile Buffer]



Figure 3 - I-75 Addressable Market
[3-Mile Buffer]

Addressable Market by Service Type

When evaluated by service type, lit fiber services represent the largest share of the addressable market across corridors, followed by dark fiber, with conduit-based opportunities comprising a smaller portion of total demand. This distribution reflects the broader range of customer segments that rely on lit services relative to the more specialized use cases associated with dark fiber and conduit leasing.

7.2.3 Competitive Landscape

The competitive landscape assessment evaluates the presence, density, and distribution of existing third-party fiber infrastructure along the selected corridors to understand relative market competitiveness. The assessment focuses on identifying where existing fiber networks overlap with the selected corridors and the relative scale of infrastructure within defined service areas.



Figure 4 - Existing 3rd Party Owned Fiber within 3-Mile Buffer of I-94

For illustration, Figure 4 presents existing third-party-owned fiber within a three-mile buffer of I-94, highlighting the concentration and continuity of overlapping fiber infrastructure along the corridor. The figure demonstrates that competitive intensity varies materially within a corridor, with higher concentrations of existing fiber observed near major population centers and key interconnection points.

To support corridor-level comparison, the analysis also reviewed existing fiber route mileage within defined buffer areas. This perspective highlights relative differences in the scale of incumbent infrastructure across corridors and indicates where competitive conditions are driven by a smaller number of large networks versus more fragmented infrastructure footprints.

Together, these views indicate that the selected corridors exhibit varying levels of overlapping third-party fiber infrastructure. This competitive context directly informs the indicative market-share assumptions applied in subsequent analysis steps. The I-94 example further illustrates that competitive conditions can vary significantly within a single corridor, reinforcing the importance of corridor segmentation in later stages of the analysis.

Table 5 - Fair Share Results

Fair Share Results (%)		
Corridor	3-Mile	5-Mile
I-69	6%	5%
I-75	5%	4%
I-94	4%	3%
I-96	4%	2%
I-196	5%	3%
US-131	2%	1%

Indicative market-share assumptions decline when expanding the analysis from a three-mile to a five-mile buffer. While broader geographic coverage increases the total addressable market, it also captures a greater extent of existing third-party fiber infrastructure, resulting in higher competitive intensity and lower indicative market share.

Under the three-mile scenario, I-69, I-75, and I-196 exhibit the highest indicative market-share assumptions, reflecting comparatively lower competitive pressure relative to total addressable demand along those corridors.

7.2.4 Market Potential (Indicative Commercial Potential)

This section presents the indicative commercial potential associated with a hypothetical build-and-commercialize new middle-mile fiber network along the selected corridors. The results provide an order-of-magnitude view of potential opportunity and are intended to support planning-level comparison across corridors and scenarios, rather than represent investment-grade forecasts or commitments to proceed.

The results reflect application of the addressable market and competitive landscape analyses described in prior sections, combined with a consistent set of assumptions related to market capture and indicative cost treatment. Outcomes are presented as ranges, with lower-bound values reflecting conservative assumptions and upper-bound values reflecting more favorable demand and competitive conditions.

Two measures of market potential are presented:

- Indicative Gross Commercialization Potential, which represents the portion of the addressable market estimated to be achievable after accounting for competitive conditions; and
- Indicative Net Commercialization Potential, which reflects gross potential after subtracting indicative capital (CAPEX) and operating (OPEX) costs associated with constructing and operating a middle-mile network.

Net commercialization values are presented prior to consideration of financing structures, transaction costs, or specific commercialization terms (e.g., revenue-sharing or concession arrangements). Results shown in this section reflect the three-mile buffer scenario only, which provides a conservative view of indicative opportunity.

All results assume a 25-year service life for the middle-mile network. Nominal values represent cumulative value over the full analysis period. For additional context, Net Present Value (NPV) results are also presented using a 5.0 percent discount rate, intended to reflect a long-term, public-sector-oriented benchmark.

Table 6 - Build & Commercialize Middle Mile [3-Mile Buffer]

Build & Commercialize Middle Mile [3-Mile Buffer]				
Route Name	Miles	Addressable Market	Gross Commercialization Potential	Net Commercialization Potential
I-75	394	\$7.7B - \$12B	\$185M - \$320M	\$43M - \$124M
I-94	272	\$7.3B - \$11.4B	\$167M - \$291M	\$53M - \$128M
I-96	188	\$6B - \$9.5B	\$139M - \$242M	\$51M - \$113M
I-69	207	\$2.8B - \$4.7B	\$75M - \$137M	\$9M - \$46M
I-196	81	\$2.2B - \$3.6B	\$57M - \$106M	\$21M - \$49M
US-131	54	\$2.4B - \$3.8B	\$61M - \$112M	\$13M - \$43M
Total [Nominal]		\$28.4B - \$45.0B	\$685M - \$1,208M	\$190M - \$504M
Total [NPV]		\$14.2B - \$22.0B	\$337M - \$580M	\$11M - \$157M



Key Takeaways

- The results indicate a substantial aggregate commercial opportunity across the selected corridors under conservative proximity and competition assumptions.
- I-94, I-75, and I-96 collectively contribute approximately 74% of total net commercialization potential at the midpoint estimate.
- The presented ranges highlight the sensitivity of outcomes to underlying assumptions, with lower-bound values reflecting conservative conditions and upper-bound values illustrating more favorable demand and market capture scenarios.

7.3 Lease Existing Fiber and Conduit Indicative Commercial Potential

This section presents the indicative commercial potential associated with leasing MDOT's existing fiber and conduit assets along the selected corridors. The analysis applies the same overarching analytical framework used for the new middle-mile build scenario to ensure consistency and comparability across commercialization approaches. Inputs, assumptions, and variables were recalibrated to reflect the distinct characteristics and limitations of existing infrastructure, as described earlier in this report.

Scope and Key Assumptions

The existing asset commercialization analysis considers only corridor segments where MDOT-owned fiber or conduit is present. Asset lengths are estimated based on MDOT-provided PDF maps; precise geospatial alignment and detailed asset condition data were not available and were therefore not incorporated. As a result, the results should not be interpreted as a formal market valuation of existing assets.

Commercialization potential reflects excess usable capacity only, with assumptions provided by MDOT applied consistently across corridors, including:

- Approximately 60 excess fiber strands assumed available where fiber is present, with one-half assumed to be commercially usable for leasing; and
- Limited spare conduit availability, with only excess conduit capacity considered available for commercialization.

As with the new middle-mile build analysis, outcomes were evaluated under conservative (low) and optimistic (high) cases to reflect uncertainty in demand, pricing, and operating conditions. Results shown reflect the three-mile buffer scenario only, which provides a conservative view of indicative opportunity and supports concise presentation.

Nominal values represent the sum of projected values over a 25-year assumed service life for the assets. NPV results are also presented using a 5.0 percent discount rate, consistent with the new build analysis.

Table 7 - Lease Existing Fiber / Conduit [3-Mile Buffer]

Lease Existing Fiber / Conduit [3-Mile Buffer]				
Route Name	Miles	Addressable Market	Gross Commercialization Potential	Net Commercialization Potential
I-75	105	\$2.6B – \$3.8B	\$33M – \$50M	\$11M – \$20M
I-94	90	\$2.0B – \$2.8B	\$24M – \$37M	\$8M – \$14M
I-96	58	\$1.2B – \$1.6B	\$14M – \$22M	\$4M – \$8M
I-69	35	\$0.2B – \$0.2B	\$4M – \$5M	\$0M – \$1M
I-196	15	\$0.5B – \$0.7B	\$7M – \$10M	\$3M – \$4M
US-131	20	\$0.3B – \$0.5B	\$5M – \$7M	\$1M – \$3M
Total [Nominal]		\$6.8B – \$9.7B	\$86M – \$132M	\$27M – \$50M
Total [NPV]		\$3.5B – \$4.9B	\$43M – \$65M	\$7M – \$18M



Key Takeaways

- Commercial value from existing fiber and conduit leasing is substantially smaller than new middle-mile build potential, reflecting limited coverage, fragmented assets, constrained capacity, and reduced scalability.
- I-75, I-94, and I-96 account for approximately 84% of total net commercialization potential at the midpoint estimate, driven by longer continuous asset segments and larger adjacent markets.
- Gross commercialization potential experiences minimal reduction from capital costs, as new construction is not required; however, net outcomes are reduced by ongoing operating, maintenance, and administrative requirements associated with managing and leasing existing infrastructure.
- While existing asset commercialization alone is unlikely to represent a standalone, scaled solution, it may provide incremental near-term value and could be leveraged alongside or in advance of new middle-mile deployment strategies.

Consistent with the new middle-mile build analysis, results are indicative and planning-level in nature and are presented prior to consideration of financing structures, transaction costs, insurance, legal expenses, or specific commercial terms that may be negotiated with private parties.

7.4 Summary of Findings

The analysis indicates that MDOT has an opportunity to leverage fiber assets—both existing and newly constructed—to support potential revenue-generating activities over time. The results show that different fiber commercialization approaches present distinct value profiles, timelines, and scalability, providing MDOT with flexibility in how such opportunities could be considered.

At a high level, the findings highlight two complementary pathways. Building and commercializing a new middle-mile fiber network exhibits substantially greater long-term indicative commercial potential, driven by broader coverage and access to a larger addressable market. In contrast, leasing existing fiber and conduit assets presents a more limited, near-term opportunity, constrained by asset continuity, excess capacity, and localized coverage.

The results highlight an opportunity MDOT may choose to evaluate and advance further over time, subject to strategic priorities, implementation considerations, and market conditions.

8. Discussion

Section 7 presented the indicative commercialization results for fiber-based opportunities across the selected corridors. Building on these findings, this section interprets the results in the context of the broader assessment, which identified fiber commercialization as the alternative revenue approach closely aligned with MDOT's financial, operational, and connectivity objectives. The discussion focuses on what the results imply for MDOT, including the scale of opportunity and the key factors that may influence potential outcomes. These considerations provide context for understanding the opportunities and associated dependencies related to fiber commercialization.

8.1 Alternative Revenue Assessment

Across the alternative revenue concepts reviewed in this study—including renewable energy uses, EV charging, ITS data-related concepts, air rights, wireless tower leasing, and ROW occupancy compensation—fiber commercialization emerges as the alternative most closely aligned with MDOT's core financial, operational, and connectivity objectives. Compared to other concepts, which may be constrained by regulatory limitations, site-specific feasibility, or limited scalability, fiber-based approaches leverage MDOT-controlled ROW in a manner that supports scalable deployment aligned with existing infrastructure and asset management practices.

The qualitative screening and literature review narrowed the broader set of alternatives and advanced two fiber-related mechanisms for further evaluation: (i) leasing of existing fiber and conduit assets and (ii) development and commercialization of new middle-mile fiber infrastructure.

While both pathways were evaluated, they represent different levels of opportunity. Leasing existing assets provides a limited, corridor-specific opportunity constrained by asset continuity and available capacity. In contrast, development of a new middle-mile fiber network enables broader corridor coverage and access to a significantly larger addressable market, forming the primary basis for the commercial opportunity assessed in the following sections.

This framing establishes fiber commercialization—particularly through new middle-mile development—as a scalable, corridor-based opportunity that is evaluated in detail in the subsequent analysis.

8.2 Interpretation of Commercial Opportunity and Commercialization Pathways

The indicative commercialization analysis indicates that fiber-based infrastructure presents a meaningful commercial opportunity under both evaluated approaches. Over a 25-year period, leasing existing fiber and conduit assets is estimated to generate approximately \$27 million to \$50 million (nominal) in net commercialization potential, compared to approximately \$190 million to \$504 million (nominal) for new middle-mile

fiber development. These results are indicative and reflect conservative assumptions applied consistently across the analysis.

Table 8 - Indicative Commercial Potential across six corridor

Indicative Commercial Potential across 6 corridors (I-75, I-94, I-96, I-69, I-196, and US-131)					
Lease Existing Fiber / Conduit	Gross Revenue Potential	Net Revenue Potential	Build & Commercialize Middle Mile	Gross Revenue Potential	Net Revenue Potential
25 Year Total [Nominal]	\$86M – \$132M	\$27M – \$50M	25 Year Total [Nominal]	\$685M – \$1,208M	\$190M – \$504M
25 Year Total [NPV]	\$43M – \$65M	\$7M – \$18M	25 Year Total [NPV]	\$337M – \$580M	\$11M – \$157M

The results highlight two distinct approaches through which MDOT could generate value from fiber assets. Leasing existing fiber and conduit assets represents a lower-investment pathway that can be advanced in the near-term using infrastructure already in place. This approach supports MDOT’s financial objective through incremental revenue generation but is constrained by asset continuity and excess capacity, resulting in a more limited and localized contribution.

In contrast, development and commercialization of a new middle-mile fiber network represents a broader and more scalable opportunity. By enabling expanded coverage and access to a significantly larger addressable market, this approach drives materially higher long-term revenue potential. It also aligns more strongly with MDOT’s long-term objectives by supporting corridor-wide infrastructure development and sustained value generation over time.

The distinction between these approaches reflects not only differences in scale, but also differences in timing and strategic role. Leasing existing assets provides a pathway for near-term value capture with lower complexity, while new middle-mile development requires greater upfront investment and coordination but unlocks a significantly larger long-term opportunity.

While the preceding discussion focuses on differences in revenue scale and timing, the two approaches also differ in how they align with MDOT’s objectives and in their overall implementation characteristics. These distinctions provide additional context for understanding the role each pathway may play within a broader commercialization strategy.

Table 9 - Fiber Value Generation Approaches

Fiber Value Generation Approaches	Lease Existing Fiber/Conduits	Build and Commercialize Middle Mile
Brief Description	~400 miles of excess fiber/conduit. Leasing these assets—with minimal investment—can generate recurring revenue.	Build new middle mile fiber—directly or via P3—unlocking more revenue and providing new operational infrastructure.
Revenue Potential	Limited value creation; quick wins	Maximizes long-term recurring revenue
Monetization Approach	Passive (leasing to carriers/ISPs)	Active (partnerships, direct commercialization)
Alignment with MDOT's Financial Goal	Low–Medium	High
Alignment with MDOT's Operational Goal	None – Low	High
Alignment with MDOT's Connectivity Goal	None – Low	High
Upfront Investment Requirement	Low	High
Implementation Horizon	Short to medium term	Medium to long term
Constraints	Depending on existing assets	Depending on market interest
Complexity / Level of Coordination	Low	High
Risk Level	Low	Medium
Admin Requirements	Low–Medium	Medium–High
Sample Delivery Models	In-house leasing team / 3rd party broker	Design-Build-Operate-Maintain-Commercialization
Summary Takeaway	Quick wins, minimal investment, moderate revenue	Higher long-term returns, support MDOT operations, require more investment

The comparison underscores that the two approaches differ not only in scale, but also in their role within a broader commercialization strategy. Leasing existing assets provides a mechanism for incremental, near-term value capture, while development of a new middle-mile network enables greater long-term revenue potential and broader system-level impact.

Overall, the results indicate that fiber commercialization presents a meaningful opportunity for MDOT, with most of the long-term value driven by new middle-mile development, complemented by targeted use of existing asset leasing where conditions allow.

8.3 Factors Affecting Analysis and Results

The preceding analysis identifies a measurable commercial opportunity associated with fiber commercialization, based on a consistent set of planning-level assumptions. As with any high-level assessment, the results are influenced by a range of underlying inputs, including market conditions, pricing dynamics, asset characteristics, delivery structures, procurement strategies, and applicable legal and regulatory considerations.

While these assumptions are appropriate for comparative evaluation, actual outcomes may vary depending on how these factors evolve over time and are addressed through implementation. Further refinement of these elements can help enhance confidence in projected outcomes and support more informed decision-making as MDOT evaluates potential commercialization pathways.

The following sections summarize the primary factors that may influence the scale, timing, and realization of fiber commercialization opportunities.

8.3.1 Market Demand & Participation

A key factor influencing commercialization outcomes is the level of market interest and participation from private developers, operators, and service providers. Interest may vary based on geography, asset type (existing versus new), and the structure of the proposed delivery model.

Private-sector participation is shaped by several considerations, including perceived risk, expected returns, contract duration, governance structure, and clarity regarding access to ROW and infrastructure. While this analysis assumes a reasonable level of participation under illustrative scenarios, actual market response may vary depending on how these factors are addressed.

Further engagement with market participants, such as through a structured market sounding process, could provide additional insight into potential interest levels and preferred commercial structures. This may include perspectives on willingness to participate under different models, approaches to risk- and revenue-sharing, and overall alignment between MDOT's objectives and market expectations.

Such inputs can support refinement of underlying assumptions and help inform how fiber commercialization opportunities may be structured and advanced over time.

8.3.2 Pricing & Revenue Assumptions

Market pricing for conduit access, dark fiber, and lit services is inherently dynamic and influenced by a range of external factors, including technological evolution, regional supply and demand, and broader telecommunications market trends.

The pricing assumptions applied in this analysis are based on benchmarking and internal modeling and were used consistently to support comparative evaluation across scenarios. Actual pricing outcomes, however, may vary depending on how underlying market conditions and commercial arrangements evolve over time.

Factors that may influence realized pricing include the structure and duration of commercial agreements, service requirements related to performance and reliability,

and the degree of product differentiation offered to customers. Variability across these elements may affect both achievable pricing levels and overall revenue potential.

Additional validations such as targeted market engagement or focused pricing assessments can help refine these assumptions and provide greater insight into potential sensitivity across different pricing scenarios.

8.3.3 Competitive Landscape & Existing Capacity

Commercialization outcomes are influenced by the structure of the existing fiber market and the availability of capacity within current networks. The presence of established providers and existing infrastructure affects how new or expanded fiber assets may compete for demand.

This analysis does not quantify the current utilization or spare capacity of third-party fiber networks, nor does it fully model future demand growth by customer segment or geography. As a result, the degree to which existing infrastructure can accommodate incremental demand remains an important consideration.

Key factors include the extent to which existing provider capacity is already committed versus available, the pace and location of future demand growth, and the likelihood that new demand would require additional middle-mile infrastructure rather than being absorbed by existing networks.

Further assessment of network capacity and demand dynamics can provide additional insight into how competitive conditions may evolve over time and how they may influence the scale and timing of commercialization opportunities.

8.3.4 Asset Inventory, Condition, and Capacity

The availability, condition, and utilization of existing MDOT fiber and conduit assets influence both the scale and feasibility of commercialization opportunities. In particular, understanding where excess capacity exists—and the extent to which it is available for leasing or reuse—is a key factor in validating the potential value of existing assets.

This analysis is based on high-level mapping inputs sufficient for planning-level assessment. However, more detailed information regarding asset location, condition, and available capacity could affect both the magnitude and distribution of opportunity across corridors.

At a high level, greater visibility into existing assets—including their extent, condition, and available capacity—would provide additional clarity on where near-term commercialization may be feasible and where new middle-mile development may be warranted. Improved asset information would also support more informed decisions regarding prioritization, market engagement, and overall commercialization strategy.

8.3.5 Delivery Model & Private Sector Role

The selection of a delivery model is a key factor influencing fiber commercialization outcomes, as it determines how responsibilities, risks, and returns are allocated between MDOT and private-sector partners. The chosen approach directly affects investment requirements, governance complexity, and long-term value realization.

As illustrated in Figure 5, delivery models exist along a continuum from MDOT-led delivery to developer-led delivery, with a range of partnership-based structures in between. As delivery responsibility shifts toward the private sector, risk transfer increases, while MDOT's direct financial exposure and operational responsibility decrease. Correspondingly, MDOT's share of commercialization revenue typically declines as risk and control are transferred.

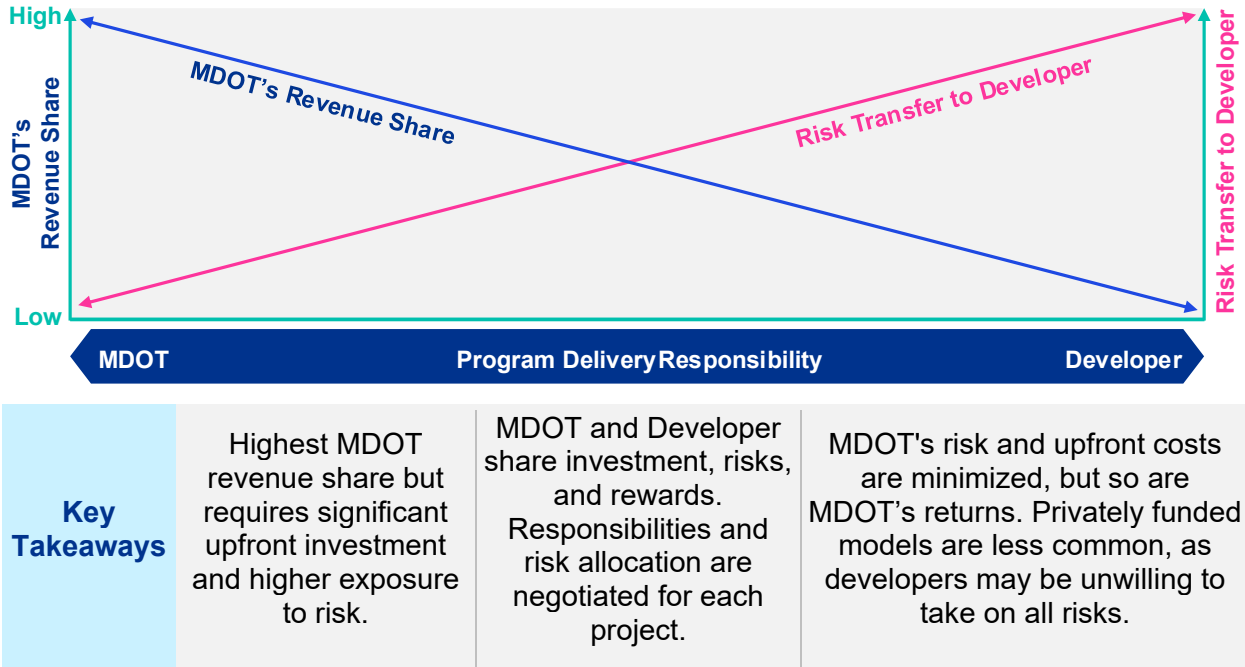


Figure 5 - Delivery Model Continuum: Risk Transfer and MDOT Revenue Share

Delivery models with a higher degree of MDOT involvement provide greater control over infrastructure assets and commercialization outcomes and allow MDOT to retain a larger share of potential revenue. However, these approaches generally require higher upfront investment and greater exposure to delivery and market risks.

At the other end of the spectrum, developer-led models reduce MDOT's capital commitments and risk exposure but are typically associated with a lower share of long-term returns and reduced control over program outcomes.

Between these endpoints, partnership-based models provide a flexible balance of investment, risk sharing, and revenue participation. These approaches can be structured to align with specific program objectives and evolving market conditions.

Overall, delivery model selection involves trade-offs across multiple dimensions, including risk tolerance, level of control, capital availability, and revenue objectives. As such, the delivery approach is closely linked to broader considerations related to program structure, procurement strategy, and market engagement.

8.3.6 Procurement and Implementation Strategy

Procurement strategy and overall program structuring influence how fiber commercialization opportunities are advanced, including how corridors are scoped,

sequenced, and delivered. While the delivery model defines how responsibilities and risks are allocated between MDOT and private partners, procurement strategy focuses on how the program is packaged, phased, and brought to market. These decisions affect implementation timelines, market participation, administrative complexity, and overall alignment with the scale of opportunity.

Key considerations include whether to pursue a statewide or phased approach, how to sequence deployment over time, and whether to advance new middle-mile development, existing asset leasing, or a combination of both.

At a high level, three implementation approaches may be considered:

- **Statewide delivery approach:** A single, integrated program enables scale and consistency in design, operations, and governance, but may increase complexity and limit participation to a smaller number of capable partners.
- **Phased or regionally segmented approach:** Dividing the program into smaller corridor or regional groupings provides flexibility, allows experience from early phases to inform subsequent deployments, and may broaden market participation.
- **Flexible or programmatic approach:** Establishing a common framework while advancing projects incrementally allows adaptation to evolving market conditions and funding availability, though it may require greater coordination over time.

Each approach involves tradeoffs across scale, flexibility, implementation complexity, and market response. As such, procurement and implementation strategy decisions are closely linked to delivery model selection, market engagement, and overall program objectives.

8.3.7 Legal and Regulatory Considerations

The commercialization of fiber infrastructure within highway ROW is subject to federal and state laws and policies. These requirements establish the parameters under which transportation agencies may authorize, structure, and manage such activities and would need to be further reviewed and interpreted to understand how potential commercialization approaches may be structured and whether they are feasible under applicable frameworks.

9. Conclusions

This section summarizes the key findings of the study and outlines the implications for MDOT based on the analysis conducted. It highlights the core conclusions regarding fiber commercialization opportunities and provides a basis for identifying potential next steps.

9.1 Conclusions from the Study

Conclusion #1: Fiber Commercialization Aligns Closely with MDOT's Core Objectives

The evaluation of alternative revenue concepts indicates that fiber commercialization provides a high degree of alignment with MDOT's core financial, operational, and connectivity objectives. Unlike other alternatives considered, fiber-based approaches leverage MDOT-controlled ROW assets in a manner that supports scalable deployment and long-term value generation.

Conclusion #2: A Measurable Commercial Opportunity Exists, with Outcomes Varying by Approach

The indicative commercialization analysis demonstrates that fiber-based opportunities may generate meaningful revenue across MDOT corridors under planning-level assumptions. Over a 25-year period, total net commercialization potential is estimated at approximately:

- \$190 million to \$504 million (nominal) for new middle-mile fiber development
- \$27 million to \$50 million (nominal) for leasing existing fiber and conduit assets

These results indicate that both pathways contribute to the overall opportunity; however, outcomes vary materially by approach. New middle-mile development represents the primary driver of long-term value, reflecting broader network coverage and access to a larger addressable market, while existing asset leasing provides a more limited, near-term opportunity constrained by asset availability and capacity.

Conclusion #3: Realization of the Opportunity Depends on Key Implementation Factors

As outlined in Section 8, the scale and timing of commercialization outcomes are influenced by a range of factors, including market demand, pricing dynamics, existing network capacity, asset conditions, delivery models, procurement strategies, and legal and regulatory considerations.

These factors represent important inputs to future decision-making and may affect the feasibility, structure, and sequencing of commercialization approaches.

Based on these findings, the next phase of work would focus on targeted evaluation of the key factors identified in Section 8, including market demand, pricing assumptions, asset conditions, delivery models, procurement strategy, and legal considerations. Advancing these areas through structured next steps can help reduce uncertainty,

refine underlying assumptions, and support MDOT in assessing the feasibility and preferred pathways for fiber commercialization.

9.2 Recommended Actions

The following recommended actions are intended to support further assessment of the key factors identified in Section 8 and to inform MDOT's review of potential fiber commercialization pathways. These actions focus on refining assumptions, increasing confidence in outcomes, and establishing a foundation for informed decision-making. Each action is aligned to specific factors influencing commercialization outcomes and may be advanced independently or in parallel.

9.2.1 Targeted Market Sounding

A targeted market sounding process may be undertaken to better understand private-sector interest in potential fiber commercialization opportunities. Engagement with developers, operators, and service providers can provide insight into expected participation levels, preferred commercial structures, and overall market receptiveness.

In addition to assessing participation, this process can help inform assumptions related to indicative pricing, competitive dynamics, and the extent to which existing networks may absorb or respond to incremental demand. These insights can support a more refined understanding of both revenue potential and market conditions.

Findings from market sounding can be used to refine key assumptions across demand, pricing, and competition, and to better align potential commercialization approaches with market expectations.

9.2.2 Legal and Regulatory Review

A focused legal and regulatory review may be undertaken to further assess the frameworks governing fiber commercialization within highway ROW. This effort would build on the high-level understanding developed in this study and provide greater clarity on how potential commercialization approaches may be structured under applicable requirements.

This review may include coordination with the Federal Highway Administration (FHWA), MDOT's internal legal team, and relevant State of Michigan legal and policy stakeholders to assess the applicability of federal guidance and state-level statutes to potential fiber commercialization activities.

Key areas for further assessment may include:

- Requirements related to use of federal-aid highway ROW
- Conditions governing the use of excess capacity for commercialization
- State authorities to lease or monetize fiber infrastructure
- Considerations related to revenue use, asset control, and public-private arrangements

This effort can help clarify legal parameters, reduce uncertainty, and inform how potential commercialization pathways may be structured and advanced.

9.2.3 Define Delivery, Procurement, and Governance Framework

Subject to confirmation of market interest and further understanding of applicable legal and regulatory considerations, MDOT may consider defining a high-level delivery, procurement, and governance framework to guide how fiber commercialization opportunities could be advanced.

Establishing this framework can provide clarity on how potential commercialization approaches may be structured in practice, including how responsibilities, risks, and implementation activities would be organized. This step serves as a bridge between planning-level analysis and potential execution by aligning program structure with market conditions and regulatory parameters.

At a high level, this effort may consider:

- **Governance and roles:** Clarifying leadership, oversight, and coordination across MDOT and other state stakeholders
- **Delivery and procurement structure:** Defining how opportunities may be packaged (e.g., statewide, phased, or hybrid approaches)
- **Implementation sequencing:** Identifying how leasing and new middle-mile development may be advanced over time

This framework would not establish final decisions but would provide a structured foundation to support subsequent market engagement, procurement planning, and potential program development.

9.2.4 Develop Asset Inventory and Capacity View

Development of a consolidated view of MDOT's existing fiber and conduit assets may be considered to better understand the location, condition, and available capacity of current infrastructure. This effort would build on the planning-level inputs used in this analysis and provide a more structured foundation for evaluating commercialization opportunities.

A refined understanding of existing assets can help:

- **Clarify available capacity:** Identify where excess capacity may support near-term commercialization opportunities
- **Inform build versus reuse decisions:** Distinguish where existing assets may be leveraged and where new middle-mile development may be warranted
- **Support prioritization of opportunities:** Align corridor selection with asset readiness and market potential
- **Improve overall decision-making input:** Provide a consistent internal dataset to support market engagement, delivery model evaluation, and program planning

This activity is intended to enhance MDOT's understanding of its existing infrastructure and support more informed evaluation of potential commercialization pathways.

9.2.5 Coordination with Michigan High-Speed Internet Office (MIHI) and BEAD Non-Deployment Funding

Michigan's BEAD Final Proposal has been approved, with a total allocation of approximately \$1.56B. Based on current program outcomes, total deployment costs are estimated at approximately \$916M, indicating that approximately \$600M in funding may remain available after meeting last-mile deployment obligations ([42](#)).

This remaining funding is expected to be directed toward non-deployment uses, with final guidance from the National Telecommunications and Information Administration (NTIA) still forthcoming. Based on how other states are positioning non-deployment priorities, these uses are expected to include program areas such as middle-mile network infrastructure, AI-supportive infrastructure and network resiliency (including interconnection enhancements), and public safety and emergency communications improvements, among other eligible activities that strengthen broadband outcomes beyond last-mile deployment.

In this context, the availability of remaining funding creates a potential opportunity to look beyond last-mile deployment and consider investments that strengthen network capacity, resiliency, interconnection, and long-term scalability.

Given the capital-intensive nature of middle-mile infrastructure, collaboration between MDOT and MIHI presents a potential opportunity for mutual benefit to the State. Through coordinated planning, MDOT corridor assets and MIHI program priorities can be aligned to support broader connectivity outcomes, including identification of priority corridors, alignment with statewide connectivity needs, and development of infrastructure that enhances network performance, redundancy, and scalability.

This coordinated approach supports a more integrated, statewide view of middle-mile infrastructure, where investments are positioned to reinforce and extend the value of BEAD-funded networks.

Overall, the MDOT–MIHI collaboration presents an opportunity to advance coordinated, long-term infrastructure planning, supporting a more resilient and scalable broadband system across Michigan.

10. Bibliography

- (1) FHWA – *Solar Energy Use on Highway Right-of-Way*
https://www.fhwa.dot.gov/ipd/value_capture/defined/solar_energy_use.aspx#solarcanopy
- (2) Michigan Department of Transportation – Grand Region Solar Canopy
<https://mdotnetpublic.state.mi.us/grsc>
- (3) Massachusetts Department of Transportation – Renewable Energy Projects
<https://www.mass.gov/info-details/massdot-renewable-energy-projects>
- (4) AASHTO – *MassDOT Public-Private Partnership Generates Solar Energy on Highway Rights-of-Way*
https://environment.transportation.org/case_study/massdot-public-private-partnership-generates-solar-energy-on-highway-rights-of-way/
- (5) Title 23, United States Code, Section 111
<https://www.fhwa.dot.gov/map21/docs/title23usc.pdf>
- (6) Michigan Alternative Fuel Corridors – Public Mapping and Program Information
<https://experience.arcgis.com/experience/0f0eafe4cefe43a0adb8104d600d3cd3/page/Home>
- (7) *USDOT Announces All 50 States, DC and Puerto Rico Now Have Alternative Fuel Corridor Designations, Which Will Help Build Out National Electric Vehicle Charging Network* | FHWA
- (8) AP News – Wireless Roadway Electric Vehicle Charging Pilot in Detroit
<https://apnews.com/article/wireless-roadway-electric-vehicle-charging-detroit-22fcdeabd026d81712a0c1a12b190d9a>
- (9) California Department of Transportation – Free EV Charging Stations Announcement
<https://dot.ca.gov/news-releases/news-release-2021-012>
- (10) West Coast Green Highway: Washington's Electric Highways
<http://www.westcoastgreenhighway.com/waelectrichighways.htm>
- (11) Michigan Department of Transportation – Connected and Automated Vehicle (CAV) and Data Programs
<https://www.michigan.gov/mdot/travel/mobility/initiatives/connected-vehicles>
- (12) Michigan Department of Transportation – Traffic Monitoring Program
<https://www.michigan.gov/mdot/programs/planning/asset-mgt/traffic-monitoring-program>
- (13) Geotab – *What Is Traffic Data Collection?* (Altitude Platform Overview)
<https://altitude.geotab.com/news-and-releases/what-is-traffic-data-collection/>
- (14) 23 CFR §710.403 – Use of Right-of-Way Airspace
<https://www.ecfr.gov/current/title-23/chapter-I/subchapter-H/part-710/subpart-D/section-710.403>
- (15) FHWA – *Reno I-80 Air Rights Project Case Study*
https://www.fhwa.dot.gov/ipd/value_capture/case_studies/reno_i80_air_rights_project.aspx
- (16) FHWA – *Capitol Crossing Air Rights Joint Development*
https://www.fhwa.dot.gov/ipd/value_capture/case_studies/capitol_crossing_air_rights_joint_development.aspx
- (17) FHWA – *Cap at Union Station Project Profile*
https://www.fhwa.dot.gov/ipd/project_profiles/oh_cap_union_station.aspx
- (18) State of Michigan Towers
<https://www.stateofmichigantowers.com/>
- (19) State of Michigan Towers Program
[The State of Michigan is Open to Tower Development — Pyramid Network Services](#)
- (20) [MDOT Utility Accommodation Guidance](#)
- (21) MCL - Section 460.1313 - Michigan Legislature
[MCL - Section 460.1313 - Michigan Legislature](#)
- (22) Arizona Department of Transportation – *Right-of-Way Occupancy Compensation Overview*
https://azdot.gov/sites/default/files/2024-03/ADOT-Broadband-Office-R_W-Occupancy-Compensation-Overview.pdf

- (23) Arizona Administrative Code § R17-3-602 – Telecommunication Use and Occupancy Agreements
<https://regulations.justia.com/states/arizona/title-17/chapter-3/article-6-d-1/r17-3-602/>
- (24) Indiana Department of Transportation – Right-of-Way Permits and Fees
<https://www.in.gov/indot/doing-business-with-indot/files/INDOT-Dig-Once-Rule.pdf>
- (25) HB5098 - Summary As Introduced (10/23/2017)
<https://www.legislature.mi.gov/documents/2017-2018/billanalysis/House/htm/2017-HLA-5098-3F8CD6DB.htm>
- (26) Colorado Department of Transportation – Fiber Leases & Right-of-Way Use
<https://www.codot.gov/programs/intelligent-transportation-systems/fiber-leases-right-of-way-use>
- (27) Colorado Department of Transportation – ITS Fiber Leasing Overview (Public Presentation)
https://content.leg.colorado.gov/sites/default/files/images/cdot_presentation.pdf
- (28) Maryland Department of Transportation – Fiber Optics Resource Sharing: Standard Pricing Schedule (Effective July 2023)
<https://www.mdot.maryland.gov/ResourceSharing/FiberResourceSharing-StandardPricingSchedule2023.pdf>
- (29) Utah Department of Transportation – Fiber Optic Network and Expansion
<https://transportationtechnology.utah.gov/fiberopticnetworkandexpansion/>
- (30) Federal Highway Administration – UDOT Takes Active Role in Facilitating Broadband Deployment (FHWA-HIF-22-040)
<https://www.fhwa.dot.gov/utilities/pdf/hif22040.pdf>
- (31) Georgia DOT Statewide Broadband Operations, Maintenance, and Commercialization Project | North Carolina, United States | Plenary Americas
<https://plenary.com/americas/project/gdot-statewide-broadband>
- (32) North Carolina Department of Transportation Broadband Infrastructure | North Carolina, United States | Plenary
<https://plenary.com/project/ncdot-broadband-infrastructure>
- (33) Effort to expand broadband in rural areas takes big step forward | Department of Transportation
<https://azdot.gov/news/effort-expand-broadband-rural-areas-takes-big-step-forward>
- (34) PA Turnpike Fiber Optic Network Project | PA Turnpike
<https://www.paturnpike.com/traveling/design-construction/pa-turnpike-fiber-project>
- (35) Perceptions and Implications of Road Use Charges
<https://www.michigan.gov/mdot/-/media/Project/Websites/MDOT/Travel/Mobility/Mobility-Initiatives/RUC/Perceptions-Implications-Road-Use-Charges-Study.pdf?rev=2520245eb9934ac29dff6ed49a2e32db&hash=ABD998C610A382B5EDC763621CE8E7D0>
- (36) TSMO Implementation and Strategic Plan
<https://www.michigan.gov/-/media/Project/Websites/MDOT/Programs/TSMO/TSMO-Implementation-Strategic-Plan.pdf?rev=d7a4987690664b769802d923809af62c>
- (37) MDOT-ITS-Strategic-Plan
<https://www.michigan.gov/mdot/-/media/Project/Websites/MDOT/Programs/TSMO/ITS/MDOT-ITS-Strategic-Plan.pdf?rev=6783dae4925f450f8d2f1d9f830e9207&hash=D63BDB398576A20F98523E07A55D9F0E>
- (38) MDOT CAV Strategic Plan
<https://www.michigan.gov/-/media/Project/Websites/MDOT/Travel/Mobility/Mobility-Initiatives/Connected-Vehicles/MDOT-CAV-Strategic-Plan.pdf?rev=5fc1d99edcc4472c9d006c3db088de98>
- (39) Michigan Department of Transportation. Connected and Automated Vehicle (CAV) Strategic Plan.
<https://www.michigan.gov/-/media/Project/Websites/MDOT/Travel/Mobility/Mobility-Initiatives/Connected-Vehicles/MDOT-CAV-Strategic-Plan.pdf?rev=5fc1d99edcc4472c9d006c3db088de98>
- (40) 2026-2030 Five-Year Transportation Program
<https://www.michigan.gov/mdot/-/media/Project/Websites/MDOT/Programs/Planning/Five-Year-Transportation-Program/2026-2030-5YTP.pdf?rev=c914d4ef973b4fa79e2dd785172594c4&hash=024266481F706E434FCE24F07D18F06F>
- (41) [FBA_Cartesian_Fiber-Deployment-Cost-Annual-Report-2024.pdf](#)
- (42) [MIHI-Final-Proposal.pdf](#)

11. Appendices

11.1 List of Acronyms, Abbreviations and Symbols

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ADOT	Arizona Department of Transportation
BEAD	Broadband Equity, Access, and Deployment
CAPEX	Capital Expenditures
CAV	Connected and Automated Vehicle
CDOT	Colorado Department of Transportation
CFR	Code of Federal Regulations
DOT	Department of Transportation
EV	Electric Vehicle
FHWA	Federal Highway Administration
GDOT	Georgia Department of Transportation
GIS	Geographic Information System
ITS	Intelligent Transportation Systems
KMZ	Keyhole Markup Language Zipped
LF	Linear Feet
MCL	Michigan Compiled Laws
MDOT	Michigan Department of Transportation
MIHI	Michigan High-Speed Internet Office
NDOT	Nevada Department of Transportation
NPV	Net Present Value
ODOT	Oregon Department of Transportation

OPEX	Operating Expenditures
PV	Solar Photovoltaic
ROW	Right-of-way
RSA	Resource Sharing Agreement
RUC	Road Usage Charge
SPR	State Planning and Research
SR	State Route
TSMO	Transportation Systems Management and Operations
UDOT	Utah Department of Transportation
WSDOT	Washington State Department of Transportation