FIBER OPTIC RESOURCE SHARING IN VIRGINIA

Commonwealth Transportation Board
Innovation & Technology Subcommittee

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February 20, 2018
Why Fiber?

- Enormous bandwidth available to support VDOT’s 1,000+ cameras and future technologies like CAV
- Very reliable and secure
- All aspects of network operation are visible to VDOT (unlike leased services)
- Low recurring costs compared to leased services
- Establishing leased high-bandwidth services to roadside is challenging
Federal Code enables utility/resource sharing programs

- In 1988, CFR, Part 645, Subpart B was modified to allow States to expand their utility accommodation policies to include utility installation on Interstate ROW, provided the installation did not adversely affect traffic or highway safety, or impair the use and aesthetic quality of the highway.

- 23 CFR Part 645, Subpart B and 23 CFR Part 710, Subpart D permits States to accommodate broadband conduit in highway ROW.

- Telecommunications Act of 1996 requires telecommunications providers to allow competing vendors to have access to facilities for deploying broadband and mandates the removal of state and local barriers to telecommunications competition.

- In 1996, FHWA and FCC recognize mutual benefit of resource sharing to DOTs and telecom industry and issue guidance memorandums.

- In 2002, AASHTO issues resource sharing design guidelines.
Virginia enables utility resource sharing agreements

- **24VAC30-151-30 Permits and Agreements** establishes the option to enter into Shared Resource Agreements for utility to use limited access right-of-way.

- **24VAC30-151-310 Utility Installations within Limited Access Highways** outlines requirements for utility installations on all limited access highway and approval by VDOT Commissioner of Highways.

- **24VAC30-151-740 Exceptions and Provisions to the Payment of Fees and Compensation** establishes compensation method as either:
  - Exchange of goods and services, cash or combination/both
Fiber Resource Sharing in Virginia

- 1996 – VDOT issues statewide solicitation for exclusive access to interstates and other highways in exchange for fiber on those routes
- Market downturn caused partner to fold which led to termination of agreement
- All agreements since have been non-exclusive
- VDOT pursued regional opportunities as they arose
- Initial deployments enabled by tobacco settlement funding
- Other expansions driven by growth of internet, data centers, broadband stimulus funding and trans-oceanic cable landings
Fiber Resource Sharing Process

- By Virginia Code, VDOT manages utility access to the ROW through the Land Use Permit Process
- Resource Sharing Agreement requirement for any longitudinal access along Limited Access (L/A) ROW
- Agreement only entertained if adequate value to VDOT’s Operations Program
- Value determined based on needs identified in VDOT’s Comm Master Plan and amount of L/A ROW being requested
- Land Use Permit governs installation and maintenance of all routes under a Resource Sharing Agreement
- Resource Sharing Agreements and Modifications reviewed by Office of Attorney General and executed by Commissioner
Fiber Resource Sharing Routes

3,708 miles
Value of Resource Sharing to VDOT

- To build comparable fiber infrastructure would cost VDOT $200,000 – $260,000/mile
- Resource Sharing providers are responsible for maintenance of the shared fiber route which would cost VDOT $1,800/mi/yr
- VDOT currently operates 1,000 miles of shared fiber that would cost $200M – $260M to build, and $1.8M annually to maintain
- Each camera transitioned from leased broadband services onto fiber saves VDOT up to $5,000 annually
Key Objectives

• Review the existing legal framework and identify opportunities
  1. Explore new options
  2. Pursue modifications to existing framework

• Assess existing needs of the Commonwealth of Virginia

• Compile data sets and materials to evaluate potential VDOT ROW asset capabilities to address broader need of the Commonwealth

• Develop initial framework to achieve maximum asset capabilities

• Establish framework for commercial opportunities based on market findings

• Present findings and develop potential procurement options
Some Examples

Other known states building and improving fiber optic infrastructure.

- Pennsylvania – Pennsylvania Fiber Optic
- Kentucky – Kentucky Wired
- California – Riverside County
- Massachusetts – Verizon Partnership
- North Carolina – I-95/US 70
- Georgia – Interstate Broadband Deployment P3
What other States are looking for

PENNSYLVANIA

- Pennsylvania Turnpike Commission is procuring a private partner to develop a fiber optic system in its 500+ miles of ROW to meet future data requirements. The project will be procured as a DBFOM P3, funded by savings from existing operations and rights to ROW.

- Benefits focused on supporting expansion of cashless toll collection, administrative building connectivity, maintenance shed connectivity, tolling systems traffic cameras, dynamic message signs, and potentially connected vehicle/automated vehicle technology.

- The P3 approach is expected to bring private finance and commercial revenues.

- The commercial opportunity may also facilitate greater choice of affordable broadband access for rural and other underserved communities.
What other States are looking for continued...

GEORGIA

- The State of Georgia intends to leverage its interstate ROW to develop "next-gen" intelligent transportation systems, prepare the State for autonomous/connected vehicles and facilitate the expansion of broadband access to rural areas. GDOT is preparing to procure a private partner, potentially through a DBFOM P3, to commercialize the existing conduit/dark fiber network and expand the fiber and wireless networks on interstates.

KENTUCKY

- Benefits focused around education, health care, improving broadband coverage, first responders and lowering customer costs.

MASSACHUSETTS

- Benefits focused on strengthening public safety and providing broadband to public schools.
What other States are looking for continued...

CALIFORNIA

- The City of San Francisco is seeking to leverage its ROW to provide open high speed broadband access to all residents. Anticipated benefits include economic impacts (given concentration of technology focused businesses in the city), as well as broader social benefits of access and connectivity for citizens.

NORTH CAROLINA

- NC plans to have fiber optics coupled with microcell towers and Intelligent Transportation Systems (ITS) equipment to provide variable message signs along U.S. 70 (future I-42), and implement integrated corridor management. It will also allow North Carolina Department of Transportation (NCDOT) to leverage its ROW to fill high-speed broadband gaps in rural North Carolina, and to integrate connected and autonomous vehicles.
Proposed Strategy and Timeline (12 weeks)

1. **Need Identification (VDOT and CoVA needs assessments)**
   - VDOT Needs (update Communications Master Plan lead by Operations Division)
   - Commonwealth Needs Identification

2. **Valuation (commercial value assessment)**
   - Assess option value within VDOT as well as across the commonwealth based on demand, commercial need and opportunities of ROW

3. **Potential Delivery Options (discussion on pros and cons)**
   - Resource Sharing
   - P3

4. **Recommendations**
   - Next steps for project development/procurement
   - Stakeholder outreach and process

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**Timeline**

- **March 2018**: Internal Review
- **April 2018**: Need Identification
- **May 2018**: Valuation, Delivery Options
- **June 2018**: Recommendations (1-2 weeks)