2022-2026 SHSP: Infrastructure Actions

TPB Transportation Safety Sub-Committee

presented by

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// Comprehensive, multi-stakeholder plan that sets goals, strategies and actions to reduce highway deaths and serious injuries:

» Statewide, multimodal highway safety plan

» Coordinated framework that identifies Emphasis Area factors to focus resources

» Required to be updated every five years

» Federal and state partner's with regional, local and private stakeholder's input.

Arrive Alive Virginia

VIRGINIA 2022-2026
STRATEGIC HIGHWAY SAFETY PLAN

SHSP Structure and Hierarchy
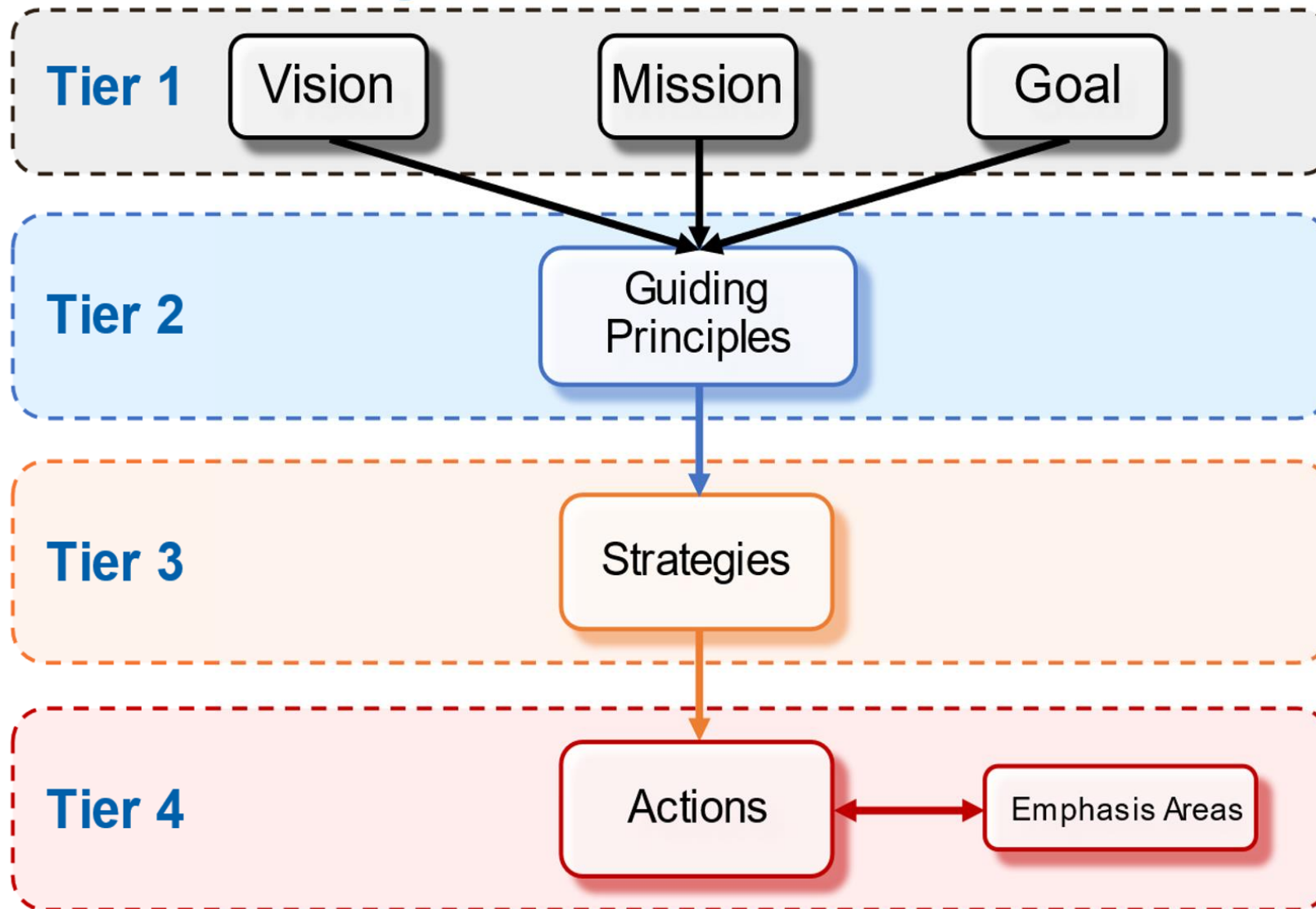
// Vision:

» **Virginia's vision is towards zero deaths and serious injuries from motor vehicle crashes so that all roadway users arrive safely at their destination.**

// Mission:

» **To fulfill the Vision through Safe System approach**

- Collaboration with **4 E**s of roadway safety – **E**ducation, **E**nforcement, **E**ngineering, and **E**mergency response & medical services
- to achieve safe travel for a fifth **E** – **E**veryone.

2045 Goal: Follows VTrans 2045

» Virginia's goal is to reduce fatalities and serious injuries in 2020 by half by 2045 and make progress towards the vision of zero.

2026 Objective:

» To meet the goal of the SHSP, the 2026 objectives are to reduce fatalities and serious injuries by ~2 percent each year.

Safe System: Guiding Principles

// **Adopted from the Safe System approach**
  - » **Death/serious injury is unacceptable**
  - » **Humans make mistakes**
  - » **Humans are vulnerable**
  - » **Redundancy is crucial**
  - » **Responsibility is shared**
  - » **Safety is proactive**

// **Added for Virginia SHSP**
  - » **Actions consider equity**

Safe Road Users · Safe Vehicles · Post-Crash Care · THE SAFE SYSTEM APPROACH · Safe Speeds · Safe Roads
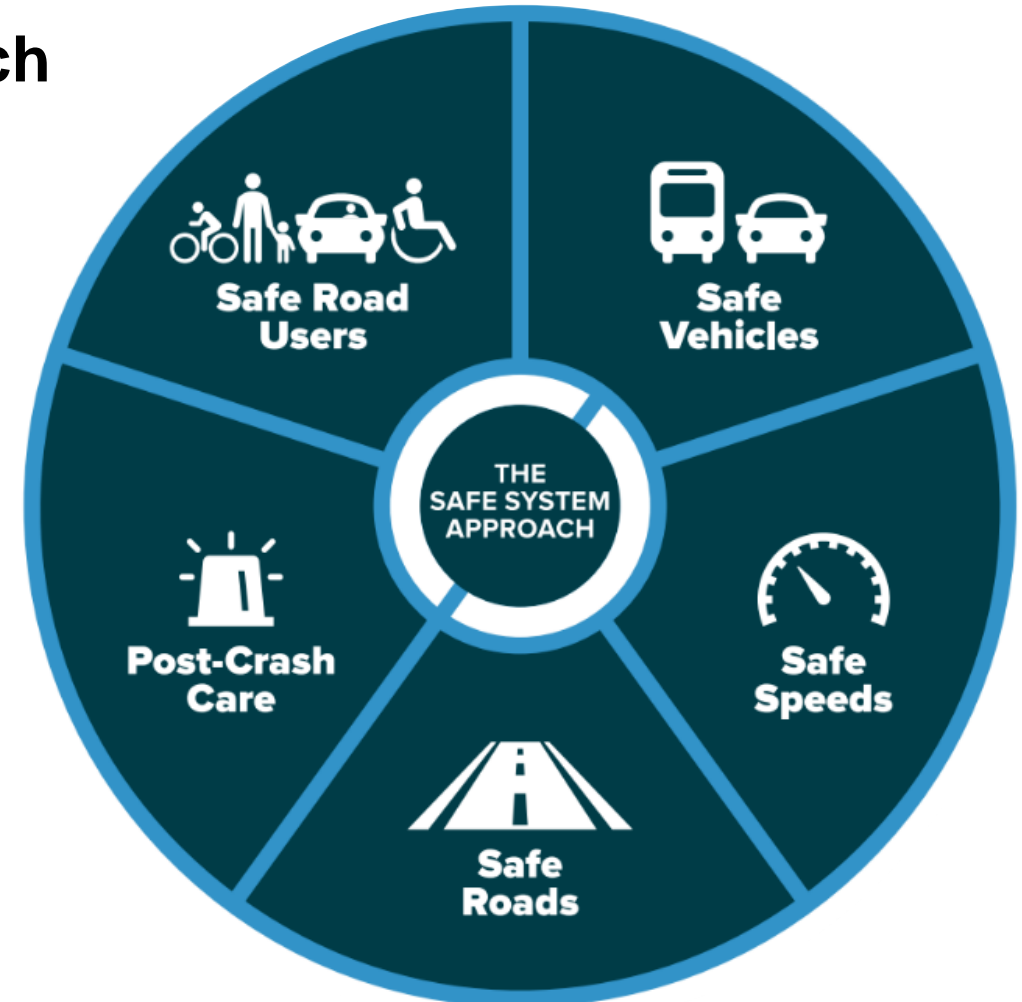
Source: FHWA

Emphasis Areas within Safe System

LEGEND

Safe System Element	Emphasis Area	New for 2022-2026 SHSP

Safe Road Users
- Pedestrians and Bicyclists
- Young Drivers
- Aging Road Users
- Occupant Protection
- Impaired Driving
- Motorcyclists

Safe Vehicles
- Heavy Vehicles
- Connected and Automated Vehicles

Safe Speeds
- Speeding

Safe Roads
- Roadway Departures
- Intersections

Post-Crash Care
- Emergency Response & Medical Services

Supporting
- Data & Analytics

A 4E Approach That Benefits Everyone

ENGINEERING

EDUCATION

ENFORCEMENT

EMERGENCY RESPONSE & MEDICAL SERVICES

EVERYONE

Priority Strategy 1: Implement road improvements that ensure human mistakes and vulnerabilities do not result in serious injuries or fatalities.

Revise design practices to emphasize context and target speed that reflects the needs of pedestrians and bicyclists. **[Long Term]**

// **Review new and best practices from NCHRP 17-76 and Report 855 with other states implementation**

Priority Strategy 2: Adopt an approach that considers risk when prioritizing locations for safety improvements and programs.

Update and enhance the Virginia Pedestrian Safety Action Plan (PSAP) biannually with VDH Health Opportunity Index and other transportation and social determinant for travel and risk considerations with potential travel demand inputs from recent research. Enhance the use of PSAP data and findings in project planning and development. Implement PSAP policy recommendations. **[Ongoing]**

// **Version 3 published @ bit.ly/VDOTPSAP**

// **Updating Unsignalized &Signalized Crossings and Accommodations Design Policies**

Pedestrian and Bicyclists Actions

Priority Strategy 5: Implement innovative solutions and utilize current and emerging technologies.

Collect and use pedestrian and bicyclist crash, volume, and infrastructure data to identify trends and gaps to improve safety. Continue data integration and sharing with partners and stakeholders. **[Ongoing]**

Enhance and deploy policy guidance on road crossing design considerations for uncontrolled, unsignalized, and traffic signal-controlled intersections during maintenance and construction project planning and development. Consider and implement proven pedestrian and bicyclist countermeasures, new technologies, or innovative designs at higher-risk crossing locations. **[Ongoing]**

// **Safety data used in the PSAP continues to be assessed.**

// **VDOT inventory of pedestrian and bicyclist facilities ongoing**

// **Training for MN and CN policy implementation with outreach for SMART SCALE, HSIP etc.**

Safe Roads: Roadway Departure

Priority Strategy 1: Implement road improvements that ensure human mistakes and vulnerabilities do not result in serious injuries or fatalities.

Promote benefits and alternate funding of complete streets, road conversions, and road/roadside design improvements, based on potential for safety network screening, during capital project planning and design. **[Ongoing]**

Improve related geometric data collection and safety analysis to promote infrastructure projects enhancing roadside design in the clear zone with context considerations to remove, relocate, shoulder, or delineate fixed objects. **[Long Term]**

// **Based on updated RD Plan, below, promote the overlap with VTrans needs to scope improving roadway and roadside "forgiving" designs**

// **Investigate automated data collection to provide and maintain information to plan and scope improvements**

Priority Strategy 2: Adopt an approach that considers risk when prioritizing locations for safety improvements and programs.

Update Roadway Departure Plan network screening using recent safety performance research, curve inventory, and best countermeasure practices. Provide training on methods and countermeasures for consideration in maintenance and construction project planning and development. **[Short Term]**

Safe Roads: Roadway Departure

Priority Strategy 1: Implement road improvements that ensure human mistakes and vulnerabilities do not result in serious injuries or fatalities.

Continue VDOT Systemic Implementation Plan for roadway departure-related traffic control devices and pavement countermeasures. **[Ongoing]**

Complete Pavement Friction Management Program development and continue data collection and support improved analysis methods. Develop and promote high-friction surface treatment (HFST) knowledge and use where appropriate. Explore application of other pavement surfacing treatments that may offer properties that uniquely respond to specific safety concerns. **[Short Term]**

// **Continue and increase HSIP funding for curve delineation, rumble strip(e)s and pavement wedging with resurfacing**

// **Implement PFMP demonstration research in VDOT Districts**

VTRC
Virginia Transportation
Research Council
We Bring Innovation to Transportation

Pavement Friction Management Program Demonstration

Priority Strategy 1: *Implement road improvements that ensure human mistakes and vulnerabilities do not result in serious injuries or fatalities.*

Update the VDOT systemic safety implementation plans for unsignalized and signalized intersections. Continue evaluation and outreach on the benefits and expand the use of these improvements at locally maintained intersections. **[Ongoing]**

Apply access management practices in project planning and development phases to ensure proper spacing and sight distance. Consider the impacts of access management on multimodal road users. **[Ongoing]**

Disseminate information, conduct training, and implement DRPT Multimodal System Design Guidelines (2020) and VDOT Complete Streets policy to apply practical design alternative assessments based on multimodal travel demand and safety performance. **[Short Term]**

Systemic Low-Cost Countermeasures for an Unsignalized Intersection Safety Improvement Plan for Virginia
http://www.virginiadot.org/vtrc/main/online_reports/pdf/19-r5.pdf

https://www.drpt.virginia.gov/transit/planning/multimodal-guidelines/

// **Update 2018 Unsignalized Intersection Plan**

// **Continue Arterial Preservation Program and Pipeline studies**

// **Promote application of Complete Streets policy and guidelines**

Implement safety action plan for passive and active public railroad highway grade crossings, including grade separations, intersection warning and signing, gating, signalized intersection interconnection, and information on Operation Lifesaver. **[Ongoing]**

VDOT · DRPT
VIRGINIA GRADE CROSSING STATE ACTION PLAN
FEBRUARY 2022

Intersections

Priority Strategy 2: Adopt an approach that considers risk when prioritizing locations for safety improvements and programs.
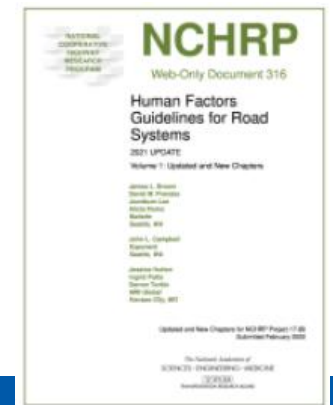
Expand potential for safety improvement network screening to include road and intersection types not currently covered with safety performance functions or lacking traffic volumes. Consider using additional intersection and roadway inventory elements during development of safety performance functions. **[Ongoing]**

Promote the use of the Human Factors Guide in project planning and development and provide related application training on road and traffic control design assessments. **[Long Term]**

// **Add new intersection types, e.g., Ramp Terminals, and additional characteristics as feasible for Network Screening**

// **Updates and new chapter to HFG is ongoing, with new release in 2021 https://www.trb.org/main/blurbs/182643.aspx**

// **Human Factors training being developed for 2022 delivery**

Priority Strategy 3: Recognize traffic safety as a public health issue and establish policies and programs that promote safe behavior and reduce crash severity outcomes.

Investigate alternate strategies to reduce red-light running for all users. Work with law enforcement and educators to initiate focused law enforcement and messaging/outreach activities to reduce red-light running. **[Long Term]**

// **Some jurisdictions are using "blue light" indicators and RLR cameras, but is there room for improvement.**

Priority Strategy 5: Implement innovative solutions and utilize current and emerging technologies.

Institutionalize the consideration of safe system and innovative designs through the Intersection and Interchange Control Assessment Program. Evaluate and enhance messaging on the benefits and use of innovative intersections and interchanges. **[Short Term]**

Complete deployment of VDOT modernized traffic signal control technologies and implement real-time signal monitoring and control strategies. Investigate and implement new technologies for conflict mitigation as they become available. **[Ongoing]**

// **iCAP (VDOT SPICE tool) is set to be launched later this Spring**

// **New VDOT controllers and statewide system is expected completion in 2022.**

Motorcycles and Heavy Vehicles

Priority Strategy 1: Implement road improvements that ensure human mistakes and vulnerabilities do not result in serious injuries or fatalities.

Deploy engineering solutions and best practices that address motorcyclist, moped, and motorized scooter-specific infrastructure issues, work zone issues and mitigation including drainage and shoulders, communication of road conditions, pavement conditions, enhanced road delineation, and traffic control devices. **[Long Term]**

// **Ideas on where to start or what is a priority are appreciated.**

Priority Strategy 1: Implement road improvements that ensure human mistakes and vulnerabilities do not result in serious injuries or fatalities.

Provide additional truck parking facilities along highways, and additional information systems to inform truck drivers of available spaces. **[Long Term]**

// **Truck Parking Demand Study is on going**

// **Truck Parking Information pilot study at two rest areas assessed technology**

Connected Automated Vehicles & Safe Speed

Priority Strategy 5: Implement innovative solutions and utilize current and emerging technologies.

Assess emerging connected vehicle datasets that produce estimates of safety surrogate measures such as excessive braking and acceleration for potential application in the network screening process. **[Long Term]**

Conduct pilots of smart intersection technologies that can detect vulnerable road users and alert connected vehicles to conflicts. **[Long Term]**

Develop and pilot advanced tools and methods to improve safety for the motorist and worker in construction and maintenance work zones, such as automated truck mounted attenuators, worker alerts, and advanced driver alerts of work zones. **[Long Term]**

Priority Strategy 5: Implement innovative solutions and utilize current and emerging technologies.

Investigate the additional use of the Active Traffic Management System (ATMS) and Variable Speed Limit (VSL) practices on freeway corridors to harmonize speed and prevent weather and queue-related crashes. **[Ongoing]**

Develop guidelines and collaborate with localities implementing automated speed enforcement in school zones and encourage automated speed enforcement for appropriate work zones. **[Ongoing]**

// **I-95 VSL Project MM 115-130 operational late spring 2022**

// **SZ ASE guidelines based on synthesis report and Arlington County study**

Emergency Response and Medical Services

Priority Strategy 3: Recognize traffic safety as a public health issue and establish policies and programs that promote safe behavior and reduce crash severity outcomes.

Expand Move-Over law public messaging and investigate the cost and benefits of having attenuator vehicles more accessible while learning of emerging mitigating technology with CAV. **[Short Term]**

// **Investigate feasibility of having TMAs at longer incidents**

Priority Strategy 5: Implement innovative solutions and utilize current and emerging technologies.

Evaluate best practices to efficiently collect, analyze, and share data from severe crash investigations (e.g., Total Station and Unmanned Aerial Vehicle (UAV) equipment and data). **[Long Term]**

Finalize localized interstate incident management plans with State and local fire, EMS, law enforcement, and incident response personnel. **[Short Term]**

Implement the Statewide Traffic Incident Management (STIM) committee initiatives to share information and garner input through the STIM website, propose quick clearance policy for consideration and implementation, and provide associated training (e.g., SHRP2 training). **[Ongoing]**

// **Finishing gaps in Interstate incident management plans and then standardizing content.**

High-visibility Backplates

Up to 15% crash reduction

Flashing Yellow Arrow

Steady Red Arrow
Drivers turning left must stop and wait (except where permitted by law).

Steady Yellow Arrow
Stop, if you can do so safely.

Flashing Yellow Arrow
Proceed with left turn after yielding to oncoming traffic and pedestrians.

Steady Green Arrow
Proceed with left turn.
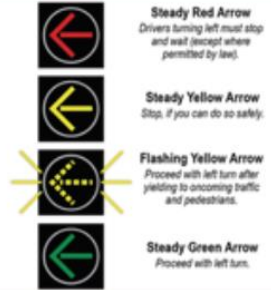
Up to 20% crash reduction

Curve Signs

Up to 40% crash reduction

Pedestrian Crossings

Up to 56% crash reduction
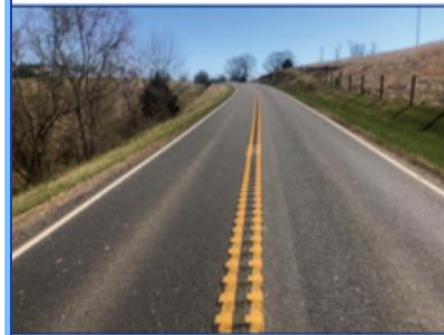

Unsignalized Intersections

Up to 10% crash reduction

Shoulder Wedge

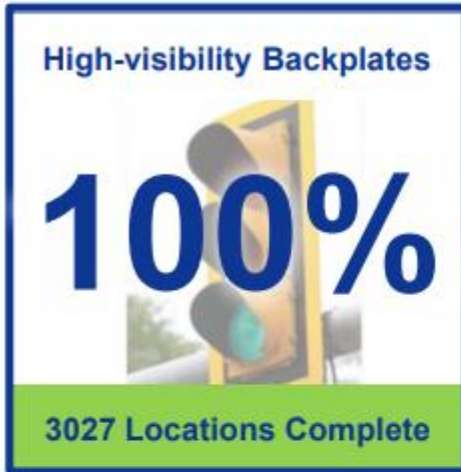Up to 20% crash reduction

Centerline Rumble Stripes

Up to 60% crash reduction

Edgeline Rumble Strips

Up to 50% crash reduction

High-visibility Backplates
100%
3027 Locations Complete

Flashing Yellow Arrow
100%
1239 Locations Complete

Curves Signs
22%
380 Curves Complete

Pedestrian Crossings
10%
57 Locations Complete

Unsignalized Intersections
13%
191 PE Complete

Shoulder Wedge
1%
172 Miles Complete

Centerline Rumble Stripes
18%
326 Miles Complete

Edgeline Rumble Strips
6%
182 Miles Complete

$624M in safety projects over FY2022-2027, This is an increase of $285M in safety funding

Local Systemic Projects

Flashing Yellow
High-Visibility Backplates
Pedestrian Crossings
Curve Signage
Unsignalized Intersections
Road Diets

$58M Investment

Expanded Flashing Yellow Arrow

$13.5M - Up to 195 locations

New VDOT Pedestrian Crossings

$20M - Up to 200 locations

2-lane Rural Roads

$74M - Up to 100 miles
Up to 50% crash reduction

Spot Projects

$22M Investment

Questions?

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