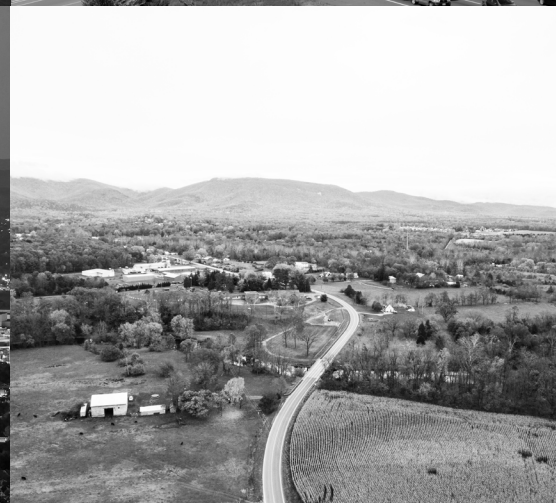


VTRANS POLICY GUIDE

- Vision, Goals, Objectives and Guiding Principles
- VTrans Travel Markets
- Identification and Prioritization of the Mid-term Transportation Needs
- Development and Monitoring of the Long-term Risk & Opportunity Register



FOR MORE INFORMATION

Visit vtrans.org for additional details, updates, and documentation about the VTrans development process. Please contact the Statewide Transportation Planning (STP) Team at the Office of Intermodal Planning and Investment to request an alternative format.

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PREPARED BY THE OFFICE OF INTERMODAL
PLANNING AND INVESTMENT FOR THE
COMMONWEALTH TRANSPORTATION BOARD



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CHAPTER 1: PURPOSE OF THE POLICY GUIDE

This Policy Guide outlines the Commonwealth Transportation Board's (CTB) policies related to VTrans, Virginia's transportation plan. As such, the Policy Guide is a resource for policymakers at all levels of government as well as for Virginians interested in policies that directly or indirectly influence allocation of limited transportation dollars and impact their day-to-day lives.

Identification and Prioritization of the VTrans Mid-term Needs

In light of limited transportation funding, the purpose of the policy for the identification and prioritization of VTrans Mid-term Needs is to provide a transparent, data-driven, systematic, and replicable process that is informed by public feedback to:

1. Identify pressing transportation needs that may require policies or investments, and
2. Prioritize the needs to determine a subset that are more critical and where solutions may make the biggest contribution to making progress towards the achievement of the CTB's transportation goals.

Details on the process and implementation of this policy can be found in the Technical Guide for the Identification and Prioritization of VTrans Mid-term Needs.

Development of the VTrans Long-term Risk & Opportunity Register

The purpose of a risk and opportunity register is to provide a better understanding of the potential changes that will affect Virginia's transportation system into the future and to allow for monitoring over time. While it is impossible to predict the future, we can be better prepared to handle changes in a way that can benefit the Commonwealth.

Details on the process and implementation of this policy can be found in the Technical Guide for the VTrans Long-term Risk & Opportunity Register.

Public Involvement

Public and agency involvement is an integral part of the CTB's policy development process. This Policy Guide synthesizes existing relevant VTrans policies. Any comments and feedback on VTrans-related CTB Policies will be considered for future modifications of the policy.



CHAPTER 2: INTRODUCTION TO VTRANS – VIRGINIA’S TRANSPORTATION PLAN

VTrans is the plan to advance the Commonwealth Transportation Board’s (CTB) vision for multimodal transportation in the Commonwealth. The CTB, with assistance from the Office of Intermodal Planning and Investment (OIP),¹ develops VTrans to identify transportation needs which may be addressed by multimodal infrastructure improvement projects, transportation strategies, creation of new policies, or modifications of existing policies. This Policy Guide addresses the components of VTrans as depicted in Figure 1.

Figure 1: Major Components of VTrans - Virginia’s Transportation Plan



¹ Office of Intermodal Planning and Investment of the Secretary of Transportation established pursuant to [§ 2.2-229](#)

2.1 VTrans Vision, Guiding Principles, Goals, and Objectives

The first major component of VTrans, development of the Vision, Guiding Principles, Goals, and Objectives, forms the basis upon which the remaining three major components are developed. The CTB updated and adopted the VTrans Guiding Principles, Goals, and Objectives in 2020.¹



Vision

Virginia's multimodal transportation system will be Good for Business, Good for Communities, and Good to Go. Virginians will benefit from a sustainable, reliable transportation system that advances Virginia businesses, attracts a 21st century workforce, and promotes healthy communities where Virginians of all ages and abilities can thrive.

Guiding Principles

GP1: Optimize Return on Investments

Implement the right solution at the right price, striving to meet current needs while advancing long-term prosperity and livability.

GP2: Ensure Safety, Security, and Resiliency

Provide a transportation system that is safe for all users, responds immediately to short-term shocks such as weather events or security emergencies, and adapts effectively to long-term stressors such as sea level rise.

GP3: Efficiently Deliver Programs

Deliver high-quality projects and programs in a cost-effective and timely manner.

GP4: Consider Operational Improvements and Demand Management First

Maximize capacity of the transportation network through increased use of technology and operational improvements as well as managing demand for the system before investing in major capacity expansions.

GP5: Ensure Transparency and Accountability, and Promote Performance Management

Work openly with partners and engage stakeholders in project development and implementation. Establish performance targets that consider the needs of all communities, and measure progress towards targets. Adjust programs and policies as necessary to achieve the established targets.






GP6: Improve Coordination Between Transportation and Land Use

Encourage local governments to plan and manage transportation-efficient land development by providing incentives, technical support, and collaborative initiatives.

GP7: Ensure Efficient Intermodal Connections

Provide seamless connections between modes of transportation to harness synergies.

¹ Commonwealth Transportation Board, [Actions to Approve the 2019 VTrans Vision, Goals, Objectives, Guiding Principles and the 2019 Mid-term Needs Identification Methodology and Accept the 2019 Mid-term Needs](#), January 15, 2020

Goals	Objectives
 <p>Goal A: Economic Competitiveness and Prosperity Invest in a transportation system that supports a robust, diverse, and competitive economy</p>	<p>Objectives:</p> <ul style="list-style-type: none"> ▪ A.1. Reduce the amount of travel that takes place in severe congestion ▪ A.2. Reduce the number and severity of freight bottlenecks ▪ A.3. Improve reliability on key corridors for all modes
 <p>Goal B: Accessible and Connected Places Increase opportunities for people and businesses to efficiently access jobs, services, activity centers, and distribution hubs</p>	<p>Objectives:</p> <ul style="list-style-type: none"> ▪ B.1. Reduce average peak-period travel times in metropolitan areas ▪ B.2. Reduce average daily trip lengths in metropolitan areas ▪ B.3. Increase the accessibility to jobs via transit, walking, and driving in metropolitan areas
 <p>Goal C: Safety for All Users Provide a safe and secure transportation system for passengers and goods on all travel modes</p>	<p>Objectives:</p> <ul style="list-style-type: none"> ▪ C.1. Reduce the number and rate of motorized fatalities and serious injuries ▪ C.2. Reduce the number of non-motorized fatalities and serious injuries
 <p>Goal D: Proactive System Management Maintain the transportation system in good condition and leverage technology to optimize existing and new infrastructure</p>	<p>Objectives:</p> <ul style="list-style-type: none"> ▪ D.1. Improve the condition of all bridges based on deck area ▪ D.2. Increase the lane miles of pavement in good or fair condition ▪ D.3. Increase percent of transit vehicles and facilities in good or fair condition
 <p>Goal E: Healthy Communities and Sustainable Transportation Communities Support a variety of community types promoting local economies and healthy lifestyles that provide travel options, while preserving agricultural, natural, historic, and cultural resources</p>	<p>Objectives:</p> <ul style="list-style-type: none"> ▪ E.1. Reduce per-capita vehicle miles traveled ▪ E.2. Reduce transportation related nitrogen oxides, volatile organic compounds, particulate matter, and carbon monoxide emissions ▪ E.3. Increase the number of trips traveled by active transportation (bicycling and walking)

2.1.1 Use of the VTrans Vision, Goals, Objectives, and Guiding Principles

Outputs of VTrans policies, including, but not limited to, VTrans Vision, Goals, Objectives, and Guiding Principles, VTrans Mid-term Needs, and VTrans Risks and Opportunities as well as VTrans concepts including, but not limited to, Equity Emphasis Areas, Activity Centers, market adoption curves for electric and automated vehicles, and impacts of VTrans Macrotrends shall be utilized by OIPI, VDOT and DRPT for statewide planning activities, and developing or modifying practices and Board policies.



2.2 VTrans Planning Horizons

The CTB identifies needs for the following two planning horizons:

- **Mid-term Planning Horizon:** VTrans' analysis for the mid-term planning horizon identifies some of the most pressing transportation issues that need to be addressed over the next 10 years. These needs are referred to as VTrans Mid-term Needs. The needs are identified so that they can inform or guide transportation policies, strategies, and infrastructure improvements developed and implemented by the Virginia Department of Transportation (VDOT) and the Department of Rail and Public Transportation (DRPT), as well as local and regional entities.
- **Long-term Planning Horizon:** VTrans' analysis for long-term planning identifies risks and opportunities for a zero- to 20-plus-year planning horizon that may require gradual and systematic shifts in policy.

2.3 Key Federal and State Requirements for VTrans

There are several statutory and regulatory requirements that guide and inform VTrans. Select key requirements are included below.

Key Federal Requirements

- [23 CFR § 450.216](#): Development of statewide transportation plan
- [49 U.S.C. § 70202](#): Development of state freight plan

Key Code of Virginia Requirements

There are several direct or indirect transportation planning requirements or related items in the Code of Virginia that are addressed by VTrans. Some of the key requirements are:

- **Develop and Update Statewide Transportation Plan ([§ 33.2-353](#)):** OIPI to assist the CTB in the development and update of a statewide transportation plan.
- **Role of OIPI ([§ 2.2-229](#)):** OIPI to assist the CTB in the development of a comprehensive, multimodal transportation policy, which may be developed as part of the Statewide Transportation Plan pursuant to [§ 33.2-353](#).
- **Statewide Prioritization Process for Project Selection ([§ 33.2-214.1](#)):** Projects and strategies shall be screened by the CTB to determine whether they are consistent with the assessment of capacity needs in VTrans.
- **Eligibility for Revenue-sharing Funds ([§ 33.2-357](#)):** Board assigns second priority to transportation needs identified in VTrans.

CHAPTER 3: VTRANS TRAVEL MARKETS FOR MID-TERM NEEDS

VTrans Mid-term Needs are established for the following VTrans Travel Markets per Virginia State Code [§ 33.2-353](#) as well as by CTB Policy.



3.1 Corridors of Statewide Significance (CoSS)

- **Number:** 12
- **Definition:** An integrated set of multimodal transportation facilities to support interregional travel of people and goods within and outside the state
- **Purpose:**
 - Support inter-regional and interstate travel
 - Connect major centers of activity within and through the Commonwealth
 - Promote the movement of people and goods essential to the economic prosperity of the state
- **Established:**
 - Eleven (11) corridors were established¹ as part of VTrans2035 in December 2009, and one was established² in May 2011. A modification was made in January 2020.³
- **Characteristics:**
 - Multimodal – must involve multiple modes of travel or must be an extended freight corridor
 - Connectivity – must connect regions, states, and/or major activity centers
 - High volume – must involve a high volume of travel
 - Function – must provide a unique statewide function and/or address statewide goals



¹ Commonwealth Transportation Board, [VTrans2035 – Virginia’s Statewide Multimodal Long-Range Transportation Plan](#), December 17, 2009.

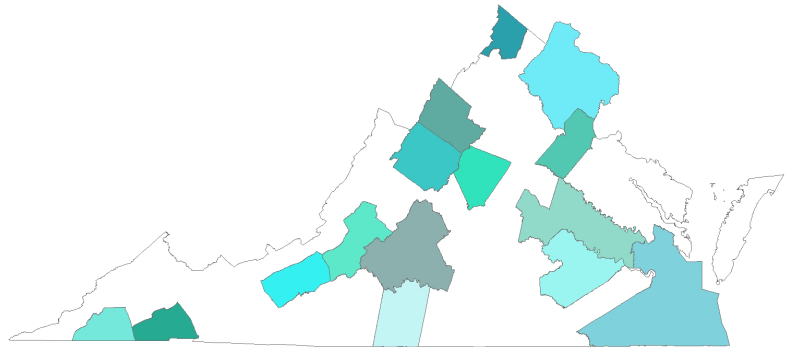
² Commonwealth Transportation Board, Northern Virginia North-South Corridor of Statewide Significance, May 28, 2011.

³ Commonwealth Transportation Board, Actions to Approve the 2019 VTrans Vision, Goals, Objectives, Guiding Principles and the 2019 Mid-term Needs Identification Methodology and Accept the 2019 Mid-term Needs, January 15, 2020.



3.2 Regional Networks (RN)

- **Number:** 15
- **Definition:** Based on designated Metropolitan Planning Organizations (MPO) within the Commonwealth. If an MPO boundary includes only a portion of a county, the entire county will be included in the needs analysis area.
- **Purpose:**
 - Support intra-regional travel
 - Bridge the gap between existing conditions and the desired future for the state’s economy
- **Established:**
 - Fifteen Regional Networks were established in December 19, 2015¹
 - Fauquier County added to Northern Virginia RN as of March 16, 2021,² as per MWCOG MPO Study Area boundary change in 2014³
- **Characteristics:**
 - At least 50,000 people in an urbanized area per US Census estimates
 - Regional Networks include VTrans Activity Centers, which are “areas of regional importance that have a high density of economic and social activity” and are associated with the Regional Networks (RNs)



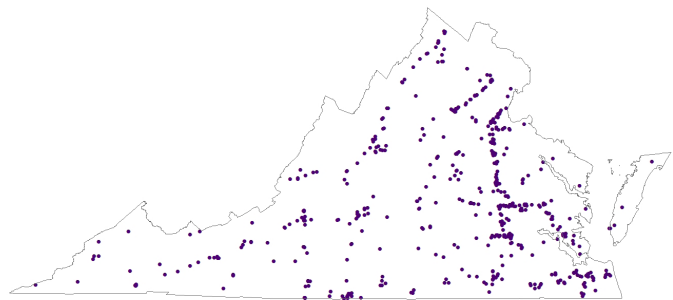
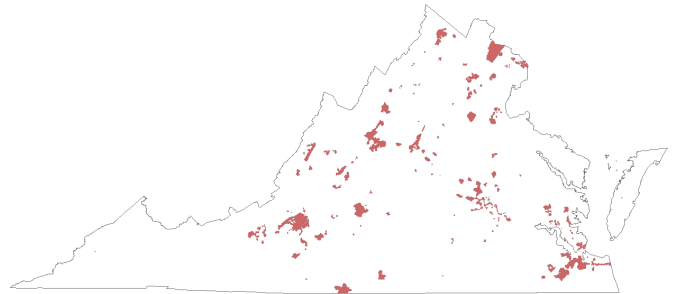
¹ Commonwealth Transportation Board, [VTrans2040 Virginia’s Statewide Multimodal Long-Range Transportation Plan Vision Plan and Needs Assessments](#), December 9, 2015

² Commonwealth Transportation Board, [Actions to Approve the Policy for the Prioritization of the VTrans Mid-term Transportation Needs and Accept the Prioritized 2019 VTrans Mid term Needs](#), March 17, 2021.

³ Metro Washington Council of Governments, <https://www.mwcog.org/uploads/committee-documents/aV1YXFhd20140710114716.pdf>, July 16, 2014

3.3 Urban Development Areas (UDA)

- **Number of UDAs:** 230 UDAs;¹ 535 Industrial and Economic Development Areas (IEDA)²
- **Definition:** Urban Development Areas are locally-designated growth areas based on local initiatives pursuant to VA Code [§ 15.2-2223](#). Industrial and Economic Development Areas (IEDAs) are locally-identified industrial and economic development sites submitted to Virginia Economic Development Partnership (VEDP)'s Business-Ready Site Program pursuant to [§ 2.2-2238](#).
- **Purpose:**
 - The purpose of UDAs is to: (1) support local, walkable places; and, (2) to the extent possible, to direct federal, state and local transportation, housing, water and sewer facility, economic development, and other public infrastructure funding to designated UDAs. The purpose of IEDAs is to support economic development.
- **Established:**
 - UDAs are established on an ongoing basis, per local government designation in a locality's Comprehensive Plan pursuant to [§15.2-2223](#). IEDA's are also established or removed on an ongoing basis.
- **Characteristics of UDAs:**
 - Pedestrian-friendly road design
 - Interconnection of new local streets with existing local streets and roads
 - Connectivity of road and pedestrian networks
 - Preservation of natural areas
 - Mixed-use neighborhoods, including mixed housing types, with affordable housing to meet the projected family income distributions of future residential growth
 - Reduction of front and side yard building setbacks
 - Reduction of subdivision street widths and turning radii at subdivision street intersections
- **Characteristics of IEDAs:**
 - Pursuant to [§ 2.2-2238](#) and consistent with Virginia Economic Development Partnership's (VEDP) [Business Ready Sites Program \(VBRSP\)](#)
 - Minimum of 100 contiguous acres (statutory); VEDP accepts sites of 25+ acres
 - Allows for industrial and research parks
 - Applicants to program must be political subdivisions of the Commonwealth of Virginia, including counties, cities, towns, industrial/economic development authorities, and redevelopment and housing authorities or regional industrial facility authority



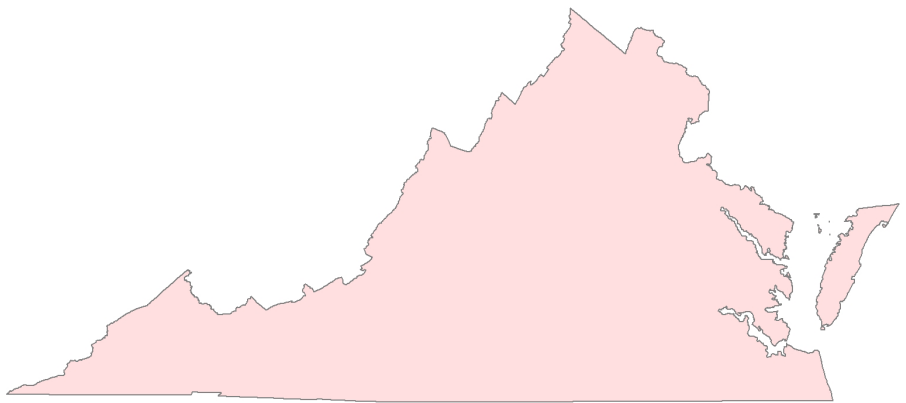
¹ As of November 30, 2019

² As of November 30, 2019



3.4 Safety

- **Definition:** A Safety analysis is conducted for all public roadways in the Commonwealth
- **Established:** The Safety Travel Market was established as part of VTrans2040¹



¹ Commonwealth Transportation Board, [VTrans2040 Virginia's Statewide Multimodal Long-Range Transportation Plan Vision Plan and Needs Assessments](#), December 9, 2015

CHAPTER 4: POLICY FOR THE IDENTIFICATION OF THE VTRANS MID-TERM NEEDS

The Policy for the Identification of VTrans Mid-term Needs establishes multimodal need categories that correspond to the Board-adopted VTrans Vision, Goals, and Objectives.¹ Each need category has one or more performance measures and thresholds to identify one or more needs. The Policy for the Identification of the VTrans Mid-term Needs was approved by the Commonwealth Transportation Board in January 2020.

Table 1 below outlines need categories and corresponding measures and thresholds established per the CTB policy for the identification of VTrans Mid-term Needs. Locations where the performance measure exceeds the threshold are designated as VTrans Mid-term Needs.

Table 1: VTrans Goals and Associated VTrans Mid-term Needs Categories

Need Category	VTrans Travel Market(s)	Measure and Threshold for Establishing VTrans Mid-term Needs
Goal A: Economic Competitiveness and Prosperity		
Congestion Mitigation	CoSS, RN	At least two percent of the average travel takes place in the excessively congested condition, defined as travel speed below 75 percent of posted speed limit
	CoSS, RN	Travel Time Index (TTI) 1.3 or higher for at least three hours OR 1.5 or higher for at least one hour
Improved Reliability (Highway)	CoSS, RN	Level of Travel Time Reliability (LOTTR) 1.5 or higher for at least one hour
Improved Reliability (Intercity and Commuter Rail)	COSS	Intercity or commuter rail on-time performance less than 80% at applicable rail stations OR on-time performance less than 90% for applicable rail lines
Goal B: Accessible and Connected Places		
Transit Access to Equity Emphasis Areas	RN	An area with no fixed-route transit service, that has population density to support fixed-route transit service, and that has significantly higher-than-average concentrations of people who are low-income, people with disabilities, minority populations, populations with Limited English Proficiency (LEP), or populations age 75 or higher.
Transit Access to Activity Centers	RN	A VTrans Activity Center where the Deficit of workers who can access the Activity Center by bus or rail transit within 45 minutes compared to those who can access the Activity Center by automobile within 45 minutes is greater than 0
Pedestrian Access to Activity Centers	RN	1-mile distance from local-serving and knowledge-based Activity Centers, fixed-guideway transit stations, and bus rapid transit (BRT) lines
Bicycle Access to Activity Centers	RN	7-mile distance from around local-serving and knowledge-based Activity Centers, fixed-guideway transit stations, and bus rapid transit (BRT) lines
Access to Industrial and Economic Development Areas (IEDAs)	Statewide	Virginia Business Ready Sites Program site with readiness status of Tier 3 or above
Urban Development Areas (UDAs)	UDA ^{2,3}	Locality-identified transportation needs for bicycle and pedestrian infrastructure, circulation and access, safety, transit enhancements and access to locally designated UDAs

¹ Commonwealth Transportation Board, [Actions to Approve the 2019 VTrans Vision, Goals, Objectives, Guiding Principles and the 2019 Mid-term Needs Identification Methodology and Accept the 2019 Mid-term Needs](#), January 15, 2020

² Per Code of Virginia [§ 33.2-353](#) and [§ 15.2-2223.1](#)

³ For the purposes of screening for the statewide prioritization process for project selection pursuant to § 33.2-214.1 of the Code of Virginia, identified UDA Needs shall also be considered RN Needs if RN congestion Needs are 20 miles or fewer.

POLICY FOR THE IDENTIFICATION OF THE VTRANS MID-TERM NEEDS (CONTINUED)

Need Category	VTrans Travel Market(s)	Measure and Threshold for Establishing VTrans Mid-term Needs
Goal C: Safety for All Users		
Roadway Safety	Statewide ¹	For each Construction District, includes VDOT Top 100 Potential for Safety Improvement (PSI) Intersections and Segments, and PSI locations with 3+ Fatal or Injury crashes at the intersection or segment over the last five years
Pedestrian Safety	Statewide	Priority corridors identified in VDOT Pedestrian Safety Action Plan ²
Goal D: Proactive System Management		
Capacity Preservation	CoSS, RN	Inclusion in the VDOT Arterial Preservation Network ³ (the state-maintained portion of the National Highway System, as well as additional highways that facilitate connectivity)
Goal E: Healthy Communities and Sustainable Transportation Communities		
Transportation Demand Management	CoSS, RN	Transportation Demand Management (TDM) needs based on roadway facility type and VTrans Travel Market

4.1 Interpretation and Usage of the Identified VTrans Mid-term Needs

Identified Needs or underlying issues are assigned to roadway segments for geographical precision. They should be interpreted and used in the following manner:

- A solution does not have to be co-located with a need as long as the purpose and effectiveness of a solution addresses the underlying VTrans Mid-term Need.
- A VTrans Need Category does not specify a type or mode of response. For example, a solution to a Need for Improved Reliability may not be roadway-centric and can instead be addressed by multimodal infrastructure improvements such as transit or rail services or park-and-ride infrastructure. Similarly, a Need for Improved Reliability may also be addressed by policies (e.g. variable pricing, occupancy or vehicle restrictions, etc.) or programs such as commuter assistance programs.
- The methodology outlined in the Technical Guide for the Identification and Prioritization of VTrans Mid-term Needs, shall direct identification and prioritization of VTrans Mid-term Needs and may continue to evolve and improve based upon advances in technology, data collection, and reporting tools, and to the extent that any such improvements modify or affect the policy and process set forth in the VTrans Policy Guide, they shall be brought to the Commonwealth Transportation Board for review and approval.
- Outputs of VTrans policies, including, but not limited to, VTrans Vision, Goals, Objectives, and Guiding Principles, VTrans Mid-term Needs, and VTrans Risks and Opportunities as well as VTrans concepts including, but not limited to, Equity Emphasis Areas, Activity Centers, market adoption curves for electric and automated vehicles, and impacts of VTrans Macrotrends shall be utilized by OIPI, VDOT and DRPT for statewide planning activities, and developing or modifying practices and Board policies.

¹ For the purposes of screening for statewide prioritization process for project selection pursuant to § 33.2-214.1 of the Code of Virginia, the identified safety Needs on CoSS roadways shall also be considered CoSS Needs.

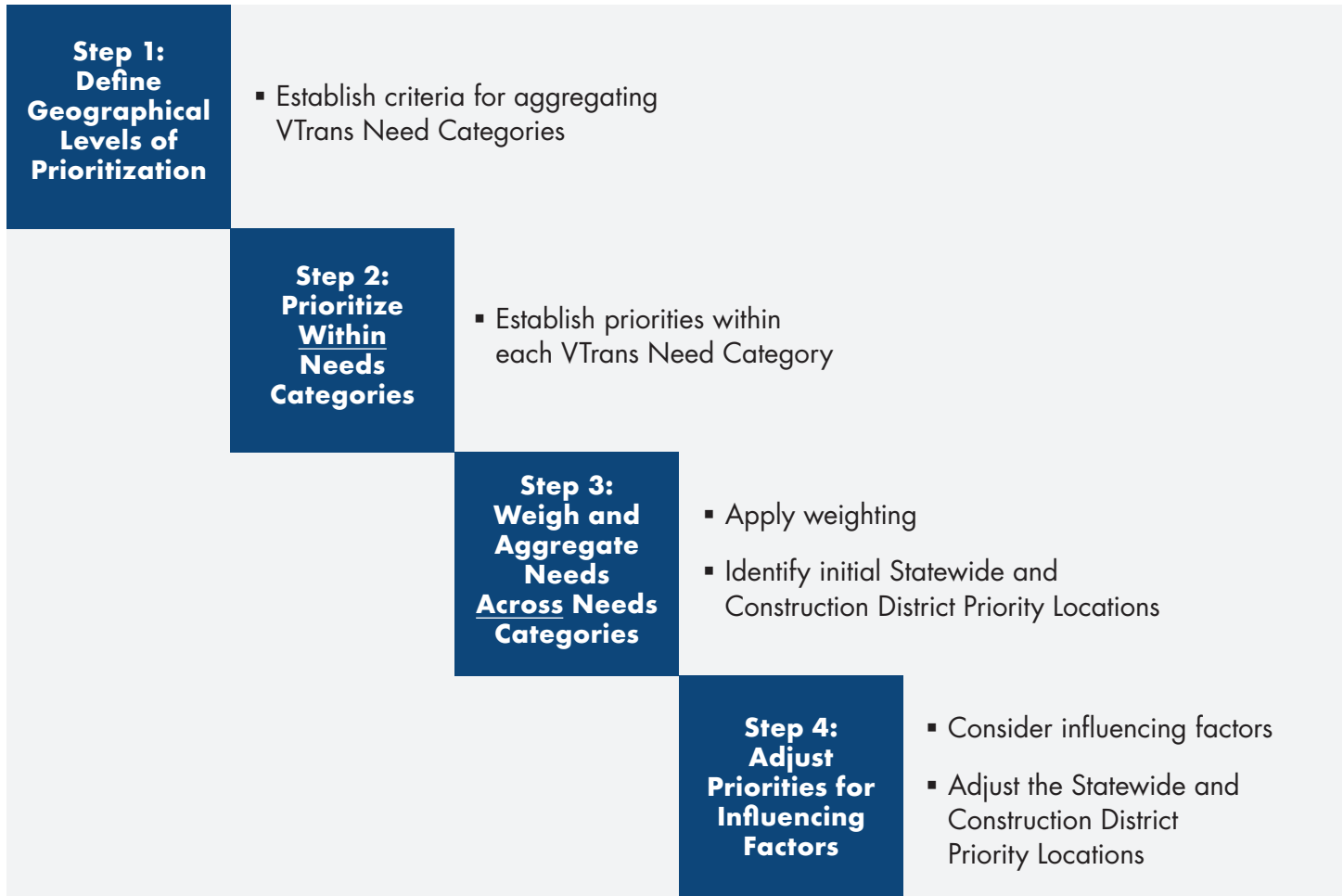
² http://www.virginiadot.org/business/resources/VDOT_PSAP_Report_052118_with_Appendix_A_B_C.pdf

³ [VDOT Arterial Preservation Program Network](#)

CHAPTER 5: POLICY FOR THE PRIORITIZATION OF THE VTRANS MID-TERM NEEDS

The Policy for the Prioritization of the VTrans Mid-term Needs¹ is conducted in four steps shown in Figure 2 and described in greater detail below.

Figure 2: Steps for Prioritization of the VTrans Mid-term Needs



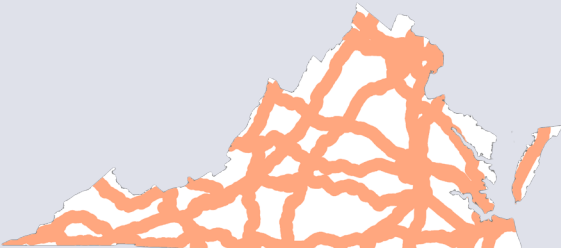
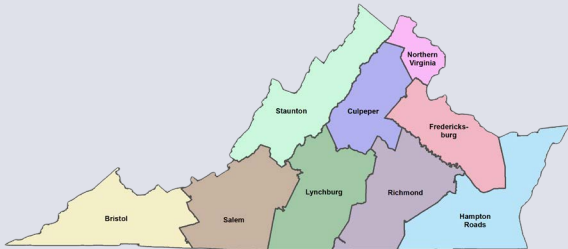
- Step 1: Two sets of priorities are established – Statewide Priority Locations and VDOT Construction District Priority Locations for each of the nine Districts. Each relies on different Need Categories and Travel Markets per Table 2.
- Step 2: This step utilizes the severity of a need and the magnitude of the impact of the need to categorize the Board-adopted VTrans Mid-term Needs as *Very High, High, Medium, and Low*.
- Step 3: This step takes the needs as categorized above and weights them to form a location- or roadway segment-specific weighted score.
- Step 4: The final step makes adjustments to the step three results in light of factors affecting the transportation network that may be important to take into account, and then categorizes the locations as *Statewide Priority 1, Priority 2, Priority 3, or Priority 4, and District Priority 1, Priority 2, Priority 3, or Priority 4*.

¹ Commonwealth Transportation Board, [Actions to Approve the Policy for the Prioritization of the VTrans Mid-term Transportation Needs and Accept the Prioritized 2019 VTrans Mid-term Needs](#), March 17, 2021.

5.1 Step 1: Define Geographical Levels of Prioritization

Two sets of Priority Locations are established – Statewide Priority Locations and Construction District Priority Locations. Each relies on different Need Categories and Travel Markets per Table 2.

Table 2: Geographic Levels of Prioritization and Applicable Travel Markets

Levels of Prioritization	Statewide Priority Locations	Construction District Priority Locations
Aggregation Level	Statewide: Corridors of Statewide Significance 	VDOT Construction District 
Applicable Need Categories	<ul style="list-style-type: none"> ▪ Congestion Mitigation (CoSS) ▪ Improved Reliability (Highway) (CoSS) ▪ Improved Reliability (Intercity and Commuter Rail) (CoSS) ▪ Roadway Safety (along CoSS) ▪ Capacity Preservation (CoSS) ▪ Transportation Demand Management (CoSS) 	<ul style="list-style-type: none"> ▪ Congestion Mitigation (RN) ▪ Improved Reliability (Highway) (RN) ▪ Transit Access to Equity Emphasis Areas (RN) ▪ Transit Access to Activity Centers (RN) ▪ Pedestrian Access to Activity Centers (RN) ▪ Bicycle Access to Activity Centers (RN) ▪ Access to Industrial and Economic Development Areas (IEDA) ▪ Safety (Segments and Intersections) ▪ Safety (Pedestrian Safety) ▪ Capacity Preservation (CoSS, RN) ▪ Transportation Demand Management (RN)



5.2 Step 2: Prioritize Within VTrans Mid-term Needs Categories

The second step establishes priorities *Very High*, *High*, *Medium*, and *Low* within each VTrans Mid-term Need Category per the following:¹

- *Very High* Priority: Top 5% of the total mileage of the applicable needs
- *High* Priority: Top 5.001%–15% of the total mileage
- *Medium* Priority: Top 15.001%–25% of the total mileage
- *Low* Priority: Bottom 25.001%–100% of the total mileage

The above-referenced priorities within each VTrans Mid-term Need Category are categorized based on the following two criteria:

- *Severity of the Need*: This criteria takes into account the intensity or extremity of the Need.
- *Magnitude of the Need*: This criteria takes into account the number of residents, vehicles, or persons impacted by the Need.

¹ Limitations of the existing datasets as well as the need to avoid small fractional distributions of the needs have required utilization of non-percentile based distribution or prioritization within VTrans Mid-term Needs. These are outlined in more detail in the Technical Guide for the Identification and Prioritization of the VTrans Mid-term Needs.

5.3 Step 3: Weigh and Aggregate VTrans Mid-term Needs Across Needs Categories

The third step takes the VTrans Mid-term Needs as categorized above, weighs and aggregates them to form a location- or roadway segment-specific score. Weighting for Construction District Priority Locations are based on SMART SCALE Area Types.¹

Table 3: Weighting to Establish Statewide and Construction District Priority Locations

Travel Market	Board-adopted VTrans Need Category	Weighting – Statewide Priority	Weighting – Construction District Priority ¹				
			Area Type A	Area Type B	Area Type C	Area Type D	
CoSS	Congestion Mitigation	25.00%	These Need Categories are not utilized for establishing Construction District Priority Locations.				
CoSS	Improved Reliability (Highway)	15.00%					
CoSS	Improved Reliability (Intercity and Commuter Rail)	10.00%					
Safety	Roadway Safety (along CoSS)	25.00%					
CoSS	Capacity Preservation	10.00%					
CoSS	Transportation Demand Management	15.00%					
RN	Congestion Mitigation	These Need Categories are not utilized for establishing Statewide Priority Locations.	25.00%	15.00%	10.00%	5.00%	
RN	Improved Reliability (Highway)		20.00%	10.00%	5.00%	5.00%	
RN	Transit Access to Equity Emphasis Areas		5.00%	6.25%	6.25%	3.75%	
RN	Transit Access to Activity Centers		5.00%	6.25%	6.25%	3.75%	
RN	Pedestrian Access to Activity Centers		5.00%	6.25%	6.25%	3.75%	
RN	Bicycle Access to Activity Centers		5.00%	6.25%	6.25%	3.75%	
UDA	Access to Industrial and Economic Development Areas		2.50%	10.00%	10.00%	15.00%	
Safety	Roadway Safety		15.00%	15.00%	20.00%	25.00%	
Safety	Pedestrian Safety		5.00%	5.00%	5.00%	5.00%	
CoSS, RN	Capacity Preservation		2.50%	10.00%	15.00%	20.00%	
RN	Transportation Demand Management		10.00%	10.00%	10.00%	10.00%	
	Total		100.00%	100.00%	100.00%	100.00%	100.00%

¹ Commonwealth Transportation Board. [Adoption of Updated Policy for Implementation of the SMART SCALE Project Prioritization Process.](#) February 19, 2020.



5.4 Step 4: Adjust Priorities for Influencing Factors

The final step is to adjust the scores determined in Step 3 in light of factors affecting the transportation network that may be important to take into account. Presence or absence of these factors will not cause a location to be assigned a lower Priority level than assigned in Step 3; they can only increase a location's Priority level.

- Co-located bridge repair, rehabilitation, or replacement needs
- Co-located pavement repair, rehabilitation, or replacement needs
- Exposure to projected sea level rise, storm surge, or historical inland/riverine flooding
- Co-located Economically Distressed Communities¹

Adjustments are made for each location from Step 3 based on the level of the applicable influencing factor criteria.

5.5 Establishment of Statewide and Construction District Priority Locations

The final adjusted Statewide Priority Locations and Construction District Priority Locations are then established as follows:

Statewide Priority Locations are assigned levels 1–4 based on their relative statewide rank by roadway segment mileage in the following manner:

- Priority 1 Locations: Top 0%–1% of the total mileage
- Priority 2 Locations: 1.001%–5% of the total mileage
- Priority 3 Locations: 5.001%–15% of the total mileage
- Priority 4 Locations: Bottom 15.001%–100% of the total mileage

Construction District Priority Locations are assigned levels 1–4 based on their relative rank for each VDOT Construction District by roadway segment mileage in the following manner:

- Priority 1 Locations: Top 0%–1% of the total mileage
- Priority 2 Locations: 1.001%–5% of the total mileage
- Priority 3 Locations: 5.001%–15% of the total mileage
- Priority 4 Locations: Bottom 15.001%–100% of the total mileage

¹ Source: Economic Innovation Group's Distressed Communities Index, <https://eig.org/dci>. See map at www.vtrans.org/interactivtrans.

5.5.1 Interpretation and Usage of the Prioritized VTrans Mid-term Needs

Prioritized Needs are location-specific for geographical precision. They should be interpreted and used in the following manner:

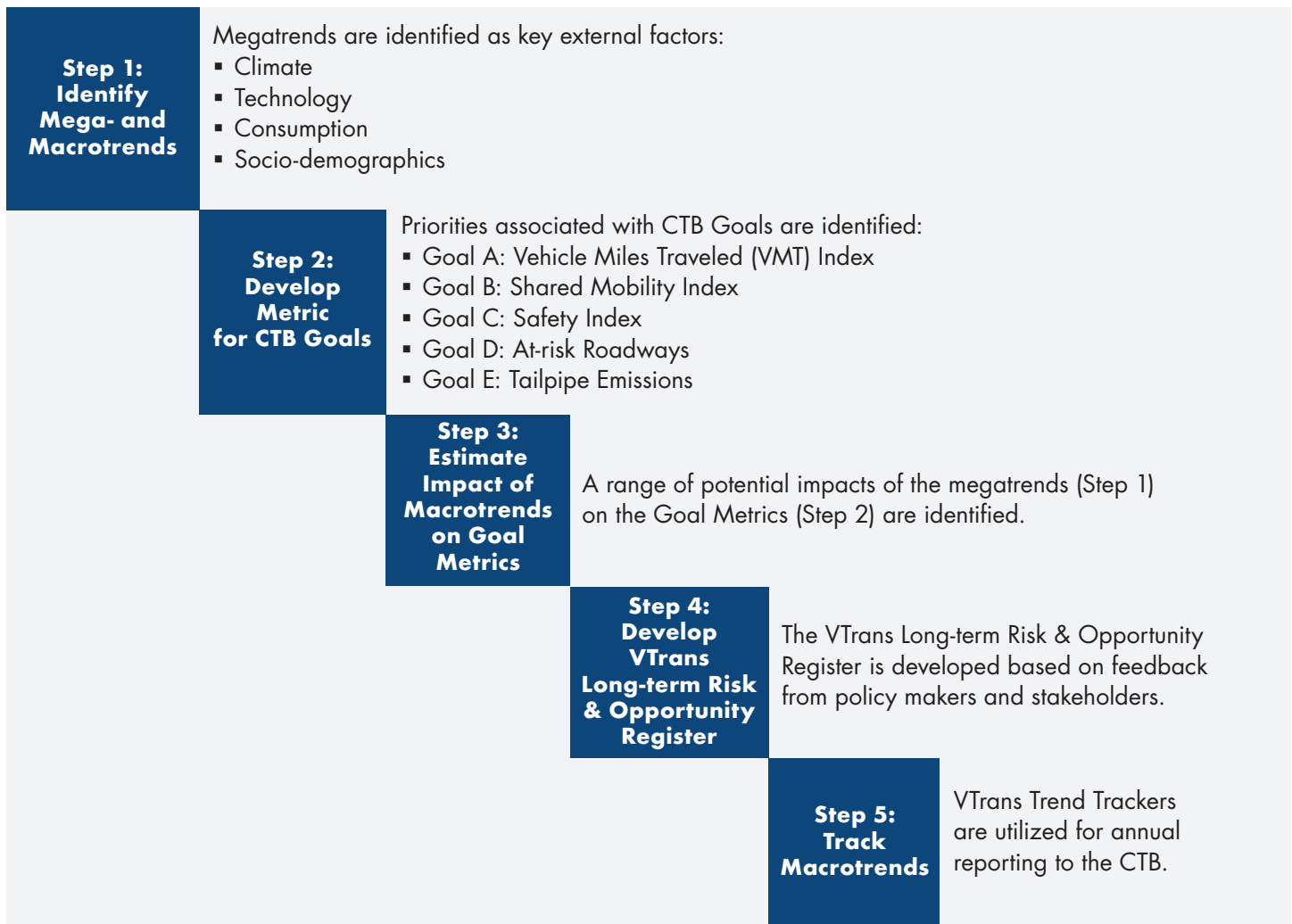
- A solution does not have to be co-located with a prioritized need as long as the purpose and effectiveness of a solution addresses the underlying issue(s).
- A VTrans Need Category does not specify a mode-specific response. For example, a solution to a Need for Improved Reliability may not be roadway-centric and can instead be addressed by multimodal infrastructure improvements such as transit or rail services or park-and-ride infrastructure. Similarly, a Need for Improved Reliability may also be addressed by policies (e.g. variable pricing, occupancy or vehicle restrictions, etc.) or programs such as commuter assistance programs.
- The methodology outlined in the Technical Guide for the Identification and Prioritization of VTrans Mid-term Needs, shall direct prioritization of VTrans Mid-term Needs and may continue to evolve and improve based upon advances in technology, data collection, and reporting tools, and to the extent that any such improvements modify or affect the policy and process set forth in the VTrans Policy Guide, they shall be brought to the Commonwealth Transportation Board for review and approval.
- VDOT and DRPT funds for corridor or facility planning and advance activities relating to concepts addressing a capacity need of the surface transportation network shall be limited to the Statewide and Construction District Priority 1 Locations.
- The Commonwealth Transportation Board may also select one VTrans Mid-term Need per state fiscal year for each VDOT Construction District for the purpose of corridor or facility planning and advance activities relating to concepts addressing a capacity need.
- Outputs of VTrans policies, including, but not limited to, VTrans Vision, Goals, Objectives, and Guiding Principles, VTrans Mid-term Needs, and VTrans Risks and Opportunities as well as VTrans concepts including, but not limited to, Equity Emphasis Areas, Activity Centers, market adoption curves for electric and automated vehicles, and impacts of VTrans Macrotrends shall be utilized by OIPI, VDOT and DRPT for statewide planning activities, and developing or modifying practices and Board policies.

CHAPTER 6: POLICY FOR THE DEVELOPMENT AND MONITORING OF THE VTRANS LONG-TERM RISK & OPPORTUNITY REGISTER

The VTrans Long-term Risk & Opportunity Register is developed based on the following steps:

- Step 1: Megatrends¹ and associated Macrotrends² are identified.
- Step 2: CTB’s priorities are identified based on the CTB’s Vision, Goals, and Objectives³.
- Step 3: Impact of mega and macrotrends on the CTB’s priorities is estimated.
- Step 4: VTrans Long-term Risk & Opportunity Register is developed based on the projected impacts on established priorities.
- Step 5: OIPI reviews and provides annual updates to the CTB for the identified risks and opportunities.

Figure 3: Steps for Development and Monitoring of VTrans Long-term Risk & Opportunity Register



¹ Megatrend: Megatrends are defined as “the great forces in societal development that will very likely affect the future in all areas over the next 10-15 years. A megatrend is also defined as “a large, social, economic, political, environmental or technological change that is slow to form. Once in place, megatrends influence a wide range of activities, processes and perceptions, both in government and in society, possibly for decades. They are the underlying forces that drive trends”. Source: [European Foresight Platform](#).









² Macrotrend: A macrotrend is defined as “An emerging pattern of change likely to impact state government and require a response. Multiple macrotrends can be associated with a megatrend.” Source: [Transportation Policy Task Force Suggested State Legislation Docket](#). 2009. California

³ Commonwealth Transportation Board, [Actions to Approve the 2019 VTrans Vision, Goals, Objectives, Guiding Principles and the 2019 Mid-term Needs Identification Methodology and Accept the 2019 Mid-term Needs](#), January 15, 2020

6.1 Step 1: Identify Mega- and Macrotrends

OIPI has identified and shall periodically update Mega- and Macrotrends identified in Table 4 to account for factors significant from a transportation planning and investment perspective.

Table 4: VTrans Mega- and Macrotrends

MEGATREND 1: CLIMATE	
	Macrotrend 1: Increase in Flooding Risk ^{1,2}
MEGATREND 2: TECHNOLOGY	
	Macrotrend 2: Adoption of Highly Autonomous Vehicles
	Macrotrend 3: Adoption of Electric Vehicles
	Macrotrend 4: Growth in Shared Mobility
MEGATREND 3: CONSUMPTION	
	Macrotrend 5: Growth in E-commerce
	Macrotrend 6: Greater Automation of Production and Services
MEGATREND 4: SOCIO-DEMOGRAPHICS	
	Macrotrend 7: Growth of Professional Services Industry
	Macrotrend 8: Increase in Workplace Flexibility
	Macrotrend 9: Growth of the 65+ Cohort
	Macrotrend 10: Population and Employment Shift

¹ Definition of Vulnerability: Vulnerability is a function of exposure to a hazard(s), the sensitivity to the given hazard, and adaptive capacity or the system's ability to cope.

² Definition of Resiliency: The capability to anticipate, prepare for, respond to and recover from extreme weather event(s) with minimum damage to social well-being, infrastructure, the economy, and the environment.



6.2 Step 2: Develop Metrics for CTB Goals

OIPI shall develop metric(s) for each CTB Goal.

Table 5: Develop Metric(s) for CTB Goals

	<p>Goal A: Vehicle Miles Traveled (VMT) Index (Estimated Change Due to VTrans Macrotrends)</p>
	<p>Goal B: Shared Mobility Index (Switchable Urban Auto SOV VMT to Micromobility and TNC/Ridesourcing)</p>
	<p>Goal C: Safety Index (Safety Index - Estimated Change in Number of Crashes with Fatalities + Serious Injuries Due to VTrans Macrotrends)</p>
	<p>Goal D: Roadways at Risk of Flooding</p>
	<p>Goal E: Tailpipe Emissions Index (Estimated Change Due to VTrans Macrotrends)</p>

6.3 Step 3: Estimate Impact of Macrotrends on CTB Goal Metrics

OIPI shall establish an order of influence and estimate cumulative impacts of macrotrends, as shown in Table 6, on Goal Metrics identified in Step 2.

Table 6: Order of Influence of Macrotrends and Influence of Macrotrends on Goal Metrics

Order of Influence	Macrotrend (listed in order of influence)	VMT Index	Shared Mobility Index	Safety Index	Number of Directional Miles of Roadways at Risk from Flooding	Tailpipe Emissions Index
1	Macrotrend # 1: Increase in Flooding Risk				•	
	Macrotrend # 9: Growth of the 65+ Cohort	Included in the 2045 Business-as-usual Scenario				
2	Macrotrend # 8: Increase in Workplace Flexibility	•	•			•
	Macrotrend # 2: Adoption of Highly Autonomous Vehicles	•	•	•		•
	Macrotrend # 3: Adoption of Electric Vehicles	•	•			•
3	Macrotrend # 4: Growth in Shared Mobility	•	•			•
4	Macrotrend # 5: Growth in E-commerce	•				•
	Macrotrend # 6: Greater Automation of Goods and Services	•				•
5	Macrotrend # 7: Growth of Professional Services Industry	Included in the 2045 Business-as-usual Scenario				
	Macrotrend # 10: Population and Employment Shift	Included in the 2045 Business-as-usual Scenario				
	Cumulative Impacts	•	•	•	•	•

• Quantified in Step 3






6.4 Step 4: Develop VTrans Long-term Risk & Opportunity Register


OIPI shall develop and update the VTrans Long-term Risk & Opportunity Register (the Risk Register) based on feedback and direction from the CTB and other stakeholders. At minimum, the Risk Register shall be based on reliable sources reflecting the state of the practice to allow for quantification of impacts of VTrans Macrotrends listed in Step 1 of the process.


The VTrans Long-term Risk & Opportunity shall allow for systematic and methodical identification of risks¹ and opportunities.² It shall also take into account the work completed in Steps 1 through 3, including the order of influence established for the ten macrotrends and the magnitude of impact established in Step 3.

Table 7 lists risks and opportunities identified based on the 2021 Update.

Table 7: VTrans 2021 Long-term Risk & Opportunity Register

























Macrotrend	Characterization	Description
		<ol style="list-style-type: none"> 1. A large number of the state’s roadways are at risk of flooding 2. Several unknown and unquantified flooding risks are present 3. Impacts of increased flooding risk are disproportionately higher for certain geographic areas and populations
		<ol style="list-style-type: none"> 4. Proactively eliminate or mitigate identified flooding risks 5. Increase the state’s preparedness to address other macrotrends associated with climate change megatrend


 Uncertainty with negative impacts on CTB Goals in Step 3


 Uncertainty with a positive impact on CTB Goals in Step 3

¹ The term risk is defined as a situation or scenario wherein there is some uncertainty and at least some probability of a negative outcome or result.

² The term opportunity is defined as a situation or scenario wherein there is some uncertainty and at least some probability of a positive outcome or result.

Macrotrend	Characterization	Description
		6. Greater wear-and-tear on the transportation system due to increased vehicle miles traveled (VMT) and increase in average vehicle weight
		7. Improve the state's ability to manage a transportation system with a high number of highly autonomous vehicles
		8. Maximize safety benefits offered by highly autonomous vehicles, especially those with Automated Driving System
		9. Higher vehicle miles traveled (VMT) for each unit of economic activity compared to the present fleet
		10. Minimize environmental impacts of the transportation system development
		11. Increased curb access conflicts in urbanized areas
		12. Projected growth in shared mobility (micromobility and TNC/ridesourcing) does not provide measurable transportation system benefits
		13. Benefits of growth in shared mobility are not equally accessible by all areas and population segments
		14. Utilize shared mobility services to improve accessibility
		15. Improve the state's ability to manage a transportation system with a high number of shared mobility vehicles
		16. Proactively eliminate or mitigate transportation impacts associated with e-commerce including those related to large warehouse and distribution centers
		17. Improve state's ability to proactively manage transportation impacts associated with greater automation of production and services
		18. Maximize utilization of workplace flexibility for telework capable jobs
		19. Transportation system and services are unable to meet mobility needs of Virginians age 65 and older

 Uncertainty with negative impacts on CTB Goals in Step 3

 Uncertainty with a positive impact on CTB Goals in Step 3

6.4.1 Interpretation and Usage of the VTrans Long-term Risk & Opportunity Register

- The methodology outlined in the Technical Guide: Development and Monitoring of VTrans Long-term Risk & Opportunity Register, shall direct the development and monitoring of VTrans Long-term Risks and Opportunities and may continue to evolve and improve based upon advances in technology, data collection, and reporting tools, and to the extent that any such improvements modify or affect the policy and process set forth in the VTrans Policy Guide, they shall be brought to the Board for review and approval.
- OIPI, VDOT, an DRPT shall undertake coordinated actions to minimize long-term risks and maximize benefits of long-term opportunities identified in the 2021 VTrans Long-term Risk & Opportunity Register.
- Outputs of VTrans policies, including, but not limited to, VTrans Vision, Goals, Objectives, and Guiding Principles, VTrans Mid-term Needs, and VTrans Risks and Opportunities as well as VTrans concepts including, but not limited to, Equity Emphasis Areas, Activity Centers, market adoption curves for electric and automated vehicles, and impacts of VTrans Macrotrends shall be utilized by OIPI, VDOT and DRPT for statewide planning activities, and developing or modifying practices and Board policies.

6.5 Step 5: Track Macrotrends

OIPI shall provide updates to the CTB on the VTrans Mega- and Macrotrends and any changes to items in the 2021 Long-term Risk & Opportunity Register once per calendar year based on a monitoring of the macrotrends and the Trend Trackers identified in Table 8.

Table 8: VTrans Trend Trackers

VTrans Macrotrend	VTrans Trend Trackers
 <p>1. Increase in Flooding Risk</p>	<ul style="list-style-type: none"> Number of directional miles at risk from sea level rise Number of directional miles at risk from storm surge Number of directional miles at risk from inland/riverine flooding Annual cost of transportation repair due to flooding events
 <p>2. Adoption of Highly Autonomous Vehicles</p>	<ul style="list-style-type: none"> Market Penetration of Semi-Autonomous (Levels 1 and 2) Vehicles Attitude and Preferences for Adoption of Semi-Autonomous (Levels 1 and 2) Vehicles¹ Market Penetration of Highly Autonomous (Levels 3 and 4) Vehicles¹ Attitude and Preferences for Adoption of Highly Autonomous (Levels 3 and 4)¹ Vehicles
 <p>3. Adoption of Electric Vehicles</p>	<ul style="list-style-type: none"> Number of Electric Vehicles Market Penetration of Electric Vehicles Attitude and Preferences for Adoption of Electric Vehicles¹ Transportation Revenue by Revenue Source
 <p>4. Growth in Shared Mobility</p>	<ul style="list-style-type: none"> Access to Shared Mobility Services¹ Utilization of Shared Mobility Services by Type¹
 <p>5. Growth in E-Commerce</p>	<ul style="list-style-type: none"> Number of Warehouse and Distribution Centers Square Footage of Warehouse and Distribution Centers Share of E-commerce Sales (Business-to-business, business-to-customers) Number of Jobs in Goods Movement Dependent Industries
 <p>6. Greater Automation of Production and Services</p>	<ul style="list-style-type: none"> Number of short-range drone deliveries Number of long-range drone deliveries
 <p>7. Growth of Professional Services Industry</p>	<ul style="list-style-type: none"> Share of Professional Services Industry Jobs Number of STEM Jobs
 <p>8. Increase in Workplace Flexibility</p>	<ul style="list-style-type: none"> Number of Workers with Workplace Flexibility¹ Utilization of Workplace Flexibility¹
 <p>9. Growth of the Age 65+ Cohort</p>	<ul style="list-style-type: none"> Number of Virginians with Age 65 or higher Share of Age 65+ Cohort
 <p>10. Population and Employment Shift</p>	<ul style="list-style-type: none"> VTrans Land Use Vitality (LUV) Index Population Employment Income

¹ OIPI shall conduct a biennial statistically valid survey to measure these trend trackers.

APPENDIX A: UPDATES TO THE VTRANS POLICY GUIDE

The list below reflects version updates to this document. For questions, please reach out to OIPI.

Document Effective Date	Version	Description
October 29, 2020	v1	This version, titled "Policy Guide for the Identification and Prioritization of the VTrans Mid-term Needs", was made available for public review and comment prior to Action by the Commonwealth Transportation Board on the Draft Policy for the Prioritization of the VTrans Mid-term Needs.
March 16, 2021	v2	This version reflected modifications to the Draft Policy for the Prioritization of VTrans Mid-term Needs based on public comment prior to Action by the Commonwealth Transportation Board.
March 24, 2021	v3	This version reflected the action by the Commonwealth Transportation Board to approve the Policy for the Prioritization of the VTrans Mid-term Needs.
September, 2021	v4	This version reflected a simplified document name, "VTrans Policy Guide", and an addition of the draft policy for the development and monitoring of the VTrans Long-term Risk & Opportunity Register.
November, 2021	v5	Updated Draft for CTB review, edited for errors.
December, 2021	v6	Additional edits for clarification and consistency.

PREPARED BY THE OFFICE OF INTERMODAL
PLANNING AND INVESTMENT FOR THE
COMMONWEALTH TRANSPORTATION BOARD

