



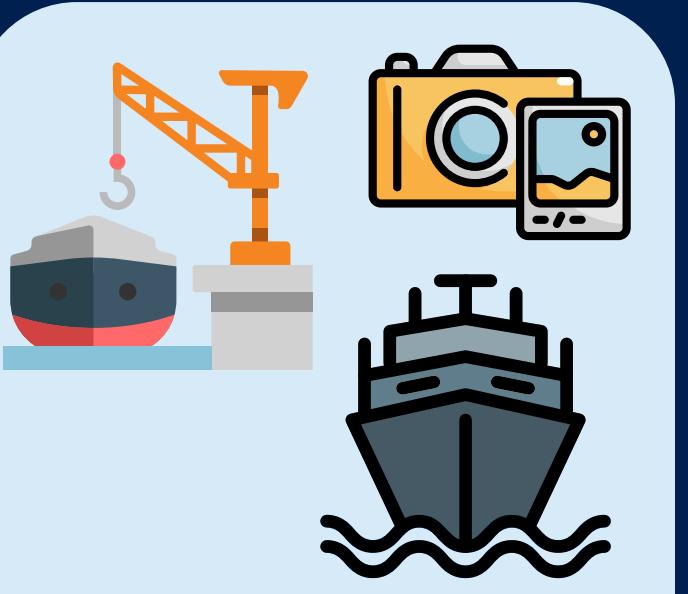
# Hampton Roads LONG-RANGE TRANSPORTATION PLAN

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

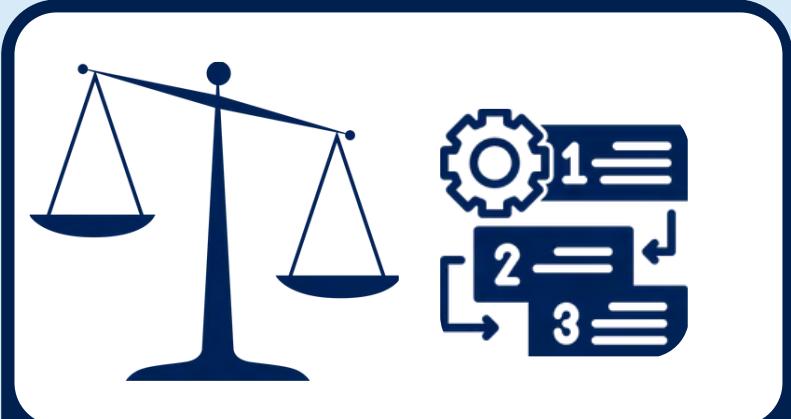
- Federal
- State
- Regional
- Local

# 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**

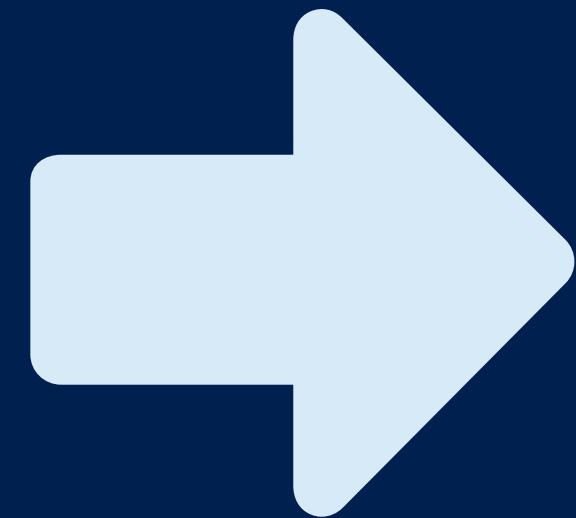


**TRADITIONAL: REPORTS  
AND MEETINGS**





**Adopted  
June 2021**



**Adoption by  
June 2026**



**\$17  
Billion**

MAINTENANCE/  
SYSTEM  
PRESERVATION

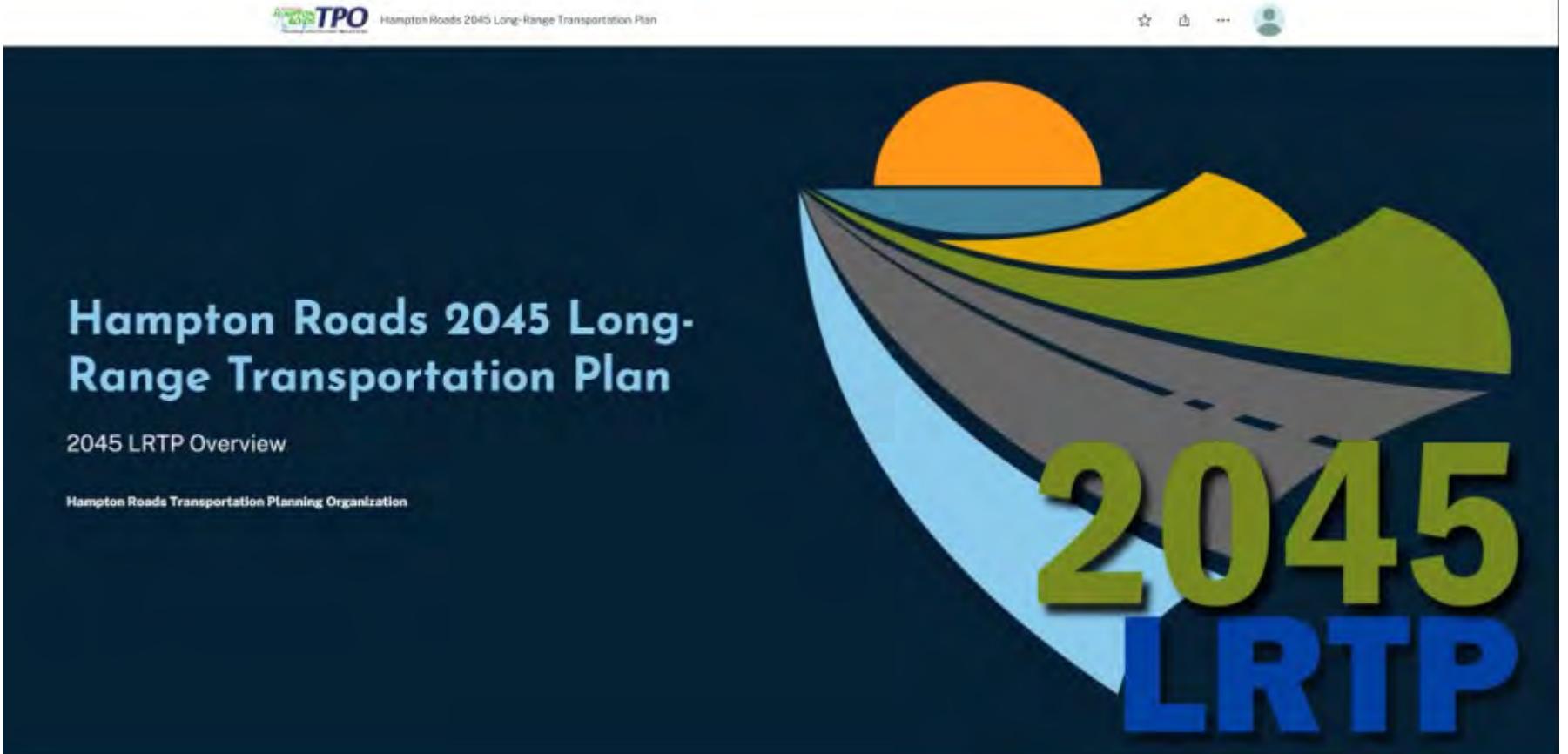
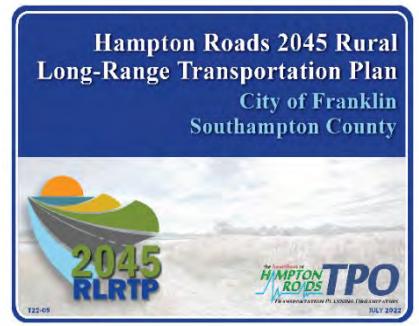
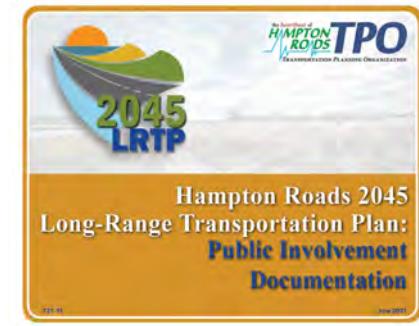
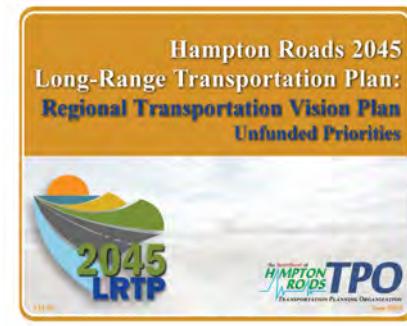
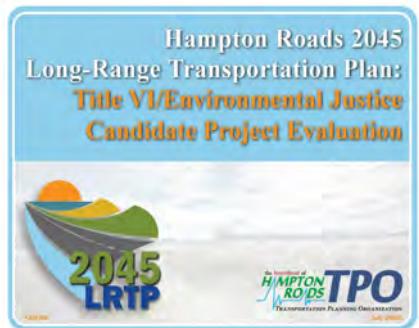
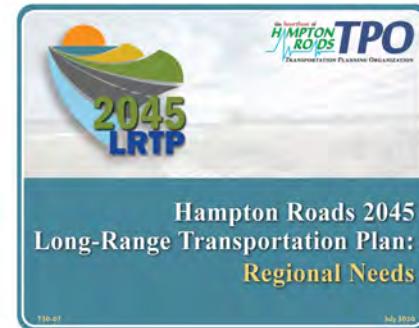
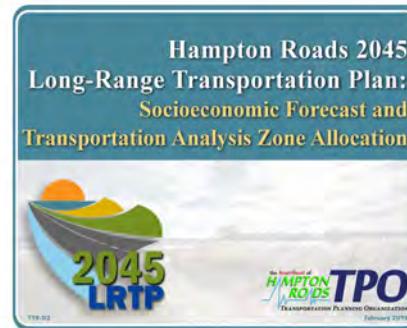
**\$13.7  
Billion**

ADDITIONAL  
MULTIMODAL  
INVESTMENTS

# Plan Highlights



# 2045 LRTP Report Documentation

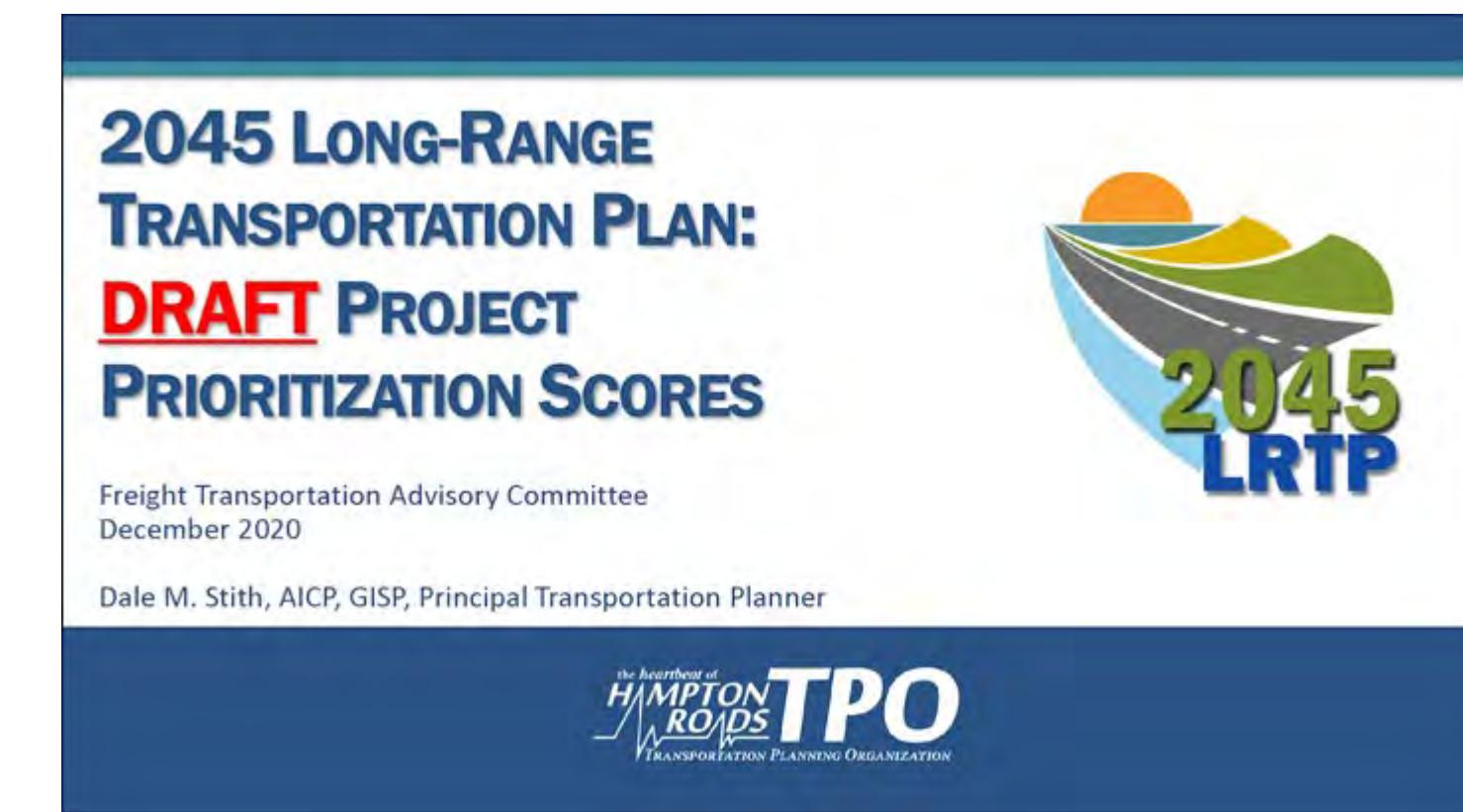


# 2045 LRTP

## 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



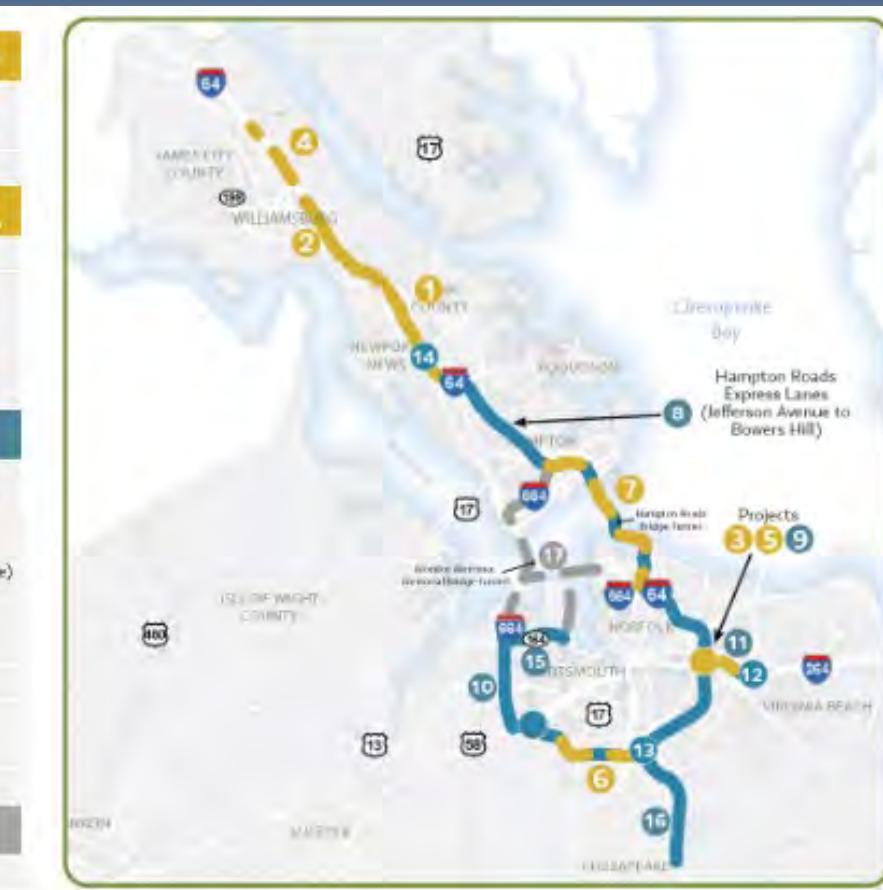
### 2045 LRTP Draft Fiscally Constrained List of Projects Presentation to HRTPO Board - February 2021



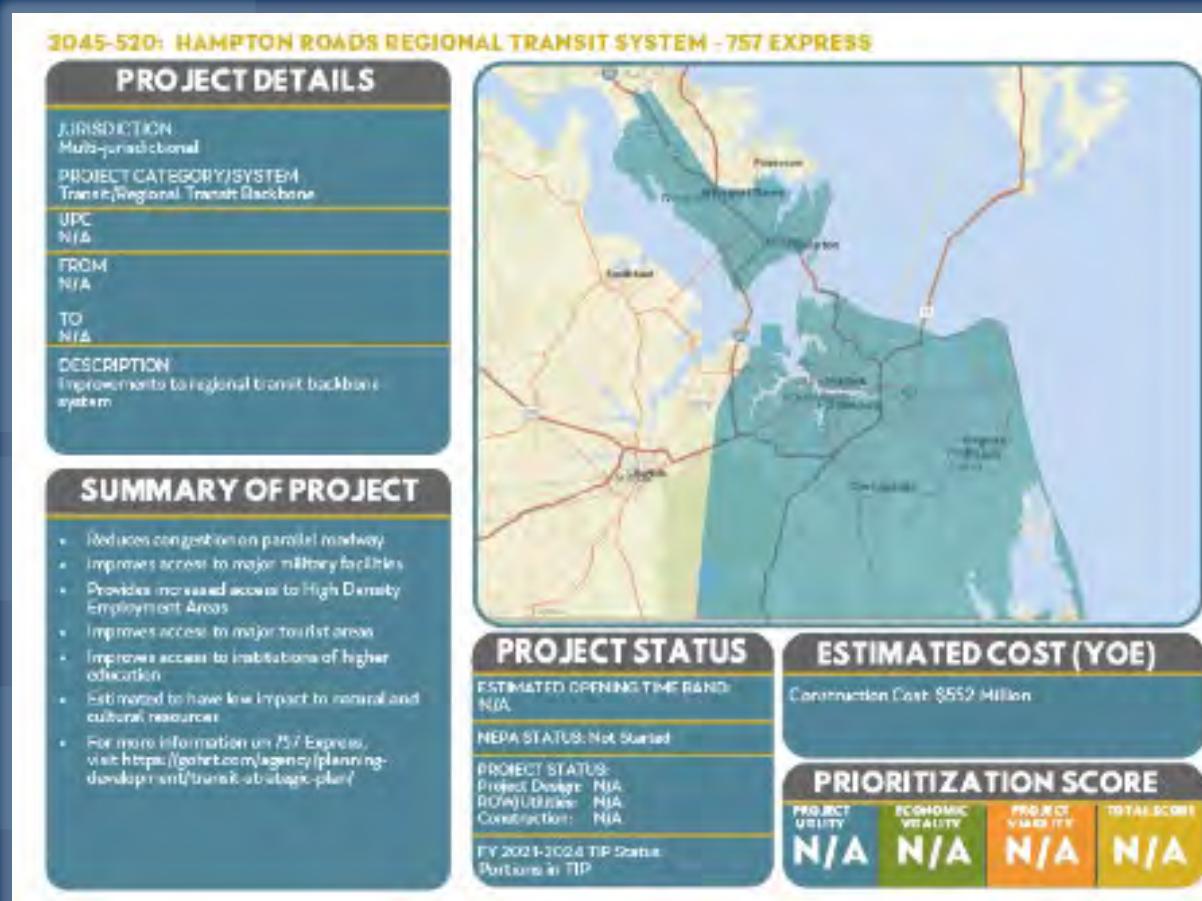
# 2045 LRTP Regional Priority Projects

## 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

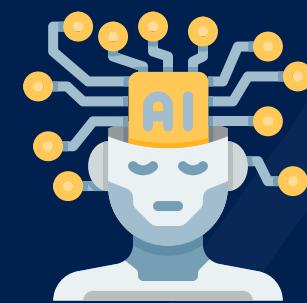
2024

2050

# 2024

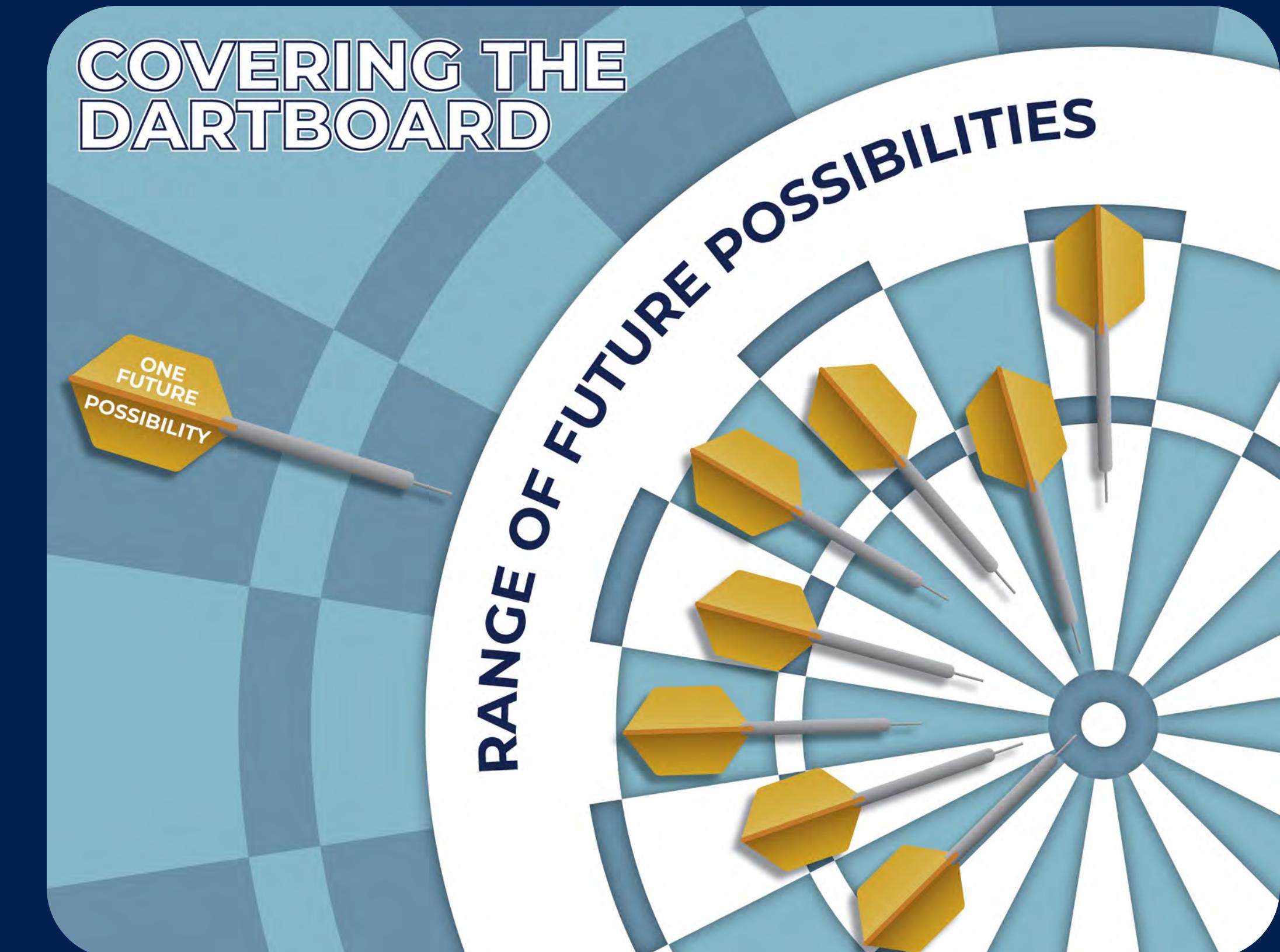


# 2050



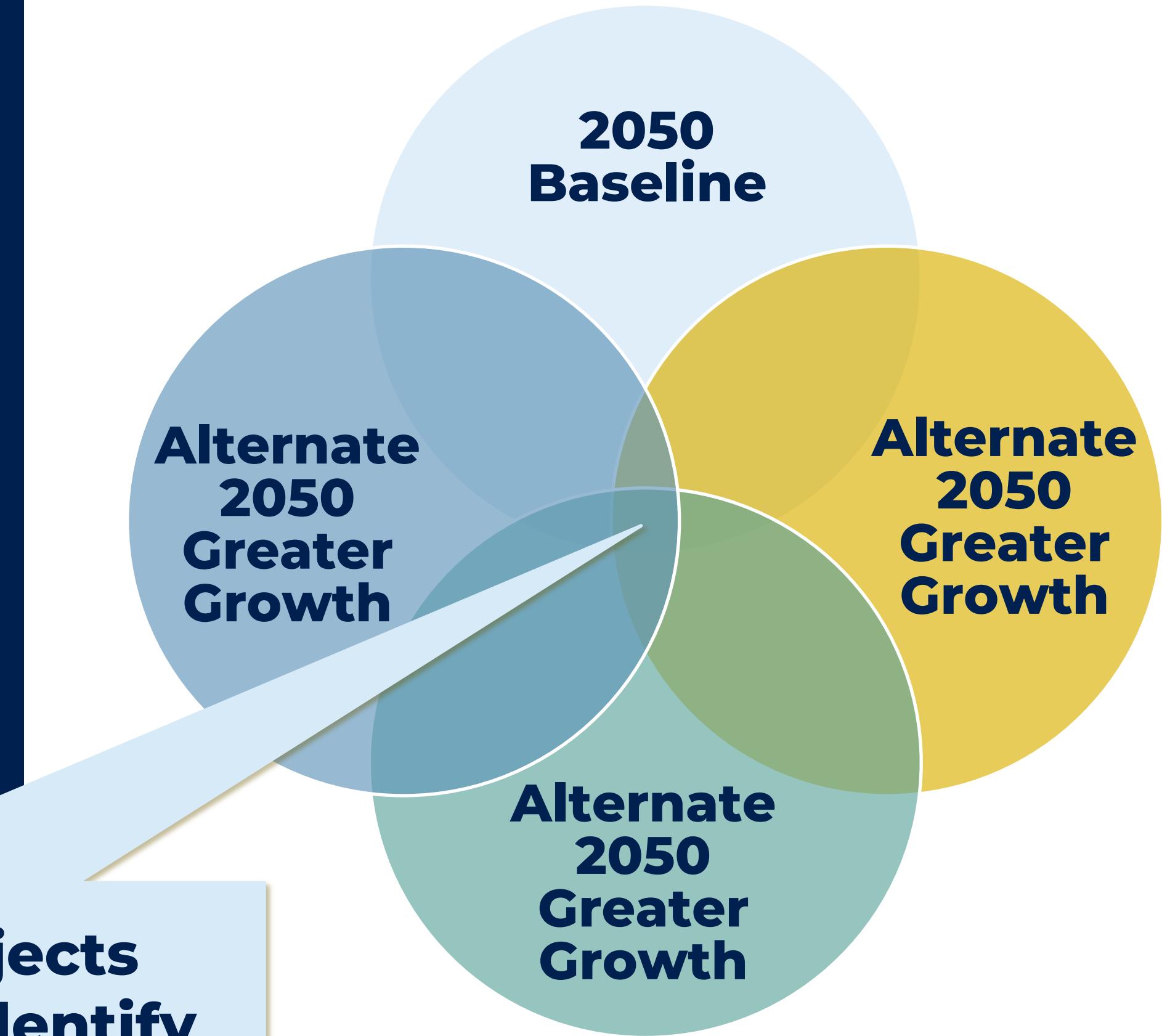
# Exploratory Scenario Planning

- 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

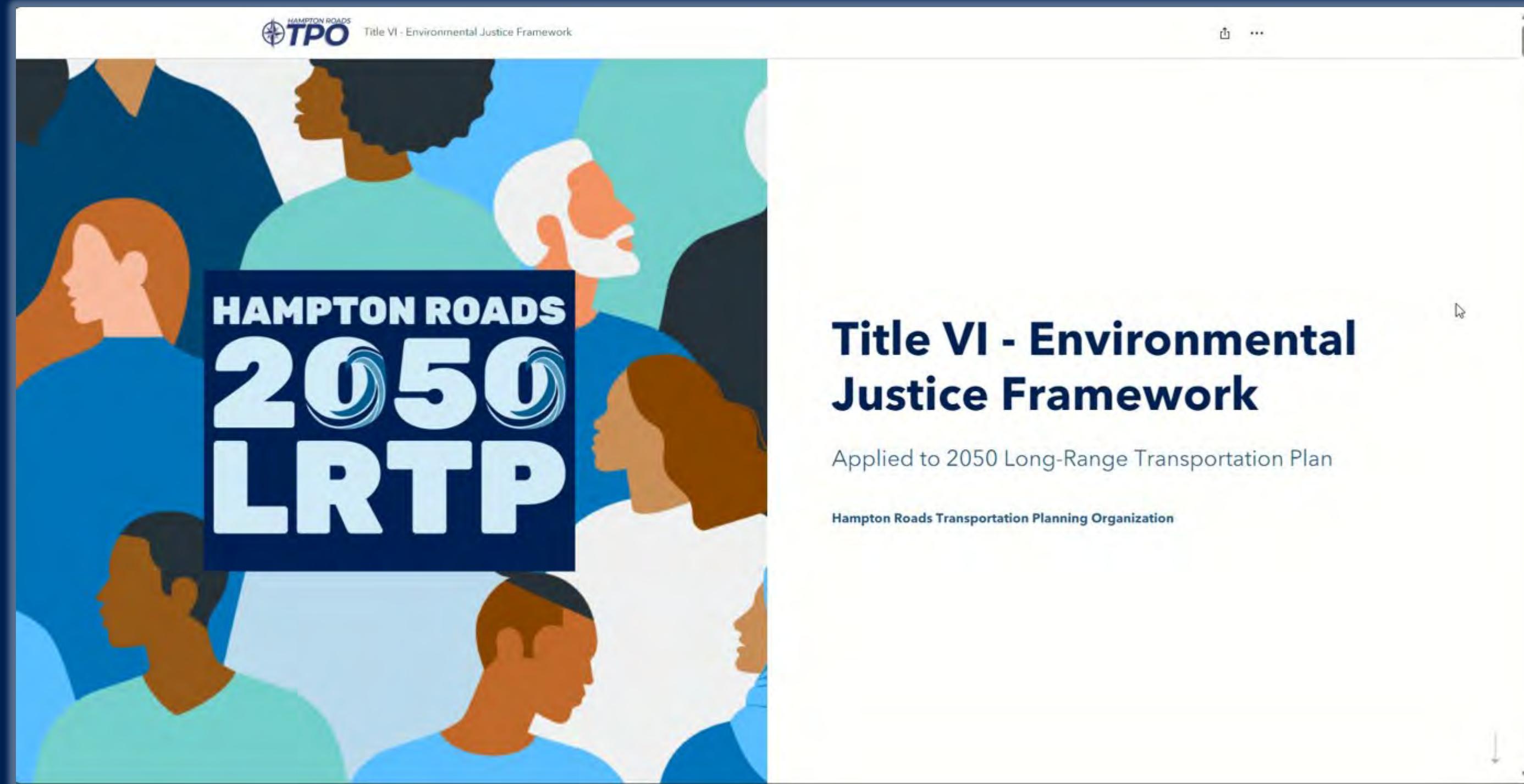
Forecasted Sea Level Rise Inundated Areas

Higher Education Facilities

Military Properties

High Density Population and Employment

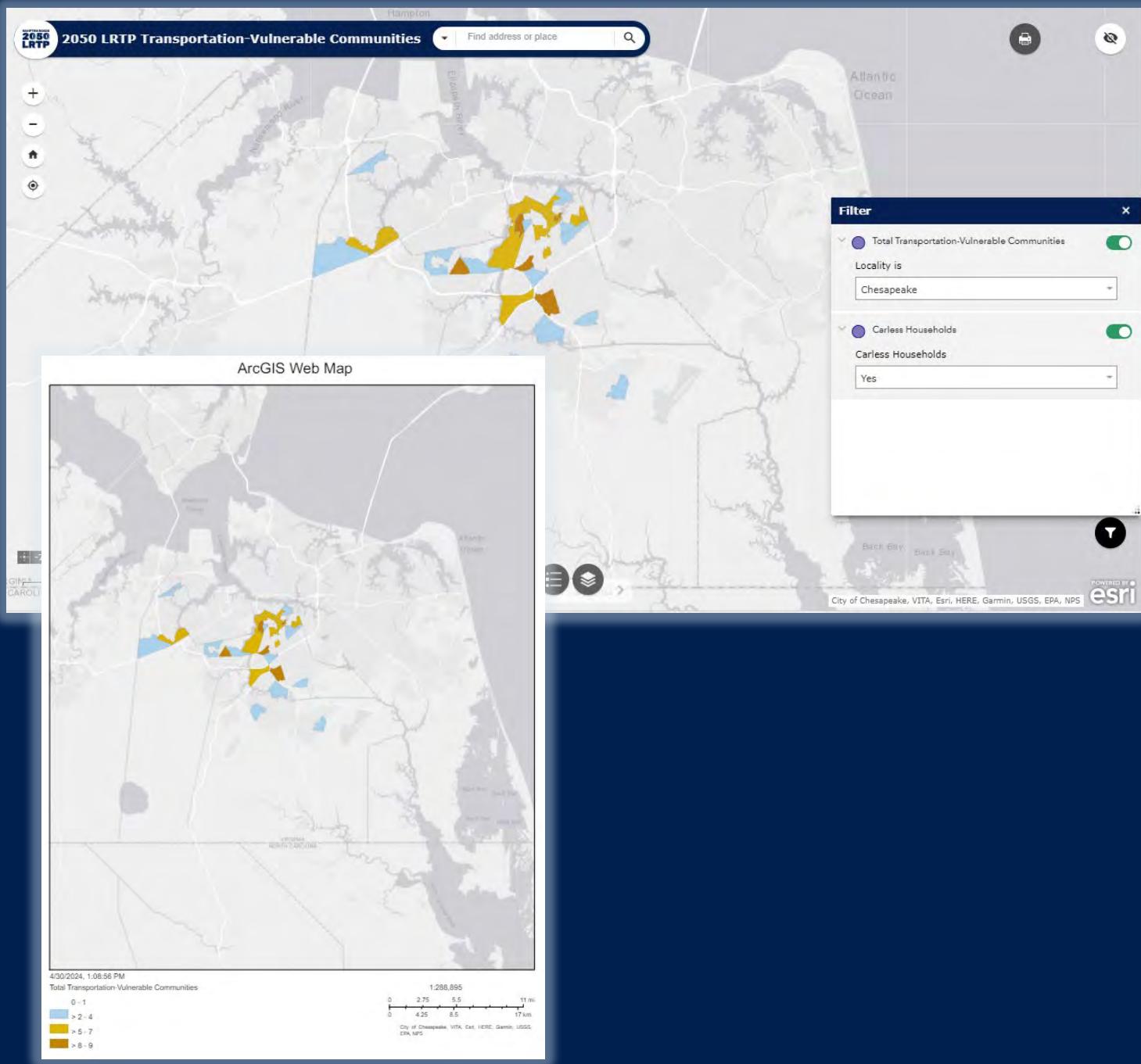
# Equity Considerations: Transportation-Vulnerable Communities



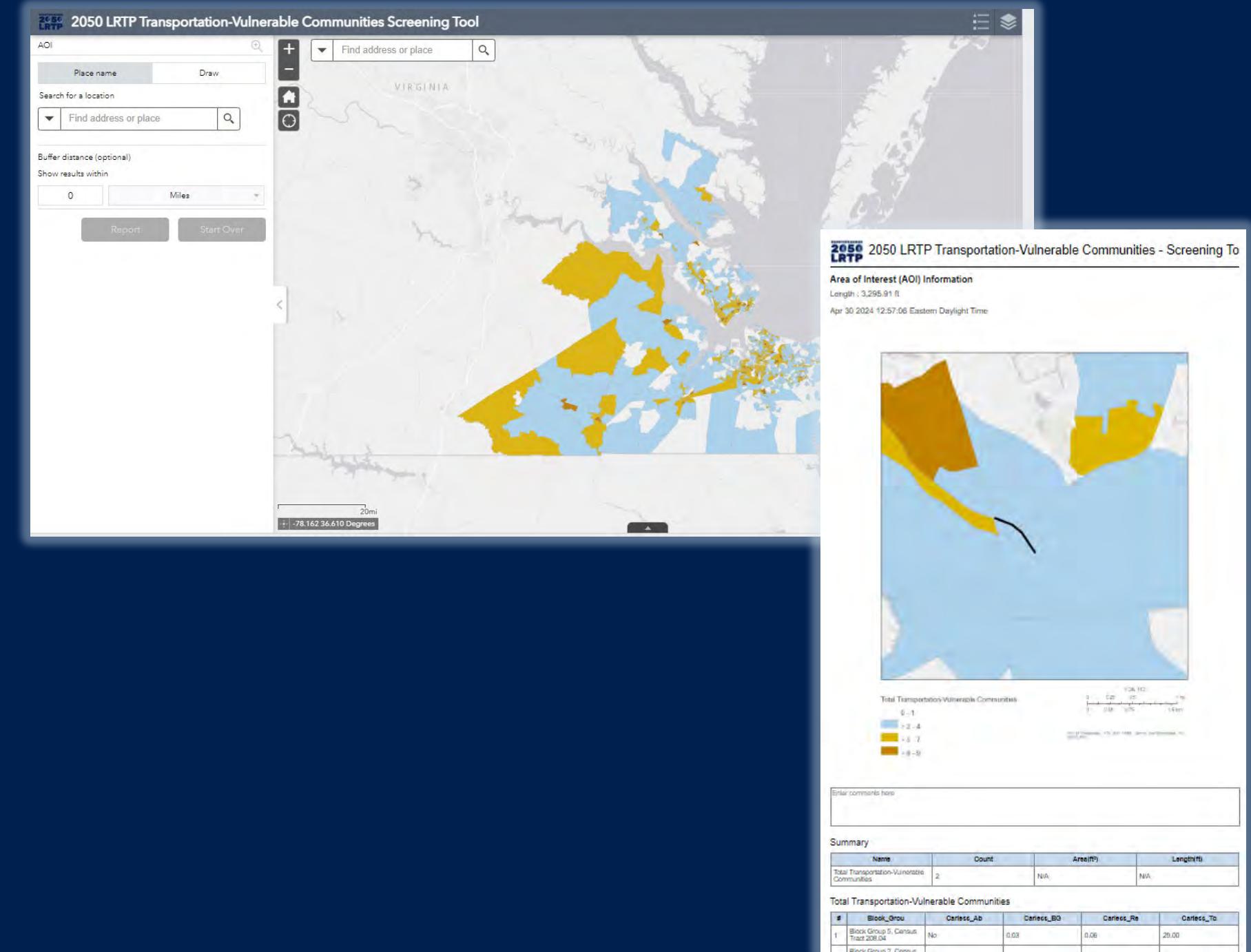
<https://storymaps.arcgis.com/stories/774eed11e4ce432c89c74d011ec6c65c>

# Other Equity Mapping Tools (in progress)

## Transportation-Vulnerable Community Maps



## Transportation-Vulnerable Community Project Screening Tool



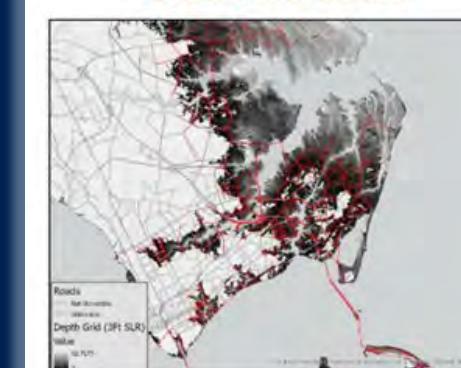
# LRTP Resiliency Considerations

## 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

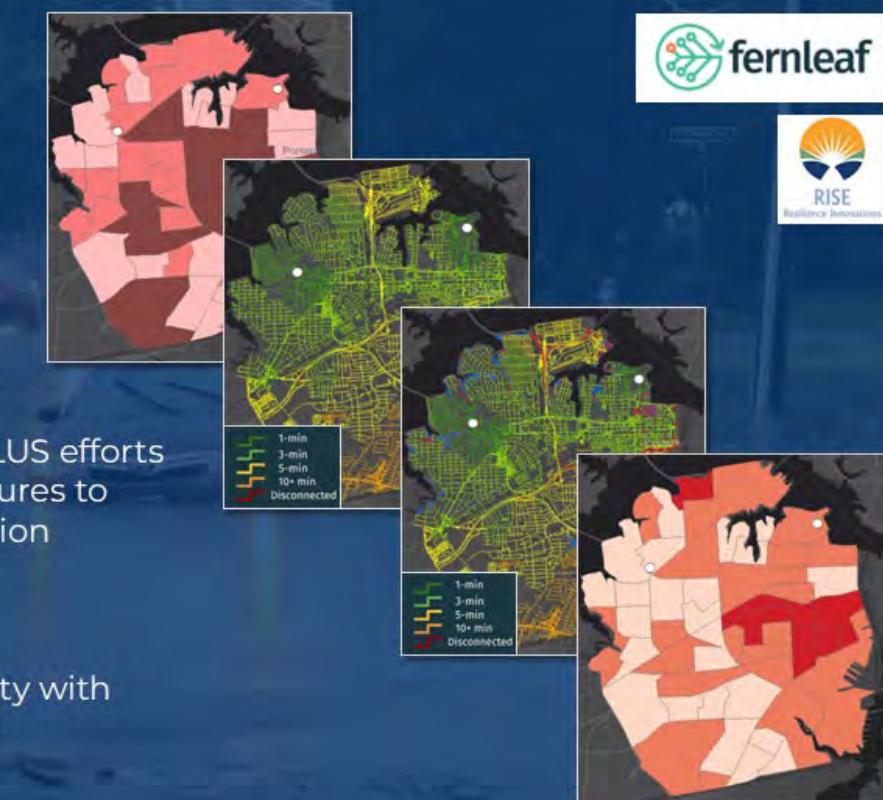
• Extreme weather/climate-induced events have had a disproportionate impact on socially vulnerable populations

• Build off Volpe RDR Tool and JLUS efforts

- Data-driven objective measures to include in Project Prioritization

• Approach:

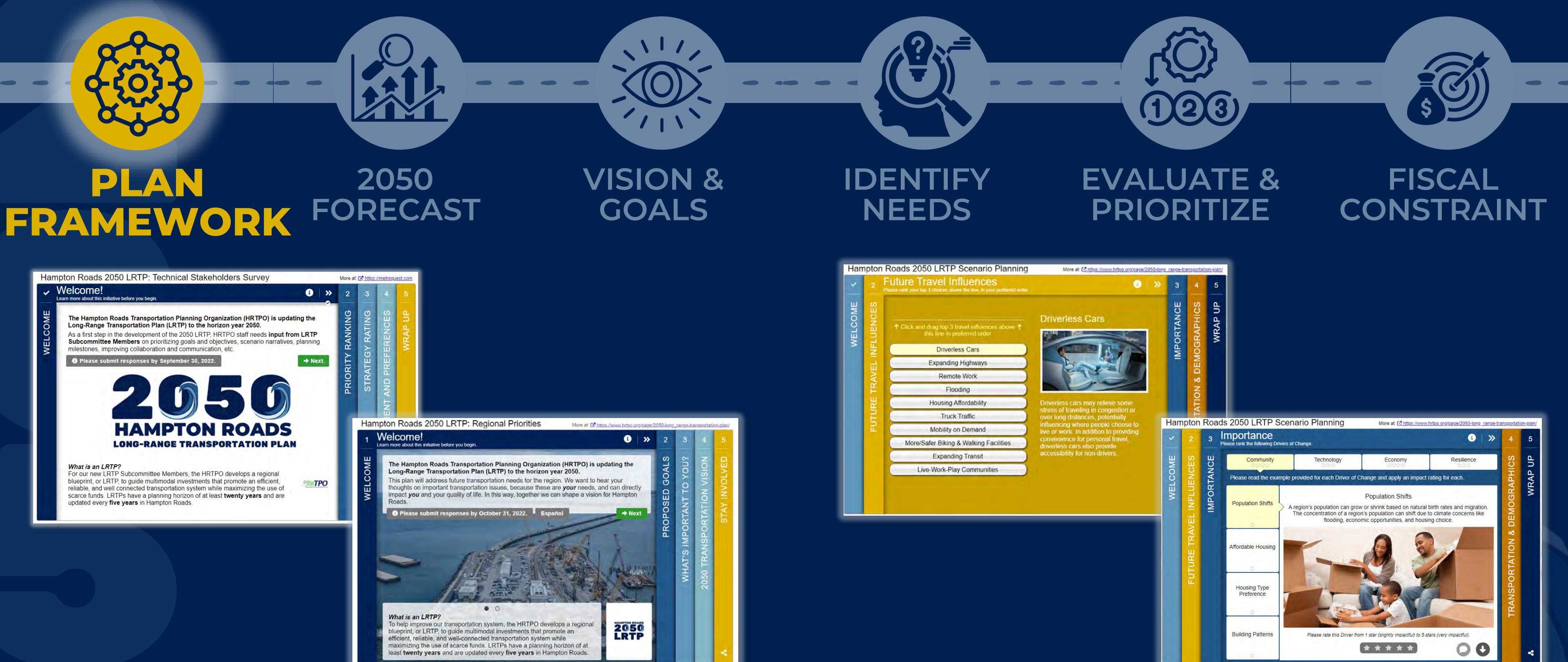
- Screening Level Analysis
- Combines Social Vulnerability with Roadway Network Analysis



PDC TPO

# 2050 LRTP Planning Milestones



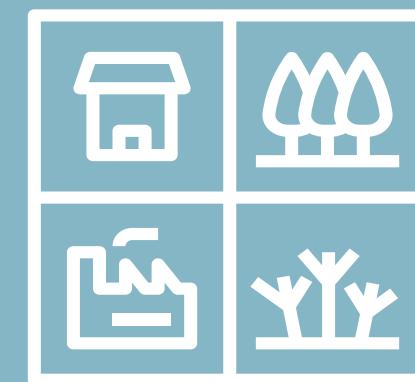
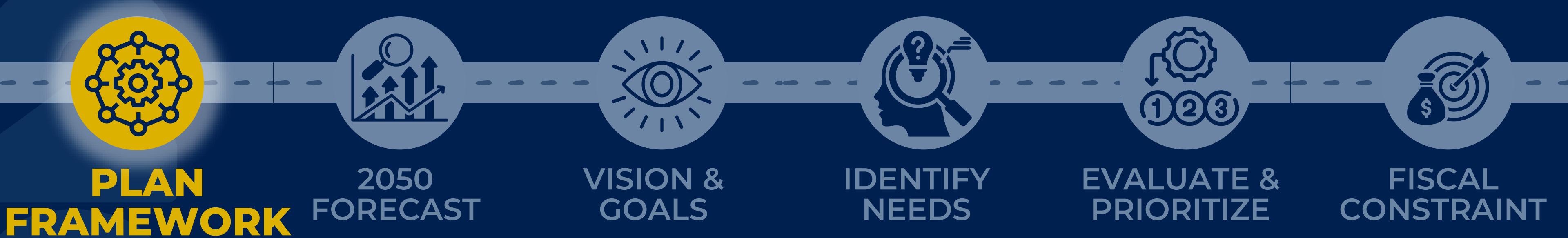


# Regional Priorities Surveys

- October 1 – November 1, 2022
- 633 Participants

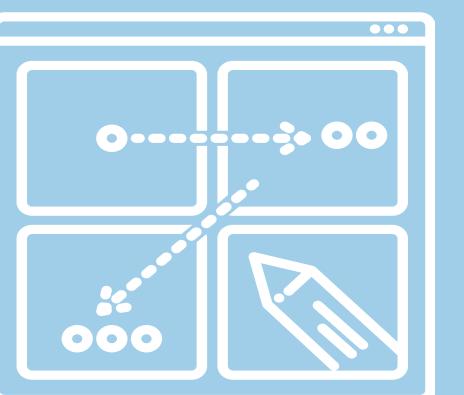
# Scenario – Drivers of Change

- 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



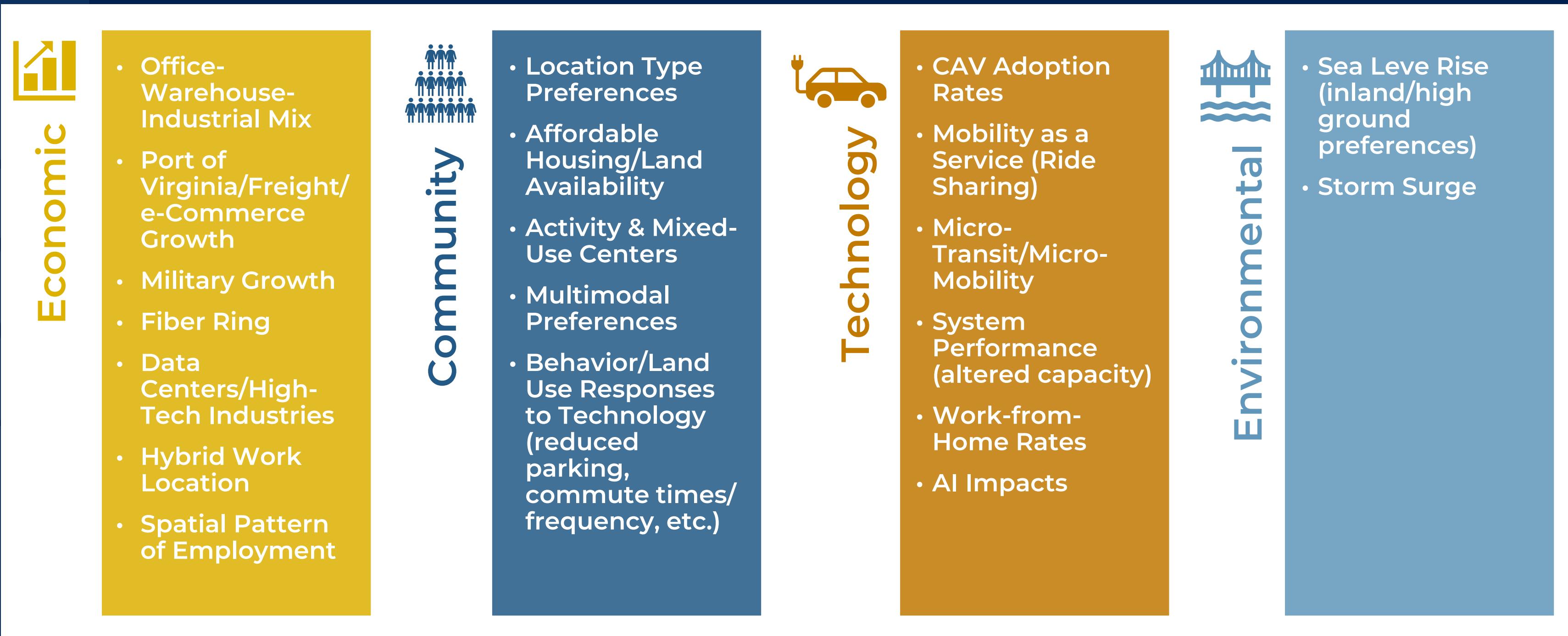
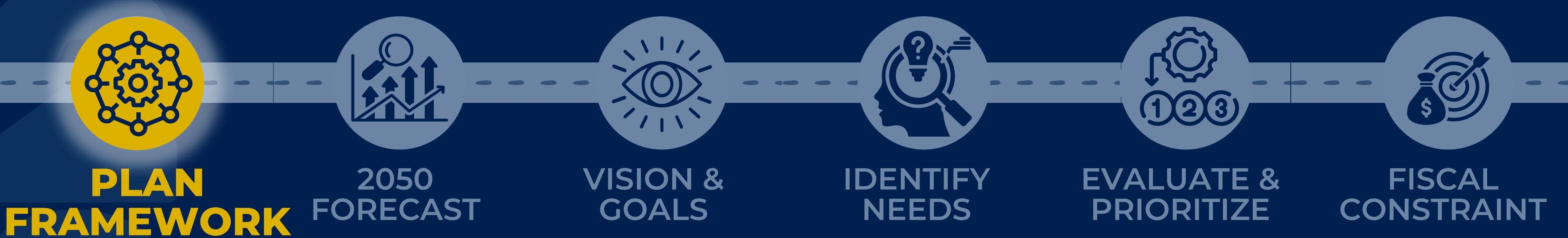
## Scenario Narratives

- 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

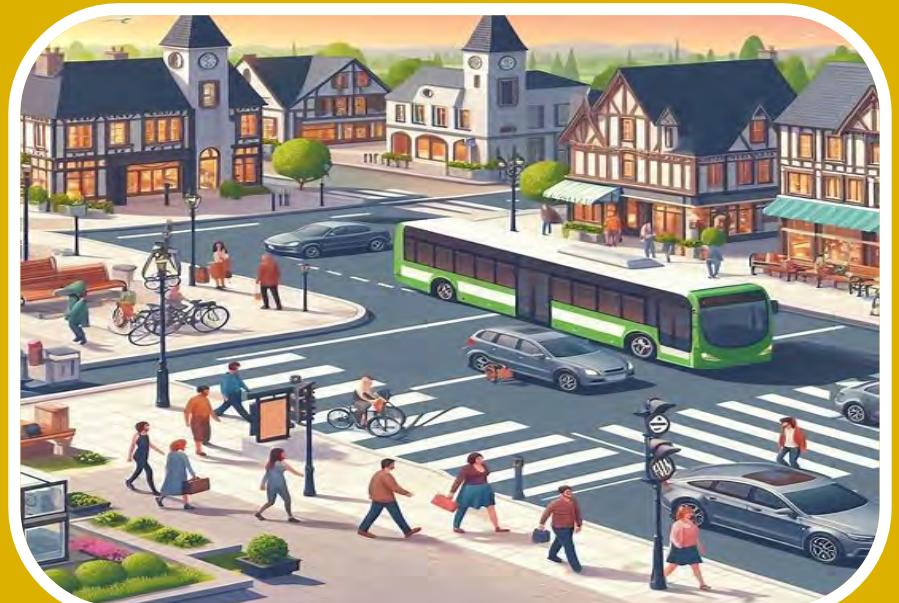
## IDENTIFY NEEDS

## 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.

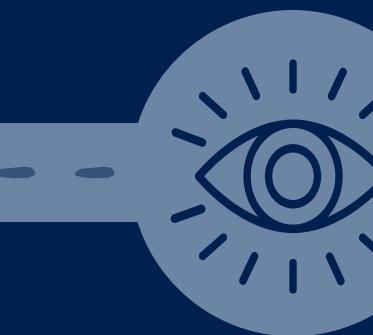
Test major impacts from climate change and alternate commuting patterns.



PLAN  
FRAMEWORK



**2050  
FORECAST**



VISION &  
GOALS



IDENTIFY  
NEEDS

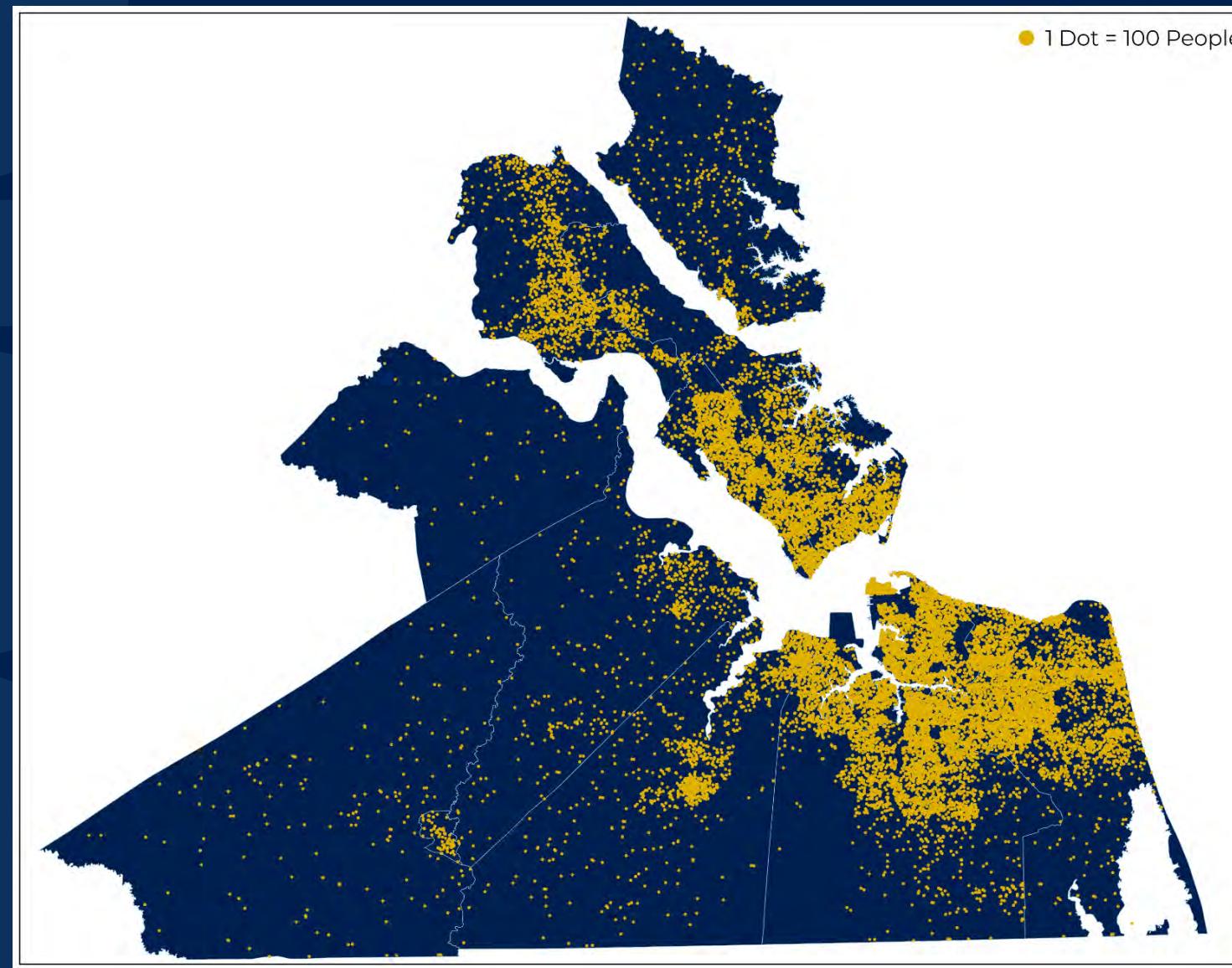


EVALUATE &  
PRIORITIZE

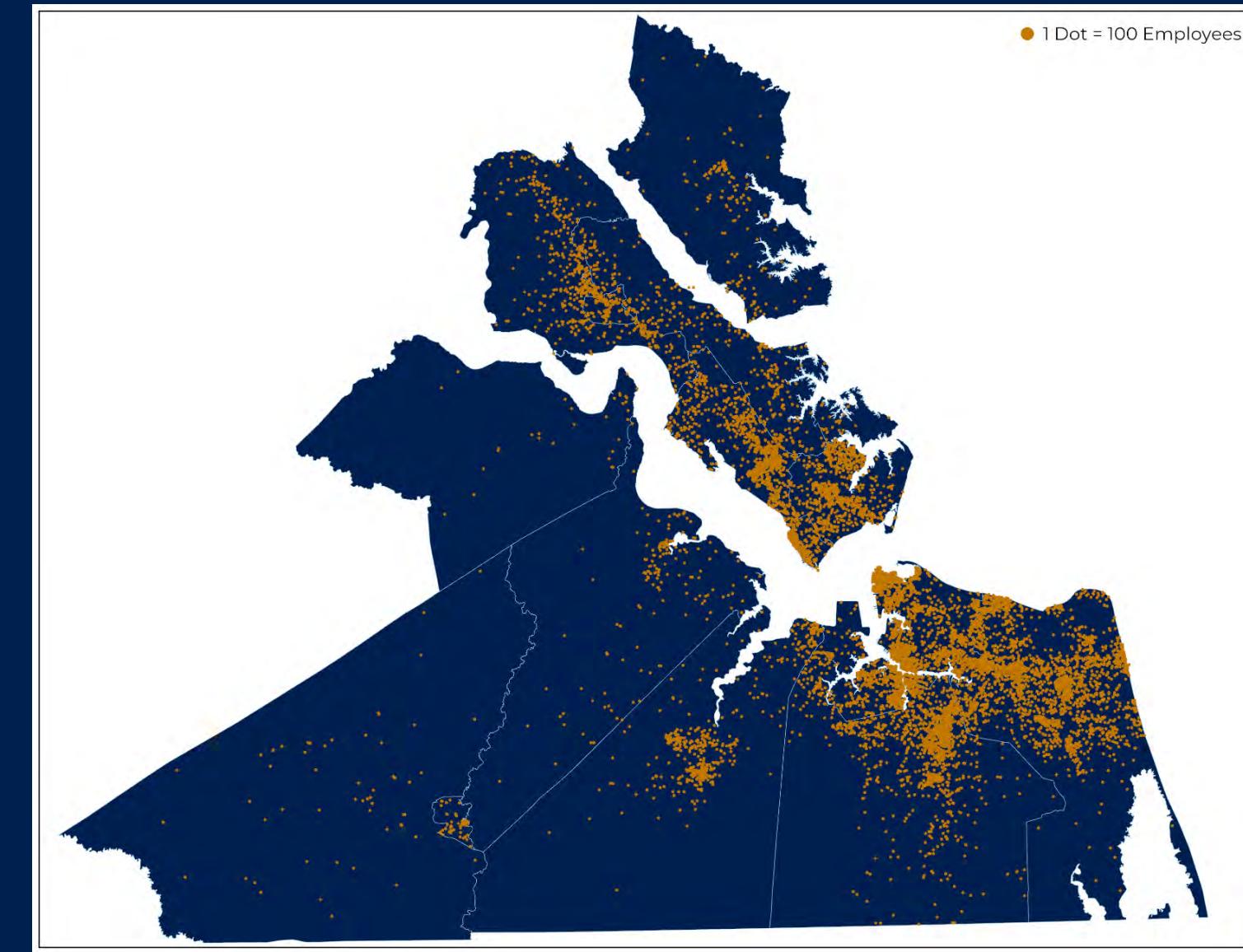


FISCAL  
CONSTRAINT

## 2050 Baseline Forecast



2050 Forecasted Population



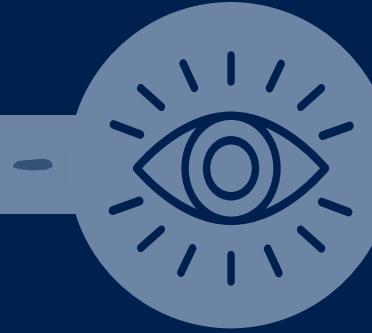
2050 Forecasted Employment



PLAN  
FRAMEWORK



**2050  
FORECAST**



VISION &  
GOALS



IDENTIFY  
NEEDS

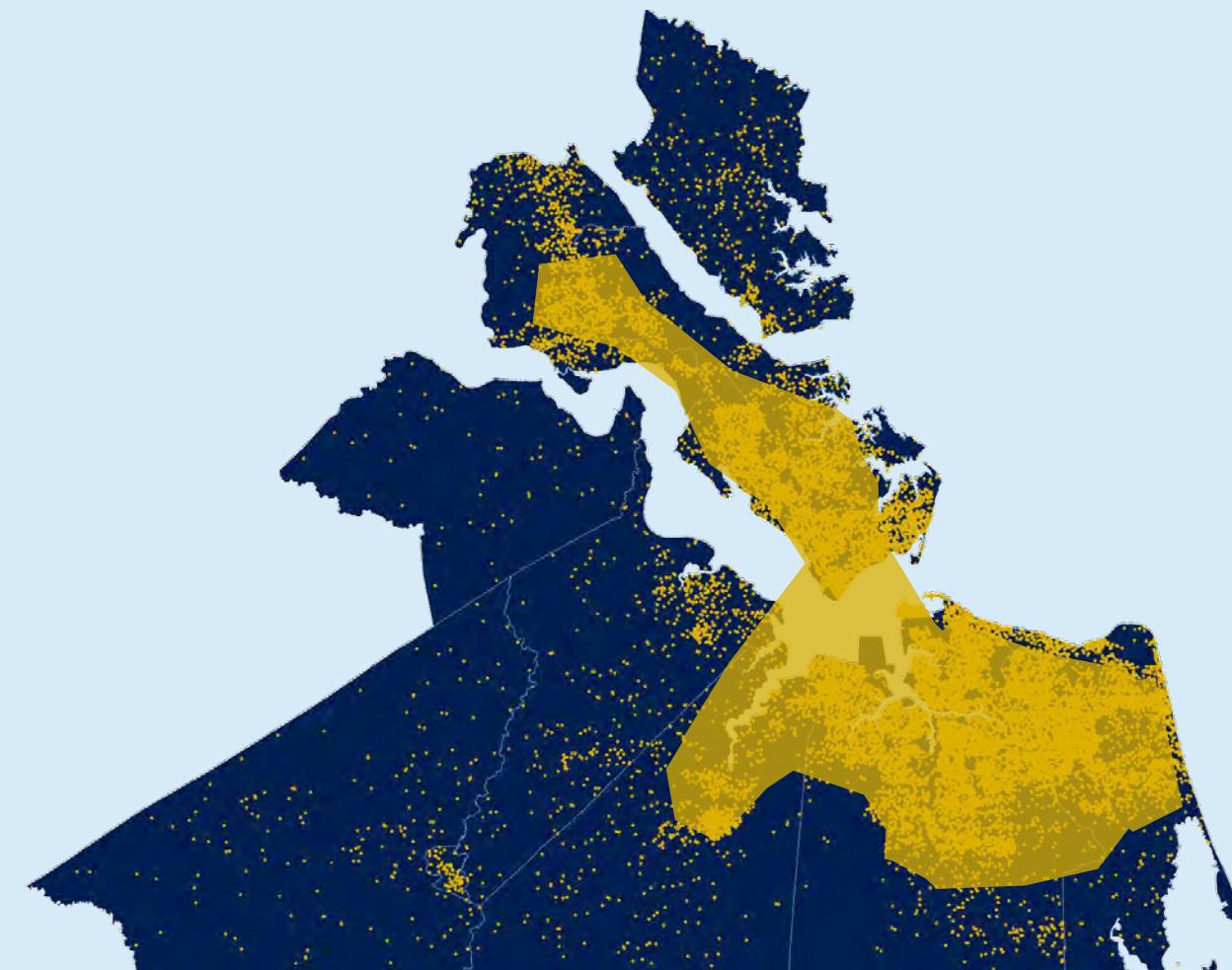


EVALUATE &  
PRIORITIZE

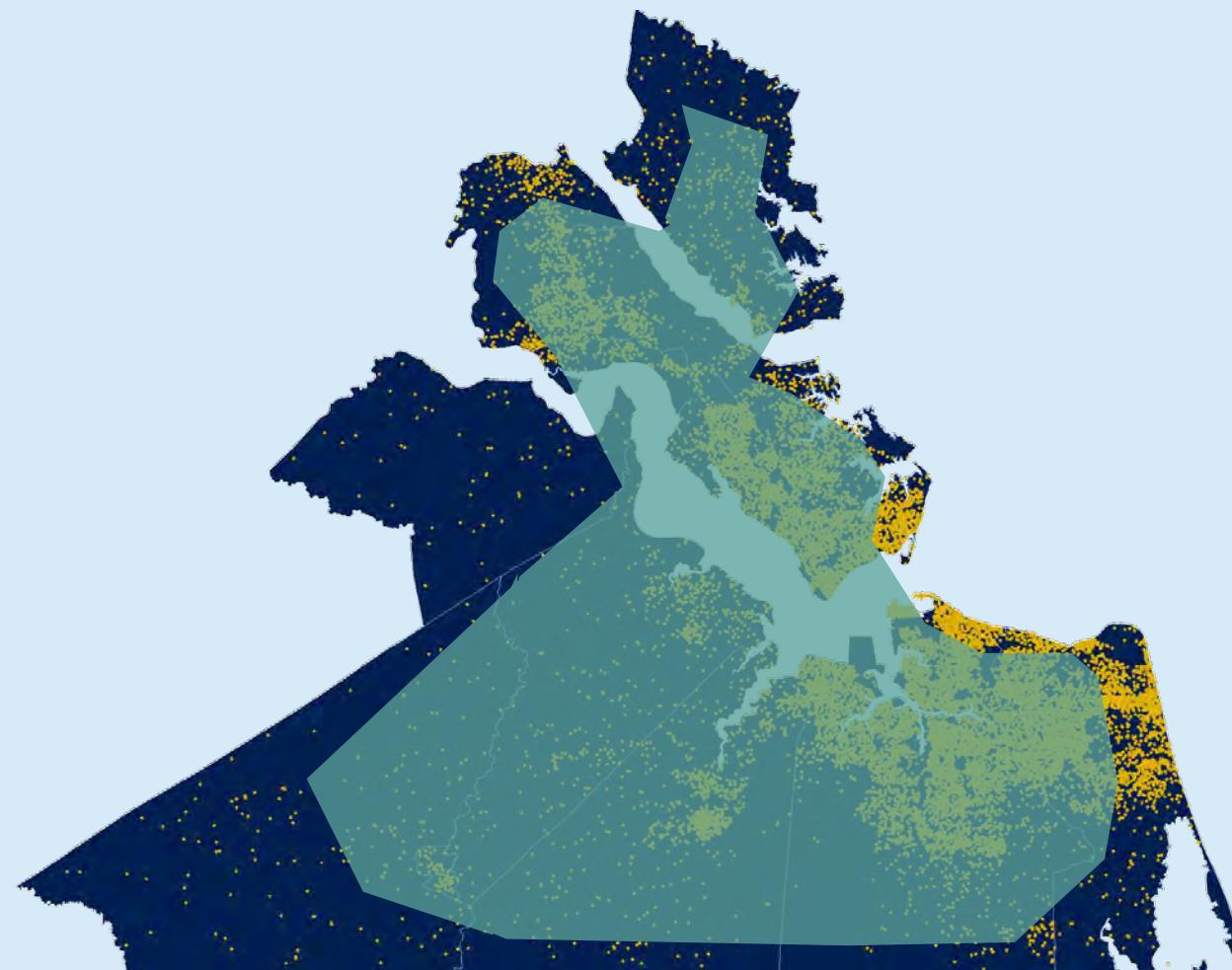


FISCAL  
CONSTRAINT

## 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



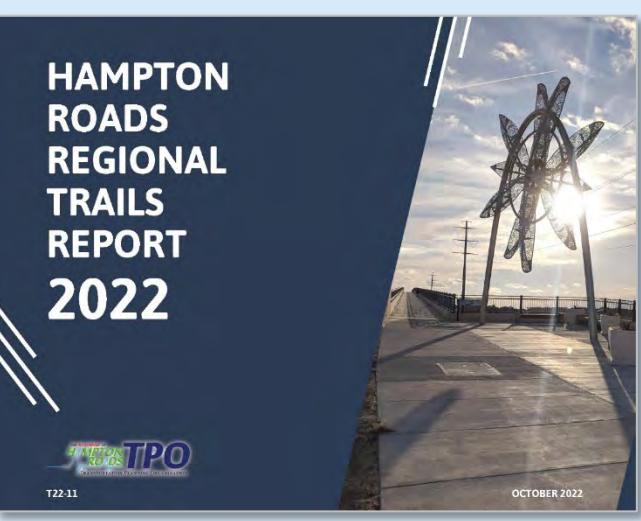
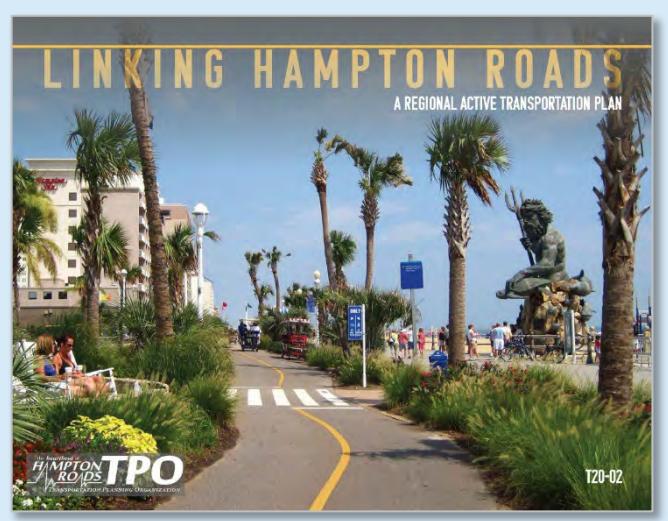
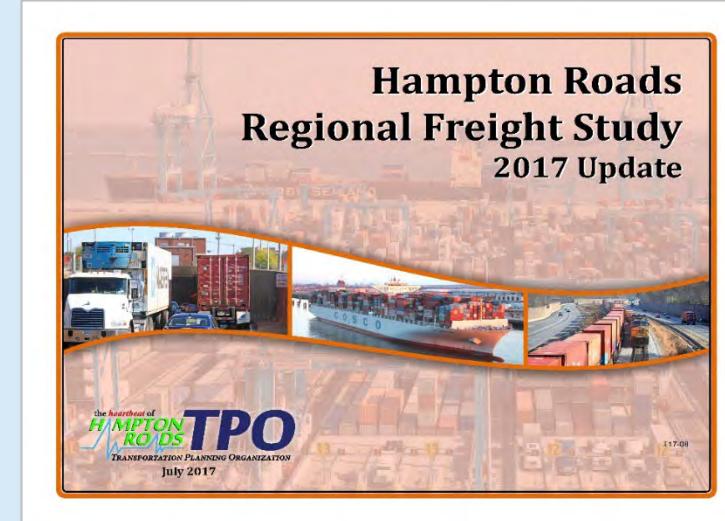
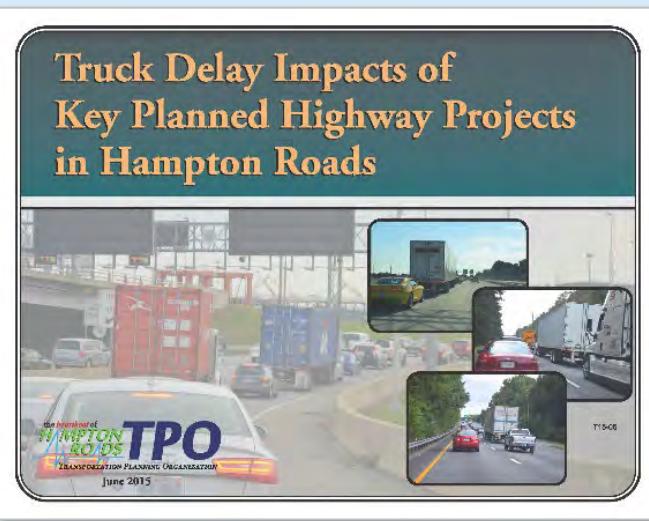
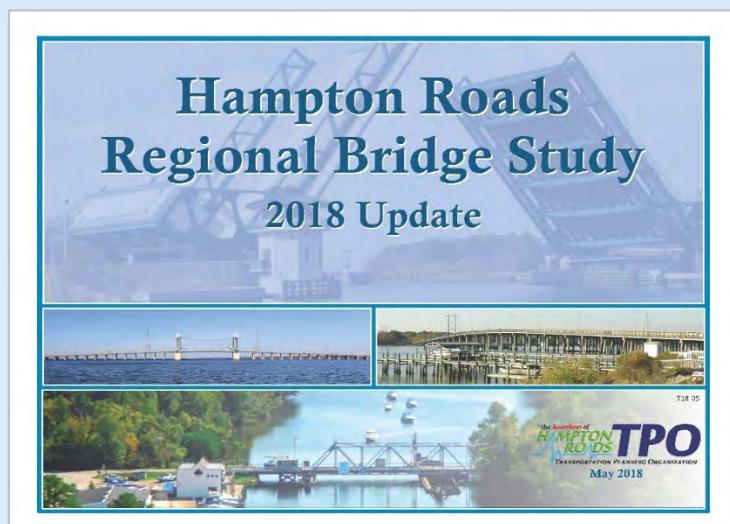
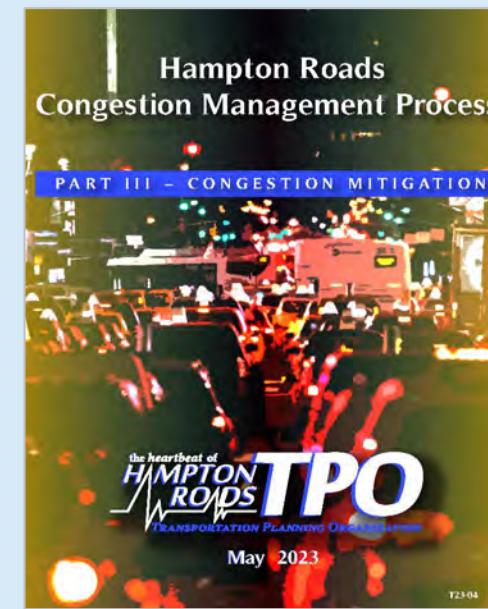
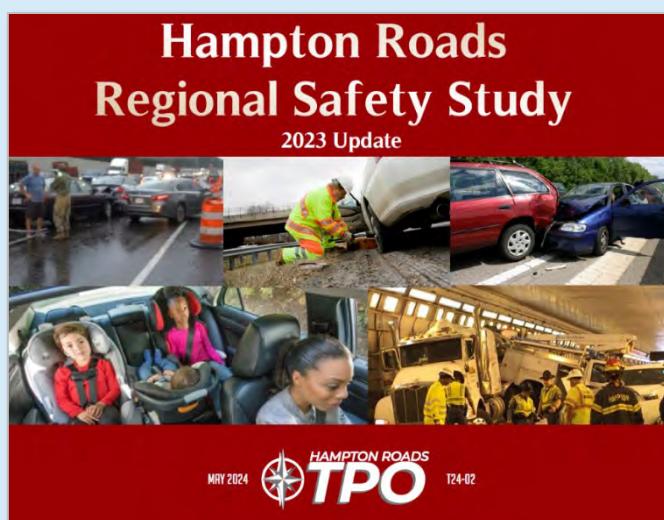
## IDENTIFY NEEDS



## EVALUATE & PRIORITIZE



## FISCAL CONSTRAINT

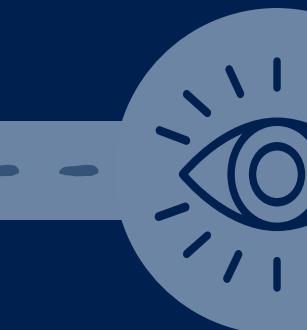




# PLAN FRAMEWORK



# 2050 FORECAST



# VISION & GOALS



# IDENTIFY NEEDS

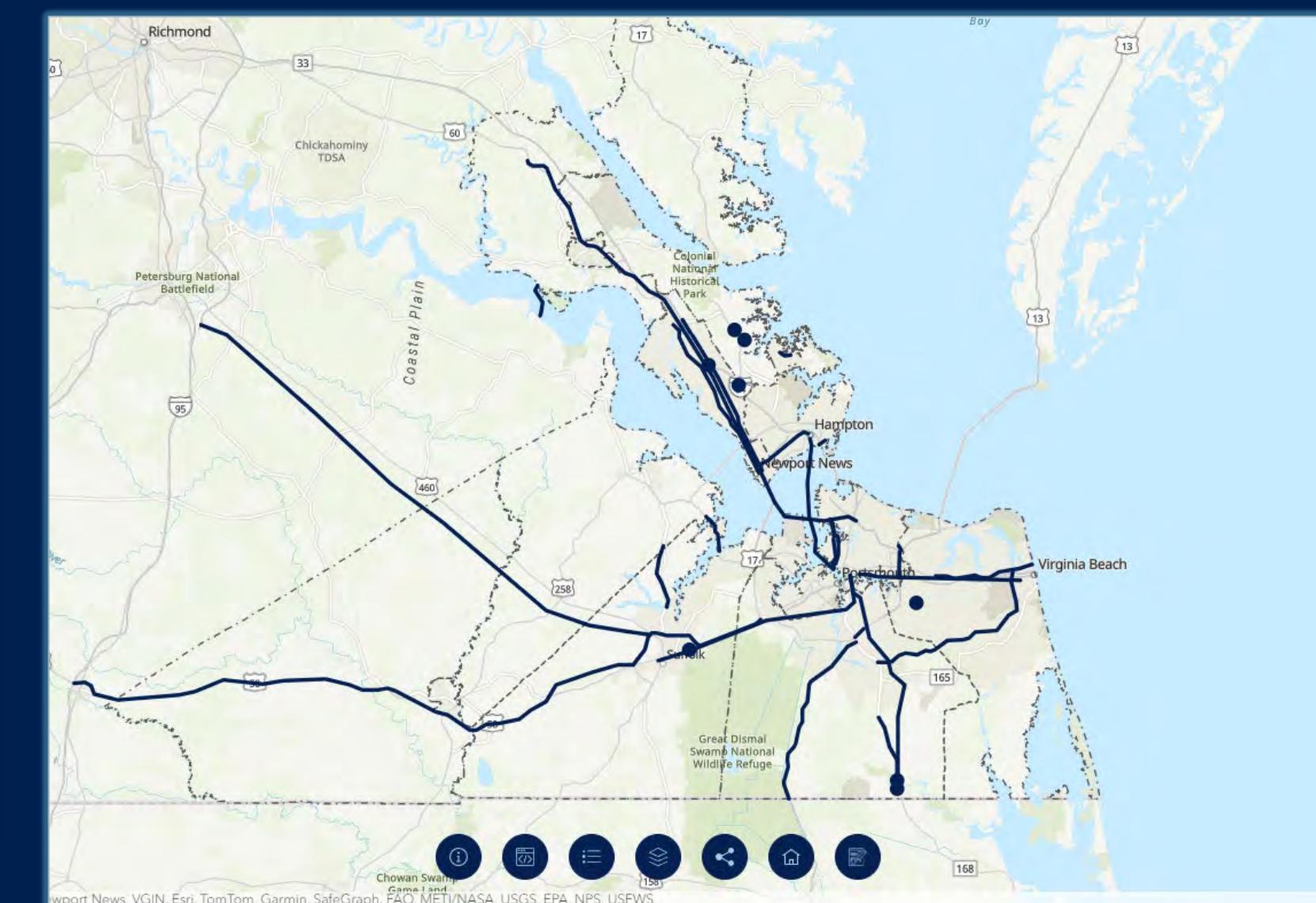
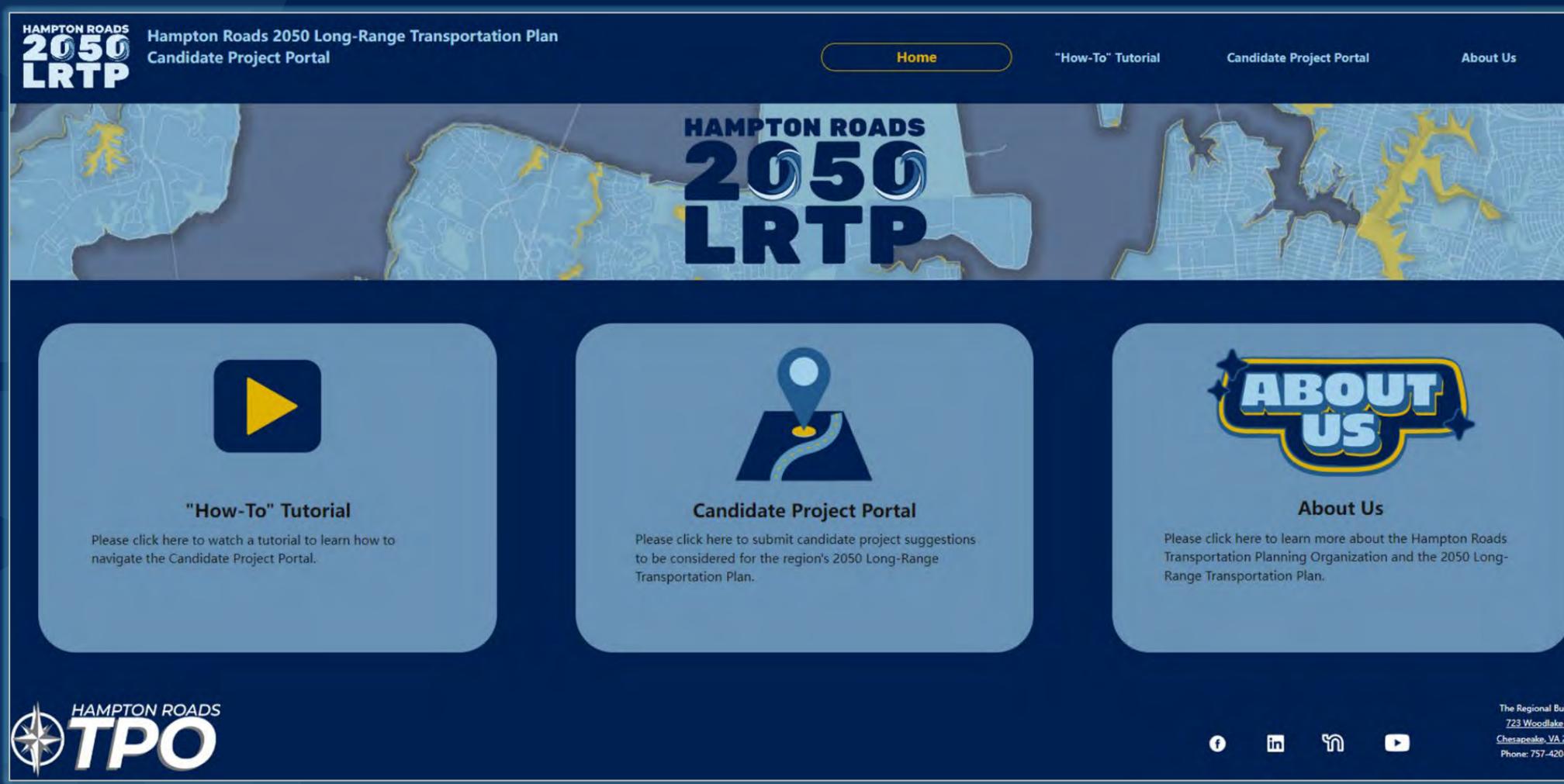


## EVALUATE & PRIORITIZE



# FISCAL CONSTRAINT

# Candidate Project Portal

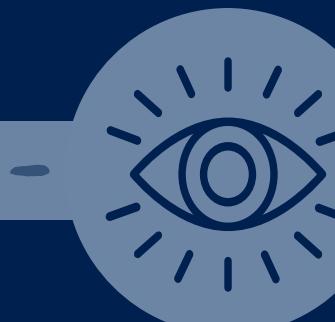




PLAN  
FRAMEWORK



2050  
FORECAST



VISION &  
GOALS



**IDENTIFY  
NEEDS**



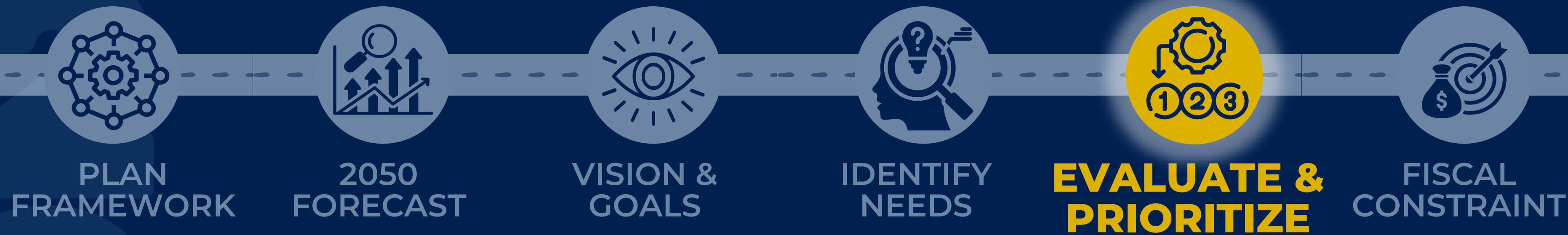
EVALUATE &  
PRIORITIZE



FISCAL  
CONSTRAINT

# Interactive Workshop with HRTPO Board





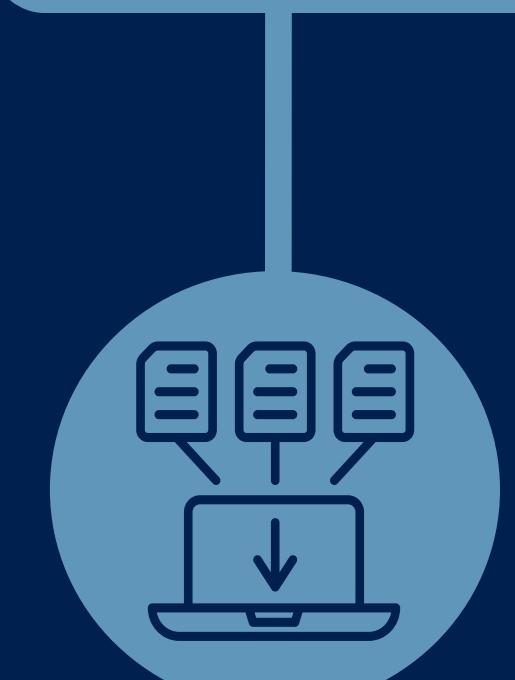
**Collect project ideas**

**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**

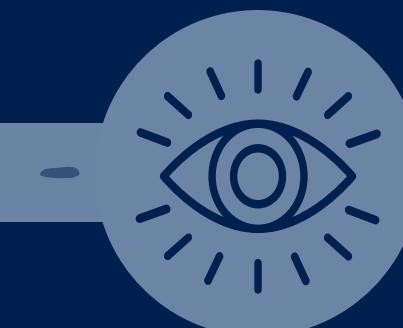




PLAN  
FRAMEWORK



2050  
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VISION &  
GOALS



IDENTIFY  
NEEDS



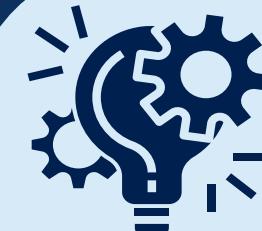
**EVALUATE &  
PRIORITIZE**



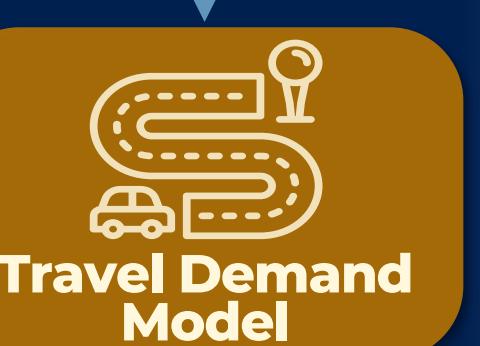
FISCAL  
CONSTRAINT

# Scenario Modeling

## Across all Scenarios



**CANDIDATE  
PROJECTS**



**HRTPO PROJECT  
PRIORITIZATION  
TOOL**

**Project  
Utility**

**Economic  
Vitality**

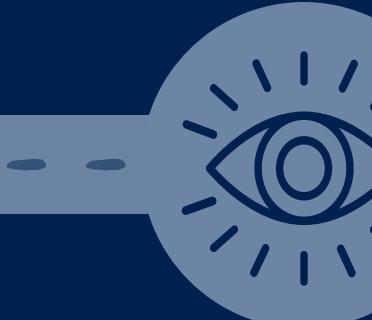
**Project  
Viability**



PLAN  
FRAMEWORK



2050  
FORECAST



VISION &  
GOALS



IDENTIFY  
NEEDS



**EVALUATE &  
PRIORITY**



FISCAL  
CONSTRAINT

# EQUITY ANALYSIS TRANSPORTATION-VULNERABLE COMMUNITIES



- Accessibility
- Travel Choices
- Safety
- Congestion

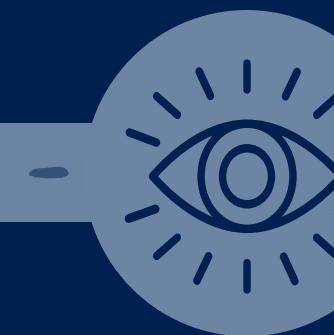




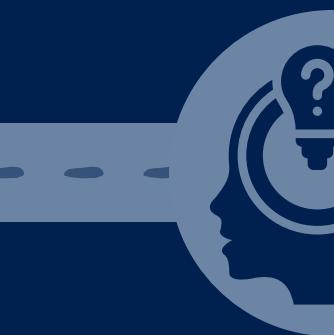
## PLAN FRAMEWORK



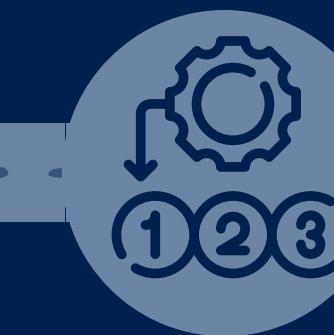
## 2050 FORECAST



## 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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