

TRANSPORTATION RESILIENCE

presented to

**Florida MPO Resilience
Peer Exchange**

presented by

Jennifer Z. Carver, AICP
Florida Department of Transportation
Office of Policy Planning

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NATURAL HAZARDS IMPACTING FLORIDA

▶ Hurricane Storm Events

Irma making landfall in the Florida Keys
Credit: NOAA



A law enforcement vehicle patrols a flooded street in Everglades City, Florida, U.S., September 11, 2017. REUTERS/Bryan Woolston

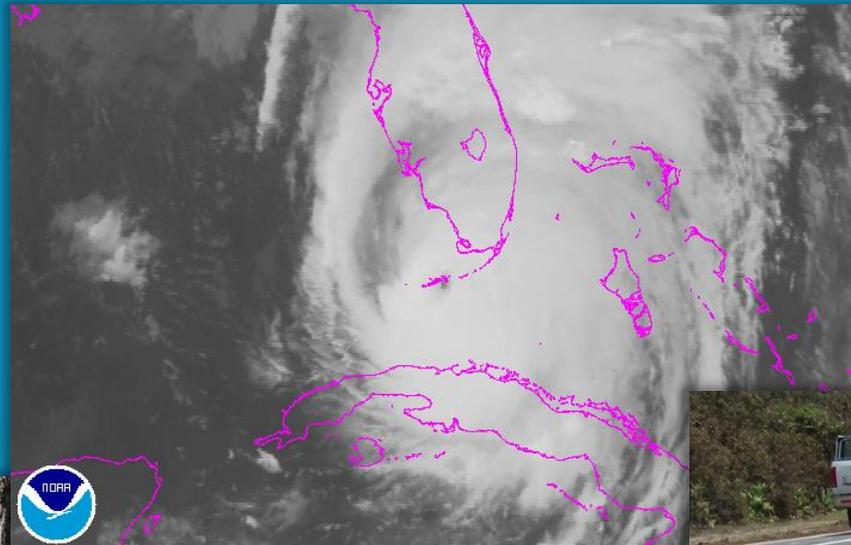
▶ Precipitation Events

▶ Sea Level Rise

▶ Wildfires

▶ Drought

▶ Sinkholes



Credit: Florida Forest Service



US 98 in Franklin County. FDOT

WHY RESILIENCY?

Resiliency -- The ability of the transportation system to adapt to changing conditions and prepare for, withstand, and recover from disruptions.

Why? Mitigate risk, make wiser investment decisions, and provide more reliable transportation.

Fixing America's Surface Transportation (FAST) Act

- Resiliency/reliability; reduce stormwater impacts; reduce vulnerability

FDOT 23 Code of Federal Regulations (CFR) Part 667

- Evaluate options for facilities that have been repaired/reconstructed 2+ times due to emergency events



The increasing **GLOBAL INTEGRATION** of Florida's economy means our **TRADE, TOURISM, & OTHER INDUSTRIES** can be impacted by recessions, instability, and supply chain disruptions around the world



According to the Florida Chamber Foundation, the likelihood of a

RECESSION WITHIN 9 MONTHS

has been **INCREASING** since May of **2019**



There is an estimated **\$1.2 TRILLION NATIONAL GAP** in **TRANSPORTATION INFRASTRUCTURE NEEDS** through **2050**, even before considering climate impacts



LONG-HAUL FREIGHT is expected to **INCREASE**

40% by **2040**



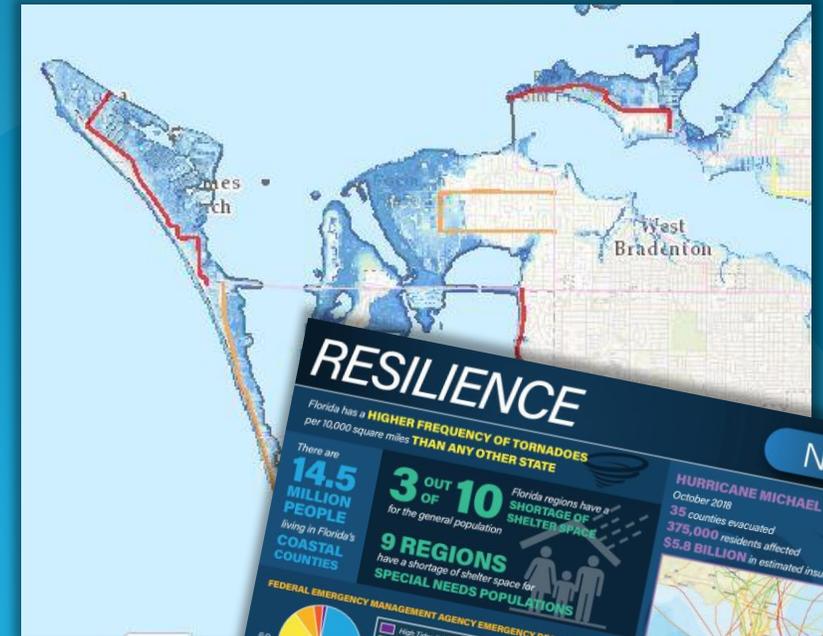
COMMONALITIES IN STATE DOT RESILIENCE PLANNING

- ▶ DOT involvement often begins with a cabinet-level, multi-agency initiative
- ▶ Most common resilience activities involve
 - » Vulnerability assessments
 - » Development of data resources (geospatial data)
 - » Development of design guidelines
 - » Outreach and grants to localities to address transportation resilience
- ▶ Resilience and reliability are often combined to address the planning requirement
- ▶ Many MPOs have advanced resilience planning in their 2045 LRTPs.



FDOT RESILIENCE INITIATIVES

- ▶ **Statewide Planning**
 - » Florida Transportation Plan
 - » Freight Mobility and Trade Plan
- ▶ **FDOT Resilience Policy**
- ▶ **SIS Vulnerability Assessment**
- ▶ **Tools, Guidance, Standards**
 - » Guidance for MPOs
 - » Sea Level Scenario Sketch Planning Tool
 - » Case Studies/Adaptation Planning
- ▶ **Research**
- ▶ **Interagency Coordination/Collaboration**
- ▶ **Projects**



RESILIENCE NOW

Florida has a **HIGHER FREQUENCY OF TORNADOES** per 10,000 square miles **THAN ANY OTHER STATE**

There are **14.5 MILLION PEOPLE** living in Florida's **COASTAL COUNTIES**

3 OUT OF 10 Florida regions have a **SHORTAGE OF SHELTER SPACE** for the general population

9 REGIONS have a shortage of shelter space for **SPECIAL NEEDS POPULATIONS**

HURRICANE MICHAEL
October 2018
35 counties evacuated
375,000 residents affected
\$5.8 BILLION in estimated insurance loss

HURRICANE IRMA
September 2017
54 counties evacuated
6.8 MILLION residents affected
\$11.1 BILLION in estimated insurance loss

TIDAL FLOODING across Florida has **INCREASED BY 352%** since 2000 while sea levels have risen approximately **3 INCHES**

21% RECESSION in the next 9 months is projected by the Florida Chamber Foundation's recession risk index

CURRENT U.S. EXPANSION has lasted 18 months and counting, more than **TWICE THE AVERAGE TIME BETWEEN RECESSIONS** since World War II

55% OF CONGESTION is caused by nationwide incidents, weather, construction, and other special events

1/2 OF ALL JOBS COULD BE AUTOMATED TODAY using current technologies

UP TO 85% OF ALL JOBS IN 2030 could be in industries or occupations that **DO NOT EXIST TODAY**

3.5 MILLION & 5.4 MILLION ACRES OF ADDITIONAL LAND could be developed between the year 2010 project and 2070

SEA LEVELS in Southeast Florida are projected to **RISE** from 2018 levels by a median amount of **2.6 INCHES** by 2030 & **10.5 INCHES** by 2060

GLOBAL INTEGRATION of Florida's economy means our **TRADE, TOURISM, AND OTHER INDUSTRIES** can be impacted by recessions, instability, and supply chain disruptions around the world

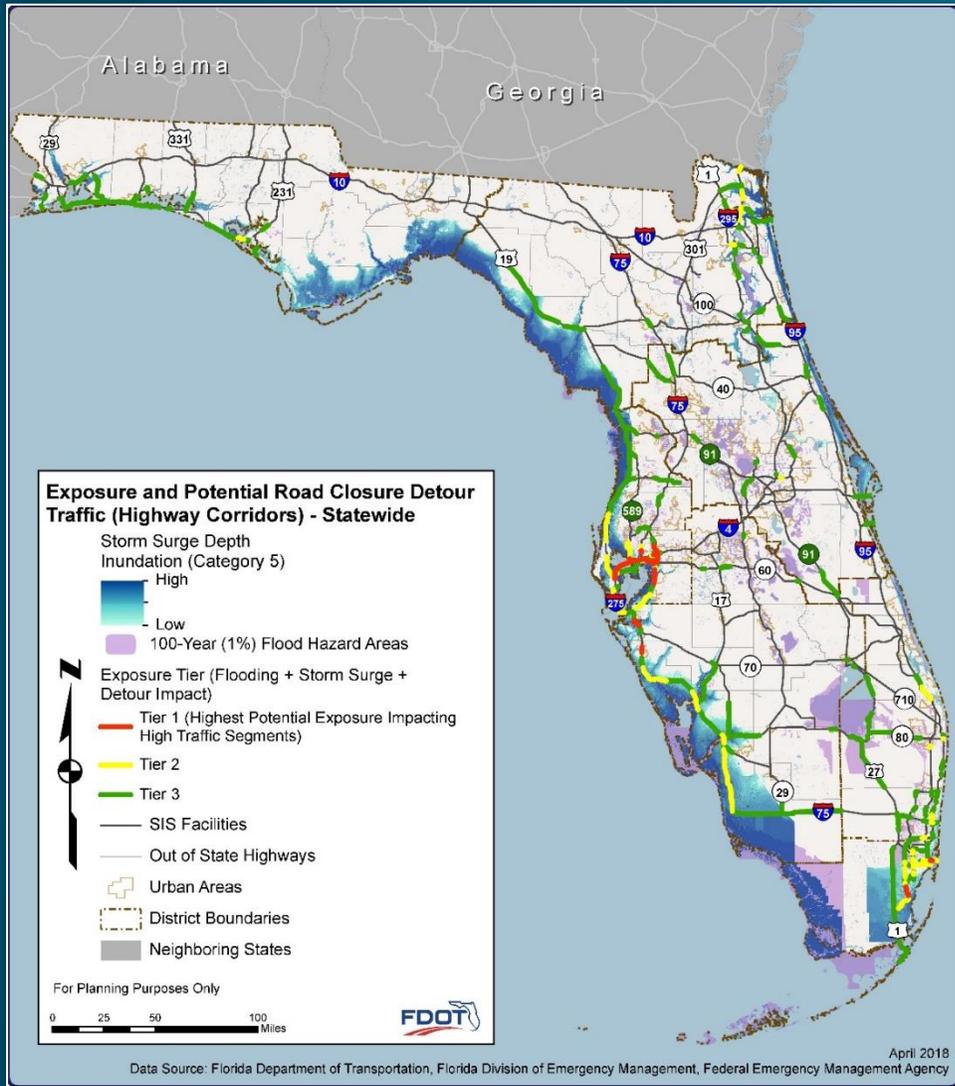
Similar regional visioning initiatives have demonstrated a **RANGE OF ASSUMPTIONS** about future growth

	Risk Event	Likelihood	Consequence
security for residents, visitors, and businesses	Hacking and cybersecurity threats to public and private transportation	4	3
	New technology causes investment to be prematurely obsolete	4	3
	Intensification of development in high hazard areas	5	3
	Aging population causes surge in demand for safe mobility options	5	3
	Wildfires disrupt major transportation routes and reduce visibility	5	3
	New technology systems perform unsafely or increase liability	5	3
	Failure to evacuate vulnerable populations due to evacuation routes in high hazard areas	5	3
	Arterial flooding disrupts major transportation routes and systems	4	3

FLORIDA TRANSPORTATION PLAN



STRATEGIC INTERMODAL SYSTEM (SIS) VULNERABILITY ASSESSMENT



L RTP RESILIENCE QUICK GUIDE

▮ Opportunities to incorporate resilience into the L RTP

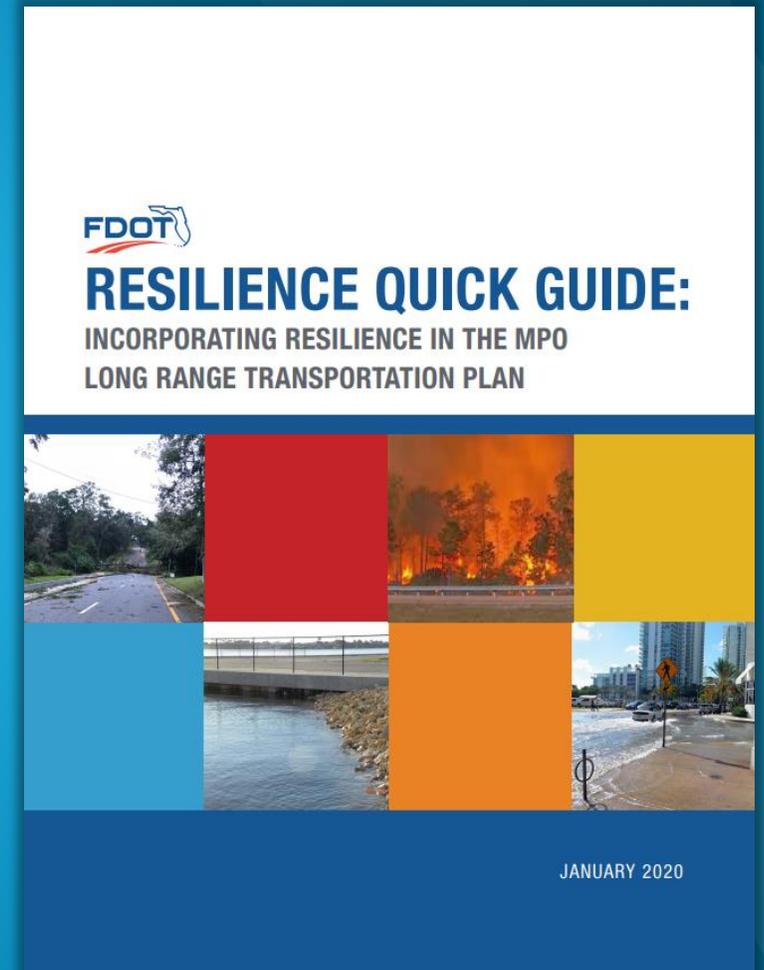
- » Goals and Objectives
- » Defining Performance Measures & Targets
- » Assessing Risks/Vulnerabilities
- » Creating Needs Plan
- » Cost Feasible Plan: Investment & Prioritization

▮ Focus on Resilience

- » Discussion of aspects of resilience

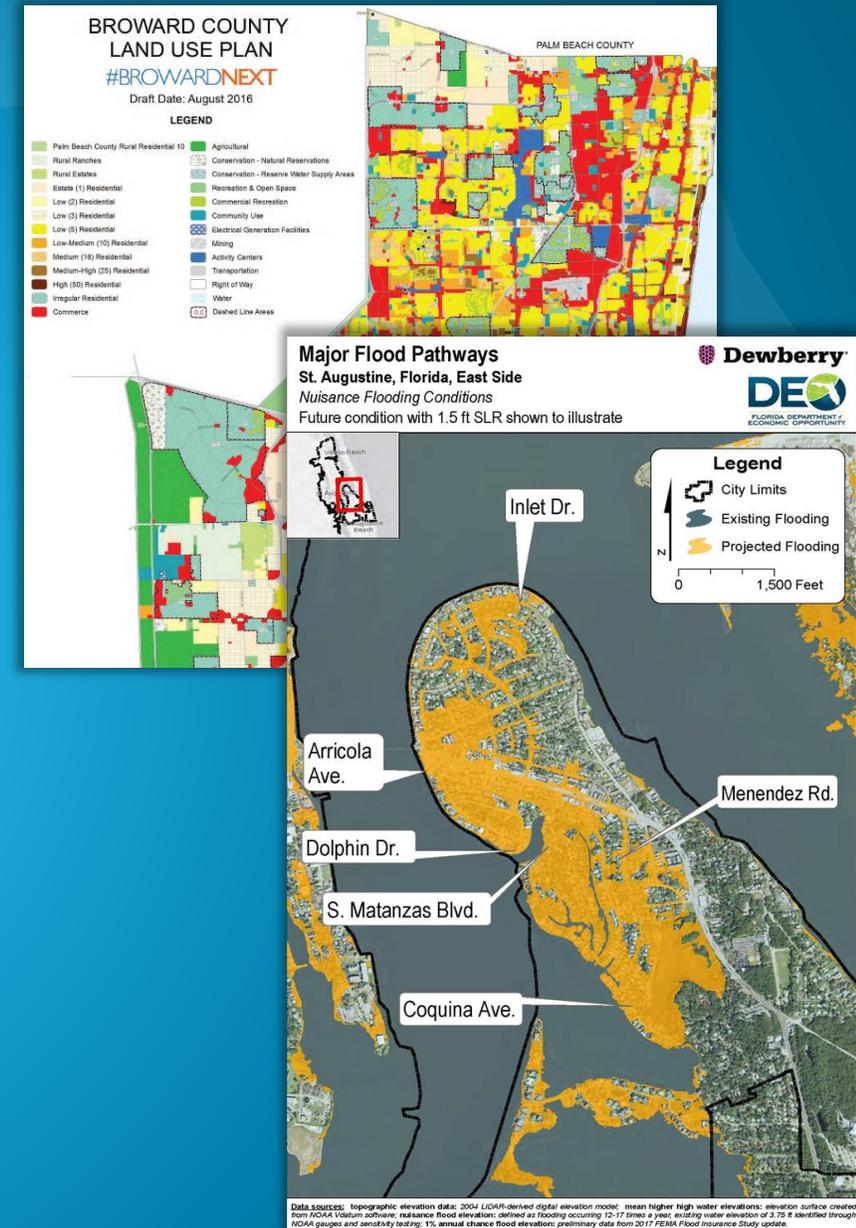
▮ Noteworthy Practices

- » Florida & National Example



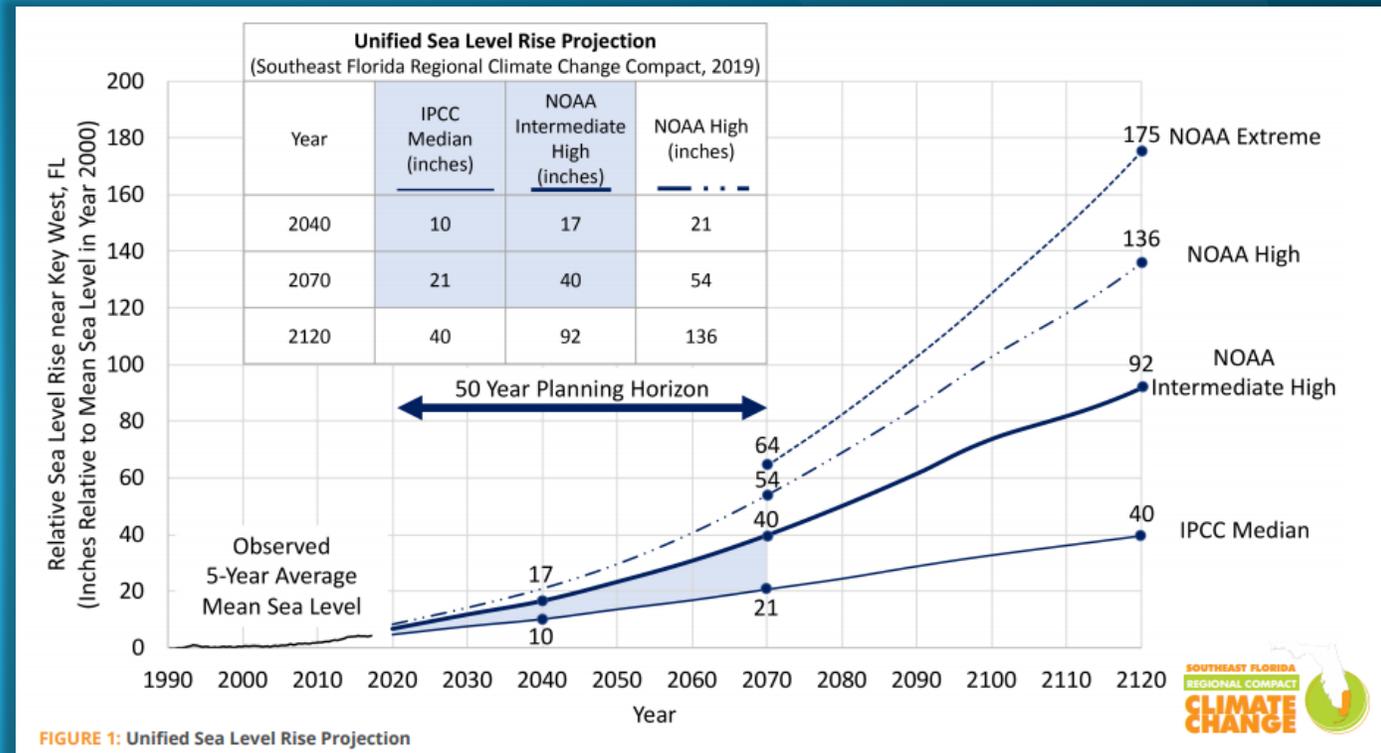
INTERAGENCY COORDINATION

- Florida Resilient Coastlines Program (DEP)
- Office of Energy (DACs)
- Comprehensive Planning Peril of Flood (& Sea Level Rise) Planning (DEO)
- U.S. Army Corps of Engineers
- Regional Resilience Collaboratives
- MPOs, Local Planning



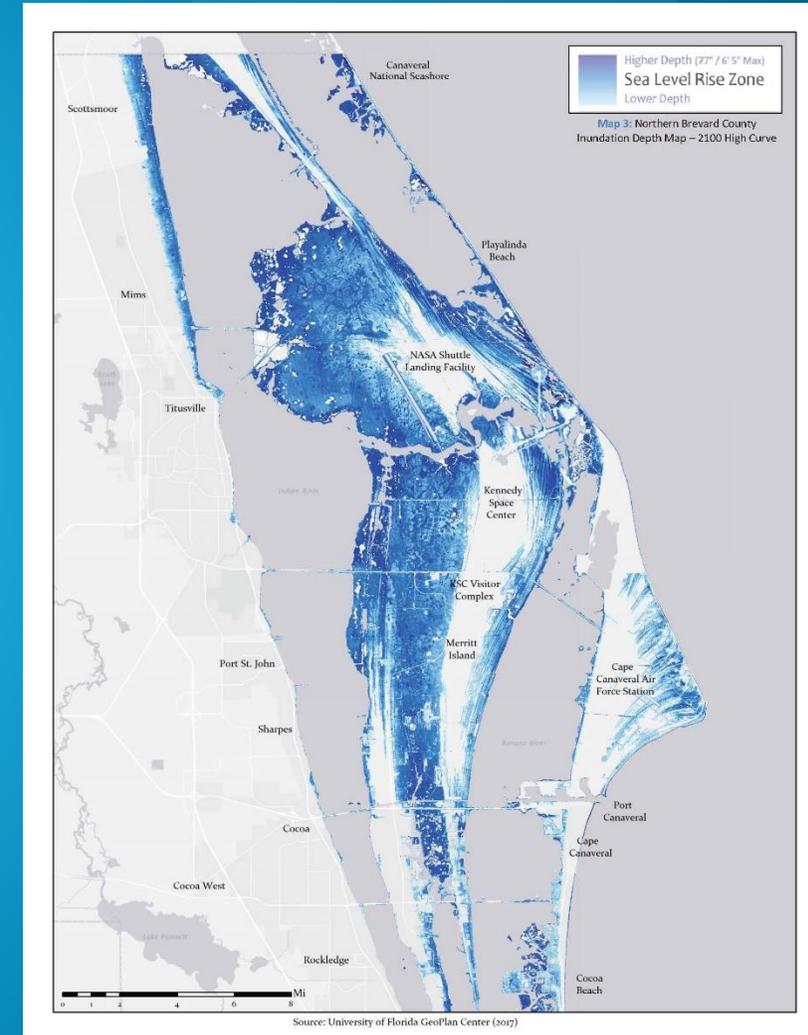
REGIONAL COLLABORATIVES

- ▶ Southeast Florida Regional Climate Change Compact
- ▶ Tampa Bay Regional Resiliency Coalition
- ▶ East Central Florida Regional Resilience Collaborative
- ▶ Northeast Florida Regional Council

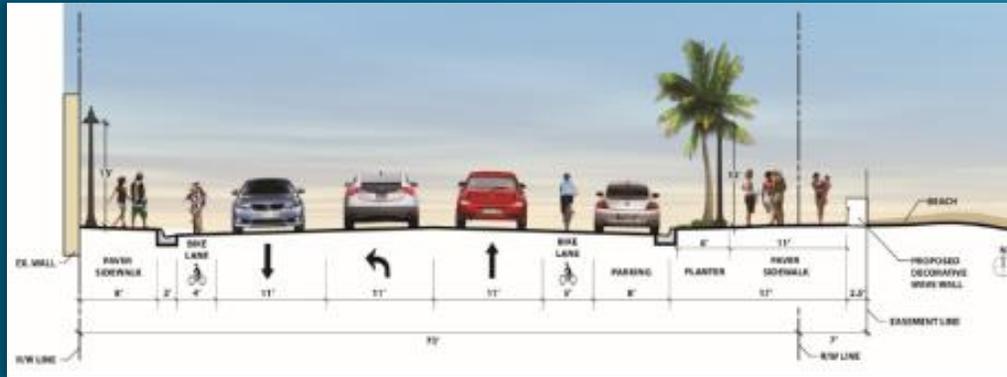


KEY CHALLENGES IN MPO RESILIENCE PLANNING

- ▶ **Technical Capacity Building**
 - » Tools and resources
 - » Climate data and thresholds
 - » Complying with legislative requirements
 - » Monitoring and evaluation
- ▶ **Coordination with partner agencies**
- ▶ **Making a case for resilience improvements (value of resilience)**
- ▶ **Funding constraints**
- ▶ **Ways to operationalize vulnerability assessment results**
- ▶ **Inform project development**



EXAMPLE PROJECTS



Permanent Project Reflecting resiliency and Community: SR A1A in Fort Lauderdale

Jennifer Z. Carver, AICP
Office of Policy Planning
Florida Department of Transportation
Jennifer.Carver@dot.state.fl.us
(850) 414-4820

www.fdot.gov/planning/policy

