



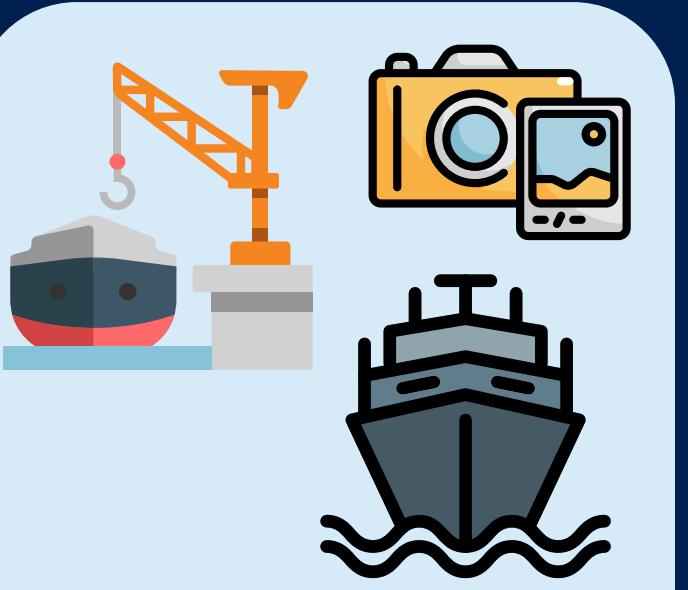
Hampton Roads LONG-RANGE TRANSPORTATION PLAN

2024 FEDERAL QUADRENNIAL CERTIFICATION REVIEW
AUGUST 14, 2024

DALE M. STITH, HRTPO PRINCIPAL TRANSPORTATION PLANNER



HRTPO LRTP Planning Considerations



Regional Economic Drivers

- Military
- Port
- Tourism
- Off-Shore Wind
- Fiber Ring/Trans-Atlantic Data Cables



Multimodal Connectivity

- Transit (traditional and high-capacity)
- Passenger Rail
- Bike/Pedestrian
- Microtransit and Micromobility
- Connected and Automated Vehicles



Resiliency Considerations

- Sea Level Rise
- Storm Surge
- Coastal Resiliency
- Recurrent Flooding



Demographic Considerations

- Aging Population
- Alternate Growth Scenarios
- Affordable Housing
- Equity



Funding

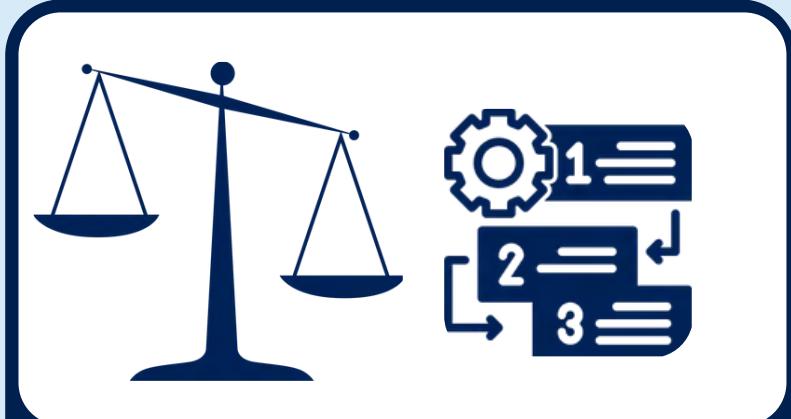
- Federal
- State
- Regional
- Local

HRTPO LRTP Approach



EXPLORATORY SCENARIO PLANNING

- Prepare for future uncertainty
- Candidate projects evaluated across all scenarios to identify most robust projects



PROJECT PRIORITIZATION TOOL

- Objective, data driven methodology
- Performance-based approach
- Used to select projects for LRTP and TIP



RESILIENCY AND VULNERABILITY PLANNING

- Evaluate potential impacts of multiple Sea Level Rise and storm surge flooding scenarios



EQUITY AND ACCESSIBILITY

- Enhance Equity and Accessibility measures

Collaboration and Outreach



SURVEYS



**INTERACTIVE MAPS,
WEB APPS AND SOCIAL
MEDIA**

**BACK
TO
SCHOOL**

SCHOOL OUTREACH

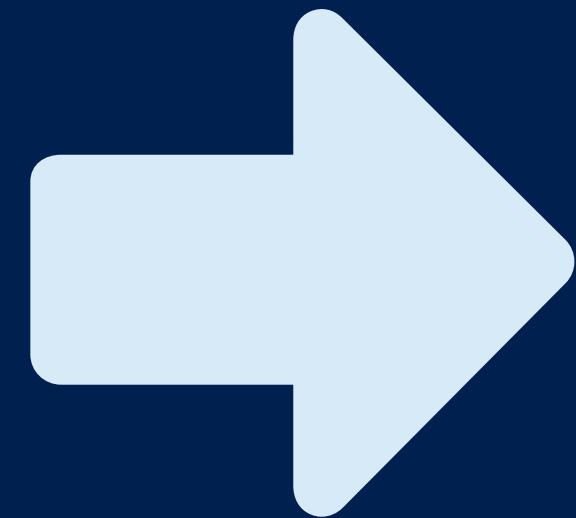


**TRADITIONAL: REPORTS
AND MEETINGS**





**Adopted
June 2021**



**Adoption by
June 2026**



**\$17
Billion**

MAINTENANCE/
SYSTEM
PRESERVATION

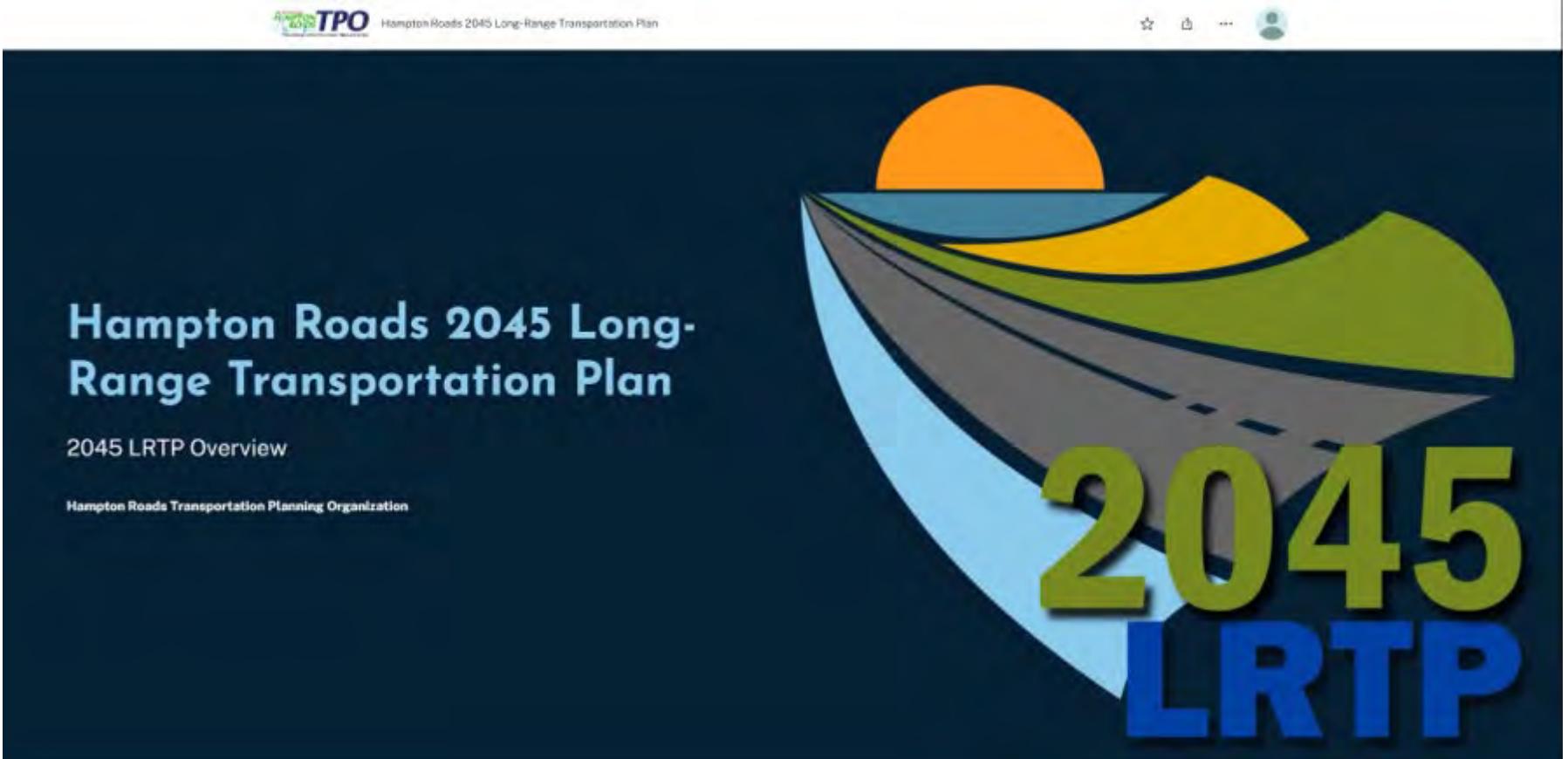
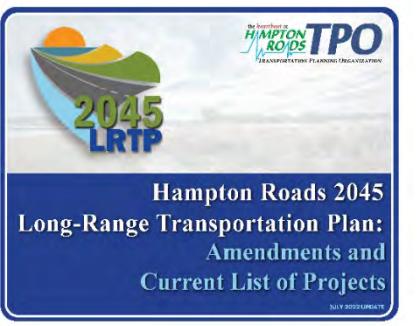
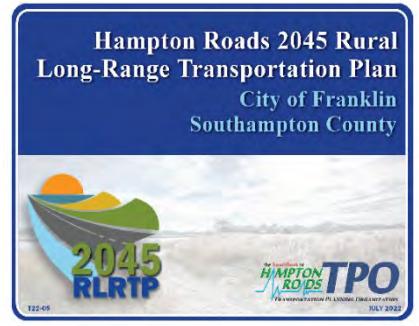
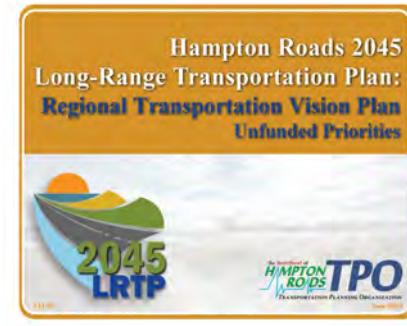
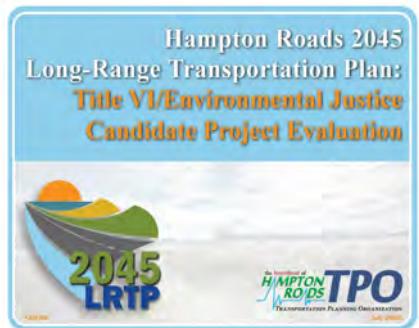
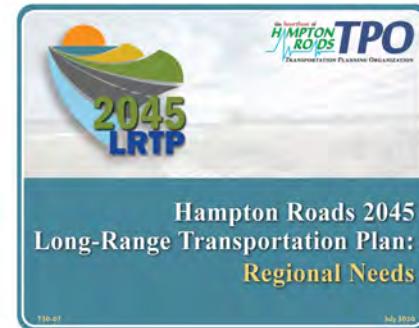
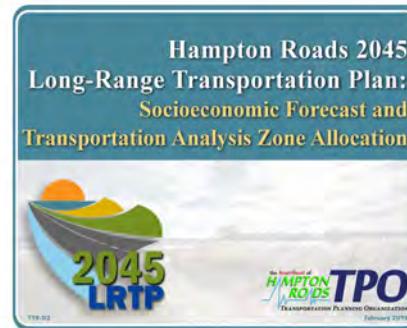
**\$13.7
Billion**

ADDITIONAL
MULTIMODAL
INVESTMENTS

Plan Highlights



2045 LRTP Report Documentation

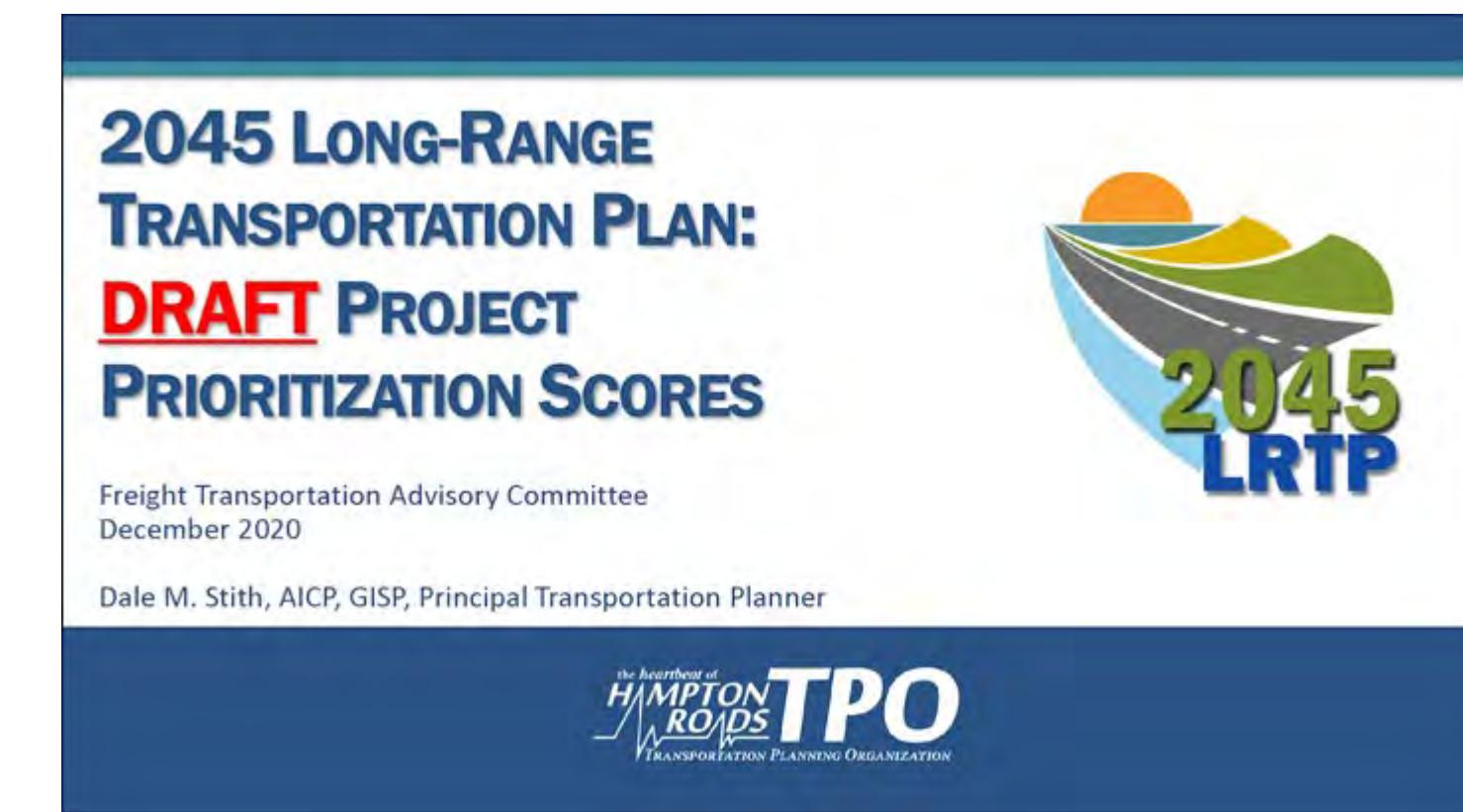


2045 LRTP

Collaboration and Public Outreach

- Multiple opportunities to comment at key decision points
- Robust visualization
- Explicit consideration and response to input received
- During the COVID-19 Pandemic, used recorded presentations and virtual meeting platforms to ensure plan could be completed in an open and collaborative fashion

Recorded Presentation Example – Draft Prioritization Scores



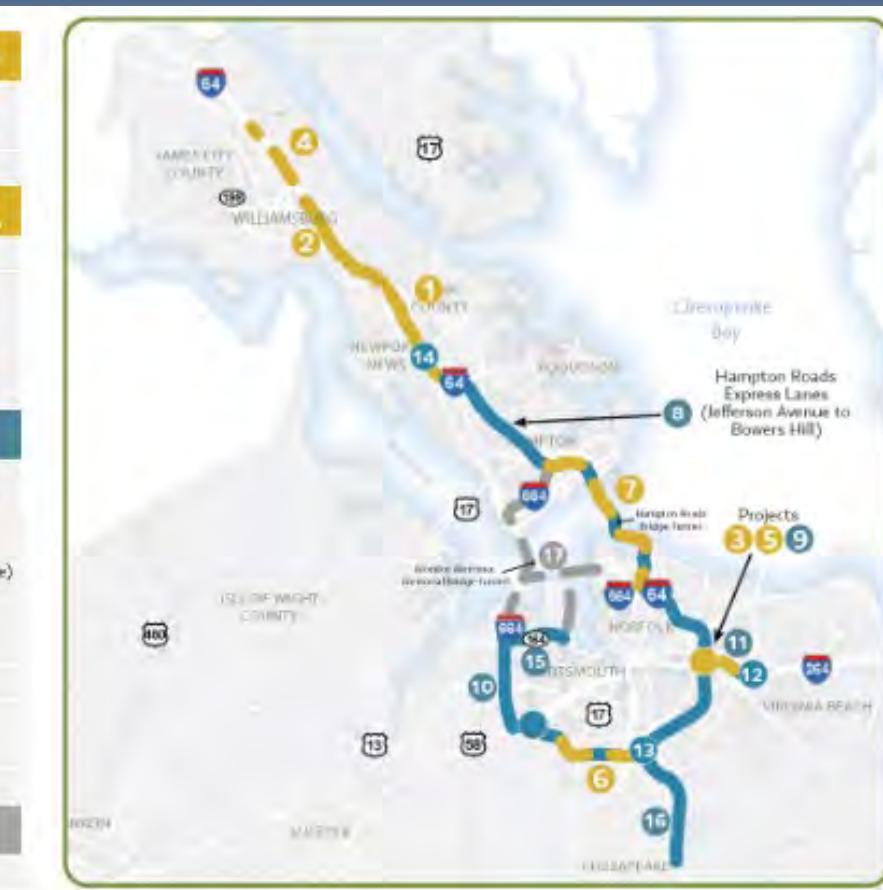
2045 LRTP Draft Fiscally Constrained List of Projects Presentation to HRTPO Board - February 2021



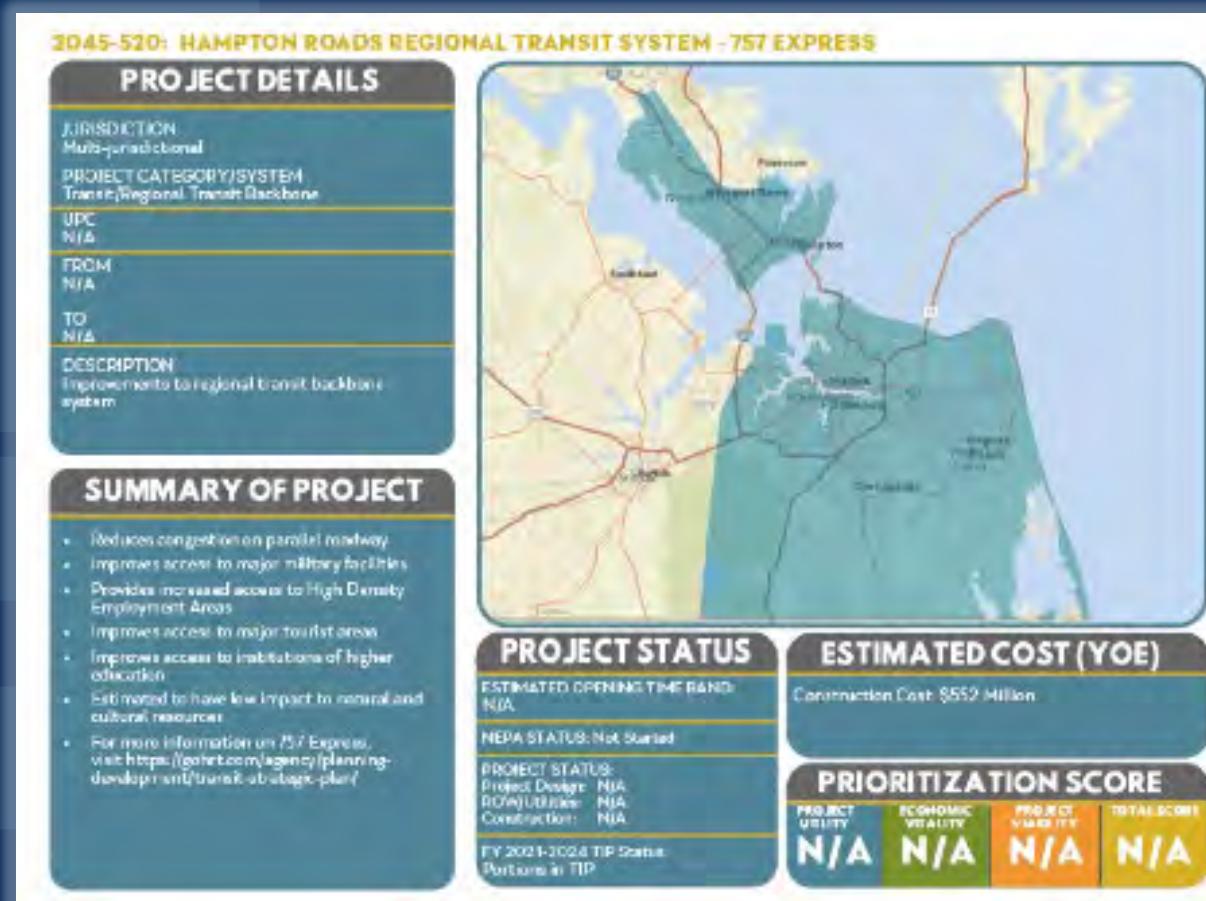
2045 LRTP Regional Priority Projects

Highway

Map Label	Completed Highway Regional Priority Projects (RPPs)	Completion
1	I-64 Peninsula Widening - Segment 1	2017
2	I-64 Peninsula Widening - Segment 2	2019
3	I-64/I-264 Interchange - Phase I	2019
RPPs Under Construction		Estimated Completion
4	I-64 Peninsula Widening - Segment 3 (Exit 242 to Exit 234)	2021
5	I-64/I-264 Interchange - Phase II	2021
6	I-64 Southside Widening, including High-Rise Bridge (I-464 to I-664)	2021
7	I-64/Hampton Roads Bridge-Tunnel Expansion (near Hampton Coliseum to I-564)	2026
Additional RPPs planned in the 2045 LRTP		
8	Hampton Roads Express Lane Network (Jefferson Avenue to Bowers Hill)	2026
9	I-64/I-264 Interchange - Phase III-A	
10	I-664 Widening, including Bowers Hill Interchange (Bowers Hill to College Drive)	
11	I-264 Widening (Witchduck Road to Independence Boulevard)	
12	I-264/Independence Boulevard Interchange	
13	I-64/I-464 Loop Ramps	
14	I-64/Denbigh Boulevard Interchange	
15	VA-164 Widening (West Norfolk Road to I-664)	
16	VA-158 Bypass Widening (I-64 to Hillcrest Parkway)	
RPPs Under Study		
17	Regional Connectors Study	



Transit



Active Transportation



2050

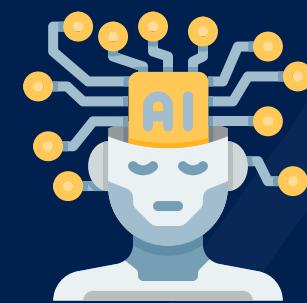
2024

2050

2024

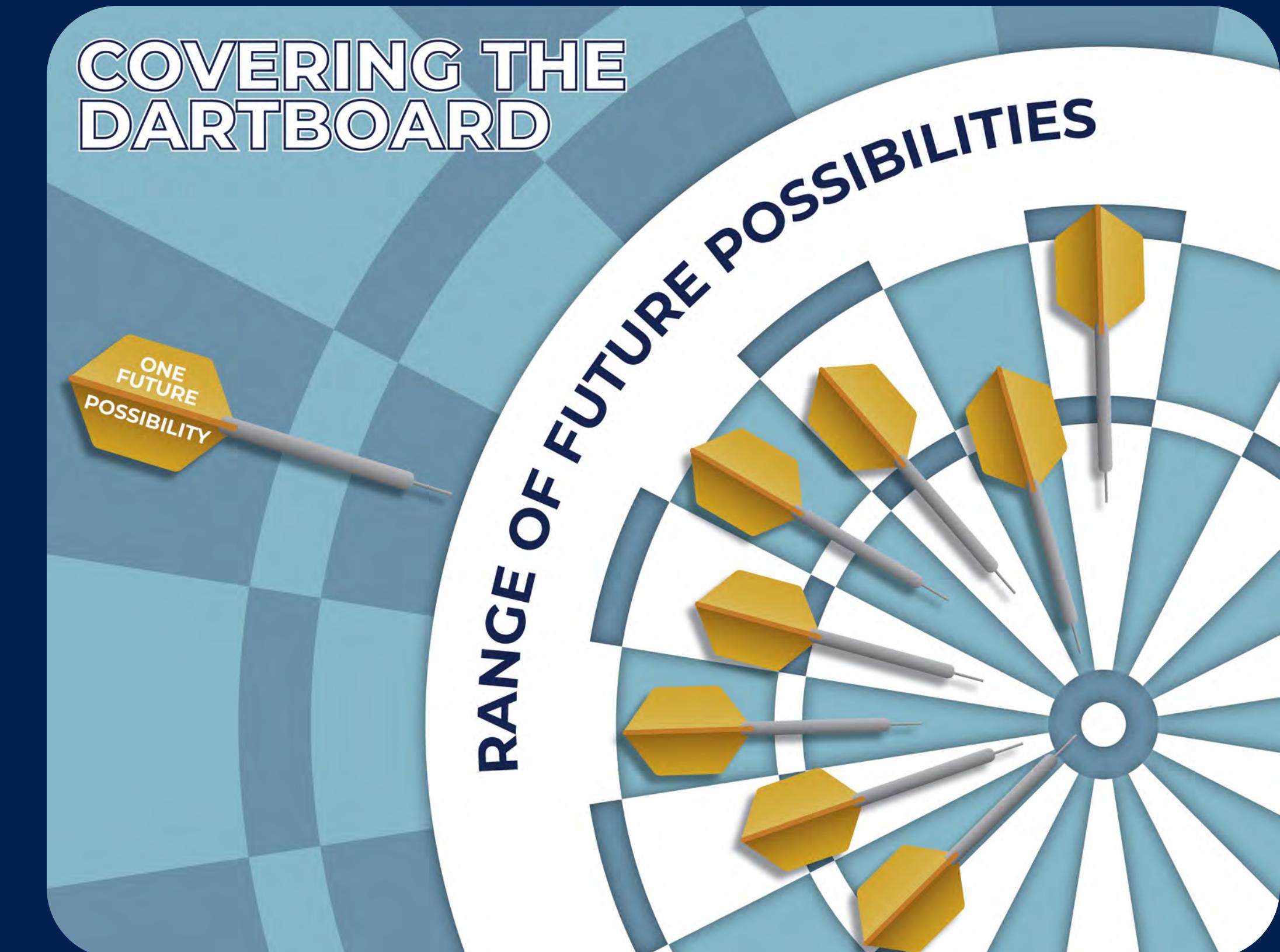


2050



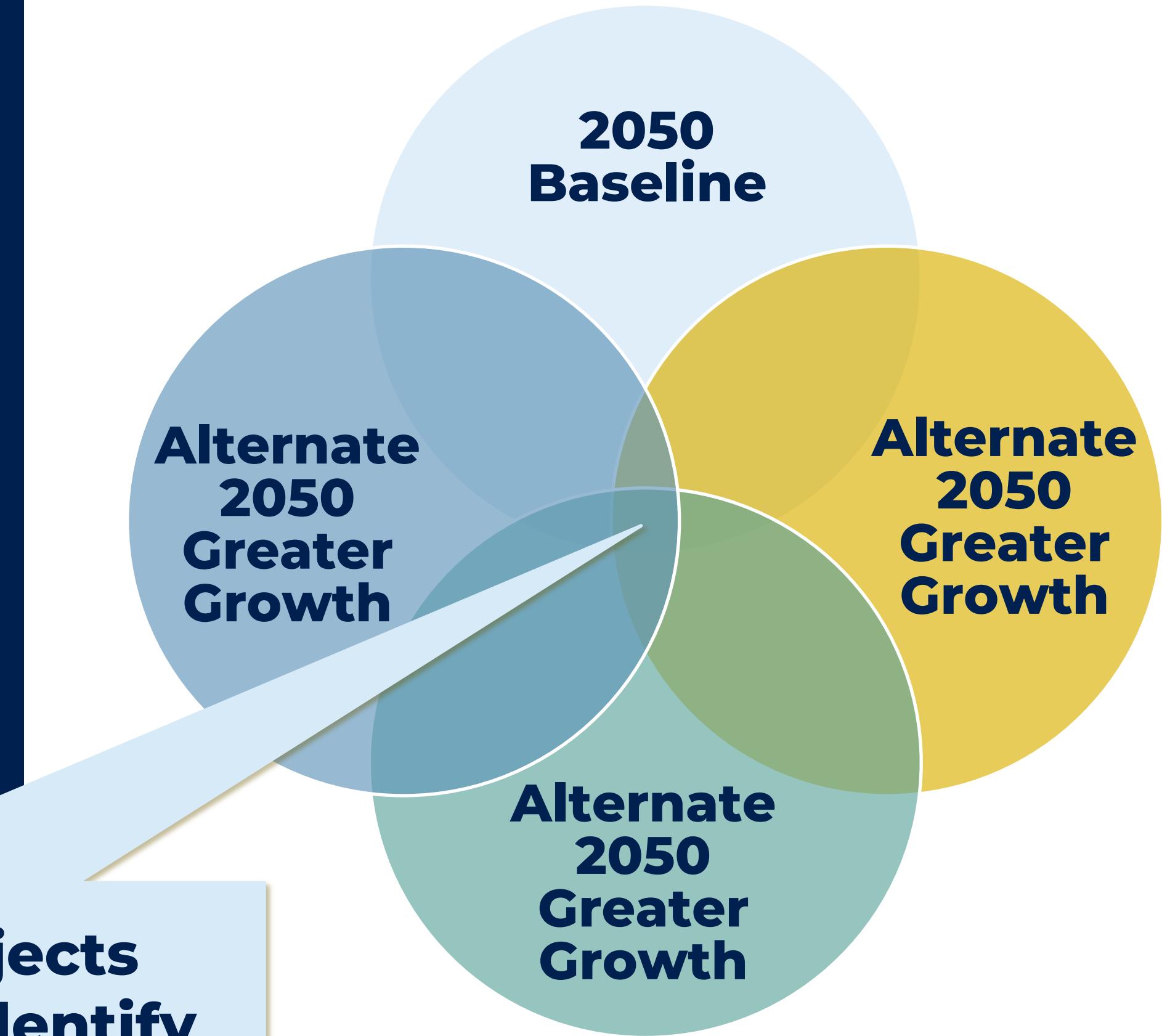
Exploratory Scenario Planning

- Shift from **PREDICTING** to **PREPARING**
- Explore different growth scenarios
- Stress test the transportation network to identify the most robust and resilient projects



LRTP Exploratory Scenario Planning

**Evaluate and Rank Projects
Across All Scenarios to Identify
Most Robust Projects**



HRTPC Project Prioritization Tool

PROJECT CATEGORIES



Bridge/Tunnel



Highway



Interchange/Intersection



Intermodal/Freight



Transit



Active Transportation



Systems/Demand Management

PROJECT UTILITY

Ability to Solve a Transportation Problem

- Congestion
- Travel Time Reliability
- System Continuity and Connectivity
- Safety and Security
- Modal Enhancements
- Infrastructure Condition

ECONOMIC VITALITY

Potential for Economic Gain

- Travel Time and Delay Impacts
- Labor Market Access
- Address Needs of Basic Sector Industries
- Increased Opportunity
- Economic Distress Factors

PROJECT VIABILITY

Project Readiness and Compatibility

- Project Readiness (funding commitment and design)
- Land Use/Future Development Compatibility
- Environmental Quality/Impacts
- Cost Effectiveness

Prioritization Data Examples

PROJECT UTILITY

Safety Data

Existing and Future Land Use

Active Transportation Corridors

Transit Stops and Routes

Large Developable Sites

TAZ Data

ECONOMIC VITALITY

Port Facilities and Major Freight Sites

Future Traffic Forecasts

Transportation Vulnerable Communities

Wetlands

Parks, Historical, and Cultural Sites

Urbanized Waterfront

PROJECT VIABILITY

Congestion Data

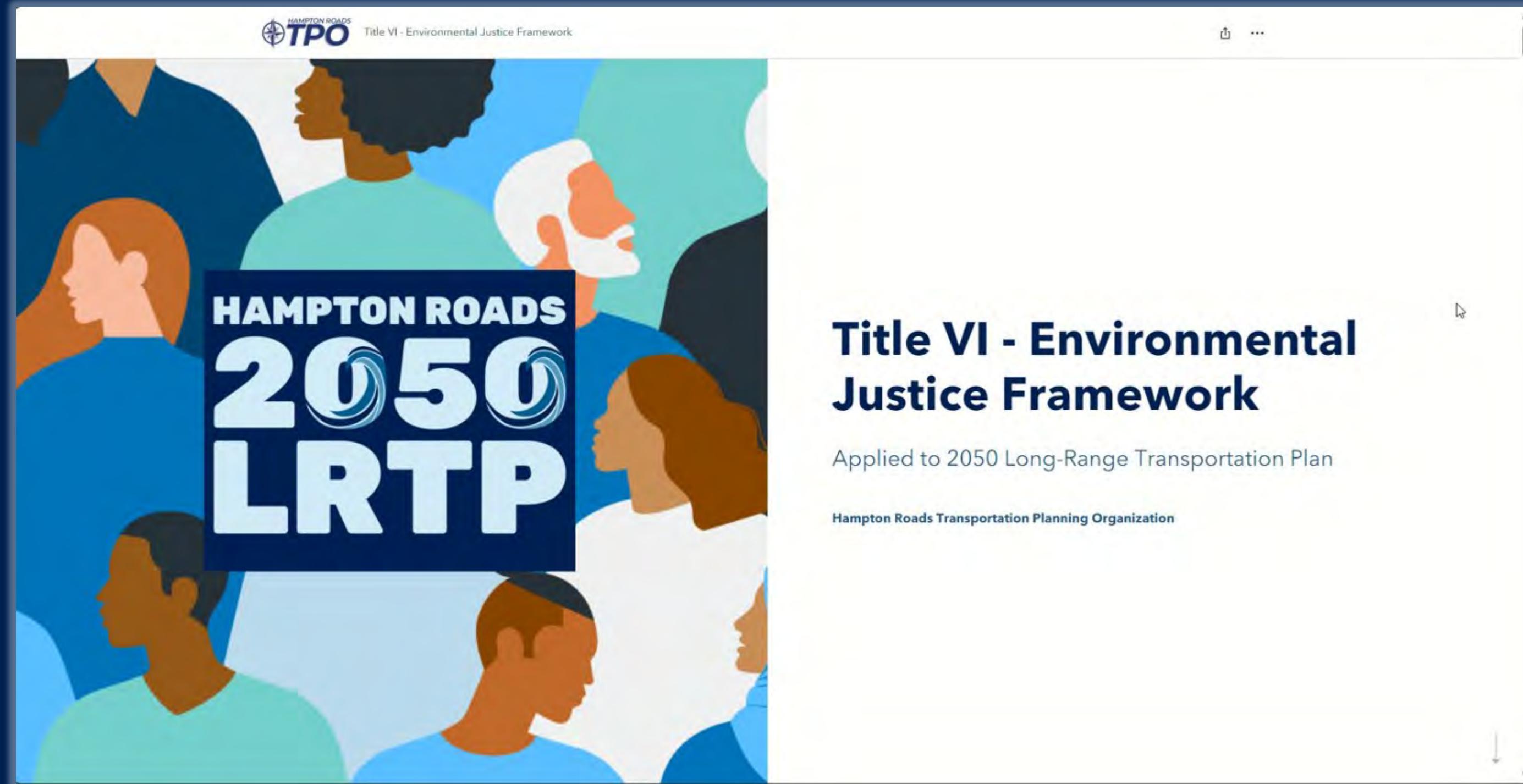
Forecasted Sea Level Rise Inundated Areas

Higher Education Facilities

Military Properties

High Density Population and Employment

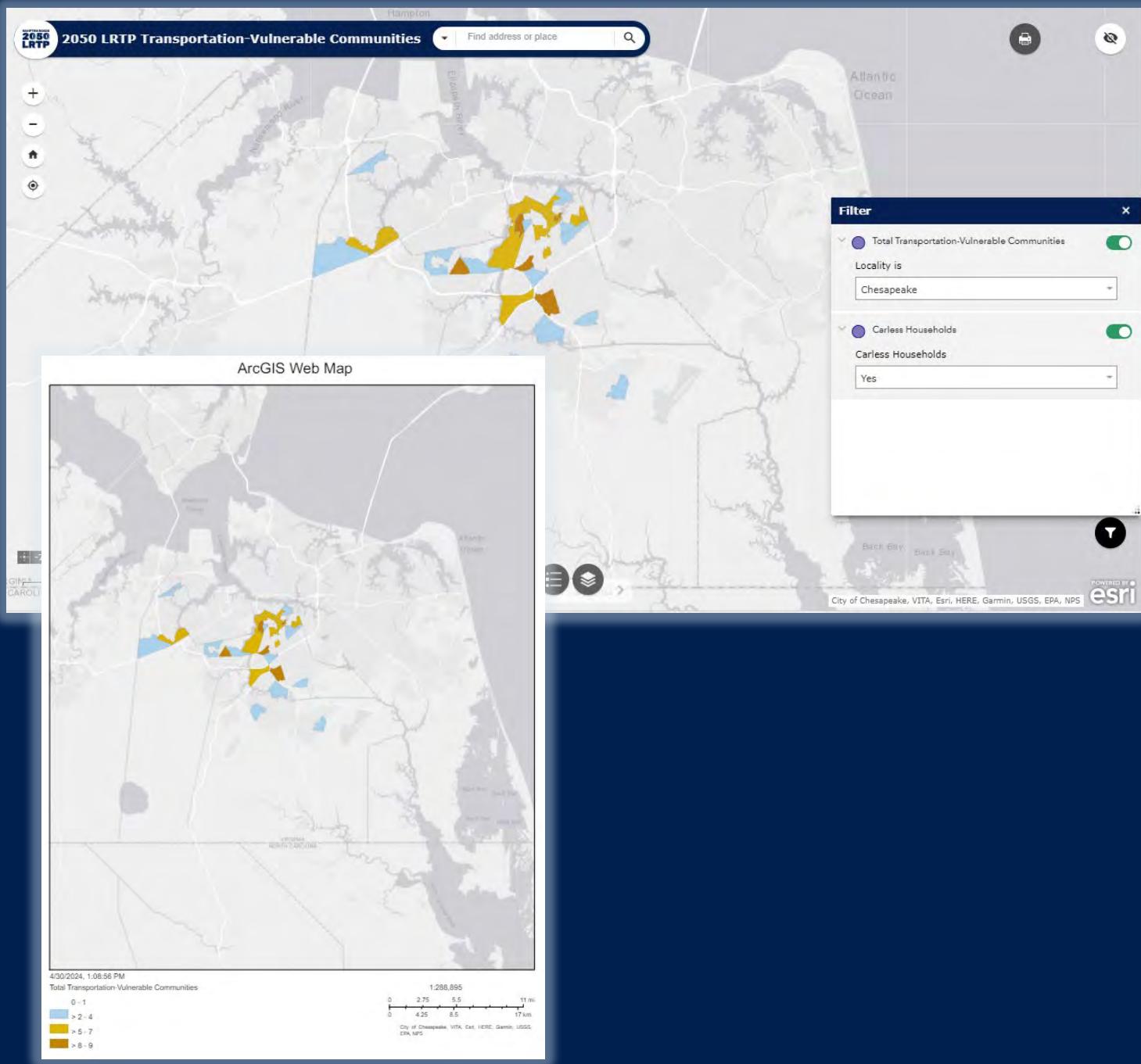
Equity Considerations: Transportation-Vulnerable Communities



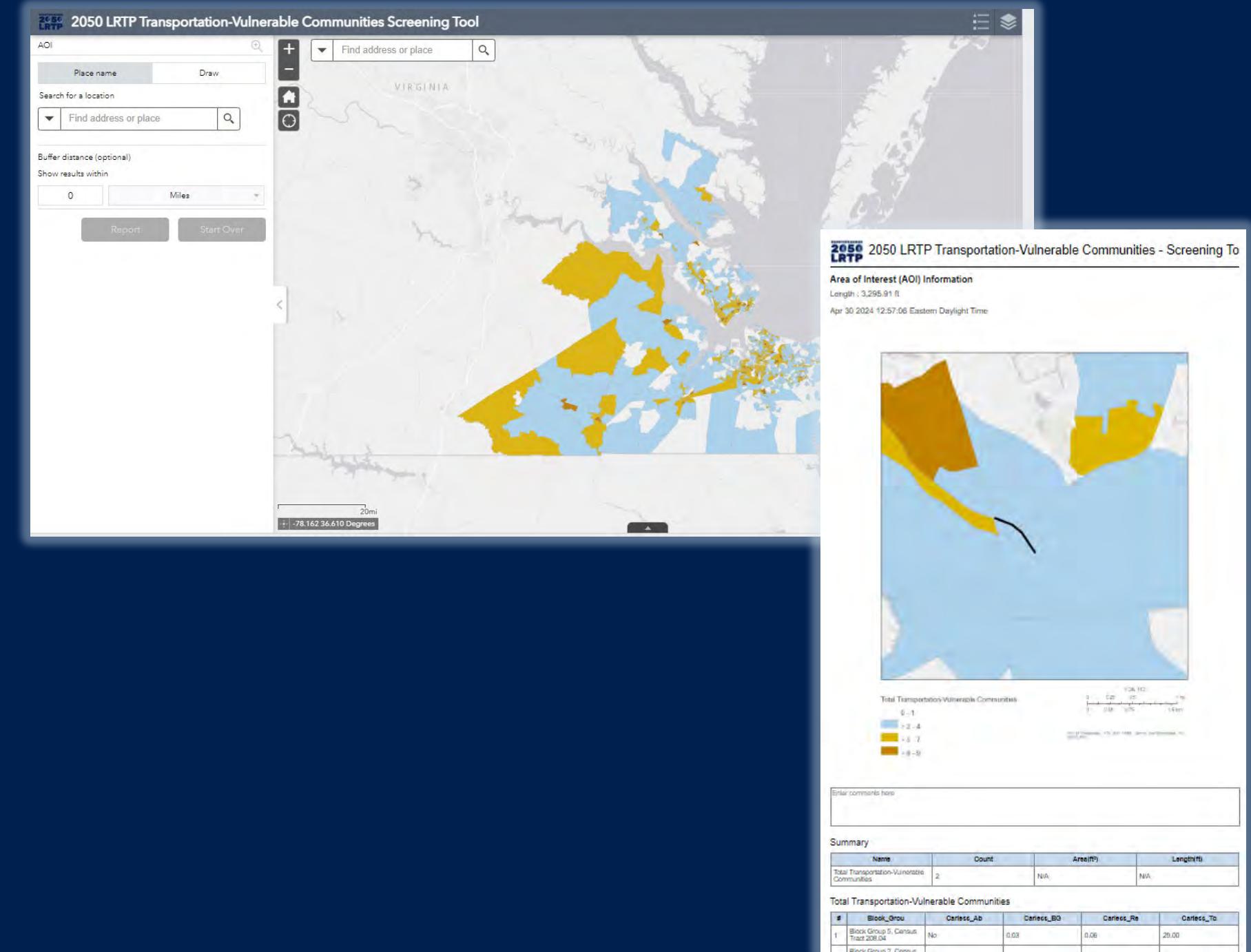
<https://storymaps.arcgis.com/stories/774eed11e4ce432c89c74d011ec6c65c>

Other Equity Mapping Tools (in progress)

Transportation-Vulnerable Community Maps



Transportation-Vulnerable Community Project Screening Tool



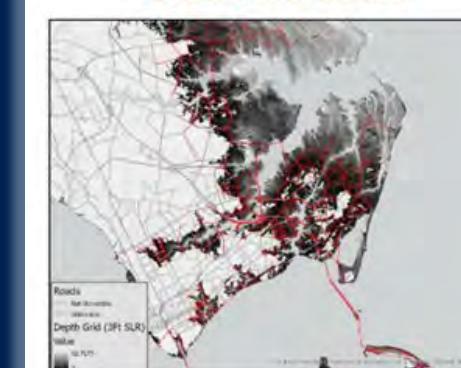
LRTP Resiliency Considerations

Incorporated into scenario planning

- Volpe Resilience and Disaster Recovery Tool
 - Identify resiliency-focused projects that provide most benefit across range of hazard scenarios
 - Transit and Equity Enhancements
- Fernleaf Resiliency and Equity Pilot
 - Screening Level Analysis
 - Combines Social Vulnerability with Roadway Network Analysis

VOLPE RDR TOOL OVERVIEW

RDR EXPOSURE ANALYSIS TOOL



Maximum network exposure on each link

- Identify network assets vulnerable under given hazard condition

RDR LINK CAPACITY LOSS CALCULATION



Capacity reduction on each link

- Assess lost/reduced capacity under given hazard condition

PROJECT RANKING BY ROI, PERFORMANCE UNDER UNCERTAINTY



- Identify resiliency-focused projects that provide most benefit across range of hazard scenarios

Source: Volpe

RESILIENCE/EQUITY PILOT WITH FERNLEAF

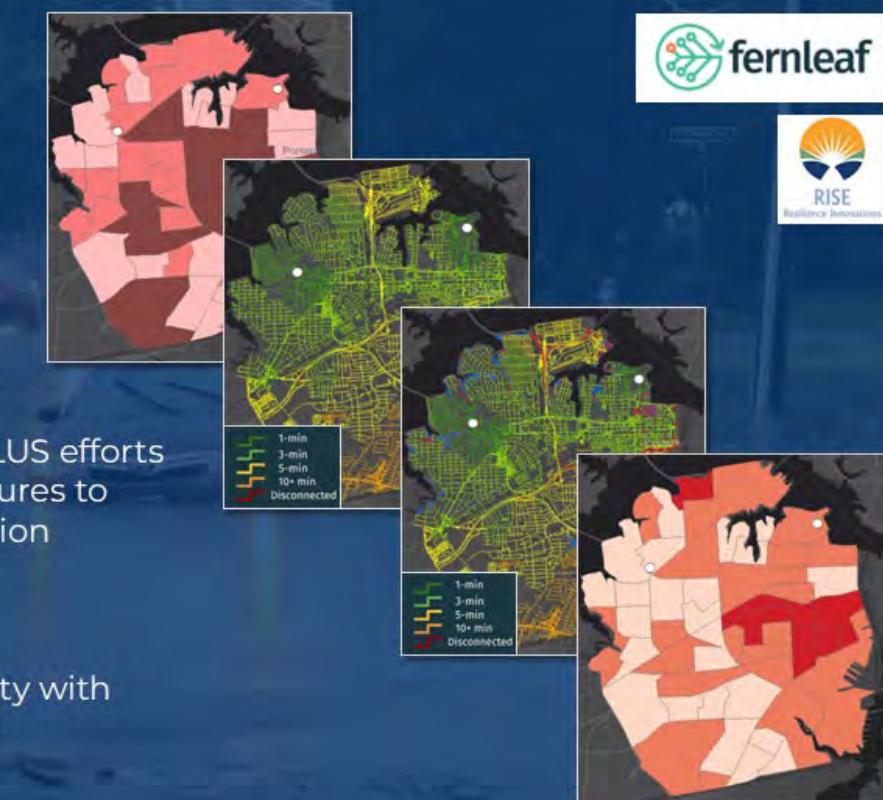
• Extreme weather/climate-induced events have had a disproportionate impact on socially vulnerable populations

• Build off Volpe RDR Tool and JLUS efforts

- Data-driven objective measures to include in Project Prioritization

• Approach:

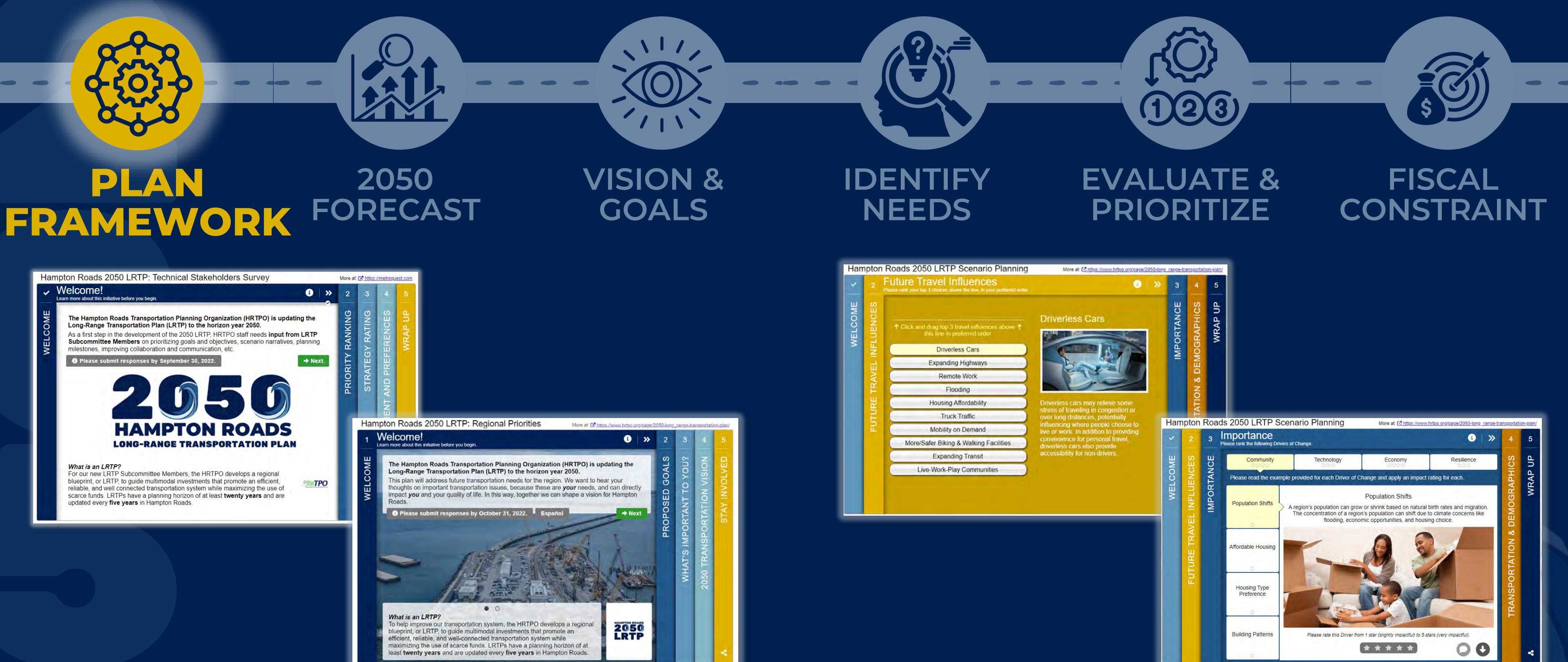
- Screening Level Analysis
- Combines Social Vulnerability with Roadway Network Analysis



PDC TPO

2050 LRTP Planning Milestones





Hampton Roads 2050 LRTP: Technical Stakeholders Survey

Welcome!
Learn more about this initiative before you begin.

The Hampton Roads Transportation Planning Organization (HRTPO) is updating the Long-Range Transportation Plan (LRTP) to the horizon year 2050. As a first step in the development of the 2050 LRTP, HRTPO staff needs input from **LRTP Subcommittee Members** on prioritizing goals and objectives, scenario narratives, planning milestones, improving collaboration and communication, etc.

Please submit responses by September 30, 2022.

2050 HAMPTON ROADS LONG-RANGE TRANSPORTATION PLAN

What is an LRTP?
For our new LRTP Subcommittee Members, the HRTPO develops a regional blueprint, or LRTP, to guide multimodal investments that promote an efficient, reliable, and well-connected transportation system while maximizing the use of scarce funds. LRTPs have a planning horizon of at least **twenty years** and are updated every **five years** in Hampton Roads.

Hampton Roads 2050 LRTP: Regional Priorities

Welcome!
Learn more about this initiative before you begin.

The Hampton Roads Transportation Planning Organization (HRTPO) is updating the Long-Range Transportation Plan (LRTP) to the horizon year 2050. This plan will address future transportation needs for the region. We want to hear your thoughts on important transportation issues, because these are **your** needs, and can directly impact **you** and your quality of life. In this way, together we can shape a vision for Hampton Roads.

Please submit responses by October 31, 2022. | [Español](#)

PROPOSED GOALS

WHAT'S IMPORTANT TO YOU?

2050 TRANSPORTATION VISION

STAY INVOLVED

What is an LRTP?
To help improve our transportation system, the HRTPO develops a regional blueprint, or LRTP, to guide multimodal investments that promote an efficient, reliable, and well-connected transportation system while maximizing the use of scarce funds. LRTPs have a planning horizon of at least **twenty years** and are updated every **five years** in Hampton Roads.

Hampton Roads 2050 LRTP Scenario Planning

WELCOME

2 Future Travel Influences
Please rank your top 3 choices above the line, in your preferred order.

FUTURE TRAVEL INFLUENCES

Driverless Cars

Driverless cars may relieve some stress of traveling in congestion or over long distances, potentially influencing where people choose to live or work. In addition to providing convenience for personal travel, driverless cars also provide accessibility for non-drivers.

IMPORTANCE

3 Transportation & Demographics

WELCOME

4 Transportation & Demographics

5 Wrap Up

WELCOME

3 Importance
Please rank the following Drivers of Change.

WELCOME

4 Transportation & Demographics

5 Wrap Up

WELCOME

5 Transportation & Demographics

WELCOME

6 Transportation & Demographics

WELCOME

7 Transportation & Demographics

WELCOME

8 Transportation & Demographics

WELCOME

9 Transportation & Demographics

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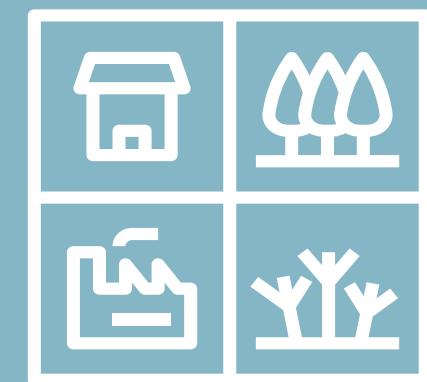
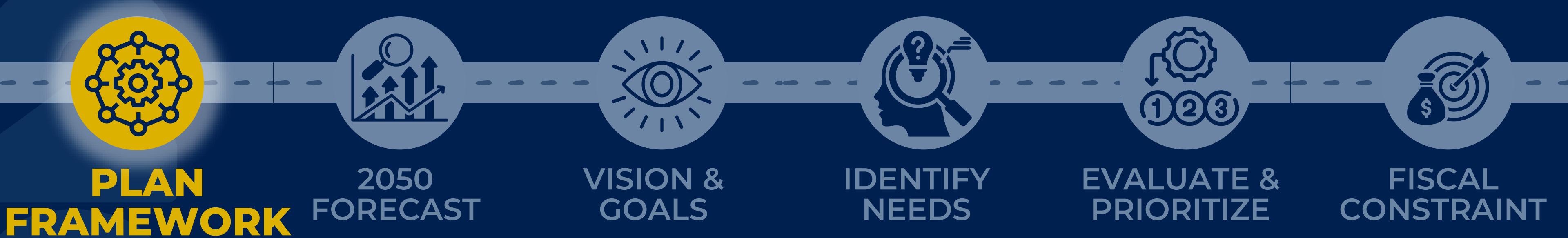
100 Transportation & Demographics

Regional Priorities Surveys

- October 1 – November 1, 2022
- 633 Participants

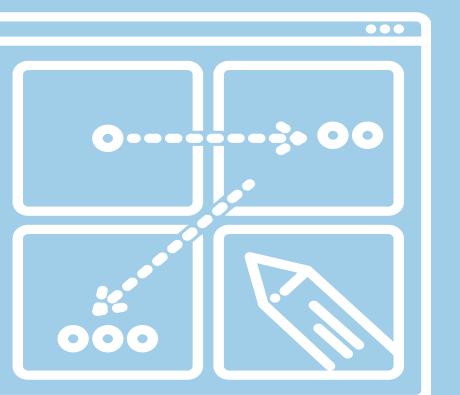
Scenario – Drivers of Change

- July 1 – August 31, 2023
- 1,556 Participants



Regional Place Types

- Unified dataset describing regional patterns
- Based off locality land use
- Quantitative densities to determine capacity



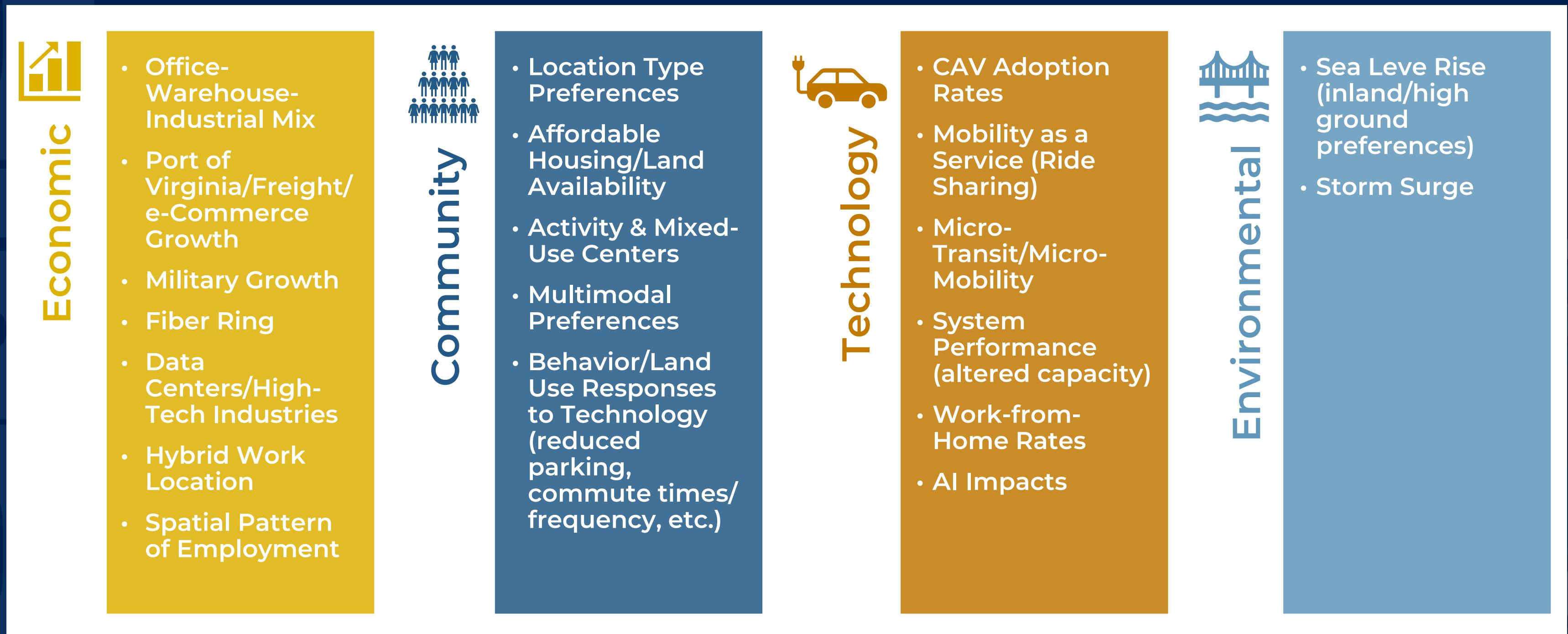
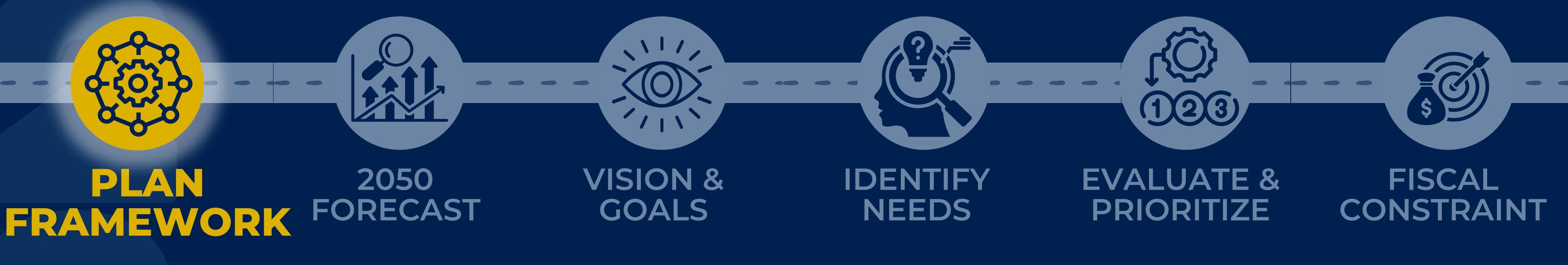
Scenario Narratives

- Distinct, plausible futures growth storylines and “Drivers of Change”
- Suitability factors and weights are scenario specific



Greater Growth Control Total

- Greater employment growth above 2050 Baseline: 24% to 33% increase above 2020





PLAN FRAMEWORK

2050 FORECAST

VISION & GOALS

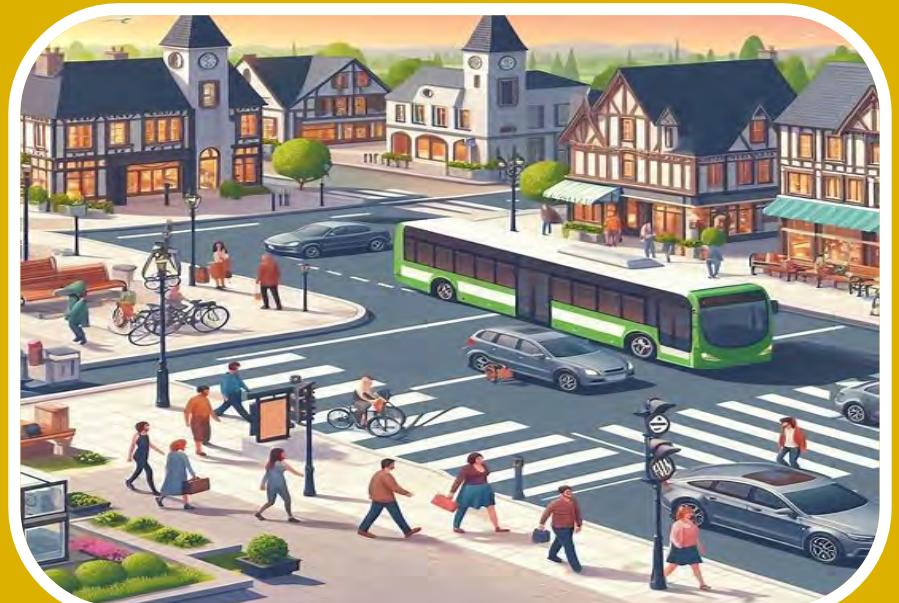
IDENTIFY NEEDS

EVALUATE & PRIORITIZE

FISCAL CONSTRAINT



Greater Urban Growth



Greater Suburban Growth



Greater Inland/ Westward Growth



WHAT THESE HELP US TEST

Test more urban and multimodal travel patterns.

Test more overall regional travel.

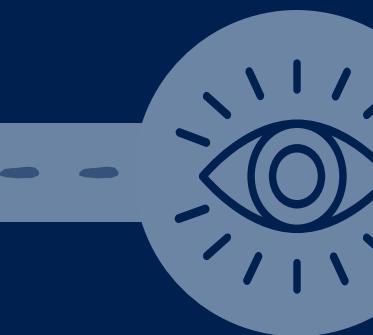
Test major impacts from climate change and alternate commuting patterns.



PLAN
FRAMEWORK



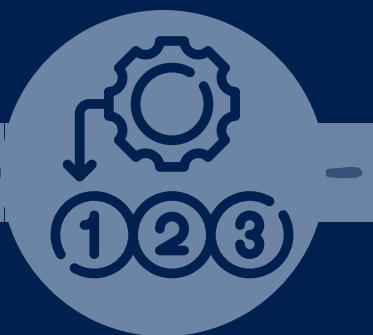
**2050
FORECAST**



VISION &
GOALS



IDENTIFY
NEEDS

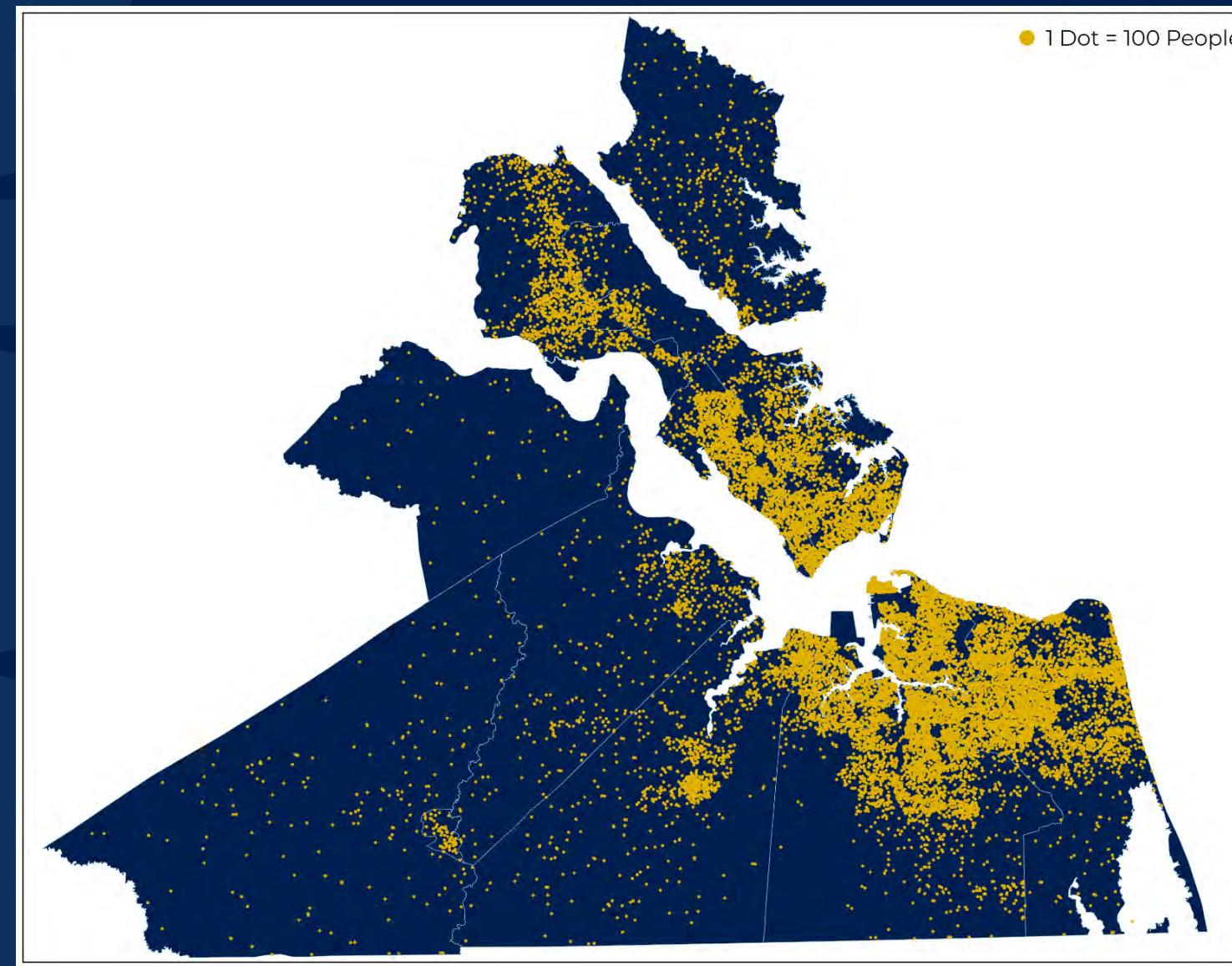


EVALUATE &
PRIORITIZE

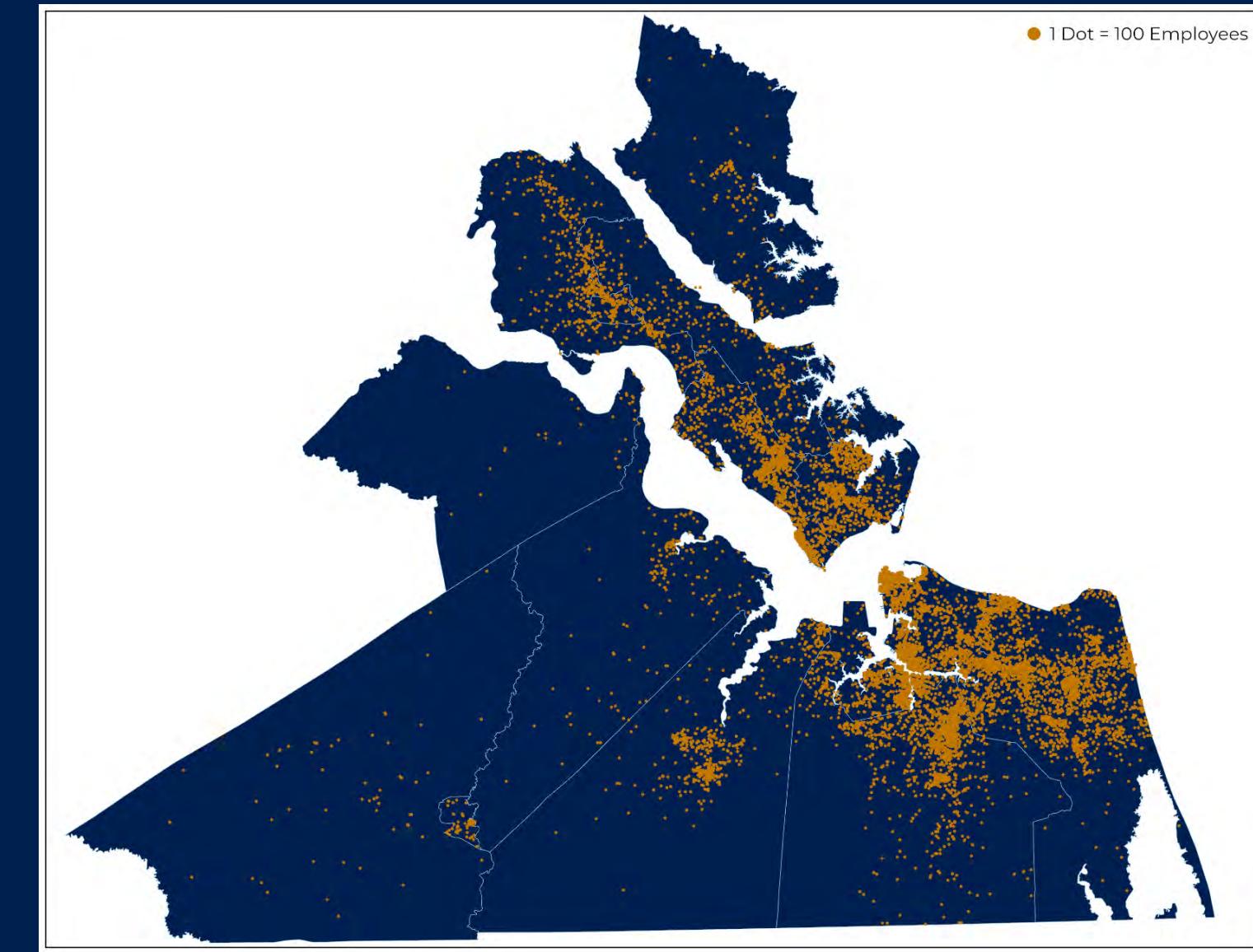


FISCAL
CONSTRAINT

2050 Baseline Forecast



2050 Forecasted Population



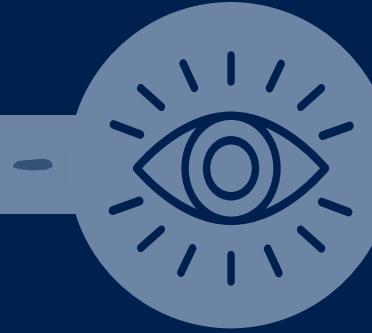
2050 Forecasted Employment



PLAN
FRAMEWORK



**2050
FORECAST**



VISION &
GOALS



IDENTIFY
NEEDS

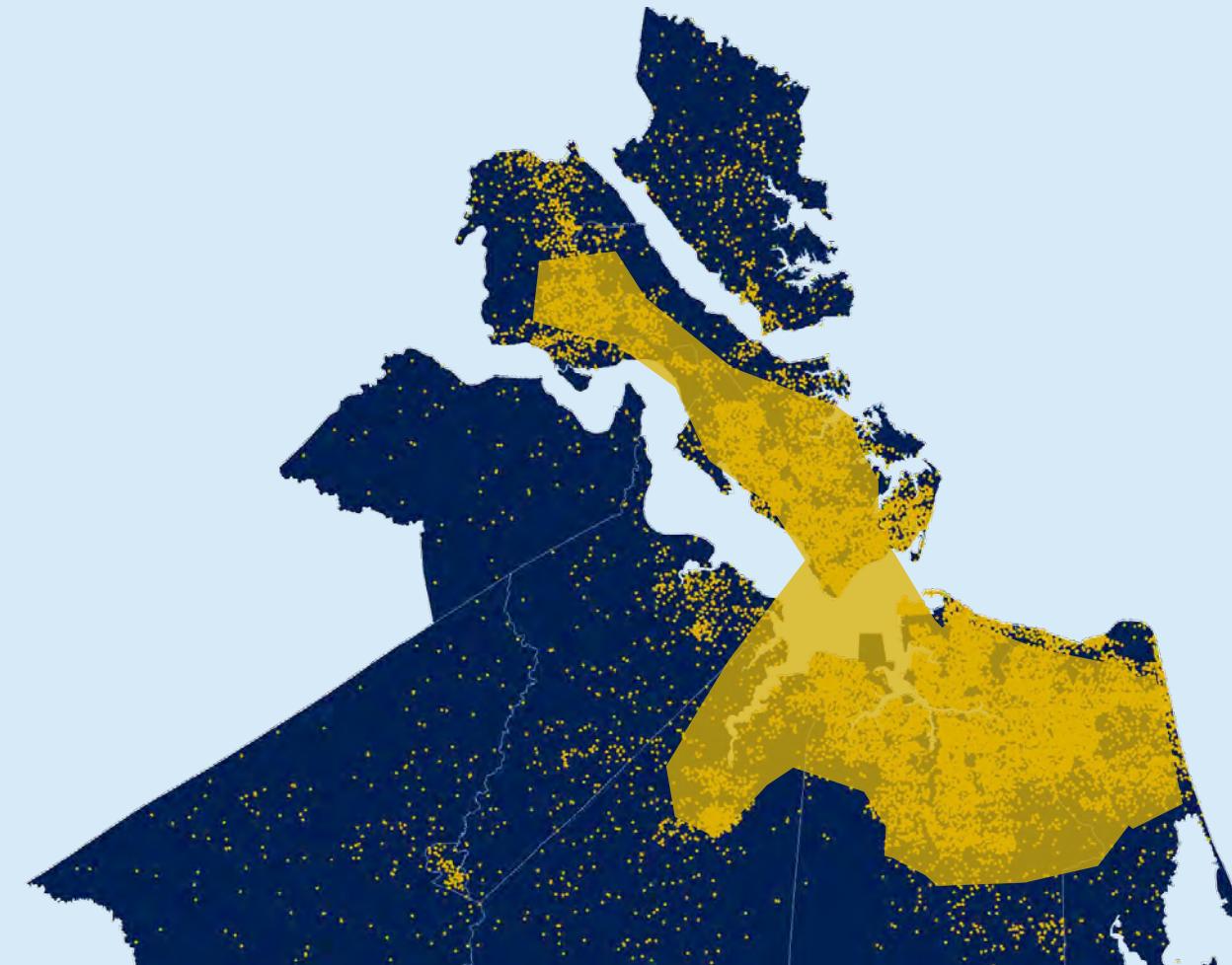


EVALUATE &
PRIORITIZE

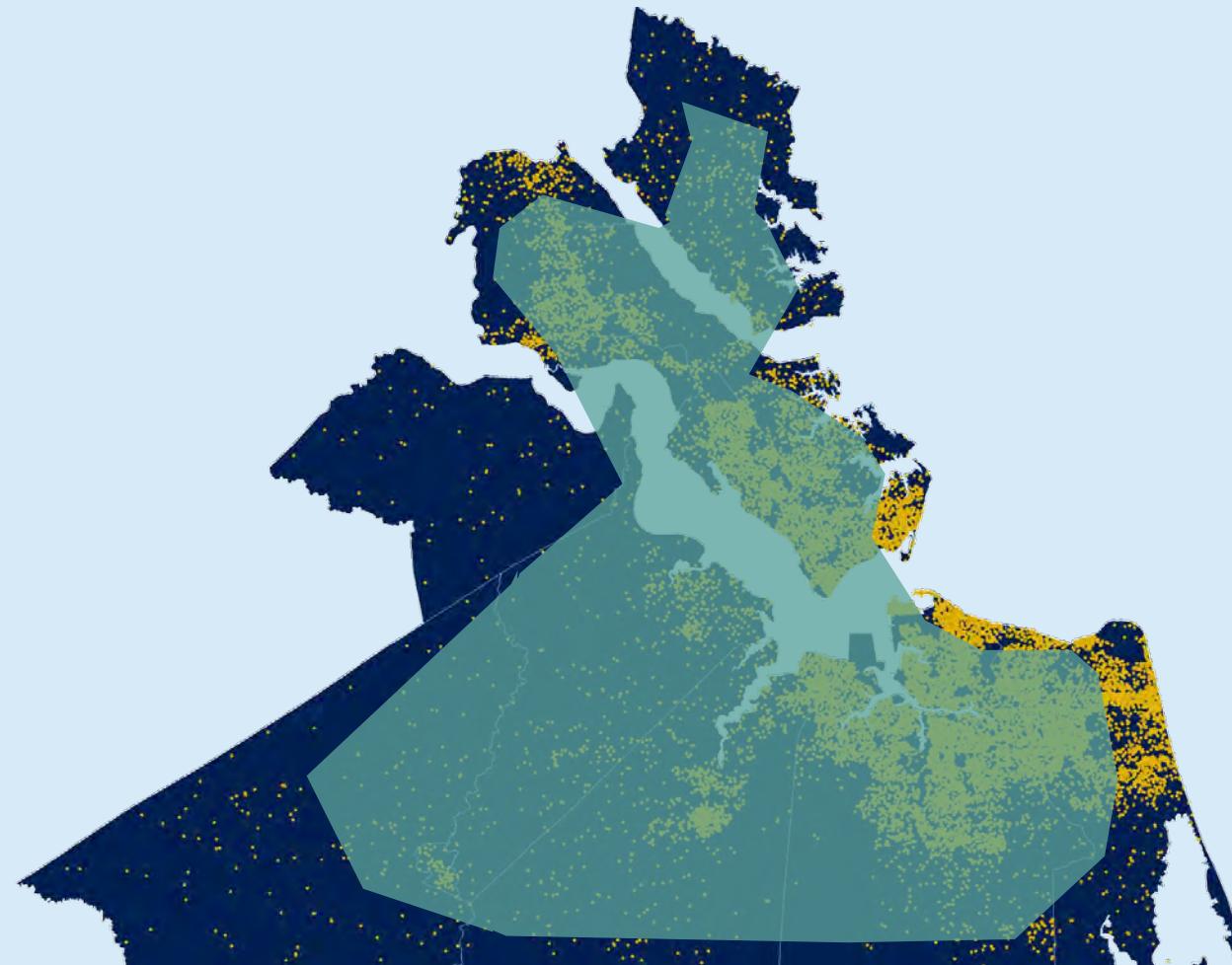


FISCAL
CONSTRAINT

Greater Urban Growth



Greater Suburban Growth



Greater Inland/ Westward Growth





PLAN
FRAMEWORK



PLAN FRAMEWORK



2050 FORECAST



VISION & GOALS



IDENTIFY NEEDS



EVALUATE & PRIORITIZE



FISCAL CONSTRAINT



- Apply equity lens to evaluate projects
- Ensure improvements help vulnerable communities
- Get input from diverse communities

- Make all ways of travel safer
- Reduce conflicts between drivers, cyclists, and pedestrians
- Protect our roads and everyone using them

- Protect the environment
- Improve quality of life
- Ensure projects fit with land use
- Build communities that offer more accessible housing options and depend less on cars

- Ensure network is reliable, efficient, and resilient
- Consider technology impacts
- Protect against flooding
- Keep transportation system in good condition

- Make it easier to get to places
- Provide travel choices
- Ensure modes work better together
- Reduce traffic delays
- Strengthen connections across the region

- Help region thrive economically
- Make moving goods more efficient
- Reduce travel during heavy traffic
- Make our area more attractive to tourists



PLAN FRAMEWORK



2050 FORECAST



VISION & GOALS



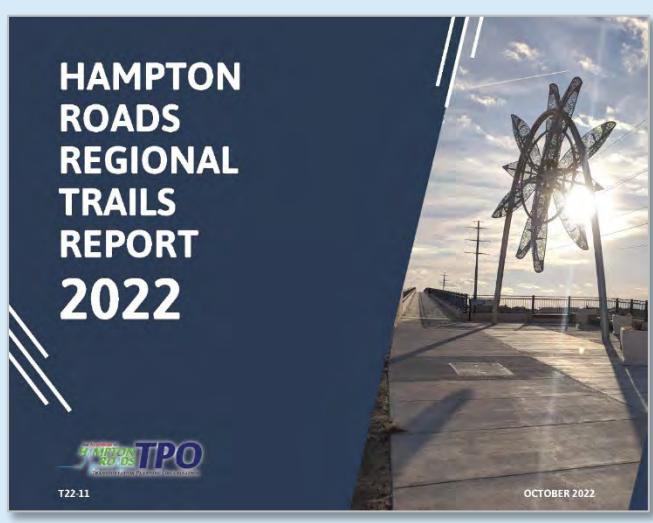
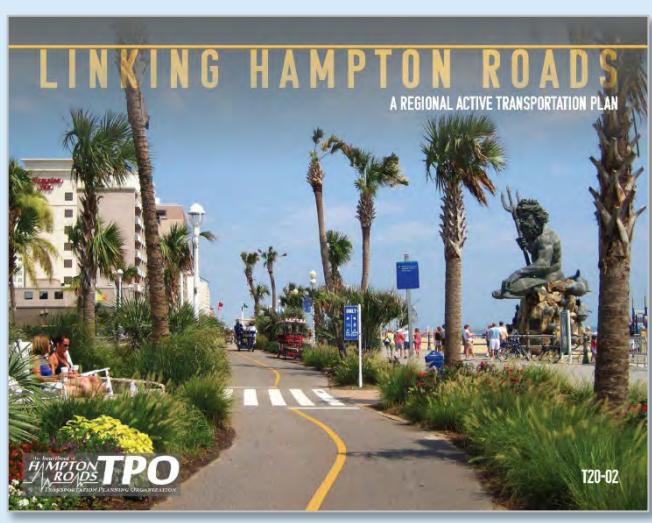
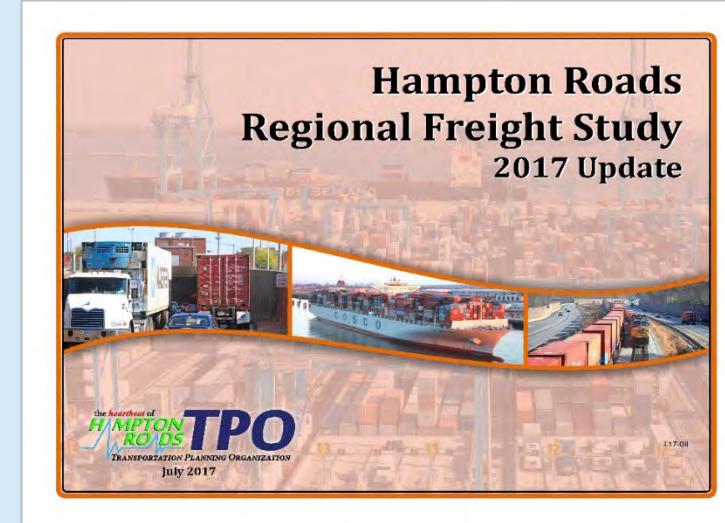
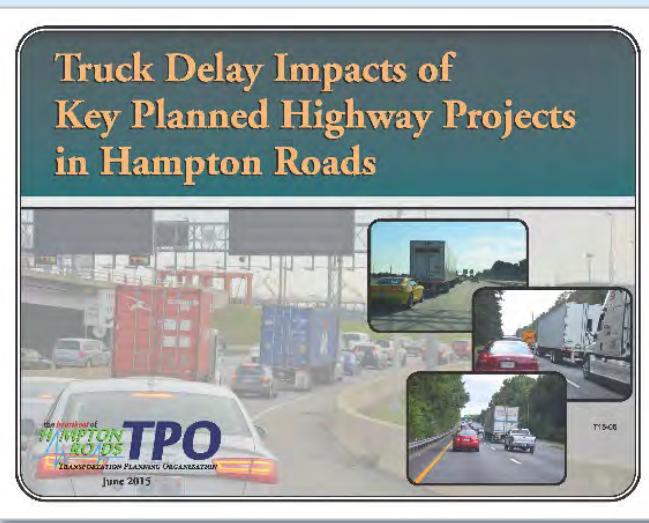
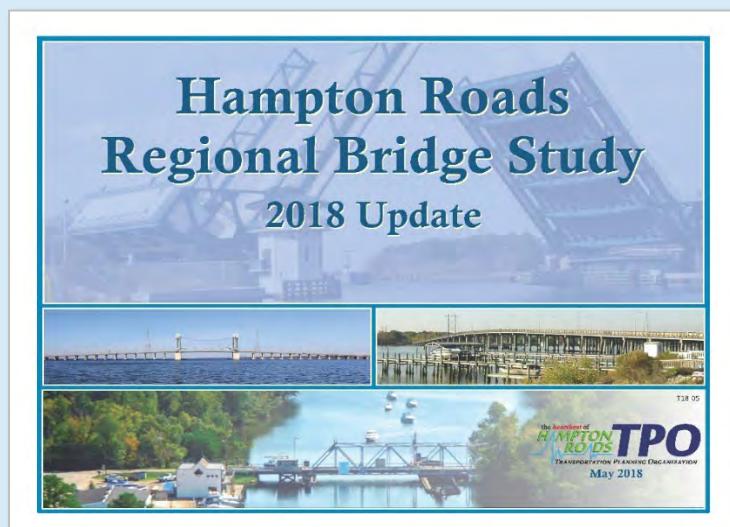
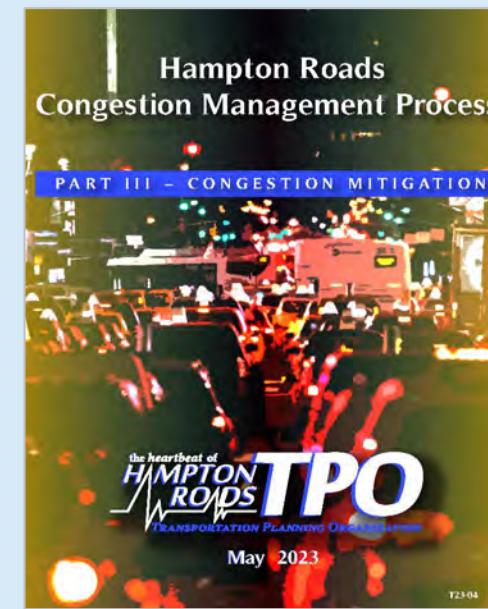
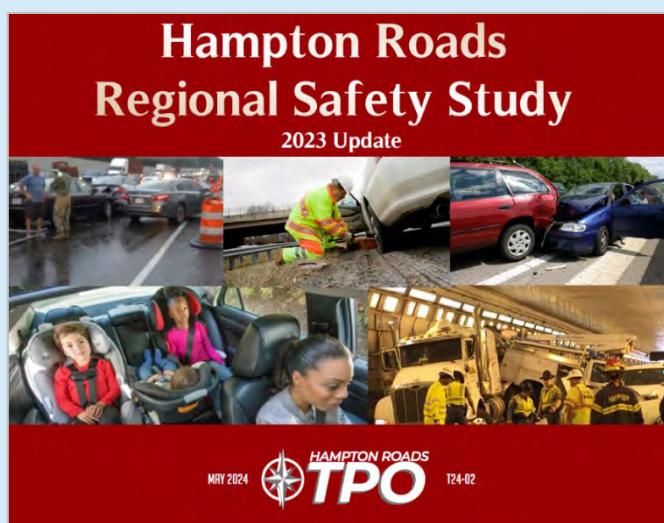
IDENTIFY NEEDS



EVALUATE & PRIORITIZE



FISCAL CONSTRAINT



PLAN
FRAMEWORK

2050
FORECAST

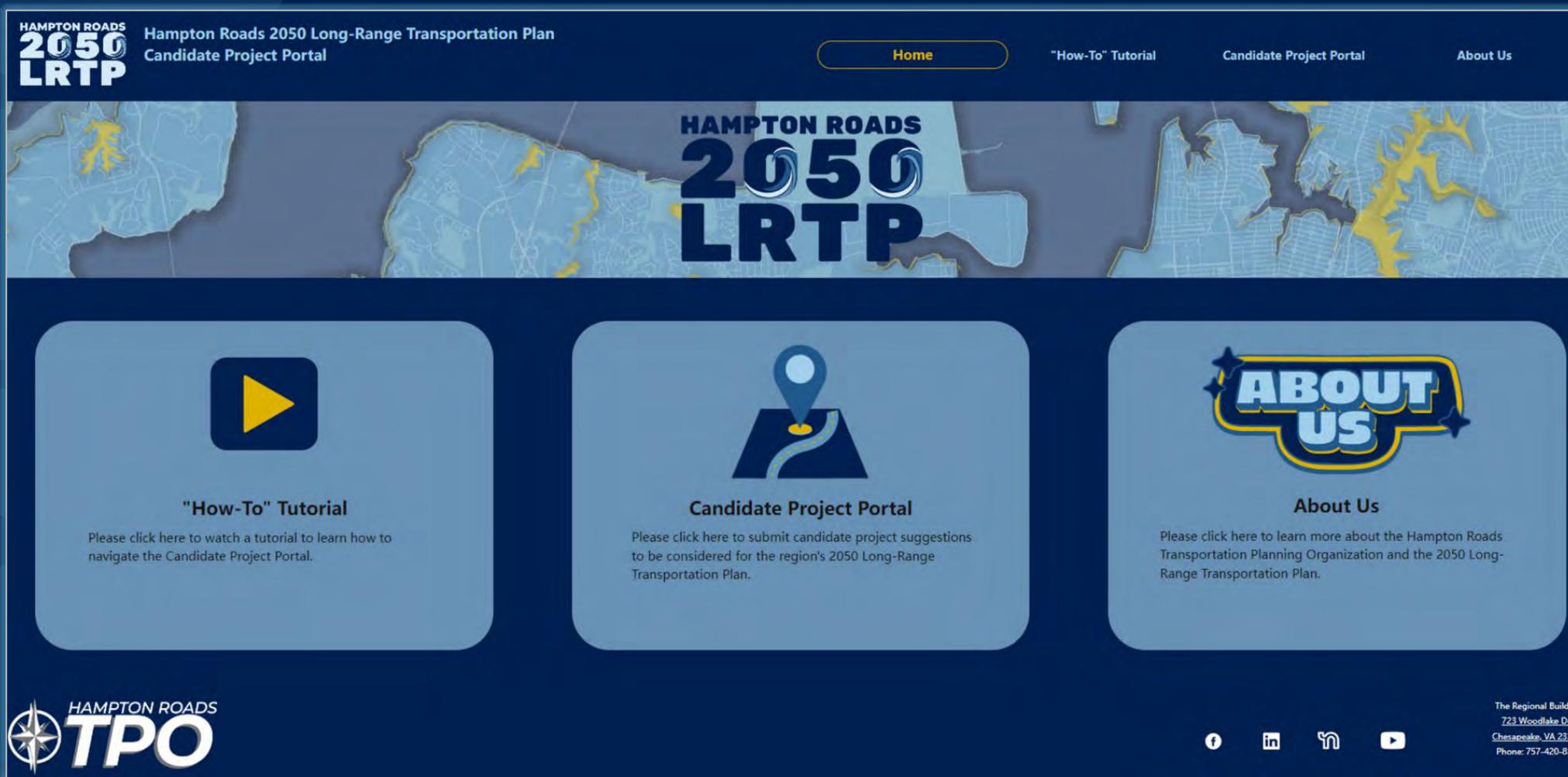
VISION &
GOALS

**IDENTIFY
NEEDS**

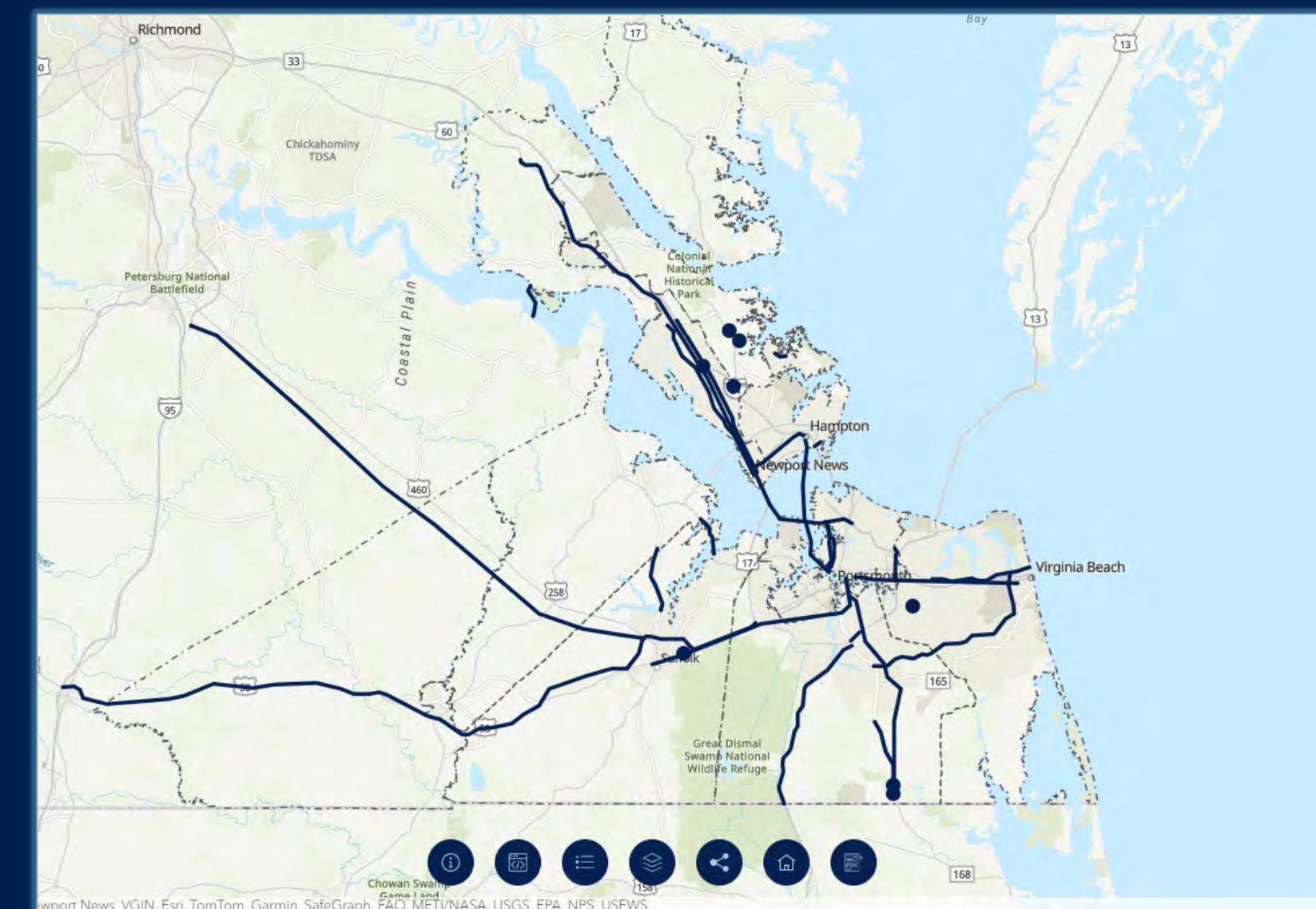
EVALUATE &
PRIORITIZE

FISCAL
CONSTRAINT

Candidate Project Portal



The screenshot shows the homepage of the Candidate Project Portal. At the top, there is a banner with the text "HAMPTON ROADS 2050 LRTP" and "Hampton Roads 2050 Long-Range Transportation Plan Candidate Project Portal". Below the banner, there are three main buttons: "How-To" Tutorial (with a play icon), Candidate Project Portal (with a location pin icon), and About Us (with an "ABOUT US" icon). Each button has a brief description and a "Please click here" link. At the bottom, there is a footer with the "HAMPTON ROADS TPO" logo and social media links for Facebook, LinkedIn, and YouTube.

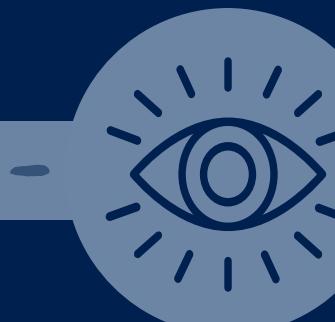




PLAN
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VISION &
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**IDENTIFY
NEEDS**



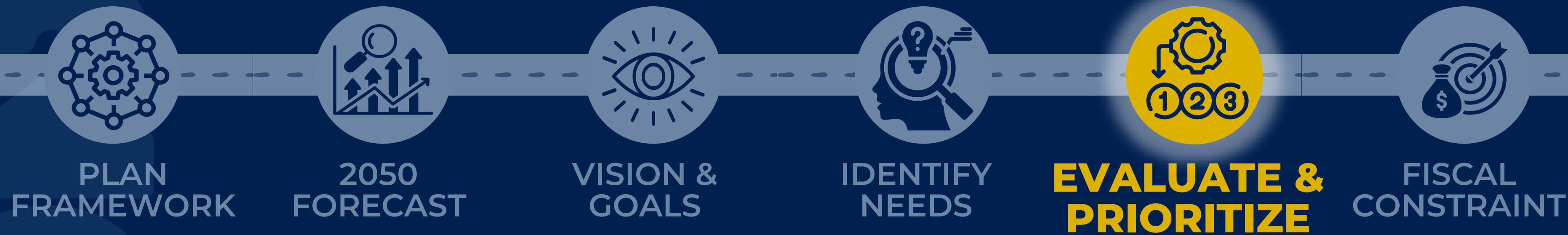
EVALUATE &
PRIORITIZE



FISCAL
CONSTRAINT

Interactive Workshop with HRTPO Board





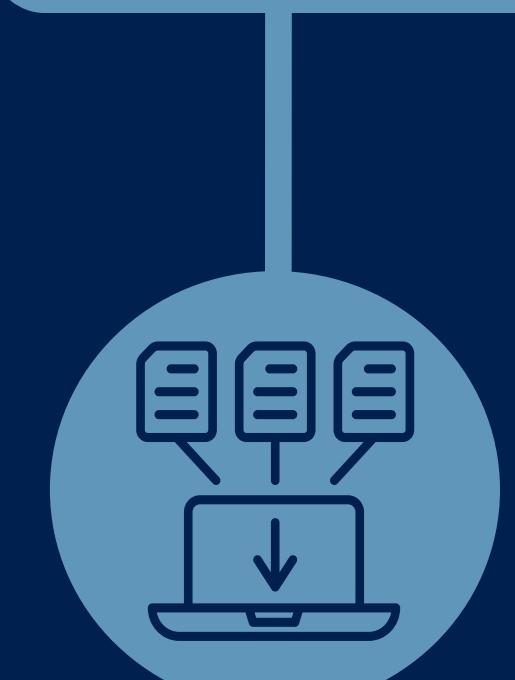
Collect project ideas

Work with stakeholders to ensure projects are consistent with growth plans

Collect project data

Evaluate and prioritize across future scenarios

Identify available funding and apply fiscal constraint

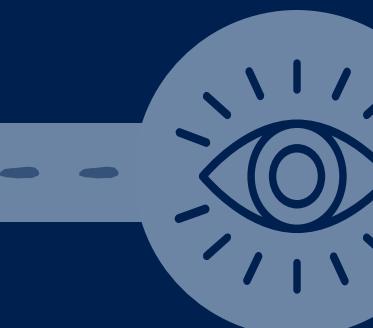




PLAN
FRAMEWORK



2050
FORECAST



VISION &
GOALS



IDENTIFY
NEEDS



**EVALUATE &
PRIORITIZE**



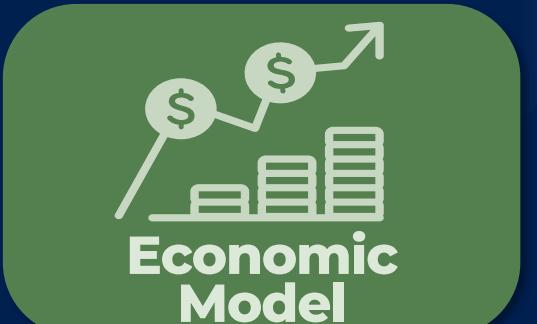
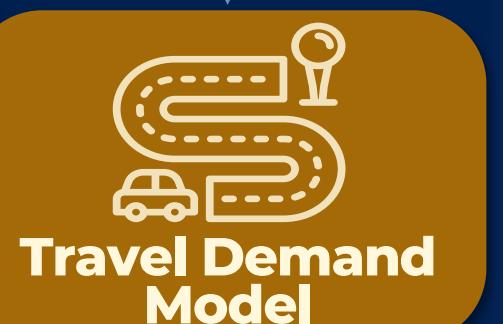
FISCAL
CONSTRAINT

Scenario Modeling

Across all Scenarios



**CANDIDATE
PROJECTS**



**HRTPO PROJECT
PRIORITIZATION
TOOL**

**Project
Utility**

**Economic
Vitality**

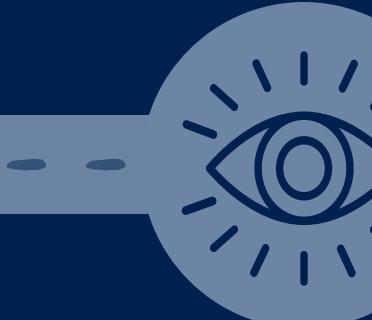
**Project
Viability**



PLAN
FRAMEWORK



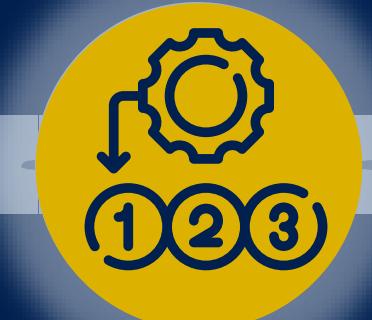
2050
FORECAST



VISION &
GOALS



IDENTIFY
NEEDS



**EVALUATE &
PRIORITIZE**



FISCAL
CONSTRAINT

EQUITY ANALYSIS TRANSPORTATION-VULNERABLE COMMUNITIES



- Accessibility
- Travel Choices
- Safety
- Congestion

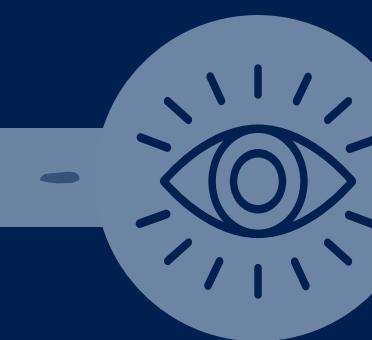




PLAN FRAMEWORK



2050 FORECAST



VISION & GOALS



IDENTIFY NEEDS



EVALUATE & PRIORITIZE



FISCAL CONSTRAINT

- Include the most robust and resilient projects
- Balance projected costs with reasonably available funding sources
- Ensure the plan is practical and achievable



FHWA/FTA Planning Emphasis Areas



***Tackling the
Climate Crisis***



***Equity and
Justice40***



***Complete
Streets***



***Virtual Public
Involvement
(VPI)***



STRAHNET



***FLMA
Coordination***



***Planning and
Environmental
Linkages (PEL)***



***Data
Sharing***

Recognition for Best Practices

- Virginia APA – Exploratory Planning for Uncertain Times (July 2019)
- AMPO – Scenario Planning Best Practices (October 2019)
- TRB – Project Prioritization (Jan 2022)
- Resiliency
 - TRB Transportation Resiliency Metrics Study (September 2020)
 - TRB Transportation Planning Applications (June 2021)
 - C40-USDN Advancing Climate Action Webinar Series (March 2022)
 - APA Federal Planning Division (June 2022)
 - TRB Innovations in Travel Analysis and Planning (June 2023)
- Virginia Land Conservation & Greenways Conference – Regional Trails Planning (April 2023)
- Talking Freight Webinar (July 2023)
- VDOT Land Use Forum - (May 2024)
- FHWA/FDOT Integrating Resilience Peer Exchange (September 2020)
- FHWA/Houston-Galveston Area Council Freight and Technology Peer Exchange (December 2022)
 - Showcased regional planning efforts in freight, resiliency, and equity
- FHWA/Piedmont Authority for Regional Transportation (May 2023)
 - Showcased scenario planning efforts
- FHWA Resiliency Peer Exchange (July 2024)
- FHWA’s Model LRTPs: A Guide for Incorporating Performance-Based Planning
 - 2045 LRTP and HRTPO Project Prioritization noted as effective practices
- NCHRP: Incorporating Uncertainty in LRTP (underway)



Hampton Roads LONG-RANGE TRANSPORTATION PLAN

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Vikas Chhillar - Transportation Data Analyst II

