KPMG

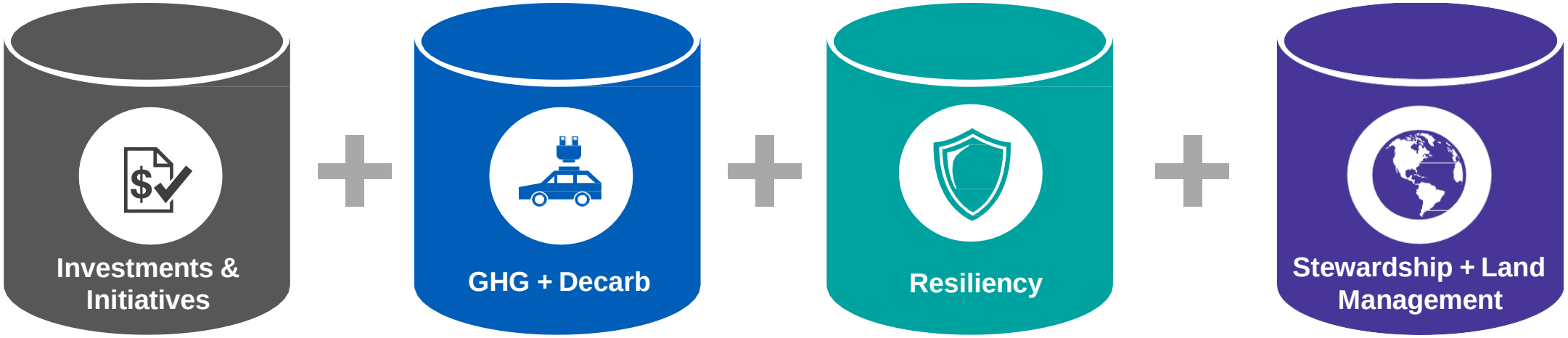
Designing Transportation Sustainability for Virginia

September 14, 2021

To achieve our common sustainability goals, we have developed the following mission for Transportation

"To deliver an effective multi-modal transportation network that addresses the mobility needs of all Virginians in an environmentally responsible manner that supports the goals of the Commonwealth Clean Energy Policy."

Standing up an Office of Transportation Sustainability with four focus areas will allow us to continually emphasize the mission and make progress



Investments & initiatives that are Sustainability-related, along with ability to measure their impacts

Identify opportunities & associated initiatives to 'bend the curve' of Transportation-related emissions

Integrate climate change impacts into infrastructure design, enabling a proactive stance in asset planning

Maximize the beneficial outcomes and outputs of our existing assets

Several principles will underpin the design of the Office of Transportation Sustainability

Key Principles

Institutionalized

Provides a strong foundation preventing material movement or change on the core tenets of Transportation Sustainability

Action-oriented

Allows for quick scoping, development, and delivery of initiatives related to Transportation Sustainability

Accountable

Provides both formal and informal means of ensuring delivery of Transportation Sustainability initiatives

Visible

Provides visibility & reach regarding the most critical areas of Transportation Sustainability

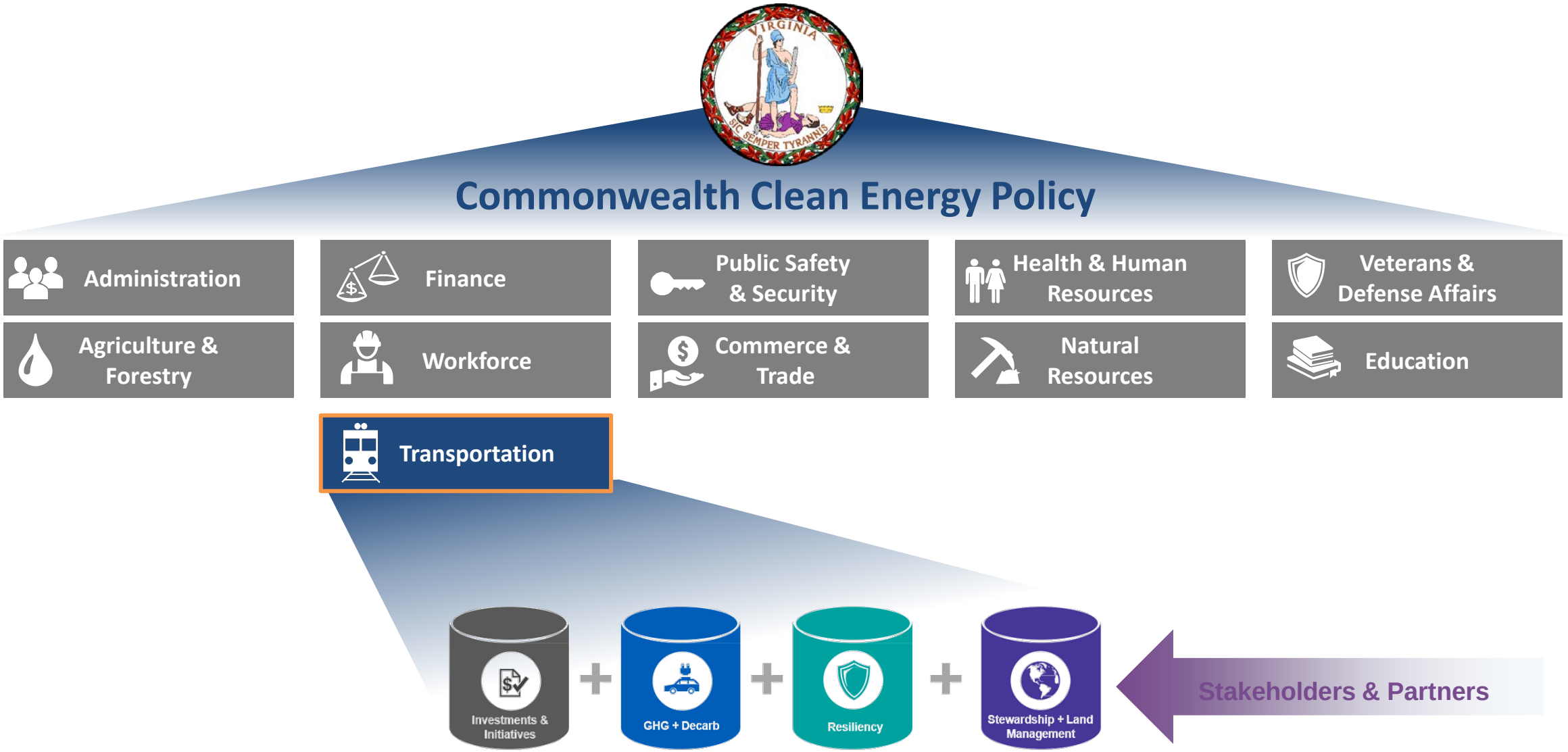
Connected

Fosters productive and meaningful interactions in and across agencies

Empowered

Creates tangible, distributed ownership around key aspects of Transportation Sustainability

Secretariats' role in delivering the Commonwealth Clean Energy Policy



Initial scope for the Office of Transportation Sustainability

1 **Investments & Initiatives**
Investments & initiatives that are Sustainability-related, along with ability to measure their impacts

2 **GHG & Decarbonization**
Identify opportunities & associated initiatives to ‘bend the curve’ of Transportation-related emissions

3 **Resiliency**
Integrate climate change impacts into infrastructure design, enabling a proactive stance in asset planning

4 **Stewardship & Land Management**
Maximize the beneficial outcomes and outputs of our existing assets

Virginia is already investing in carbon-reducing initiatives focused on Transportation sustainability across the Commonwealth

Omnibus Transportation Bill

Establishment of the Commonwealth Transportation Fund directed toward specific environmental sustainability initiatives; restructured fuel tax and other revenues to support carbon-reducing alternatives.

CTB Environmental Committee

Body developing policy recommendations regarding GHG emissions analysis and assessing/optimizing Land Management strategies.

Transit Investments

Increase of state funding for transit & operations by 50% per year; initial investments in bus electrification; establishment of the Transit Ridership Incentive Program (TRIP) to increase connectivity & reduced- and free-fare programs.

I-81 Improvement Plan Funds

Infrastructure improvements funded by raising diesel, road tax and regional motor fuel taxes for highway and multi-modal investments.

Multimodal Mobility in NOVA

More than $2b in multimodal investment in transit, rail, trails, park & rides, and technology.

MBUF Pilot

Pilot program to understand drivers, concerns, adoption curve, and path forward for a mileage-based usage fee (‘MBUF’) program in the Commonwealth

WMATA Collaboration

Ongoing partnership with DC & Maryland to contribute $500m each year for state of good repair capital projects.

Transforming Rail

Railway expansion and improvement for commuter, passenger, and freight rail operations

Integrated Express Lanes

A more than 90-mile network of Express Lanes eliminates more than 112 million passenger miles and preventing 6,000+ metrics tons of greenhouse gas emissions

Investments & Initiatives | Focused on a balanced slate of environmental and Transportation-focused outcomes to promote positive impacts and return

Progress to Date

Plan Forward

- Identify key sustainability elements to deliver on Virginia's current & future needs
- Continue to utilize and refine key criteria & measures by which to prioritize potential investments
- Establish a formal impact review process (or modify existing processes to accommodate this review)

Ideal Future State

Provide guidance on the types of investments and initiatives that will deliver a multi-modal transportation network for all Virginians in an environmentally-responsible manner.

GHG + Decarbonization | Progress to Date

EV Readiness

Studies to determine the overall readiness of the Commonwealth for a shift to greater fleet mix of electric vehicles (Phase I complete; Phase II is currently being scoped)

Shift to Electric Transit

Move to electric transit including zero-emissions buses in several areas of Virginia such as Alexandria, Blacksburg, and Hampton Roads.

Rail Industrial Access

Increased focus on providing adequate rail industrial access to lower need for individual trucking & cargo logistics.

GHG Emissions Baseline

Continued collaboration with DEQ on GHG emissions inventory for transportation, identifying sources and opportunities for mitigation.

I-95 Pilot Program

Pilot underway to study a portion of the I-95 corridor to determine how best to evaluate GHG and climate change impacts during NEPA studies.

Offshore Wind

Focus on large offshore wind assets to provide a cleaner grid that takes advantage of Virginia's natural energy production potential.

Green Operator Program

A voluntary, public-private program to help drayage trucks in Virginia lower their contributions to air pollution.

Clean Cargo Handling

Initiative to convert many cargo handling vehicles and equipment over to cleaner powertrains (e.g., electric or hybrid)

Sustainable Aviation Fuels

Ability to utilize sustainable sources from feedstocks such as cooking oil and animal fats to lower overall emissions profile of aviation activities.

GHG + Decarbonization | A goal of reducing the carbon footprint of Virginia's transportation assets

Progress to Date

GHG & Emissions Inventory

Continued collaboration with DEQ on GHG emissions inventory for transportation, identifying sources and opportunities for mitigation.

I-95 Pilot Program

Pilot underway to study a portion of the I-95 corridor to determine how best to evaluate GHG and climate change impacts during NEPA studies.

Plan Forward

- Define strategic decarbonization goals and Virginia's most material issues in this space
- Establish inventory and align on GHG projections
- Identify gaps & opportunities to 'bend the curve'
- Develop decarbonization roadmap & implementation plan with selected opportunities

Ideal Future State

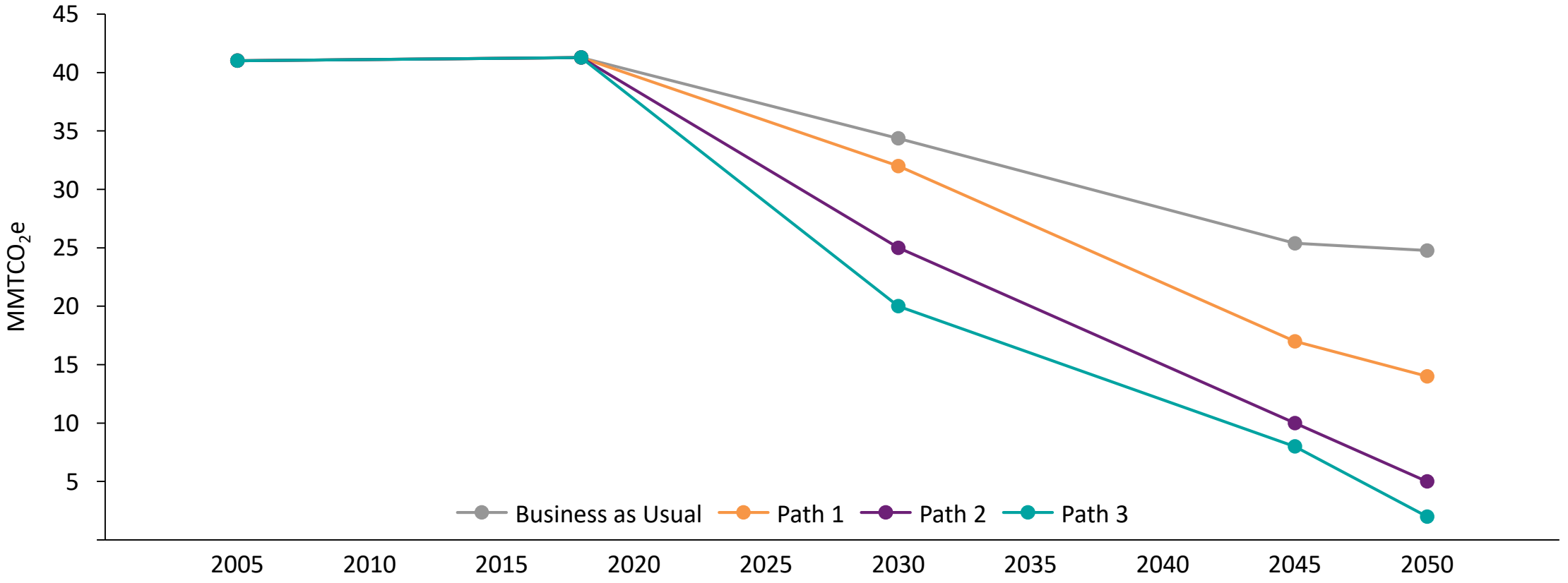
Decarbonization activities and potential paths will be more transparent and better integrated into decision-making processes across agencies.

This will result in achieving the 2045 Net Zero Carbon Energy Economy goals set forth for Virginia.

Scenario analysis provides an avenue to select from a wide variety of these potential paths, and help balance the various objectives that may – at times – be in conflict

Example | Multi-scenario analysis on decarbonization timeframes

ILLUSTRATIVE



Resiliency | Progress to Date

VIMS Study

Study with Virginia's Institute of Marine Science (VIMS) to study potential impacts of sea level rise and other key climatic factors on infrastructure.

Precipitation Analysis

Update of models related to rainfall intensity, duration, and frequency to better reflect recent trends in observed events.

Recycling Program

Work to identify and expand opportunities for recycling or reuse of materials, whether related to construction or day-to-day maintenance efforts.

Construction Design Updates

Update of construction designs to incorporate new and more environmentally-friendly methods to deliver the same overall outcome.

Coastal Resilience Master Plan

Plan to increase ability to prepare for and adapt to localized flooding events, increase financing flexibility, and enhance agency coordination.

Climate Change Megatrends

Ongoing research by VTrans into how shifts in climate will impact planning and development efforts for the Commonwealth over time.

Materials Research

Research into specific materials (porous pavements, surface treatments, etc.) and the types of tradeoffs that they offer in terms of environmental benefits & performance

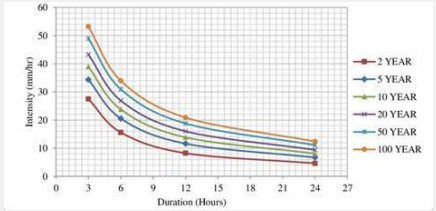
Resiliency | Resiliency – the capacity to respond and recover from disruption – will be supported by research such as VIMS, which provides insights into how to optimize infrastructure spend

Progress to Date

VIMS | William & Mary
Virginia Institute of Marine Science

VIMS Recurrent Flooding Project

Project to capture management strategies for assets that have or will see substantial climate impacts; in addition, identify how to mitigate future use conflicts for Rare, Threatened or Endangered (RTE) species and their habitats.



IDF Precipitation Study

Study to develop precipitation curves around Intensity, Duration, and Frequency (IDF) to better understand and predict behaviors and useful responses.

Plan Forward

- Assess maturity of Virginia's capabilities related to Resiliency
- Evaluate existing and need for future assessments to ensure data on relevant hazards is available
- Establish a risk-based, adaptive design approach to incorporate resilience into new construction projects
- Develop and finalize resiliency strategy, incorporating aspects of ROI and efficiency into performance

Ideal Future State

Virginia will be prepared to 'bounce back' from adverse events and leverage industry-leading data, information, and studies on resilience to catalyze its own innovation.

Stewardship + Land Management | Progress to Date

Pollinator Habitats

Development and maintenance of natural habitats along state-maintained roads and properties to encourage pollinator presence.

Monarch Conservation

Formal conservation agreement with U.S. Fish & Wildlife Service to conserve this at-risk species; only 8 states are currently included.

Land Holdings Analysis

Evaluation of existing land held by VDOT including land use, land cover, and other characteristics to determine possible enhanced use in the future.

Animal Passages/Crossings

Continued development of dedicated animal passages and crossings to limit unintentional human-animal interactions with negative outcomes.

I-295 Reforestation

Reforestation along the I-295 corridor in 5 key areas of right-of-way that reduces pollutants to surface water during runoff events.

‘Lovers Not Litter’

Program to encourage citizen commitments to reduce the amount of litter – and associated cleanup costs – on Virginia’s roadways.

LED Highway Lighting

Increased focus on conversion to efficient LED lighting for key highway corridors.

Forced-air Composting

New method of ensuring more sanitary roadside cleanup of animals.

Wetlands Preservation

A suite of several programs designed to mitigate damage to Virginia’s wetlands and preserve critical wildlife and their habitats (e.g., oyster reefs)

Stewardship + Land Management | Land use & management promotes healthy environments while also maximizing beneficial outcomes for the Commonwealth

Progress to Date

Land Holdings Analysis

Evaluation of existing land held by VDOT including land use, land cover, and other relevant characteristics

VDOT Pollinator Habitat Program

Creates natural areas of native plants along state-maintained roads and properties

I-295 Reforestation Project

Tree planting efforts in 5 areas of VDOT ROW to reduce pollutant runoff

Plan Forward

- Diagnose Land Management current state
- Outline key levers or criteria to evaluate Land Management decision-making process
- Perform initial 'asset scan' to provide overview of potential land use options
- Determine how to integrate principles of Land Management into ongoing processes

Ideal Future State

Land Management will be an objective, actively-managed process that both improves the environment and could provide additional opportunities to expand other programs across Virginia.

Immediate Next Steps

- ❑ Outline organizational structure and develop operating model for establishing Office
- ❑ Continue building inventory of Transportation strategies & initiatives
- ❑ Develop estimates of costs, benefits & related impacts for each strategy
- ❑ Execute stakeholder outreach to understand existing + planned sustainability efforts:
  - — *Continue individual outreach efforts*
  - — *Grow employee awareness, engagement, and support for Sustainability*
  - — *Launch public outreach and gather direct citizen input*