Memorandum

To: Todd Sears

Date: July 15, 2025

Project #: 58600.12

From: Jenn Conley
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Re: VTrans Communications in ROW
Best Practices + Interview Memo

Introduction

The Vermont Agency of Transportation (VTrans) is investigating the potential to monetize the placement of communication infrastructure in the state-owned rights of way (ROW). This research effort, requested by the state legislature, involves conducting a best practice scan of various state Departments of Transportation (DOTs) to gather insights and develop strategies that can effectively generate revenue from the use of these assets. By identifying and considering the methodologies to implement successful policies and procedures from other states, VTrans may be able to optimize its ROW usage while generating revenue. This process included a comprehensive document and online search followed by interviews with key peers who currently monetize the ROW to better understand the diverse approaches employed by other states.

Best Practices Scan

VHB conducted an initial review of different features of the utilization of state-owned ROW. A number of different aspects of communication use of the ROW quickly came to light. First, research revealed two types of "payment" for communications in the ROW:

- **Revenue Generating**: includes policies and practices that enable the state to generate income from the use of ROW by telecommunication entities. States may implement fee structures, lease agreements, and other financial arrangements that allow for revenue collection.
- **Bartering**: Some states engage in bartering arrangements where telecommunication entities provide services or infrastructure improvements in exchange for ROW access. This approach allows states to benefit from enhanced services or infrastructure upgrades without direct monetary transactions.

Through the initial research, two primary types of communication infrastructure were monetized:

- **Cell Tower**: Some states may have specific guidelines and permitting processes for the installation and management of cell towers in ROW.
- **Broadband/Fiber Optic**: Many states allow the installation and management of linear broadband and fiber optic infrastructure for either revenue to bartering. States may have streamlined permitting processes and supportive legislation to promote the expansion of high-speed internet services.

VHB conducted a more thorough best practices scan of other state DOTs to explore how each state is monetizing state-owned ROW. During this process, several research studies were reviewed, which helped identify some states for interviews.

Specifically, "Managing Longitudinal Utility Installations on Controlled Access Highway Right-of-Way"[1] and "Valuation and Compensation Approaches in Utility Accommodation: A Guide,"[2] both produced by the National Cooperative Highway Research Program (NCHRP), were reviewed in detail. **Table 1** below shows the 10 states initially identified and a high-level overview of their ROW policies.

Table 1 – Best Practices Scan

State	ROW Policies
California	California's policies on right-of-way (ROW) for broadband emphasize integrating wired broadband facilities within access-controlled state highways through revised accommodation policies. The California Department of Transportation (Caltrans) issues licenses for telecommunications installations, supported by Senate Bill 156's $3.25 billion investment in a middle-mile network. Programs like the Wireless Telecommunications Program facilitate encroachment permits via the Caltrans Encroachment Permit System, ensuring streamlined processes while supporting broadband expansion without disrupting transportation operations.
Colorado	Telecommunications providers are required to compensate the Colorado Department of Transportation (CDOT) for the use of public rights-of-way. They can do so either by submitting an unsolicited proposal or by obtaining a Fiber Communication Permit, which includes paying an initial fee and an annual rate, with adjustments based on geographical location. Unlike local governments, CDOT is not subject to certain fee limitations and aims to ensure fair compensation to enhance broadband deployment across state highway rights-of-way.
Georgia	Georgia requires permits and fee payments for telecommunication utilities using the right-of-way (ROW), with the fees structured to cover administrative and maintenance costs related to the installations. GDOT also offers the possibility of negotiating alternative lump sum payments and may provide fee waivers for projects aimed at expanding broadband access to educational and medical facilities.
Iowa	Iowa's ROW policies allow communication lines to be installed longitudinally within interstate and freeway rights-of-way, subject to occupancy fees prescribed by Iowa Administrative Code 761—Chapter 115. These fees are based on the number of ducts, cables, and their length. Installations serving exclusively governmental purposes may be exempt from fees. Although Iowa typically

[1] National Academies of Sciences, Engineering, and Medicine. 2014. Managing Longitudinal Utility Installations on Controlled Access Highway Right-of-Way. Washington, DC: The National Academies Press. https://doi.org/10.17226/22356.
[2] National Academies of Sciences, Engineering, and Medicine. 2023. Valuation and Compensation Approaches in Utility Accommodation: A Guide. Washington, DC: The National Academies Press. https://doi.org/10.17226/27163

State	ROW Policies
	does not engage in fiber-sharing agreements, arrangements have been made in specific cases for state use. These policies ensure utility accommodation while minimizing costs and leveraging the state's transportation infrastructure.
Louisiana	Louisiana's ROW policies promote efficient broadband and wireless infrastructure deployment. The state has established clear guidelines for ROW permitting and encourages the utilization of existing infrastructure to expand broadband access.
Maryland	Maryland's ROW policies focus on resource sharing, enabling private companies to gain access to state-owned land and infrastructure for communications system installations in exchange for equipment, services, or financial consideration. The Resource Sharing Agreement Program, overseen by the Department of Information Technology (DoIT), establishes guidelines for long-term access to ROW by private entities, enhancing mission effectiveness and reducing operating costs as per the State Resource Sharing Law. Additionally, Maryland's legislation allows nonprofit telecommunications services to install broadband infrastructure in state ROW, with fee waivers available for rural and underserved areas to promote equitable access.
Utah	Utah's ROW policies focus on expanding the state's fiber optic network through public-private partnerships (PPPs), allowing local broadband providers to use state-owned ROW to install fiber infrastructure. UDOT facilitates these efforts, creating agreements that may include monetary or in-kind compensation, such as access to telecommunications infrastructure. This approach not only enhances digital connectivity in rural areas but also integrates the network with state agency communications, generating significant cost savings and supporting telemedicine, distance learning, and telecommuting initiatives.
Virginia	Virginia's ROW policies actively involve VDOT in the installation of broadband facilities, requiring providers to obtain land use permits through local VDOT offices. In cases of limited access, a Resource Sharing Agreement may be needed, facilitated by the VDOT Broadband Coordinator. Changes to the Code of Virginia since 1998 have established a public ROW use fee for telecommunication service providers, calculated by VDOT, which is reported to localities. VDOT's coordination of broadband infrastructure deployment involves identifying a utility coordinator, registering interested entities, notifying companies of state transportation plans, and integrating broadband efforts with local transportation and land use plans.
West Virginia	West Virginia's ROW policies for telecommunications and utilities are guided by Senate Bill 445 and House Bill 4447 to support broadband and wireless infrastructure development. Current

State	ROW Policies
	directives set the ROW access fee at $0, aiming for neutrality and transparency. West Virginia conducted similar study regarding monetization of communication infrastructure in ROW in 2018.
Wisconsin	Wisconsin's ROW policies require obtaining a utility permit from the WisDOT before using or occupying state trunk highway (STH) ROW, for both underground and aboveground installations. WisDOT can charge fees or receive communication infrastructure for longitudinal occupation of controlled-access highway ROW, with rates detailed in their Highway Maintenance Manual. Agreements for utility accommodation may involve accepting telecommunications infrastructure or services as compensation for ROW usage, aiming to facilitate infrastructure deployment while providing protection of public utilities during construction.

Based on the initial information gathered from the NCHRP publication, and summarized above, VHB conducted additional online review of key states. The information found online is presented below and includes additional information on regulatory context, ownership and oversight, strategic goals, utilities included, data management, and compensation or trading where available.

California's Right of Way Policies for Broadband Infrastructure

Legal Framework and Policy Directives: California's policies for accommodating broadband facilities within state highway rights-of-way are guided by a combination of state legislation, executive orders, and strategic initiatives. Key legal instruments include Senate Bill 156 and various executive orders aimed at expanding broadband access and accelerating infrastructure deployment across the state.

Broadband Facility Accommodation: The California Department of Transportation (Caltrans) has revised its accommodation policies for broadband facilities within access-controlled highway ROW. This revision ensures that broadband installations, categorized as non-utility encroachments, comply with state guidelines. Caltrans plays a crucial role in processing the licensing for wireless and wired telecommunications facilities, ensuring they are sited without disrupting highway operations or future expansions.

Senate Bill 156 and Middle-Mile Network: Enacted in July 2021, Senate Bill 156 aims to establish an open-access middle-mile network to provide equitable high-speed broadband across California, with a budget of $3.25 billion. The Middle-Mile Advisory Committee (MMAC) oversees the design and construction of this network, ensuring connectivity for homes, businesses, and community institutions.

Encroachment and Utility Accommodation: According to the California Streets and Highways Code, an encroachment is defined as any installation within the state highway ROW, including towers and broadband facilities. Caltrans' Encroachment Permit System (CEPS) facilitates the application process, allowing real-time tracking and management of encroachment permits online.

Licensing Program for Wireless Telecommunications: Caltrans' Wireless Telecommunications Program permits telecom carriers to install and operate facilities on state ROW through a Master License Agreement. This agreement, approved by the California Transportation Commission (CTC), aligns state interests with community needs.

Colorado's Right of Way Policies for Telecommunications

Legal Framework and Authority: Colorado's right of way policies are governed by a combination of state statutes, executive orders, and federal regulations. The Colorado Department of Transportation (CDOT) operates under specific legislative mandates, including Senate Bill 22-083 and relevant sections of the Colorado Revised Statutes (C.R.S. §§ 43-1-1201 et seq., and C.R.S. § 43-1-210) along with the Federal Telecommunications Act of 1996. These laws require CDOT to receive fair and reasonable compensation from telecommunications providers for the use of public rights-of-way on a competitively neutral and nondiscriminatory basis (47 U.S.C.A. § 253(c)). The Executive Order D 2022 009, along with Senate Bill 22-083, emphasized accelerating broadband deployment in Colorado. CDOT's ROW program, aligned with these directives, aims to enhance the state's digital infrastructure by fostering efficient ROW management practices and partnerships facilitated through CDOT's permitting processes.

Compensation and Fee Structure: CDOT is empowered to charge fees for the use of its ROW through both cash payments and in-kind exchanges as part of its Public-Private Initiatives Program. This program allows entities to submit unsolicited proposals for ROW usage, which can involve leasing CDOT's excess dark fiber capacity or presenting compensatory offerings aligned with CDOT's mission.

In February 2022, steps were taken to improve ROW access for broadband infrastructure, resulting in a fee structure to facilitate such deployments. The fee structure includes an initial, one-time application fee of $0.05 per foot and an annual Property Use Rate of $0.05 per foot and an annual Property Use Rate of $0.10 per foot for urban counties and $0.03 per foot for rural counties. These fees are adjusted annually by the implicit price deflator-gross national product (IPD-GNP).

Permit Processes and Options: Entities interested in installing longitudinal, buried fiber infrastructure within CDOT ROW can choose one of two paths:

1. Submit an unsolicited proposal to demonstrate compensation and value to CDOT.
2. Apply for a Fiber Communication Permit, which requires the initial permitting fee, and the annually billed Property Use Rate.

Iowa's Right of Way Policies for Telecommunications

Legal Framework and Fee Structure: Iowa permits communication lines to be installed longitudinally within interstate and freeway rights-of-way, as governed by Iowa Administrative Code 761—Chapter 115.

Compensation and Fee Structure: There are annual fees charged for this occupancy, which vary based on the number of ducts, cables, and the distance covered. The initial fee is due before any construction work begins, and annual invoices are issued thereafter. For a multiduct system, fees are either a flat fee of $14,500 per cable installation or $7,250 per mile. Other installations incur a fee of $12,000 per cable installation or $2,500 per mile. These fees increase by 3% annually since the base year of 2004.

Government entities using the ROW exclusively for governmental purposes may be exempt from these fees. However, if they lease out lines or conduit space for non-governmental uses, a standard occupancy fee applies.

Utility Accommodation and Coordination: Iowa stresses the importance of maximizing utility accommodation within the highway ROW to avoid the purchase of costly utility easements. This approach reduces rates for consumers, reflecting prudent use of taxpayer investments.

Strategic Initiatives: The state sometimes enters into fiber sharing agreements, mainly for building out its own network. These agreements, negotiated by the Intelligent Transportation System (ITS) staff, work with companies to reserve fibers for the state's use. The consent and coordination process for utility accommodations is detailed in the Point25 process, covering Sections 115.25 to 115.30 for administrative procedures concerning utility movements.

Application for Work: Utility companies must apply for a permit and agree to terms before performing work within state highway ROW. This process ensures compliance with legal and procedural requirements specified by the Iowa DOT.

Maryland's Right of Way Policies for Telecommunications

Legislative and Policy Framework: Maryland's approach to ROW management emphasizes resource sharing, as defined by the 1996 Maryland Telecommunications Act and SF&P § 3A-301 - 313. The Resource Sharing Law and DoIT's RSA Program Policy outline the comprehensive framework governing resource sharing agreements. Communication infrastructure companies install, operate, and maintain communications systems and provide the state with communications equipment, services, or cash. The Maryland Department of Transportation (MDOT), in collaboration with the Department of Information Technology (DoIT), develop strategic alliances with private companies to access state-owned properties and infrastructure under the Resource Sharing Agreement (RSA) Program initiated on October 22, 2019.

Nonprofit Use and Fee Waivers: Maryland allows nonprofit telecommunications services to use state rights-of-way at no cost for installing broadband infrastructure, particularly in rural areas, and supports their proposals with fee waivers to enhance rural and underserved broadband access, as outlined in Section 8-654 and the DOIT RSA Rural and Underserved Broadband Fee Waiver.

Coordination and Compliance: Maryland's approach to coordination and compliance in managing telecommunications infrastructure within state rights-of-way is anchored by the collaboration between MDOT and DoIT. The strategic framework emphasizes the streamlining of processes to ensure effective management and implementation of RSAs. MDOT's project and utility coordination process, guided by comprehensive guidelines, aims to facilitate seamless collaboration between state agencies and private telecommunications providers, efficiently granting access to state ROW. This collaborative approach optimizes infrastructure development by balancing the needs of public agencies and private companies, promoting statewide digital connectivity while ensuring compliance with legislative requirements and operational standards.

Utah's Right of Way Policies for Telecommunications

Public-Private Partnerships (PPP) and Network Expansion: Utah has developed a robust fiber optic network through effective Public-Private Partnerships (PPP), which allow local broadband providers to utilize the Utah Department of Transportation's (UDOT) fiber backbone. This approach connects rural communities and supports Intelligent Transportation Systems (ITS) and state agency networks. UDOT's partnerships have resulted in significant cost savings, estimated at $105.8 million.

Statewide Fiber Optic Deployment: UDOT has been committed to expanding a statewide fiber optic network, which includes over 3,252 miles of fiber cables. This network comprises both UDOT-owned and resource-shared fibers, with

most high-traffic roadways already covered. Approximately 49% of interstates and highways in Utah have fiber optic coverage, supporting connectivity for rural areas, schools, and businesses.

Compensation and Agreements: Utah Administrative Code R907-65 outlines the compensation schedule for longitudinal access to interstate highway ROWs for installing telecommunications facilities. The state allows telecommunications providers to compensate through monetary payments or in-kind contributions, such as providing conduit, dark fiber, telecommunications equipment, or services.

In-Kind Compensation Options: UDOT is authorized to enter agreements that include in-kind compensation instead of monetary payments. The department may accept telecommunications assets and services for its own uses, helping offset costs while facilitating infrastructure deployment.

Lump Sum Monetary Compensation: Telecommunications providers can choose between annual payments or lump sum monetary compensation for ROW access. Lump sum payments are calculated to be equivalent to the discounted present value of annual payments over the agreement period. This flexible payment structure allows for streamlined financial agreements, supporting the rapid deployment of telecommunication infrastructure.

Strategic Goals and Benefits: UDOT's comprehensive strategy emphasizes deploying fiber infrastructure to support broadband access, telemedicine, distance learning, and telecommuting, especially for rural communities. By engaging with private telecoms and leveraging ROW assets, Utah aims to enhance digital resources across the state, ultimately promoting economic growth and improved quality of life.

Through these policies and strategic initiatives, Utah positions itself as a leader in telecommunications development, setting a benchmark for integrating public resources and private expertise to achieve statewide connectivity goals.

Virginia's Right of Way Policies for Telecommunications

Broadband Infrastructure Deployment and Coordination: The Virginia Department of Transportation (VDOT) actively partners in installing broadband facilities within the state right of way. Providers must obtain a land use permit through local VDOT land use offices to operate within these ROWs. In cases involving limited access rights-of-way, a Resource Sharing Agreement (RSA) may be required, and providers are advised to contact the VDOT Broadband Coordinator for assistance.

Federal Regulations and Requirements: As of December 3, 2021, the Federal Highway Administration (FHWA) published a new Broadband Infrastructure Deployment rule. This rule, under Section 607 of the MOBILE NOW Act, includes specific requirements for VDOT, such as:

- Appointing a broadband utility coordinator to manage infrastructure ROW efforts.
- Establishing a registration process for entities interested in installing broadband facilities alongside roadway projects.
- Notifying broadband infrastructure companies annually about the State Transportation Improvement Program (STIP).
- Coordinating these initiatives with statewide telecommunications, transportation, and land use plans.

Public Right of way Use Fees: Since July 1, 1998, Virginia has implemented a public right of way use fee for certificated telecommunications service providers using highway and street ROWs. VDOT, under state code 56-468.1, calculates and reports the monthly fee per access line to localities and providers. Telecommunications companies are

responsible for including these charges in their billing and remitting collections to the appropriate governmental entities.

Regulatory Guidance and Support: VDOT provides comprehensive regulatory guidance and technical support through various manuals and documents, such as the ROW Manual and the Utility Relocation Policies & Procedures. These resources are essential for ensuring compliance with state regulations and facilitating smooth telecommunications infrastructure deployment within the ROWs.

Strategic Goals: Virginia's ROW policies aim to support broadband infrastructure deployment while maintaining efficient regulation and coordination with federal and state requirements. By partnering with private providers and leveraging existing regulations, Virginia strives to enhance statewide connectivity and boost economic development.

Through these initiatives, Virginia ensures effective management and utilization of state-owned ROWs, supporting the growth and development of telecommunications infrastructure across the state.

Wisconsin's Right of Way Policies for Telecommunications

Regulatory Framework and Utility Accommodation: Wisconsin regulates the use of state trunk highway (STH) rights-of-way for telecommunications infrastructure through the Wisconsin Department of Transportation (WisDOT). Providers seeking to utilize these ROWs must obtain a utility permit, which is essential for both underground and aboveground installations, as well as for occupying existing utility infrastructures like poles or ducts.

Controlled-Access Highways: Controlled-access highways in Wisconsin are categorized as either fully controlled (freeways and interstates) or partially controlled (expressways). The use of these ROWs, particularly for telecommunications, is governed by strict policies that outline the types and locations of permitted installations as detailed in WisDOT documents.

Compensation Requirements: According to Wis. Stat. ss. 86.07(2)(a) and 84.01(31), WisDOT can impose fees or mandate the provision of communication infrastructure in exchange for longitudinal ROW access. Fees are set for a 20-year tenure and are calculated based on the occupation distance along the highway centerline. These compensation requirements apply to both public and private utility installations on all state trunk highways listed in WisDOT's controlled-access highway tables.

Federal Infrastructure Deployment Rules: As of December 3, 2021, new federal rules under FHWA apply to broadband infrastructure deployment in the ROW of federal-aid highway projects in Wisconsin. While these rules influence WisDOT highway improvement projects, they do not alter existing state utility accommodation requirements.

Protection and Adjustment of Utilities: Contractors working on public streets or highways are responsible for avoiding interference with public utility structures, including telecommunications facilities, unless authority is obtained from the relevant public works commissioner. Utilities may need to temporarily protect or adjust their structures during road works, with associated costs borne by the contractor or public utility, depending on the project's nature.

Strategic Agreements: Wisconsin's legislation permits the negotiation of agreements to accept communication facilities and services as compensation for the accommodation of utility facilities within highway ROWs. Such agreements are aimed at capitalizing on utility accommodations while ensuring that communication infrastructure development aligns with state transportation and communication objectives.

In summary, Wisconsin maintains a comprehensive legal and procedural framework to manage telecommunications installations within highway ROWs, ensuring coordination, compliance, and strategic development of infrastructure across the state.

Table 2 below illustrates the 10 states initially identified and a high-level overview of their ROW policies.

Table 2 – Best Practices Investigation Details

State	Legal Framework and Authority	Compensation and Fee Structure	Trading of Services	Ownership and Oversight	Data Management	Strategic Goals
California	Senate Bill 156 and executive orders guide ROW policies; Caltrans manages ROW.	Licensing fees for ROW usage based on installation type; "Dig Once" policy.	Limited trading of services; focus on infrastructure sharing.	Managed by Caltrans; comprehensive infrastructure guidelines in place.	Encroachment Permit System (CEPS) for tracking installations.	Maximize property use for community planning; efficient broadband deployment.
Colorado	Governed by Senate Bill 22-083 and C.R.S. statutes; CDOT oversees ROW.	Fees or in-kind exchanges for ROW usage through Public-Private Initiatives.	In-kind infrastructure contributions (e.g., dark fiber) for CDOT's mission.	Managed by CDOT; facilitates partnerships and infrastructure alignment.	GIS mapping and fiber leasing agreements for digital infrastructure planning.	Enhance digital infrastructure and streamline ROW processes.
Iowa	Iowa Administrative Code 761 governs ROW policies; DOT coordinates.	Annual fees for longitudinal ROW access; exemptions for government use.	Occasional fiber sharing agreements with ITS staff coordination.	Managed by Iowa DOT; focuses on utility accommodation and state infrastructure.	Utility permits; procedures outlined in Utility Accommodation Manual.	Maximize utility accommodation and enhance network connectivity statewide.
Maryland	Maryland Telecommunications Act and Resource Sharing Law guide policies.	Resource-sharing agreements; cash or services exchanged for ROW usage.	Strategic alliances for data services and infrastructure sharing.	Oversight by MDOT and DoIT for strategic IT outcomes.	Resource Sharing Agreements integrate telecom data with state IT services.	Encourage partnerships and maximize state infrastructure utility.
Utah	Utah Administrative Code R907-65 defines	Monetary payments or in-kind	Contributions for UDOT's ITS programs	Managed by UDOT; coordinates	Data integration with ITS systems; comprehensive	Statewide fiber deployment, support

State	Legal Framework and Authority	Compensation and Fee Structure	Trading of Services	Ownership and Oversight	Data Management	Strategic Goals
	ROW compensation rules.	contributions; lump-sum options available.	enhance connectivity.	statewide fiber optic network expansion.	mapping and planning.	for telemedicine and remote connections.
Virginia	Code of Virginia provides ROW fee structure since 1998; VDOT oversees ROW.	Public right of way fees for telecom use; focus on regulatory compliance.	Provisions for service exchanges exist under fee collection policies.	VDOT Broadband Coordinator manages infrastructure deployment.	Regulatory guidance and manuals support ROW management and maintenance.	Support broadband deployment, enhance state and local connectivity plans.
Wisconsin	WisDOT guidelines under Wis. Stat. ss. 86.07 regulate ROW usage.	Fees or infrastructure accepted for ROW use; 20-year occupation period.	Communication facilities and services accepted as payment for ROW access.	Managed by WisDOT; detailed documentation and digital permit processes.	GIS mapping for transparent and efficient ROW management.	Strategic development of telecommunications; optimize utility accommodations.

Interviews

Using the list of states developed above, VHB researched contact information and reached out to request interviews to learn more about the programs. VHB and VTrans jointly conducted interviews from April 28, 2025, through May 28, 2025. Each of the states listed above participated in the interviews except for Georgia, Louisiana, and West Virginia. Georgia and Louisiana were not responsive to multiple emails. West Virginia responded to emails but indicated that they did not have an established program even though they conducted their own study in 2018. Table 3 outlines the interview dates for each of the states.

Table 3 – States Contacted / Interviewed

	State	Heard Back From	Interviewed	Date Interviewed
1	California	Yes	Yes	May 27, 2025
2	Colorado	Yes	Yes	May 21, 2025
3	Georgia	No	No	-
4	Iowa	Yes	Yes	May 27, 2025
5	Louisiana	No	No	-
6	Maryland	Yes	Yes	May 14, 2025
7	Utah	Yes	Yes	May 8, 2025
8	Virginia	Yes	Yes	April 28, 2025

	State	Heard Back From	Interviewed	Date Interviewed
9	West Virginia	Yes	No	-
10	Wisconsin	Yes	Yes	May 28, 2025

Detailed meeting notes or transcripts are provided in **Appendix A**. The key findings are listed below by subject area for a better understanding of the range of approaches to each subject area.

Organization

The interviewees involved in managing telecommunications infrastructure within ROW are typically part of the ROW departments within state Departments of Transportation (DOTs) or equivalent agencies. These include organizations like Caltrans in California, CDOT in Colorado, and VDOT in Virginia, which are central to overseeing ROW policies, permits, and leasing arrangements.

The state of Maryland does not operate their program out of their DOT and instead operates their program out of the Department of Information Technology (DoIT), which is instrumental in strategic IT planning and resource-sharing agreements. In Utah, the Department of Transportation (UDOT) works alongside Intelligent Transportation Systems (ITS) divisions to integrate digital infrastructure within ROW projects. This inter-departmental collaboration is pivotal for aligning telecommunications initiatives with broader state infrastructure goals, facilitating public-private partnerships, and ensuring the effective deployment and management of broadband services across state networks.

Table 4 – Organization Location

State	Organization Location	Notes
California	DOT	Real Property Services within the Department of Right of Way
Colorado	DOT	Fiber and Broadband Coordination within the Intelligent Transportation System
Iowa	DOT	Utility Program within the Transportation Development Division
Maryland	DoIT	Resource Sharing Agreement (RSA) Program within Department of Information Technology. RSA coordinates heavily with the State Highway Administration.
Utah	DOT	Intelligent Transportation Systems, Fiber Optic Communications & Interstate Lighting Maintenance
Virginia	DOT	In two department – Right of Way and Utilities and Office of Land Use
Wisconsin	DOT	Bureau of Highway Maintenance

Utility Types Served

Several states discussed the types of utilities served in their ROW, and these were substantially focused on linear fiber-optic installation and wireless communications equipment. Fiber-optic cables are the most common utility found to be located in the ROW and many states use it as a backbone for communication systems (either statewide or for DOT use). For instance, Utah DOT emphasized the importance of the fiber network for DOT traffic signal coordination and real-time situational awareness, highlighting their role in connected vehicle technology and communication systems. Similarly, VDOT utilizes fiber optics in their statewide network to provide services for DOT ITS devices and signals.

Cell towers are another significant utility, with states like Virginia and Maryland discussing monetization strategies for this use. VDOT owns several towers and charges fees for their use, generating revenue with minimal footprint, while Maryland's Department of Information Technology manages a large number of towers.

Table 5 – Types of Communication Types

State	Types of Communication	Notes
California	Linear, Cell Towers	Cell towers have been very lucrative
Colorado	Linear, Small Cell Tower	Challenges with potential legislative policy changes for telecommunications infrastructure
Iowa	Linear, Solar, Radio Towers	
Maryland	Linear, Cell Towers	
Utah	Linear	Emphasis on conduit installation and fiber optics.
Virginia	Linear, Cell Towers	Cell towers have been very lucrative.
Wisconsin	Linear, Small Cell Tower	Focus on fiber optics and electric transmission

Locations/Right of Way Types

The monetization of limited-access rights-of-way including interstate highways and other major freeways was typical across various state programs. States such as Virginia, Wisconsin, and Iowa capitalize on these high-value corridors to facilitate telecommunications infrastructure. In particular, Virginia integrates Resource Sharing Agreements (RSAs) for infrastructure development within limited-access ROWs, enhancing connectivity while generating revenue.

Iowa further extends its program by offering non-linear agreements for infrastructure like cell towers on state-owned garage sites. These innovative practices demonstrate how states can maximize the utility of their transportation networks to advance digital infrastructure while catering to local needs and expanding connectivity options.

Table 6 – Locations of Communication Utilities

State	Locations of Communication Utilities	Notes
California	Interstate	Additionally, Roadside Rest Areas, Park and Ride Lots, Maintenance Stations, Storage Areas and Caltrans building
Colorado	Interstate	Goal to expand the states communication infrastructure.

State	Locations of Communication Utilities	Notes
Iowa	Interstate, Freeways	There are a few radio towers located near state-owned garages.
Maryland	Interstate	Goal to expand the states communication infrastructure.
Utah	Interstate	
Virginia	Interstate	There are a few cell towers located in rest areas.
Wisconsin	Interstate	

Data Collection and Management

In analyzing the data collection and management practices across various states' ROW programs, a recurring theme is the critical importance of accurate infrastructure mapping. This is pivotal for efficient management and strategic planning of telecommunications deployments. Many states are adopting sophisticated mapping and data management software to facilitate this process. For instance, OSP Insight is commonly utilized by states such as Virginia and Maryland to provide comprehensive mapping capabilities that enhance visualization and management of underground and overhead infrastructure. Utah employs Bentley software for detailed infrastructure design tasks, ensuring that precise modeling aligns with engineering requirements. ESRI, a leader in Geographic Information System (GIS) technology, is used for mapping purposes across Utah's ROW initiatives, allowing integration of spatial data to support extensive network planning. These technological tools are essential for maintaining precise records, supporting infrastructure updates, and ensuring efficient coordination among service providers, thus reinforcing the states' capacities to manage their digital infrastructure effectively.

Table 7 – Data Management

State	Mapping System	Notes
California	ArcGIS	ROW team does the mapping.
Colorado	ArcGIS	Office of Information Technology maintains it.
Iowa	No system	
Maryland	OSP Insight, ArcGIS	They are currently working on building out their database.
Utah	ArcGIS, Bentley	Have a very robust mapping network. Contract out GIS support. Convert Bentley files to ArcGIS.
Virginia	OSP Insight	It has been an intensive process to build up the database. Mapping new locations and going to bring in old plans.
Wisconsin	No system	They are working towards creating a mapping system but currently just have coordinate locations.

Agreements

In managing telecommunications infrastructure within the ROW, states adopt various approaches, utilizing leases, permits, or a combination of both to align with strategic goals and regulatory compliance. Contracts or permits issued for ROW monetization programs typically include agreed compensation, an indemnification clause to protect against state liability for damage, location data, site plans, and as-built plans.

States like California and Virginia primarily use leases. California issues licenses and leases under its Wireless Telecommunications Program, allowing telecom facilities on state ROWs through Master License Agreements. In Virginia, leasing arrangements, labeled Resource Sharing Agreements (RSAs) are used for installations in limited-access ROWs.

Conversely, states such as Colorado, Iowa, and Wisconsin rely on permits for managing ROW usage. Colorado issues Fiber Communication Permits, enabling entities to pay fees or provide in-kind compensation for ROW access. Iowa requires utility permits for telecommunications installations within interstate and freeway ROW, ensuring alignment with utility accommodation guidelines. Wisconsin mandates utility permits for telecom infrastructure, with providers needing permits to occupy state trunk highway ROWs. Meanwhile, Maryland and Utah deploy a mixed-use strategy that integrates both leases and permits. Maryland emphasized resource-sharing agreements, using these when there is an exchange of services and potentially incorporating permits into broader leasing strategies for specific telecom and broadband installations.

Utah engages in compensation agreements that may involve lease structures alongside permits related to ROW expansion and fiber network deployment. The length of terms for these agreements varies based on the type of infrastructure but typically spans 20-25 years for fiber optic cable installations and around 10 years for tower installations.

Compensation

The compensation associated with locating utilities in the right of way (ROW) can vary significantly depending on the form of payment and the scope of the project. Agreements can be either fee-based or structured as barters, where in-kind compensation is exchanged for access. Typically, the cost is determined by various factors such as the type of infrastructure (e.g., fiber optics, cell towers), the length of the installation (measured by footage or mileage), and the rurality of the installation site. Some states, like Utah, have successfully used ROW programs to trade services and build out the state's fiber network, which supports the DOT's Intelligent Transportation System (ITS) network as well as other departments' fiber needs. This approach is particularly advantageous when attempting to connect to existing or proposed ITS devices.

In-Kind vs. Fee-Based Compensation

The choice between in-kind compensation and monetary fees often hinges the goals of the State and/or DOT particularly. In-kind compensation can be advantageous, particularly when aligned with broader state fiber infrastructure goals, such as expanding digital coverage statewide or DOT goals, such as improving ITS connectivity.

Range of Costs and Methods of Calculation

Cost structures and calculation methods are also diverse. ROW access fees are generally calculated on a per-mile or per-foot basis, often reflecting a "market rate" adjusted according to location characteristics, such as a lower cost in a rural setting where connectivity improvements are desired. In Colorado, fiber-optic installations incur both an initial per-mile fee and an annual rate, while Wisconsin opts for a one-time fee covering a 20-year contract period, which can reduce administrative overhead and costs associated with annual renewals.

Table 8 – Agreements, Compensation and Calculations

State	Type	Term	Compensation
California	Master License Agreement (MLA)	10-years with two 5-year renewals	The fee structure within the Master License Agreement is determined based on the geographic location and type of telecommunications facility, with annual fees subject to automatic 2.5% increases for inflation and adjustments reflecting fair market value, ensuring equitable and consistent access to state property for broadband expansion.
Colorado	Permit		Initial, One-Time Application Fee (2024) › $0.05 per foot Annual Property Use Rate (2024) › $0.10 per foot for urban counties* (>200k population) $0.03 per foot for rural counties
Iowa	Permit		When a multiduct system is required by the department: flat fee of $14,500 per cable installation or $7,250 per mile of cable, whichever is greater. All other installations: flat fee of $12,000 per cable installation or $2,500 per mile of cable, whichever is greater. These fees shall increase 3% per year after the base year of 2004.
Maryland	Resource Sharing Agreement (RSA), Permit	30 years	Mixed revenue approach with both monetary compensation and in-kind exchanges, such as fiber swaps, enabling infrastructure build-out without direct costs. The agreement allows a company to use state-owned property for installing fiber optics, with costs calculated based on land use, distance, and maintenance, including terms for initial and potential renewal periods.
Utah	In-Kind Services, Permit	30 years	UDOT favors in-kind services rather than cash payments. Across the fence valuation every 5-years.
Virginia	Resource Sharing Agreement (RSA), Permit	25 years	The fees are calculated by multiplying the number of public highway miles by a set rate when considering new installations. The minimum fee per access line is $0.50 per access line. Across the fence valuation is utilized.
Wisconsin	Permit, In-Kind Exchange	20 years	Across the fence valuation is used to determine the value of land use for fiber optic installation based on adjacent property values. They implemented a one-time 20-year fee based on mileage, allowing for simplicity and long-term cost stability for installations. This system also included options for tradeoffs, such as providing dark fiber, which has been instrumental in expanding their intelligent transportation system, allowing for enhanced communication capabilities and infrastructure development.

Resulting Fiscal Benefits

The fiscal outcomes of ROW utilization programs can be significant, though they vary by state. Some focus on extending broadband networks, resulting in significant cost savings instead of direct revenue generation. Utah's proactive use of ROW programs has reportedly saved the state around $105.8 million, highlighting the efficiencies gained through strategic infrastructure expansion. Many states emphasize the broader benefits of expanding their broadband capacity, aiming for cost efficiency through acquiring dark fiber or enhancing public internet access, which can yield savings and support long-term digital infrastructure development. These benefits to the state only have value if this is the goal of the program. The benefits to a state DOT are tied to their need for connected infrastructure.

In contrast, Colorado's program revenue primarily sustains the team managing ROW, covering approximately six salaries (although there are additional staffing needs of the program). In Iowa, the monetization of ROW is intricately tied to the state's Living Roadway Trust Fund. This fund supports initiatives that incorporate native vegetation management within highway ROWs, enhancing both the aesthetic and ecological value of these areas. By channeling revenue generated from ROW agreements into the Living Roadway Trust Fund, Iowa not only facilitates infrastructure development but also promotes biodiversity and environmental stewardship.

Table 9 – Use of Revenue

State	Use of Revenue
California	Funds go into the State Transportation Fund for future transportation projects.
Colorado	Primarily used to sustain the fiber and broadband program team, covering salaries and operational costs.
Iowa	Funds are directed to the Living Roadway Trust Fund, supporting roadside vegetation management and ecological enhancements.
Maryland	Revenue enhances digital infrastructure for state IT services, including broadband expansion and supporting governmental operations.
Utah	Utilized primarily through in-kind contributions to enhance the state's fiber optic network, supporting ITS and connectivity services.
Virginia	Used to enhance broadband infrastructure deployment, aligning with federal and state connectivity goals.
Wisconsin	Supports telecommunications infrastructure expansion, specifically targeting ITS enhancements and using dark fiber trades.

Staffing Needs

Deanne Popp from Iowa discussed staffing-related challenges within the program. She noted the lack of comprehensive documentation regarding the program's structure and background when she assumed her role, making management difficult. Additionally, she mentioned that the program's fees do not cover staffing costs and involves staff outside of her program, in permitting and roadside management, who require financial support. To address these financial challenges, she considered introducing a future fee structure to better support staffing needs. Popp also raised issues related to staff turnover, complicated accounting system management, and emphasized the need for efficient reporting to track billing and payments.

Lynne Yocom manages Utah's fiber optic system with a team of four full-time employees, supported by full-time network engineers from the Division of Technology Services. They have a five-year contract with Horrocks Engineering

for GIS support, trade analysis, splice details, mapping, and right-of-way expertise. Legislative funding helps maintain the necessary staffing levels to efficiently run telecommunication projects.

Matt Dryer outlined Maryland's staffing approach for managing the resource sharing agreement program. As a staff of one at the Maryland Department of Information Technology (DoIT), he oversees about 260 agreements. While he manages program oversight himself, the operational workload, such as permitting processes, is mainly handled by the Maryland Department of Transportation (MDOT), with support from agencies like the Department of Natural Resources and the Maryland Military Department. These agencies have personnel responsible for managing agreements in coordination with Matt. Legal review ensures compliance with legislative and agency guidelines. Collaboration across state agencies, such as MDOT and others.

Table 10 – Staffing Notes

State	Staffing Notes
California	Four senior ROW agents from the Division of Right of Way, including one dedicated to the wireless program, manage leasing within Caltrans' Airspace program, which is uniquely separate from their permitting office.
Colorado	Six staff manage the program across different regions, with costs covered primarily by revenue from the ROW program. Look for anecdotal instances of collaboration and sharing responsibility among regions.
Iowa	Utility program staff within Iowa DOT manage the program, but fees do not fully cover staffing costs. The staff is likely involved in permitting and coordination processes, requiring support due to limited resources.
Maryland	Managed by a single staff member at DoIT, overseeing about 260 agreements. The program relies on interagency collaboration for operational workload, especially in permitting and compliance.
Utah	Managed by four full-time employees, supplemented by contracted GIS and engineering support. Extensive external contracting to address specialized needs, such as mapping and technical expertise.
Virginia	Managed within VDOT's Right of Way and Utilities sections and Office of Land Use. Likely involves multiple personnel across different departments for comprehensive management.
Wisconsin	Staffed by Bureau of Highway Maintenance personnel, focusing on program efficiency to address staffing needs. Anecdotal evidence suggests strong coordination efforts to maximize utility accommodations.

Lessons Learned

Although the above provides significant information for VTrans to consider in the development of the programs, VHB also asked each state representative "What do you want to share with a state looking to start a program for the first time? Or What do you wish you knew when starting this program?" The responses from various state representatives regarding starting a telecommunications program for the first time reveal a diverse array of insights and lessons learned. Wisconsin DOT, represented by Robert Fasick, emphasized the importance of clearly justifying rates, limiting the scope of the program, and avoiding long lease durations.

Iowa DOT's Deanne Popp highlighted the need for robust documentation of fee structures and understanding baseline fee amounts. Maryland DOT, through Matthew Dryer, discussed the legislative framework supporting resource sharing agreements and the barter system for fiber swaps, underscoring the importance of collaboration between the DOT, Department of Information Technologies (DoIT), and other branches of the Maryland state government.

Leslie Gaylord from Colorado DOT shared experiences of setting up a fiber program amidst changing mandates, stressing industry collaboration and regional understanding. Eva-Marie Figlietti, in California, concentrates on consistent rent evaluations and overseeing the management of wireless companies. Rent adjustments are based on market conditions and other relevant factors. This approach involves a systematic review process to align rent adjustments with current market values or specific criteria within their agreements, supporting the leasing program's financial viability and competitiveness over time.

Virginia DOT's Kimberly Leckner, helps localities understand how the fees are structured and calculated, ensuring they can effectively manage telecommunications infrastructure within their jurisdictions. This guidance is part of VDOT's broader effort to coordinate with local governments to facilitate the deployment and management of broadband and wireless services, aligning state ROW policies with local needs and regulatory requirements. Lynne Yocom highlighted the critical role of infrastructure, underscoring the importance of legislative frameworks that enable trading of excess capacity in telecommunications. She emphasized the cost-effectiveness of installing conduits during initial road construction and the power of strategic partnerships to stimulate economic development. These insights provide a well-rounded perspective on the complexities and strategic approaches necessary for launching telecommunications initiatives, tailored to the specific goals of different state programs.