Commonwealth Transportation Board Environmental Subcommittee

VDOT Central Office
1221 East Broad Street
Richmond, Virginia

June 17, 2024
Draft Minutes

The meeting was called to order at 8:35 a.m.

Board members in attendance: Tom Fowlkes, Mary Hynes, Scott Kasprowicz, Randolph Laird, and Thomas Lawson.

Welcome

Angel Deem, VDOT Chief of Policy, welcomed everyone to the meeting. Ms. Deem shared that VDOT was recently awarded a Federal Highway Administration Environmental Excellence Award for the establishment of the Office of Transportation Sustainability (OTS). The awards, issued every two years, recognize outstanding transportation projects, processes, and organizations that incorporate environmental stewardship. Ms. Deem introduced Chris Swanson, VDOT Environmental Division Director, as the meeting's facilitator.

Approval of January 2024 minutes

Minutes approved.

Decarbonization Program

Chris Berg, OTS Director, provided an update on the National Electric Vehicle Infrastructure Program. VDOT released the Phase 1-B Request for Applications (RFA) on May 2, 2024, with a closing date of July 10, 2024. The RFA is soliciting applications to build electric vehicle charging stations in 41 VDOT-identified target areas along Alternative Fuel Corridors throughout the state.

Mr. Berg also presented an overview of the development of the Emissions Benefit Estimate Tool to provide VDOT with consistent estimates of carbon dioxide emissions reductions resulting from projects funded through the federal Carbon Reduction Program (CRP). The tool, which will build on federal methodologies and datasets, as well as best practices from other states, adapted for Virginia-specific conditions to allow VDOT to satisfy CRP guidance on program evaluation by tracking benefits from specific projects and the program as a whole.

Resilience Program

Mr. Berg provided an update on the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Grant Award VDOT received in April of 2024. The grant-funded project, titled Modernizing Operations for Virginia's Evacuation Resilience (MOVER), is a pilot effort led by VDOT's Traffic Operations Division toward a comprehensive statewide integrated technology initiative to ensure efficient traffic flow on critical routes during flooding and emergency weather events. The project will support the installation and integration of stream gauges, flood sensors, road weather information systems, traffic cameras, message signs, and other technology to monitor and manage traffic along evacuation routes.

Mr. Kasprowicz asked about the role of third-party sources of traffic data and artificial intelligence to supplement VDOT traffic monitoring efforts. Mr. Berg shared that VDOT is currently evaluating the use of third-party traffic data sources and artificial intelligence tools to supplement VDOT operational data gathering, analysis, and decision support.

Mr. Fowlkes asked about the ability of localities to apply for PROTECT funding, and Mr. Berg shared that localities and Metropolitan Planning Organizations can apply to directly to the Federal Highway Administration for funding. Ms. Deem shared that Virginia Beach and Stafford County were both awarded PROTECT grant funding from the 2023 funding opportunity.

Land Stewardship Program

Mr. Berg provided an update on progress toward Objective 4.5 of VDOT's Business Plan: 'Improve Land Management.' Key VDOT stakeholders have begun coordination to achieve the objective, including the identification of environmental land management practices including pollinator habitat, wetland mitigation, total maximum daily load (TMDL) projects, wildlife crossings, aquatic organism passage, and other potential future uses of the right of way for power generation and transmission. VDOT divisions are currently sharing relevant data sets, databases, and workflows to identify areas of overlap and opportunities to de-conflict and coordinate among potentially competing land management practices.

Subcommittee members asked what the current state of VDOT efforts to map the agency's right of way. Mr. Swanson shared that internal efforts are ongoing and still subject to quality assurance and quality control prior to any public release. Recent analysis indicates that the extent of VDOT's right of way is approximately 445,000 acres.

Subcommittee members expressed a desire for the land management effort to include coordination with external stakeholders, including private developers and environmental groups, as well as consideration for the potential for economically beneficial uses of the right of way. Mr. Berg shared that the initial focus of the effort is on inventorying and coordinating existing VDOT practices, which will then provide an informed and consistent approach to evaluating additional practices in the future.

Next Meeting

Tentatively September 2024.

Public Comment

No public comments were received.


VDOT
Virginia Department of Transportation

DECARBONIZATION PROGRAM: NATIONAL ELECTRIC VEHICLE INFRASTRUCTURE PROGRAM UPDATE

Commonwealth Transportation Board
Environmental Subcommittee

Chris Berg, Director of Sustainability

June 17, 2024

National Electric Vehicle Infrastructure (NEVI) Review

Authorized under Infrastructure Investment and Jobs Act

Deploy fast electric vehicle (EV) charging stations

$106M allocated for Virginia over 5 years

Annual Deployment Plan required

NEVI Phase 1-A Request for Applications (RFA) Review

Release Date:

- July 21, 2023

Locations:

- 18 Target Areas along Interstate Alternative Fuel Corridors (AFCs) identified for potential charging stations

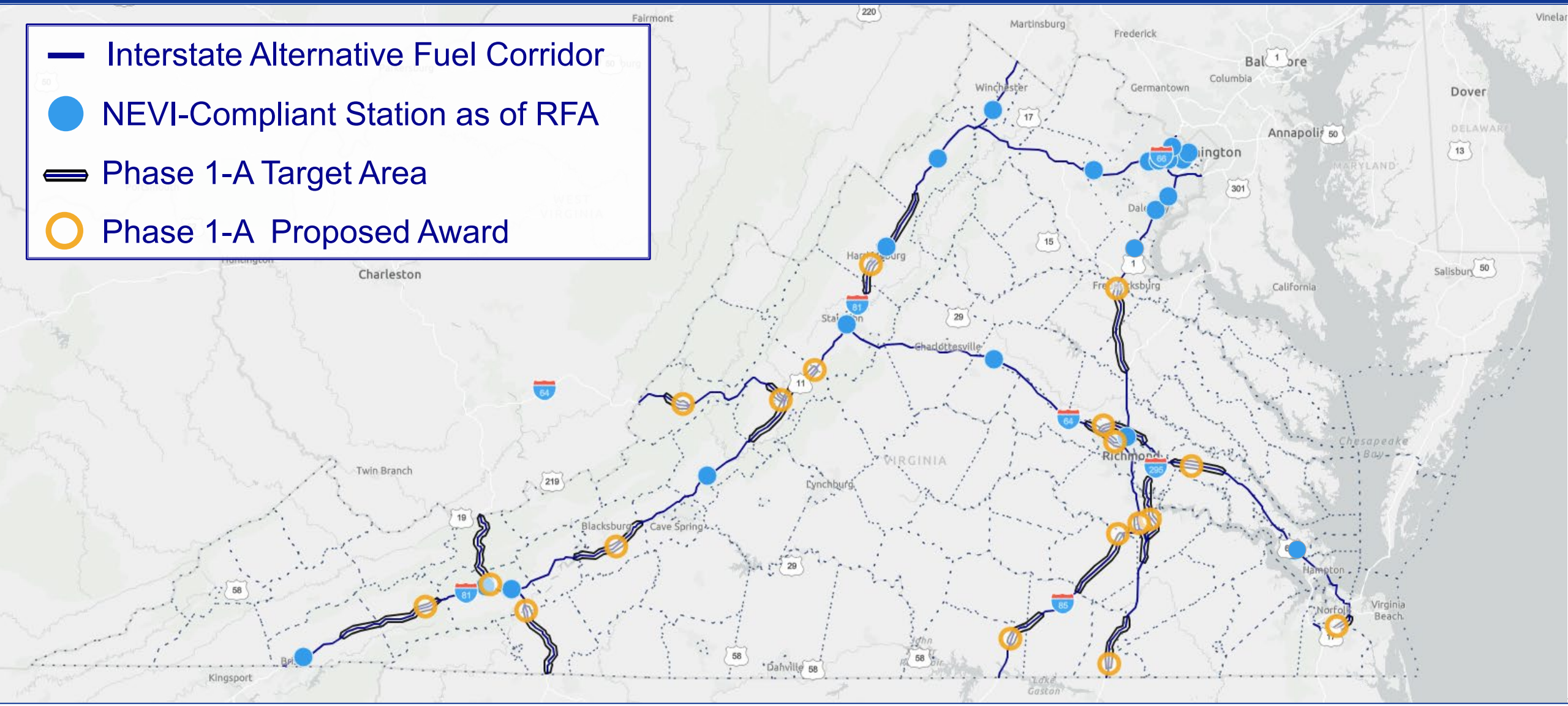
Request Closed:

- October 20, 2023

Application Review:

- Evaluation against federal requirements and program goals
- Development of award agreement documents

NEVI Phase 1-A Awards Review



NEVI Phase 1-B RFA

Release Date:

- May 2, 2024

Locations:

- 20 Target Areas along Interstate AFCs
- 21 Target Areas along State Highway AFCs

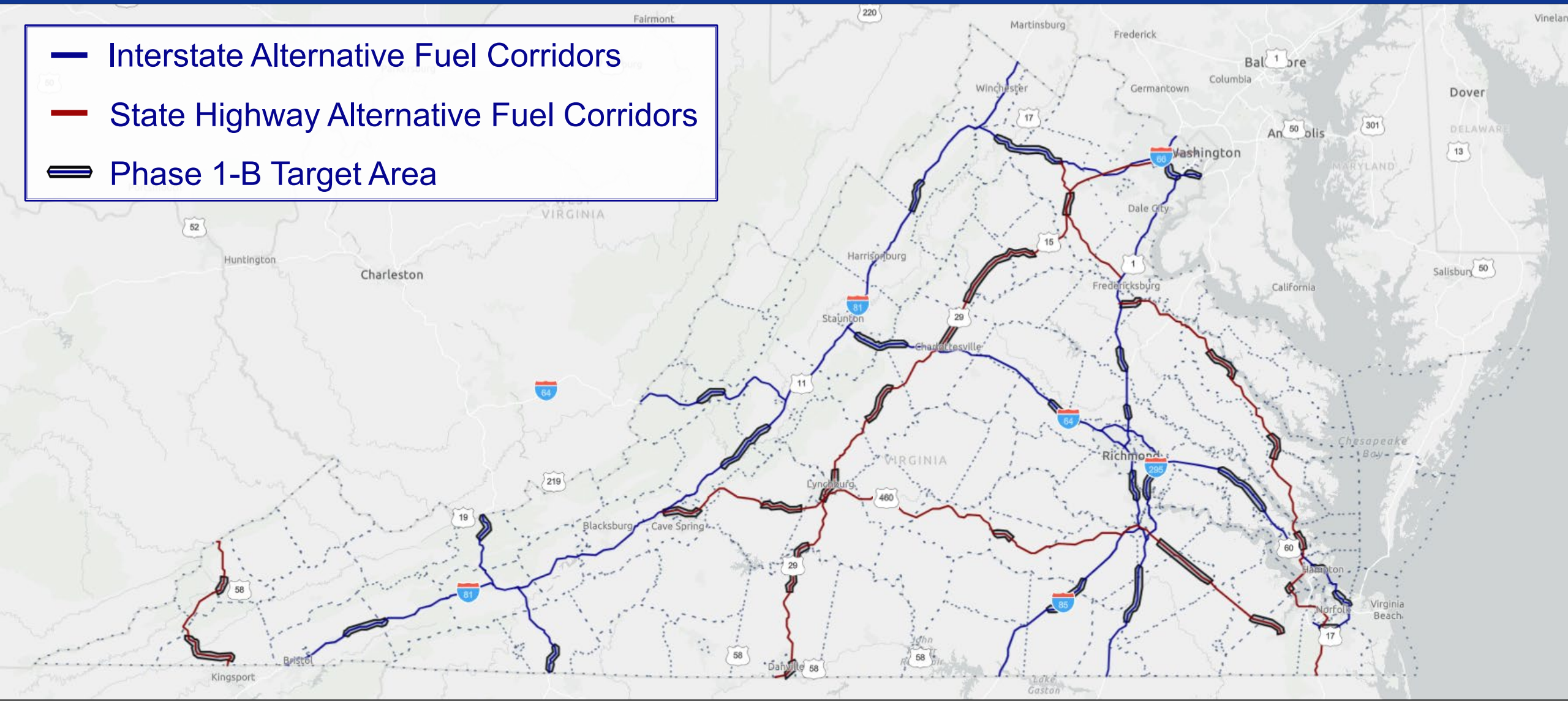
Request Close:

- July 10, 2024

Application Review:

- Evaluation against federal requirements and program goals using refined criteria from Phase 1-A

NEVI Phase 1-B Request for Applications



DECARBONIZATION PROGRAM: EMISSIONS BENEFIT ESTIMATE TOOL

Carbon Reduction Program (CRP) Review

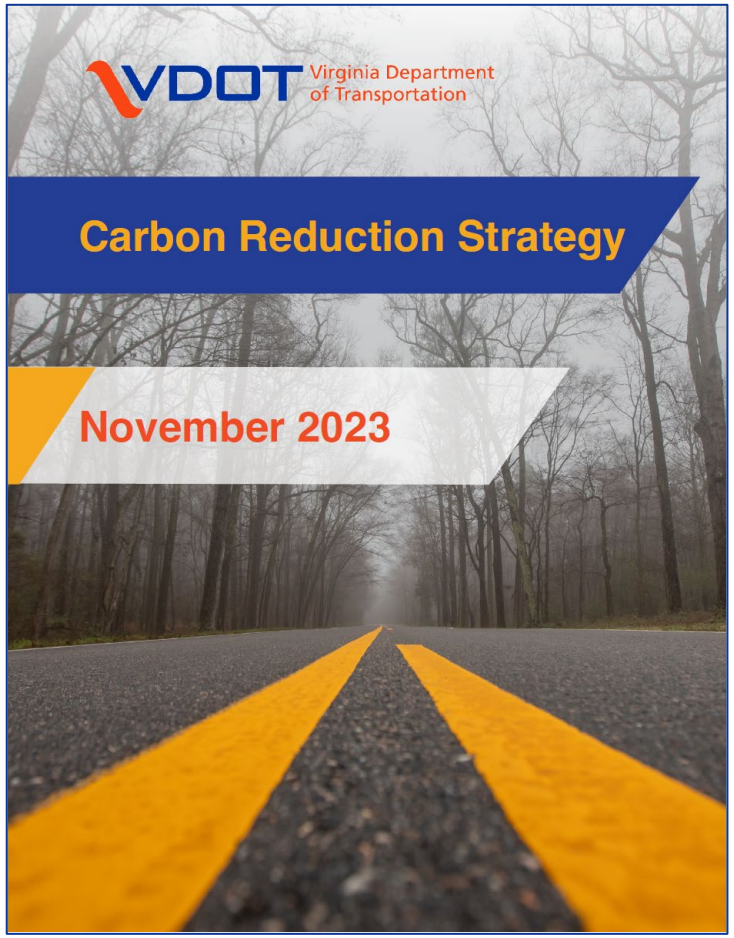
Authorized under Infrastructure Investment and Jobs Act

Reduce on-road, highway, CO_2 emissions

$166M allocated for Virginia over 5 years

Written Carbon Reduction Strategy (CRS) required

CRP Review



Transportation Choice

- **Public Transportation**
- **Bike lanes**
- **Sidewalks and crosswalks**
- **On-road and off-road trails**

Efficiency & Alternative Fuels

- Alternative fueling/charging infrastructure
- Truck stop electrification
- Diesel engine retrofits
- Efficient street lighting and traffic control devices

Congestion Management

- Congestion management technologies
- Intelligent transportation systems
- Traffic flow improvements
- Congestion pricing

Low Emissions Construction Practices

- Zero-emission construction equipment and vehicles
- Sustainable pavements and construction materials

Emissions Benefit Estimate Tool

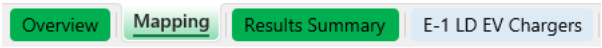
- CRP Guidance encourages states to document and measure their progress
  - Most transportation projects initiated by the Department do not require air quality emissions benefit estimate
- Tool will provide consistent calculation methodologies to support development of emission benefit estimates for transportation projects and studies, as appropriate

Methodology

- Tool calculates the carbon dioxide emissions reduction and cost-effectiveness of emissions reduction from projects
- Based on methodologies and data from:
  - Federal Highway Administration (FHWA): Congestion Mitigation Air Quality (CMAQ) Emissions Calculator Toolkit
  - Environmental Protection Agency (EPA): MOtor Vehicle Emission Simulator (MOVES4) Emission Factors
  - Tools developed by peer state Departments of Transportation

Strategies and Project Type Examples

CRP Strategy	CRP Project Type
Install infrastructure network improvements for walking, rolling and bicycling	• Construct or improve bicycle network
	• Construct or improve pedestrian network
	• Establish or expand micromobility programs
	• Add or improve road crossings for users
	• Plan, design and engineer Safe Routes to School
	• Plan, design and engineer transit hubs
	• Plan, design and engineer local and regional active transportation projects
Add high-capacity public transit options	• Implement Bus Rapid Transit (BRT) systems that use dedicated lanes and stations with off-board fare collection to provide faster and more efficient service
	• Implement bus transit priority treatments
	• Expand or add bus service
	• Enhance bus frequency or hours of service
	• Enhance transit stops
	• Transit pilot projects (e.g., on-demand)



Project Example - Bicycle Infrastructure

Construct or improve bicycle network

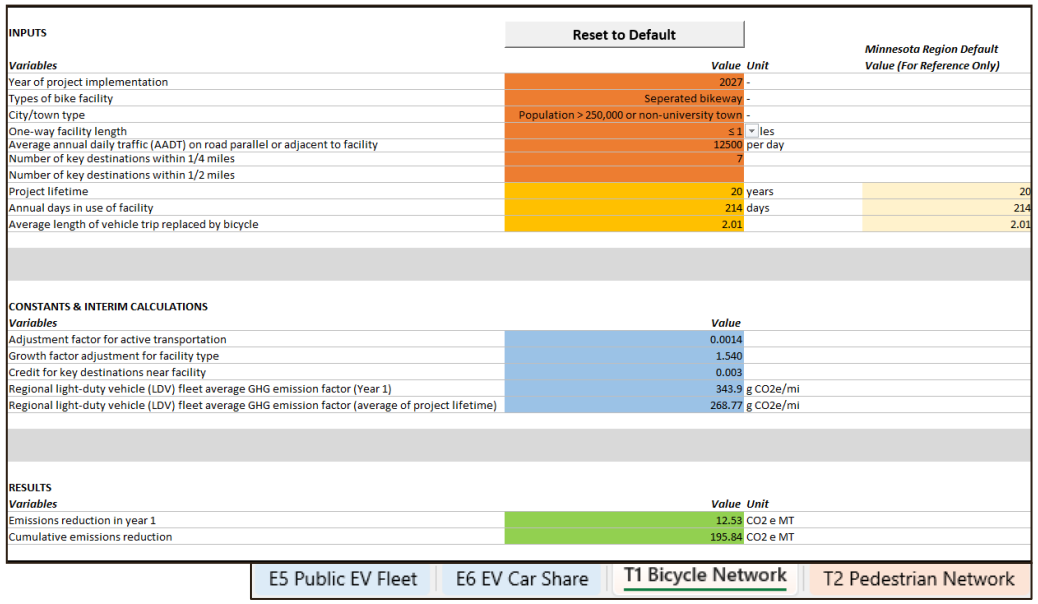
Add bicycle facilities to improve bicycling conditions, displacing vehicle travel by encouraging bicycling instead

- Emissions reduction depends on the type of facility (off-road, on-road, protected) and potential to displace VMT from the parallel roadways (current traffic, nearby attractions, city and town population).
- **Required User Input:** type of facility; city and town type; facility length; average annual daily traffic (AADT) on road parallel to facility; nearby attractions; project implementation year
- **Optional User Input:** annual days in use; average bike trip length; project lifetime

New Bikeway Engineering Project

- Average daily trips across the current roadway: 12,500
- Off-road trail facility
- 1 mile
- 7 key destinations within ¼ miles:
  - 2 parks, 1 school, 1 church, 1 pharmacy, 1 gym, 1 bank
- Population < 250,000

Project Example - Bicycle Infrastructure



INPUTS — Reset to Default

Variables	Value	Unit	Minnesota Region Default Value (For Reference Only)
Year of project implementation	2027	-	
Types of bike facility	Seperated bikeway	-	
City/town type	Population > 250,000 or non-university town	-	
One-way facility length	≤ 1	les	
Average annual daily traffic (AADT) on road parallel or adjacent to facility	12500	per day	
Number of key destinations within 1/4 miles	7		
Number of key destinations within 1/2 miles			
Project lifetime	20	years	20
Annual days in use of facility	214	days	214
Average length of vehicle trip replaced by bicycle	2.01		2.01

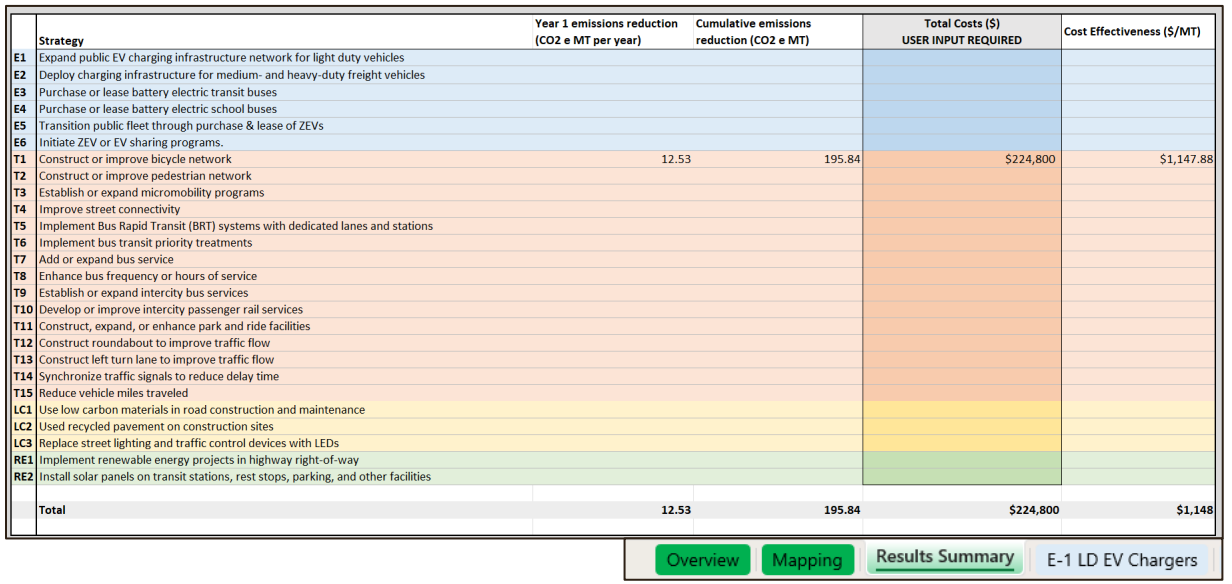
CONSTANTS & INTERIM CALCULATIONS

Variables	Value	
Adjustment factor for active transportation	0.0014	
Growth factor adjustment for facility type	1.540	
Credit for key destinations near facility	0.003	
Regional light-duty vehicle (LDV) fleet average GHG emission factor (Year 1)	343.9	g CO2e/mi
Regional light-duty vehicle (LDV) fleet average GHG emission factor (average of project lifetime)	268.77	g CO2e/mi

RESULTS

Variables	Value	Unit
Emissions reduction in year 1	12.53	CO2 e MT
Cumulative emissions reduction	195.84	CO2 e MT

E5 Public EV Fleet | E6 EV Car Share | T1 Bicycle Network | T2 Pedestrian Network



	Strategy	Year 1 emissions reduction (CO2 e MT per year)	Cumulative emissions reduction (CO2 e MT)	Total Costs ($) USER INPUT REQUIRED	Cost Effectiveness ($/MT)
E1	Expand public EV charging infrastructure network for light duty vehicles				
E2	Deploy charging infrastructure for medium- and heavy-duty freight vehicles				
E3	Purchase or lease battery electric transit buses				
E4	Purchase or lease battery electric school buses				
E5	Transition public fleet through purchase & lease of ZEVs				
E6	Initiate ZEV or EV sharing programs.				
T1	Construct or improve bicycle network	12.53	195.84	$224,800	$1,147.88
T2	Construct or improve pedestrian network				
T3	Establish or expand micromobility programs				
T4	Improve street connectivity				
T5	Implement Bus Rapid Transit (BRT) systems with dedicated lanes and stations				
T6	Implement bus transit priority treatments				
T7	Add or expand bus service				
T8	Enhance bus frequency or hours of service				
T9	Establish or expand intercity bus services				
T10	Develop or improve intercity passenger rail services				
T11	Construct, expand, or enhance park and ride facilities				
T12	Construct roundabout to improve traffic flow				
T13	Construct left turn lane to improve traffic flow				
T14	Synchronize traffic signals to reduce delay time				
T15	Reduce vehicle miles traveled				
LC1	Use low carbon materials in road construction and maintenance				
LC2	Used recycled pavement on construction sites				
LC3	Replace street lighting and traffic control devices with LEDs				
RE1	Implement renewable energy projects in highway right-of-way				
RE2	Install solar panels on transit stations, rest stops, parking, and other facilities				
	Total	**12.53**	**195.84**	**$224,800**	**$1,148**

Overview | Mapping | Results Summary | E-1 LD EV Chargers

Year 1 Emissions Reduction (CO2e MT per year)	Cumulative Emissions Reduction (CO2e MT)	Total Project Cost ($)	Cost Effectiveness ($/MT)
12.53	195.84	$224,800	$1,148

RESILIENCE PROGRAM: PROTECT GRANT AWARD

Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT)

Authorized under Infrastructure Investment and Jobs Act

Ensure transportation resilience to natural hazards

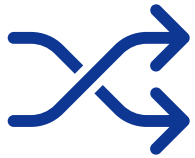
$1.4B in discretionary grant funding over 5 years

Voluntary Resilience Improvement Plan

RESILIENCE PLAN OBJECTIVES & STRATEGIES REVIEW

1. Data Driven Decisions	• Authoritative Datasets • Data and Research Gaps
2. Stakeholder Engagement	• Coordination with Federal, State, MPO, Local Initiatives
3. Identify At-Risk Infrastructure	• Visualization Tool (Asset and Network Vulnerability and Risk Assessment) • Inform focus areas, projects
4. Resilience Measures	• Adaptive Design Criteria (Hydraulics, Materials, Structure and Bridge) • Natural and Nature-Based Solutions • Operational, Maintenance, and Emergency Management Measures • Administrative and Policy Measures
5. Feasibility and Cost Effectiveness Analyses	• Develop Benefit Cost Analysis Tools
6. Funding Opportunities	• PROTECT Formula & Discretionary Funding • Other Funding Opportunities

PROTECT Grant Program Overview



Planning Activities

Resilience Improvements

Community Resilience and Evacuation Routes

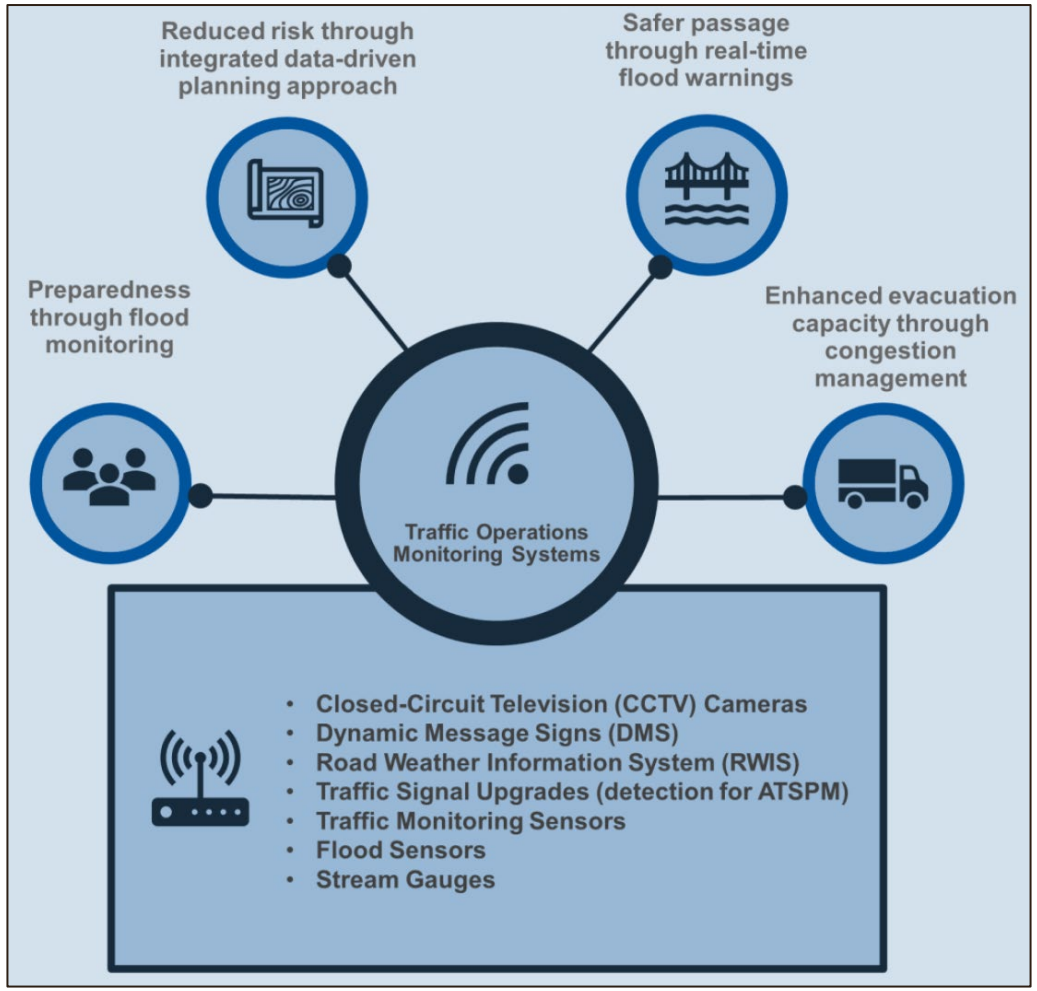
VDOT 2023 PROTECT Grant Application

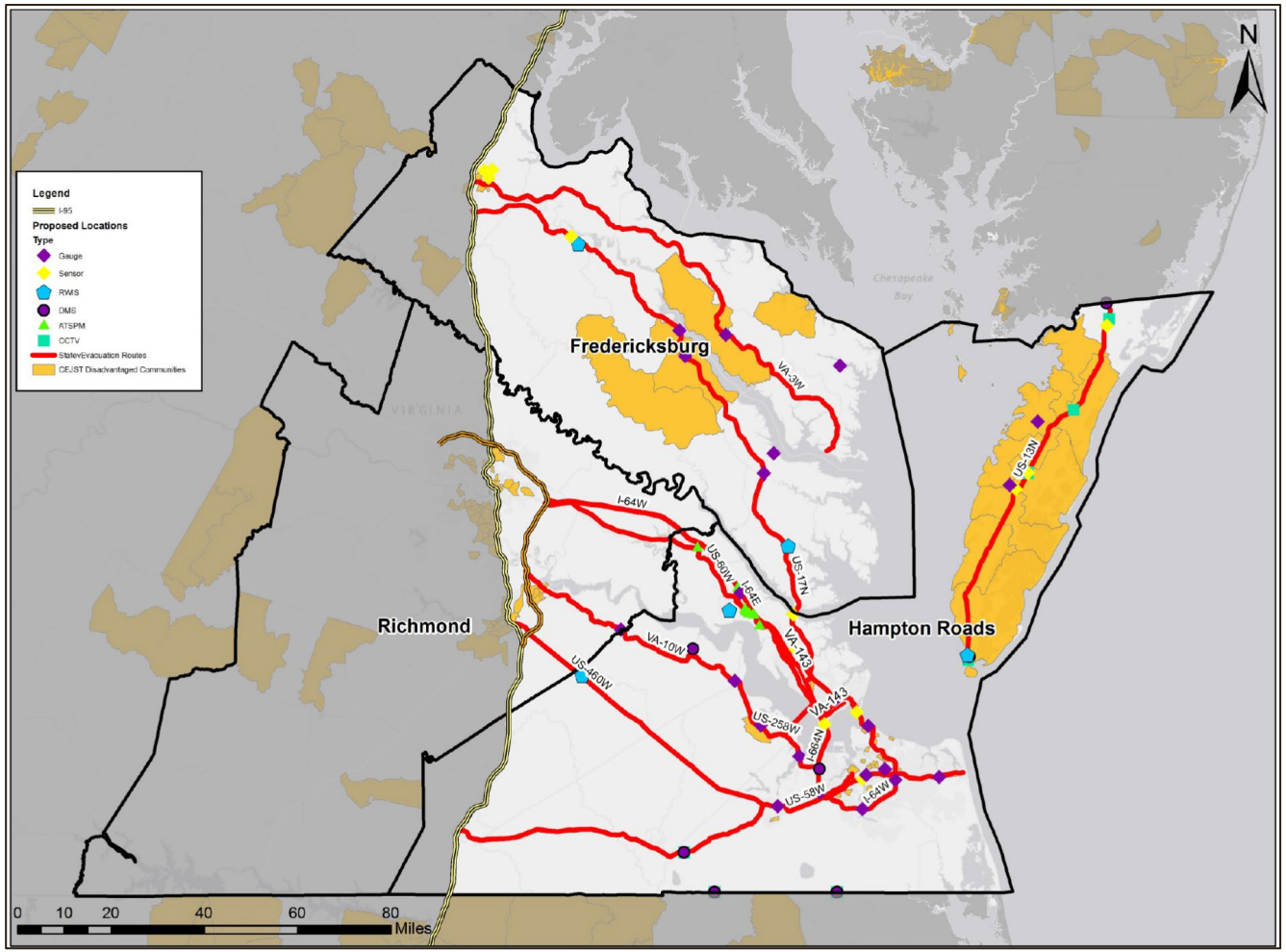
At-Risk Coastal Infrastructure

VDOT PROTECT Grant Award

- $5.4M Award – Announced 04/2024
- Modernizing Operations for Virginia's Evacuation Resilience (MOVER)
- Hampton Roads, Fredericksburg, & Richmond Districts
- Pilot effort led by Traffic Operations Division toward a comprehensive statewide integrated technology initiative to ensure efficient traffic flow on critical routes during flooding and emergency weather events
  - Technology installation
  - Data analysis & integration

MOVER Program Overview

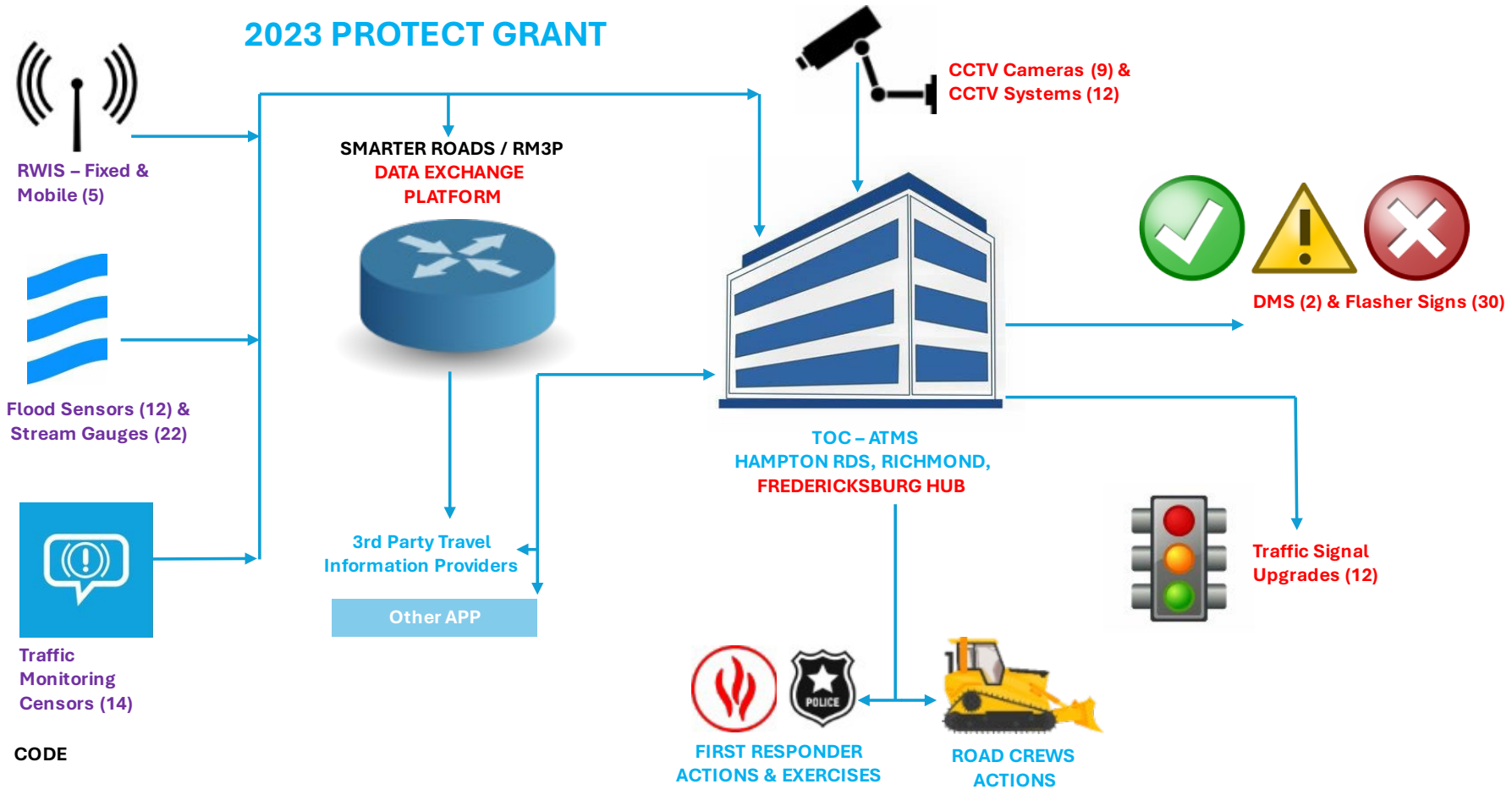




MOVER Program Overview: By the Numbers

- **Technology Installation:**
  - **22** Stream Gauges
  - **12** Flood Sensors
  - **5** Road Weather Information Systems (RWISs)
  - **12** Closed Circuit Television Systems (CCTV)
  - **9** CCTV Cameras
  - **30** Flasher Signs
  - **14** Traffic Monitoring Sensors
  - **12** Traffic Signal Upgrades
  - **2** Dynamic Message Signs (DMSs)
- **Other Components:**
  - Technology for Fredericksburg District Traffic Monitoring
  - Data Analysis and Integration
  - Advanced RWIS-Flood Detector Study
  - Camera-Video-Based Vehicle Counts Program
  - Outreach

MOVER Program Overview



CODE

PURPLE = Proposed state match

RED = Federal grant funds

BLUE = Normal operations

All quantities are estimates and subject to change upon completing field surveys.

LAND STEWARDSHIP PROGRAM: UPDATE

VDOT Business Plan – Land Management Objectives Review

Goal: Enhance VDOT's Land Use Review Process

- **Objective 4.5: Improve Land Management**
  - Identify and take advantage of opportunities to maximize value to the Commonwealth and meet commitments
  - Maximize the beneficial outcomes and outputs of VDOT's existing land assets
  - Ensure future land use decisions are consistent and defensible

VDOT Business Plan – Land Management Objectives Review

Goal: Enhance VDOT's Land Use Review Process

- **Objective 4.5: Improve Land Management**
  - Develop and adopt a suite of land management practices and accompanying decision support methodologies to include cost-benefit and return on investment analyses
  - Establish a land management program that optimizes land values and provides a decision-support methodology as well as a tracking mechanism for leadership use

Environmental Land Management Practices

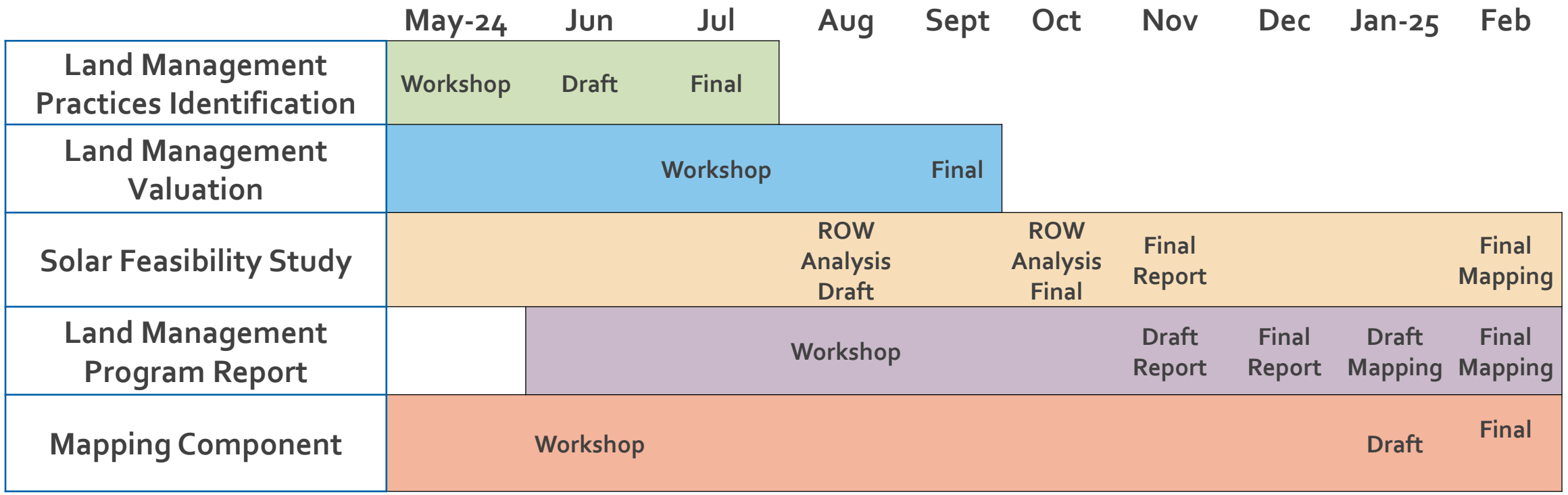
- **Pollinator Habitat** – Expand vegetation for butterflies, bees, moths, etc.
- **Total Maximum Daily Load (TMDL)** – Reduce pollutant discharge
- **Wetland Mitigation -** Offset impacts to aquatic ecosystems
- **Wildlife Countermeasures** – Reduce wildlife vehicle collisions
- **Aquatic Organism Passage (AOP)** – Remove aquatic barriers
- **Other Opportunities** – Evaluate solar, high voltage transmission, broadband

Land Management Visioning Workshop – May 22nd

Main Workshop Takeaways:

- Core VDOT Divisions – Environmental, Land Use, Maintenance, Location & Design, Right of Way
- Explore existing VDOT land management processes, data sets, databases, and tools that can be enhanced to minimize conflict and maximize benefit
- Intersection points:
  - Roadside maintenance
  - Issuance of land use permits
  - Construction projects
  - Excess property disposal

Land Management: Key Milestones

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