

# **FIBER OPTICS OPPORTUNITIES INITIATIVE PHASE 1 FINDINGS**

**Office of Public-Private Partnerships**

**June 19, 2018**



Morteza Farajian, PhD

# Objectives for Fiber Optics Opportunities Initiative

- Execute a strategy that meets Virginia Governor's and Legislative leadership's telecommunications objectives, including all underserved and rural areas, for broadband.
- Maximize opportunities that benefit and/or prepare Virginia's transportation infrastructure, operations, Commonwealth and business functions by leveraging fiber (current and future expanded) capability.

# Introduction - Phase 1 Timeline

## 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)

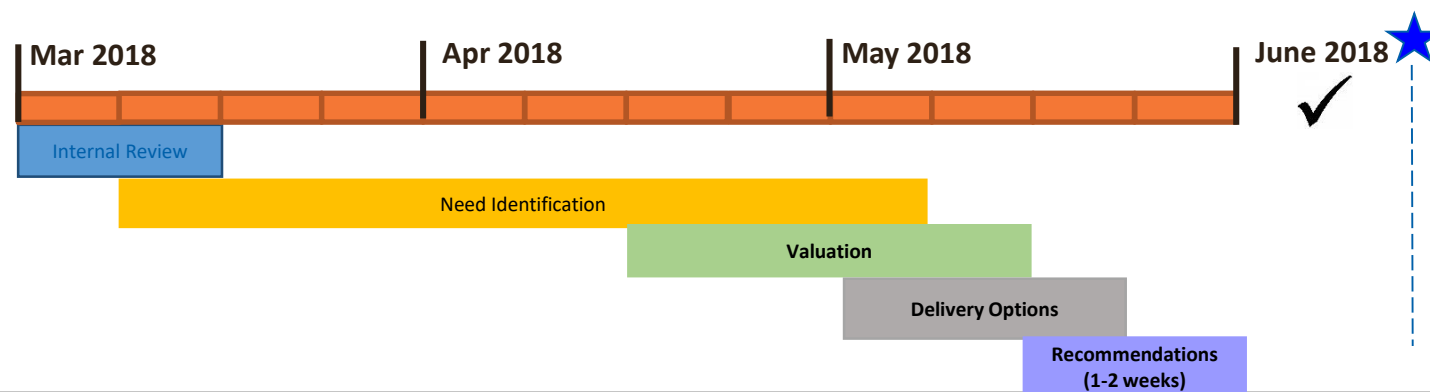
- Assess option value within VDOT as well as across the commonwealth based on demand, commercial need and opportunities of ROW

## 3. Potential Delivery Options (discussion on pros and cons)

- Resource Sharing
- P3

## 4. Recommendations

- Next steps for project development/procurement
- Stakeholder outreach and process



# Legislative Requirements (state and federal)

## Value of Assets

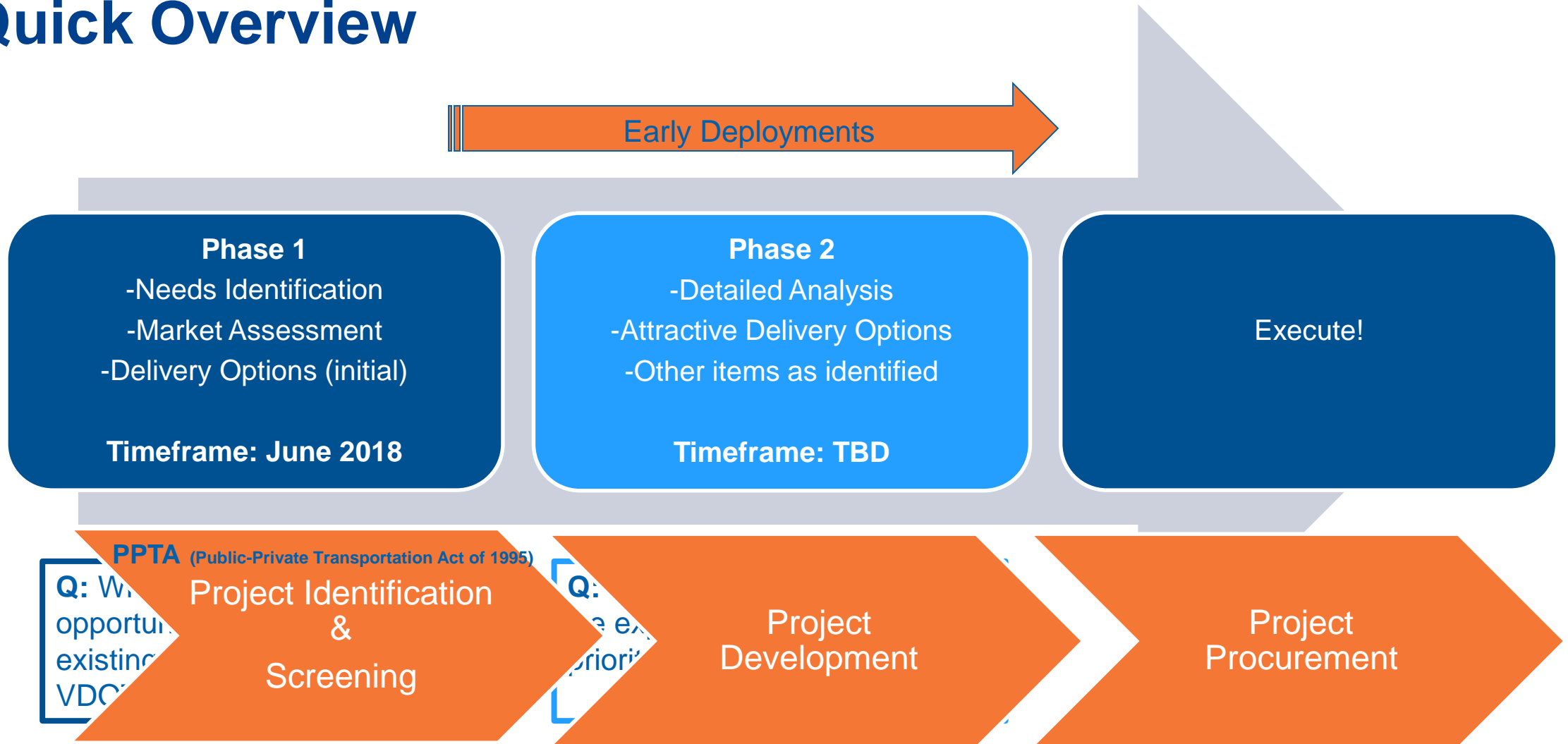
- ~ 400 miles of fiber owned by VDOT
- ~ 3700 miles of fiber under RSA
- ~ Right of Way



## Policy Goals & Objectives

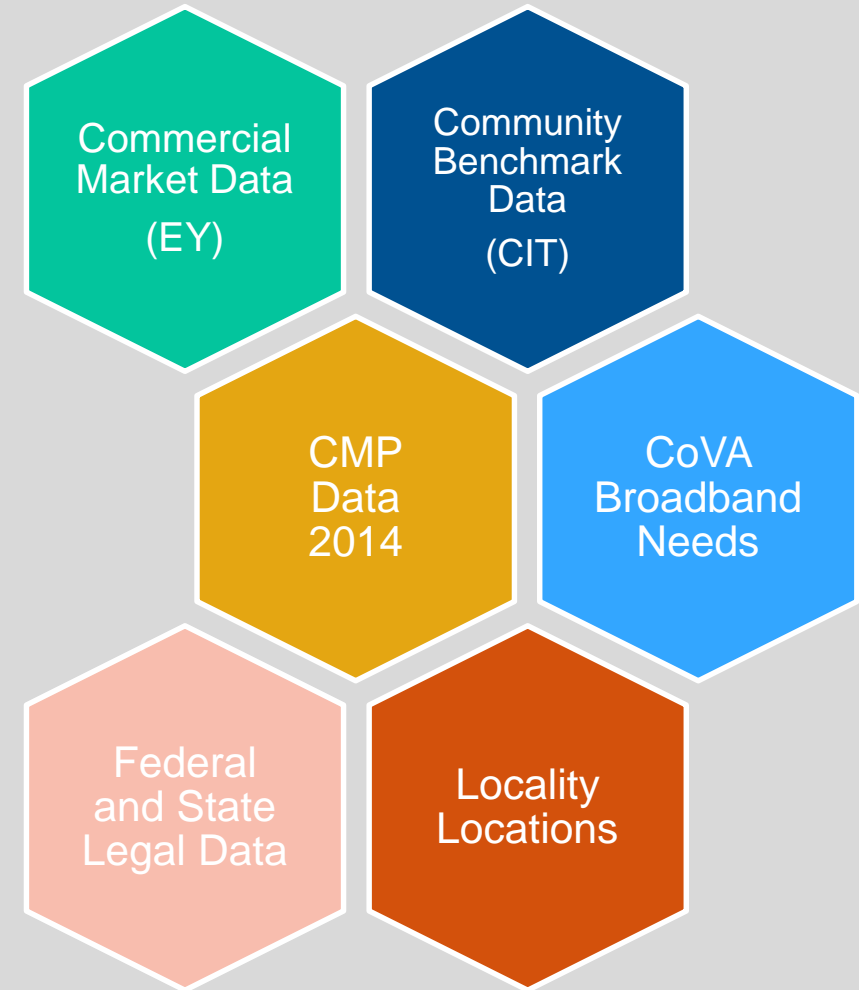
1. VDOT Operations
2. VDOT Administration
3. Transportation Needs
4. CoVA Telecommunications priorities

# Quick Overview

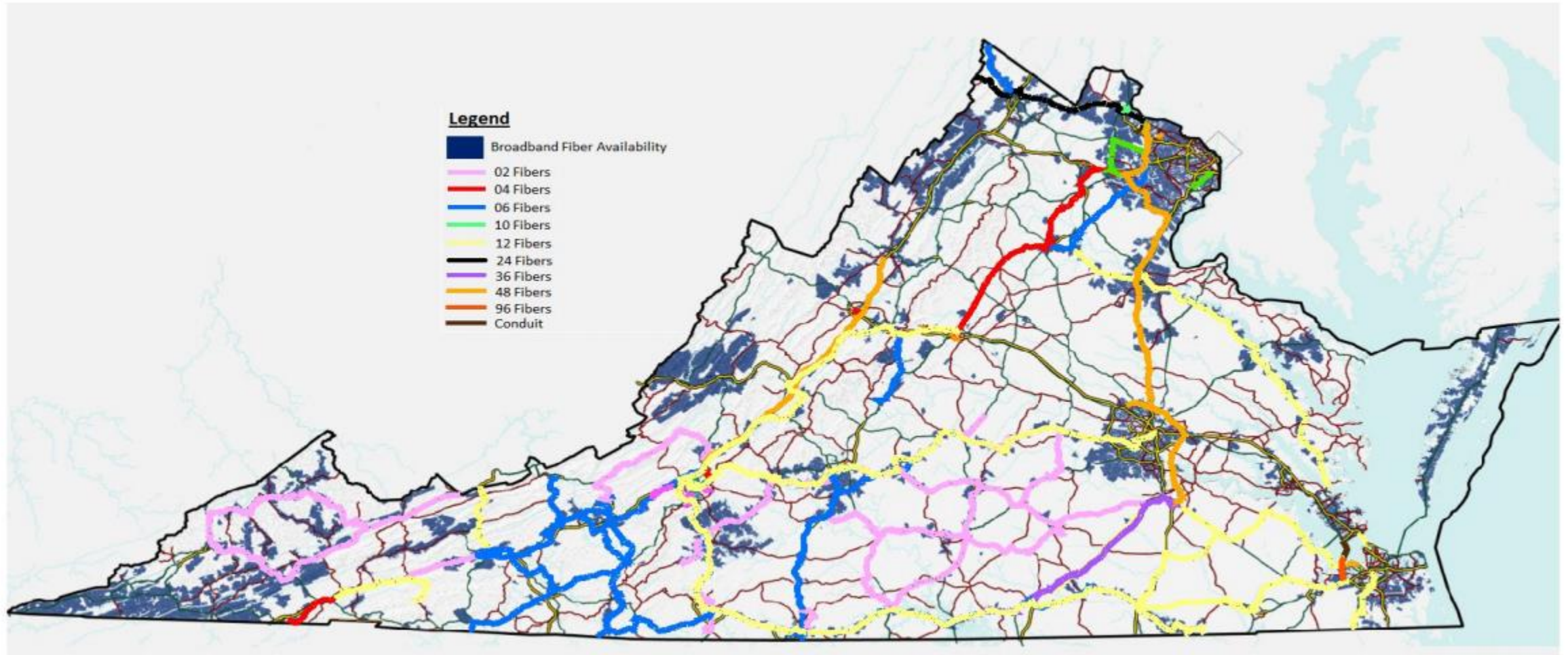


## Key Inputs for Phase 1

- VDOT empirical data (i.e. assets, TOCs, traffic data, fiber routes, etc.)
- Telecommunications market data
- Commonwealth community data
- Commonwealth needs and priorities
- Executive Branch Agency locations
- U.S. Census data



# Broadband Fiber Availability and Resource Sharing Fiber



# Communications Master Plan (CMP) Update

- The CMP identifies communications needs to support VDOT's Operations Program and provides guidance on evaluating alternatives and prioritizing communications projects
- Updating Plan to account for new resource sharing agreements, new field assets and updated objectives, which include:
  - Opportunities to connect to local 911 centers
  - Interconnecting VDOT District Offices
  - Connecting directly to major data centers
  - Interconnecting the I-66 and I-64 tolling systems
- Network and bandwidth requirements updated based on new objectives
- Short and long-term projects identified/updated to meet new objectives

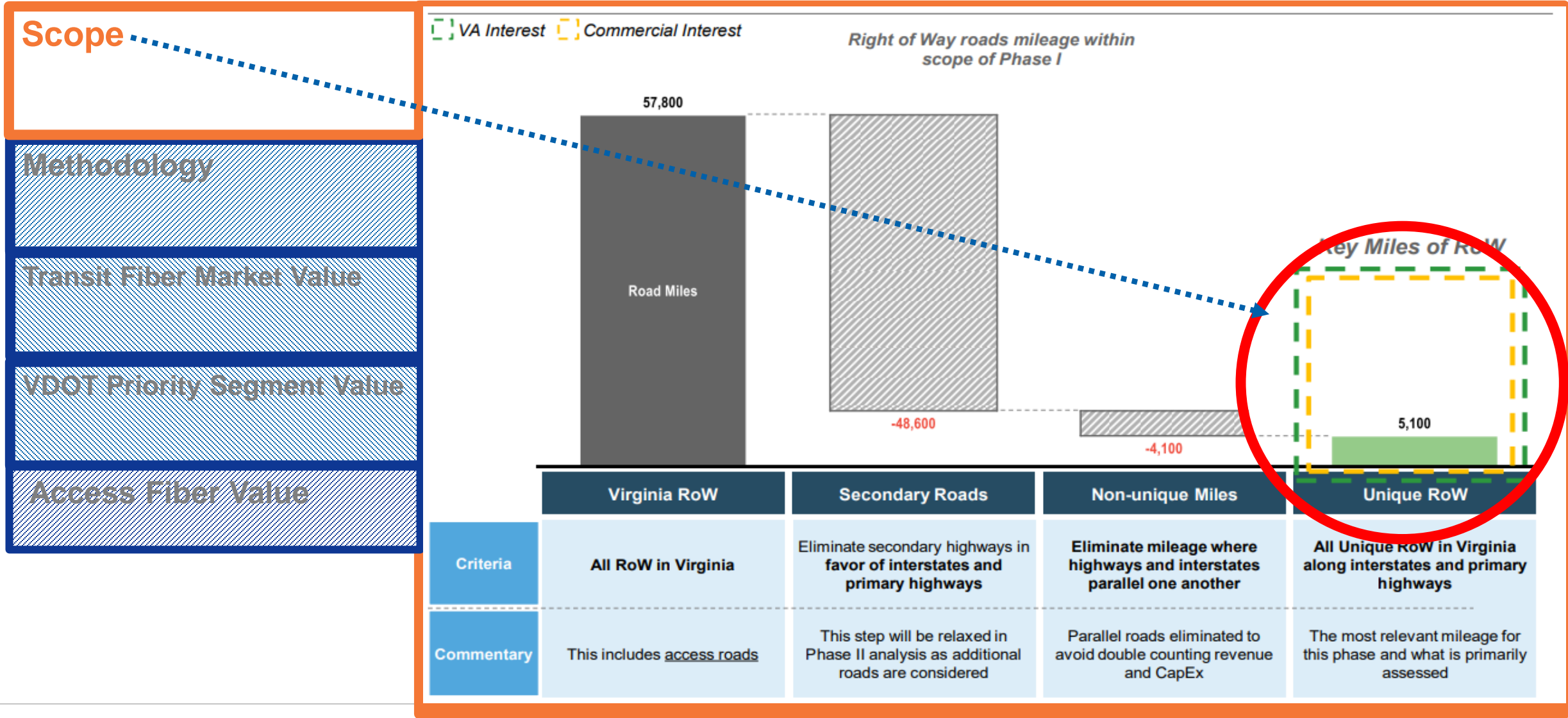


# Communications Master Plan (CMP) Update

Roadside Technology Assets	2014 QTY	2018 QTY
Signalized Intersections	2,999	3,029
Traffic Cameras	915	1,097
Dynamic Message Signs	541	526
Weather Stations	80	97

- **59% of 911 centers are within 1 mile of VDOT fiber (75% within 5 miles)**
- **VDOT has 18 active Fiber Resource Sharing agreements**
- **VDOT has access to 3,700 miles of Resource Sharing fiber and currently uses 1,255 miles**
- **Resource sharing routes used by VDOT would cost up to \$326M to build and \$2.26M to maintain annually**

# Study focused on ~5100 road miles of attractive fiber routes



# Transportation, CoVA and Commercial data and facilities documented and mapped using GIS mapping

Scope

Methodology

Transit Fiber Market Value

VDOT Priority Segment Value

Access Fiber Value

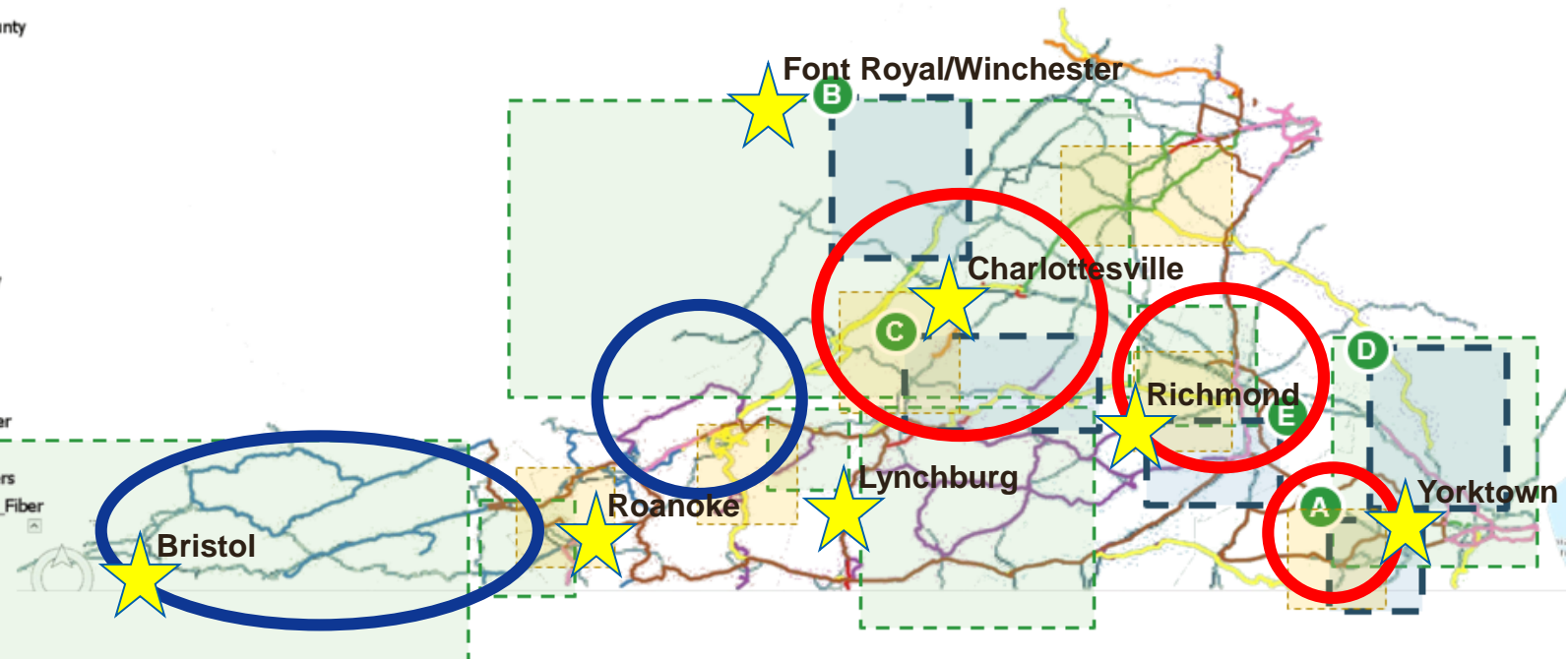
## B PRIORITY BUILDS

VA Interest Commercial Interest IVDOT Identified

PRELIMINARY

### Aligning VDOT, CoVA and Commercial Interests

- ACOE
- AT&T
- Albemarle\_County
- BVU
- CenturyLink
- Citizens
- FiberLight
- Level\_3
- Lumos
- MBC
- NOVEC
- Nelson\_County
- NexGen
- Qwest
- RVBA
- Shentel
- SideraLighttower
- Summit
- VDOT\_Lit\_Fibers
- VDOT\_Owned\_Fiber
- WMATA



#### VDOT Highlighted Five Areas Of High Importance

<b>A</b> I-17 over the York River	<b>B</b> I-81 to I-66	<b>C</b> I-64 Richmond to Charlottesville
<b>D</b> Eastern Shore	<b>E</b> I-64 Richmond to Virginia Beach	TBD..

#### Sample Virginia Goals Identified

- ▶ Connectivity to CoVA premises
- ▶ Extension of rural broadband
- ▶ Areas with data center presence
- ▶ Limited wholesale broadband presence for small/medium sized businesses

#### Sample Commercial Goals

- ▶ Areas where there is high commercial demand
- ▶ Areas where demand is not fully addressed by supply of high speed broadband
- ▶ Areas where CapEx is justified by return

# Transit Fiber= Backbone/Infrastructure supporting wholesale

Scope

Methodology

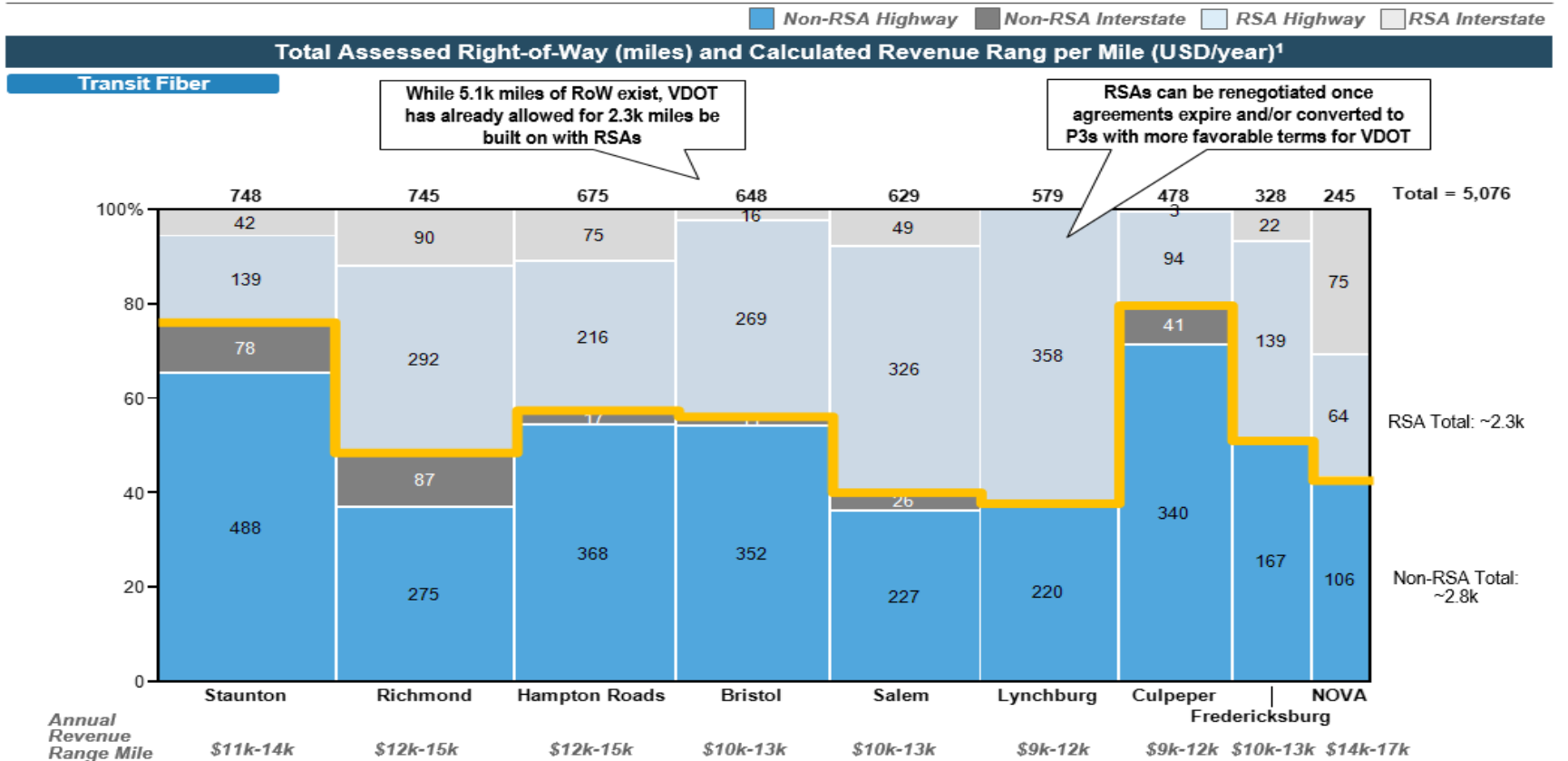
**Transit Fiber Market Value**  
(wholesale/leased lines)  
In scope

VDOT Priority Segment Value

Access Fiber Value

## Wholesale Market Opportunity

The total addressable transit fiber miles along Virginia's unique RoW is approximately 5.1k miles, of which ~2.3k miles are covered by RSAs fiber



Note: 1) Figures do not include IRUs, customer/revenue ramp up, and difference is due to rounding  
 2) Assumptions, specifically the lack of revenue and CapEx ramp up periods and revenue dis-synergy, are more pronounced on State Routes when looked at in their entirety; assumes 144 strands with 50% utilization and yet to be modified by competition  
 Source: VDOT, unique RoW is defined as route miles on interstates or US primary highways discounting intersections

# Transit Fiber= Backbone/Infrastructure supporting wholesale Transoceanic fiber ring has not been included in revenue assessment YET

Scope

Methodology

Transit Fiber Market Value  
(wholesale/leased lines)

**VDOT Priority Segment Value**  
(In scope of ~5100 miles)

Additional Value

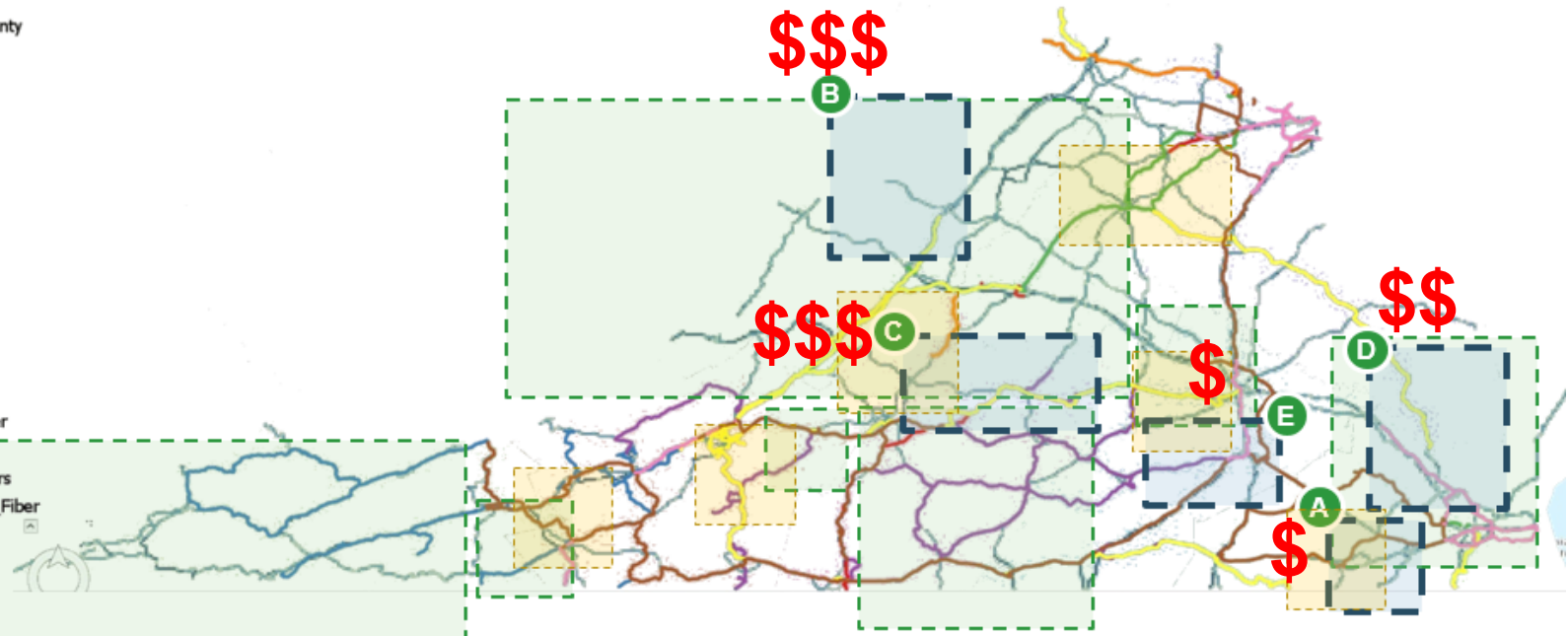
## B PRIORITY BUILDS

VA Interest Commercial Interest IVDOT Identified

PRELIMINARY

Aligning VDOT, CoVA and Commercial Interests

- ACOE
- AT&T
- Albemarle\_County
- BVU
- CenturyLink
- Citizens
- FiberLight
- Level\_3
- Lumos
- MBC
- NOVEC
- Nelson\_County
- NexGen
- Qwest
- RVBA
- Shentel
- SideraLighttower
- Summit
- VDOT\_Lit\_Fibers
- VDOT\_Owned\_Fiber
- WMATA



### VDOT Highlighted Five Areas Of High Importance

<b>A</b> I-17 over the York River	<b>B</b> I-81 to I-66	<b>C</b> I-64 Richmond to Charlottesville
<b>D</b> Eastern Shore	<b>E</b> I-64 Richmond to Virginia Beach	TBD..

### Sample Virginia Goals Identified

- ▶ Connectivity to CoVA premises
- ▶ Extension of rural broadband
- ▶ Areas with data center presence
- ▶ Limited wholesale broadband presence for small/medium sized businesses

### Sample Commercial Goals

- ▶ Areas where there is high commercial demand
- ▶ Areas where demand is not fully addressed by supply of high speed broadband
- ▶ Areas where CapEx is justified by return

## Access Fiber= consumer and business access wholesale fiber to support the last mile

Scope

Methodology

Transit Fiber Market Revenue  
(wholesale/leased lines)

VDOT Priority Segment Revenue  
(within scope of ~5100 miles)

### Additional Revenue

Access & Wireless  
(within ½ mile of VDOT RoW)

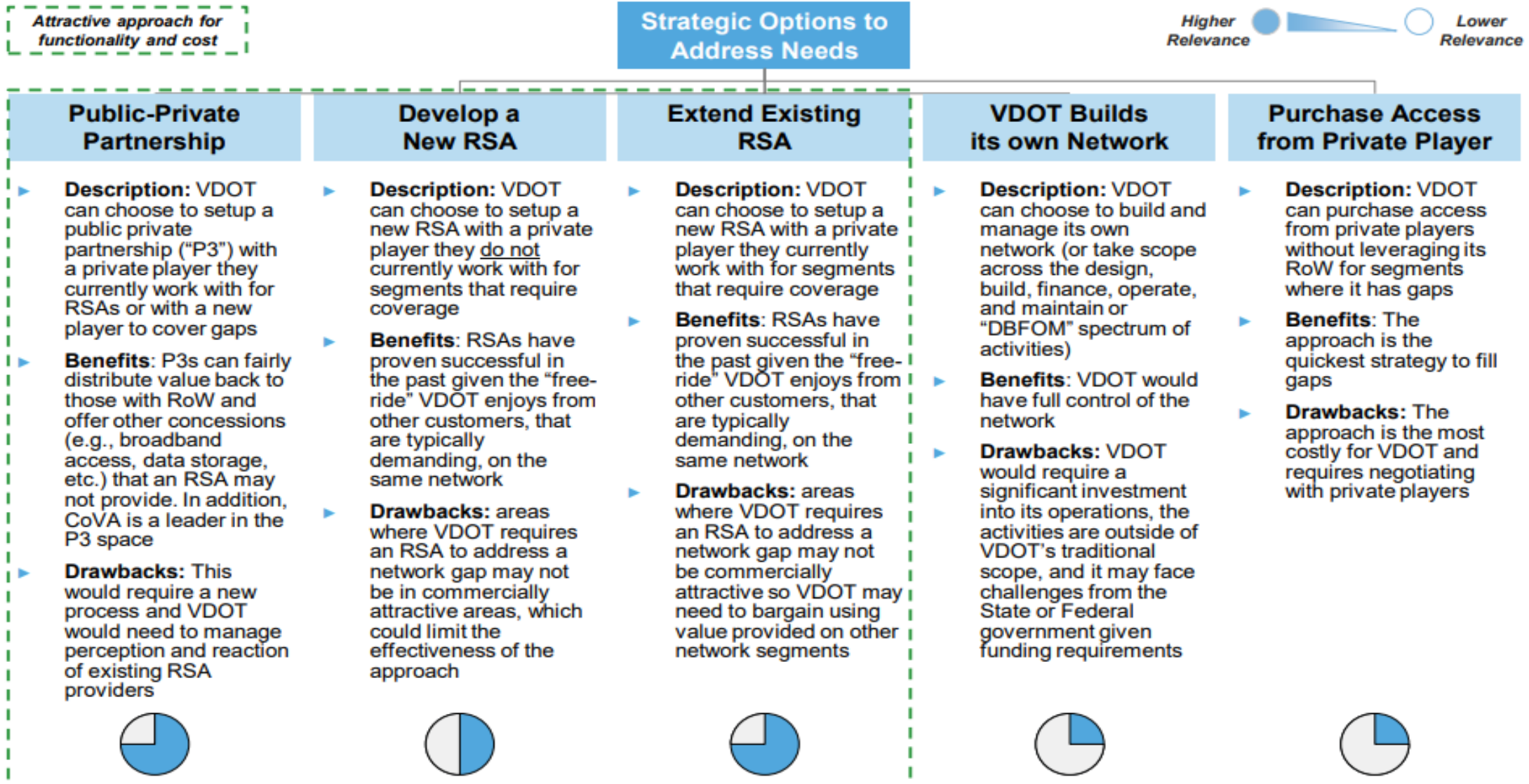
- Additional value may be created if VDOT leverages the total 57,800 miles of RoW to support
  - 5G wireless small cell sites
  - Access fiber to deploy to last mile

# RECOMMENDATIONS



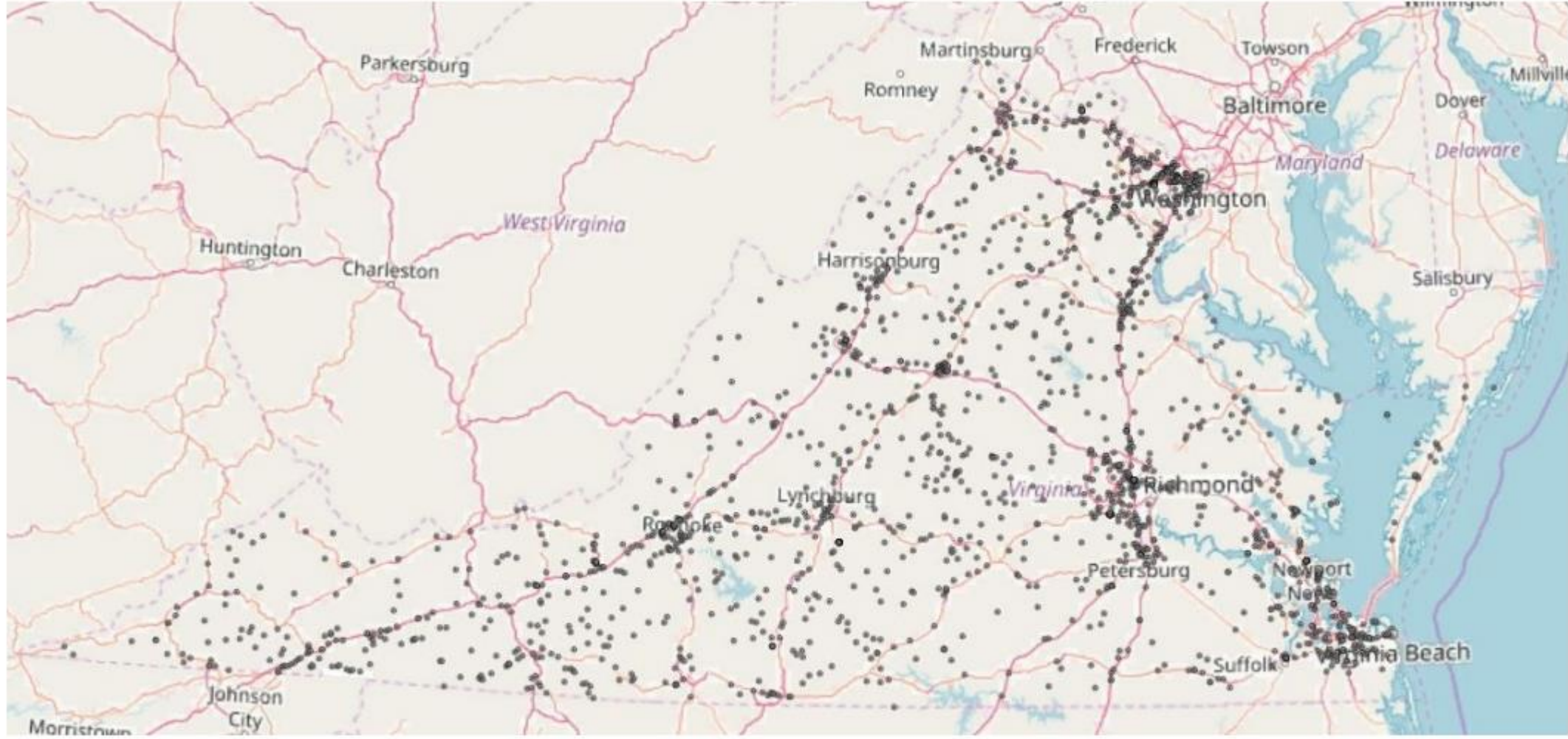
# Recommendations – Consider all viable options

## Capture RoW Value for VDOT





# Recommendations – Take advantage of ongoing construction projects



# Recommendations – Leverage VDOT owned fiber

- **Options to make quick results**
  - Investigate connecting the 59% of 911 centers that are within 1 mile of VDOT fiber
  - Leverage 2018 CMP to identify where VDOT can make additional network connections
  - Wireless mesh technology to make network connections
  - Investigate existing RSAs to possibly extract more value

# Next Steps

1. **CTB feedback during this meeting**
2. **CTB direction in the next meeting**
3. **Coordination with office of Secretary of Transportation**
4. **Creation of Stakeholder Advisory Committee**
5. **Initiation of Phase 2**
6. **Issuance of Request for Information to engage private sector**
7. **Presentation of results to CTB and potentially PPTA Steering Committee**