Transit Planning Support Tools to Prepare for a Changing Climate -

MTA's Adaptation and Resiliency Toolbox (ARToolbox)

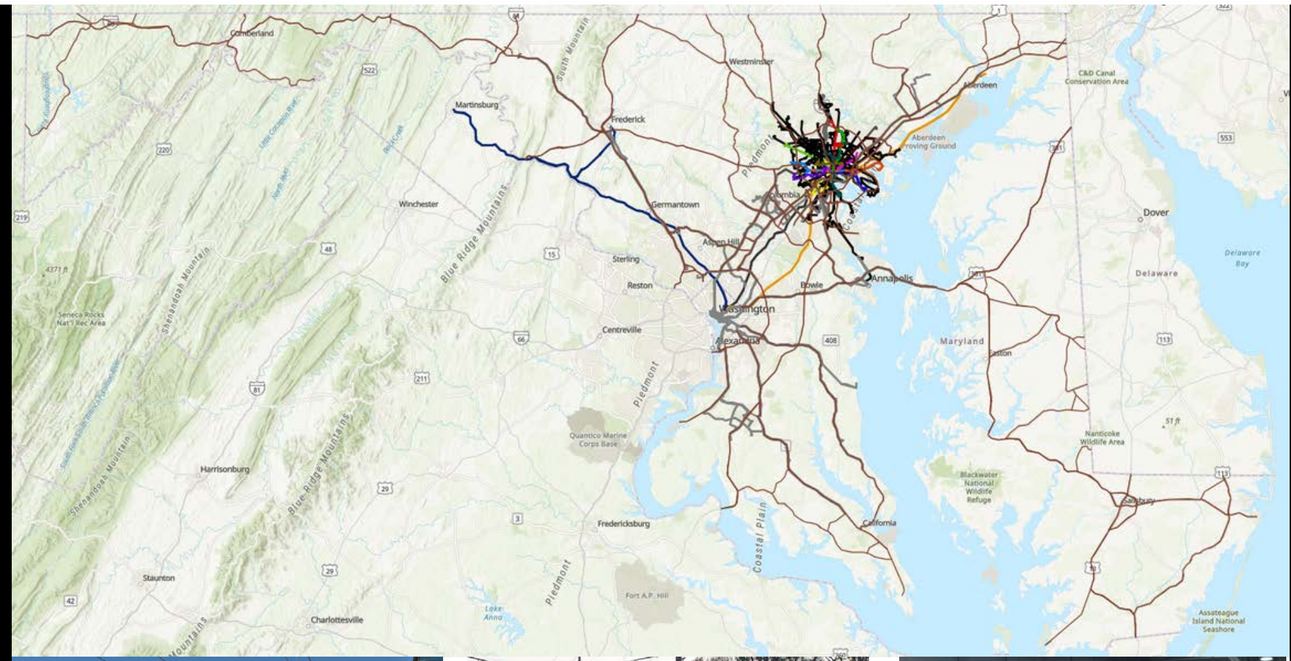
MDOT MARYLAND DEPARTMENT OF TRANSPORTATION

MARYLAND TRANSIT ADMINISTRATION

MTA Overview

The Maryland Transit Administration (MTA) is one of the largest multi-modal transit systems in the United States. We operate:

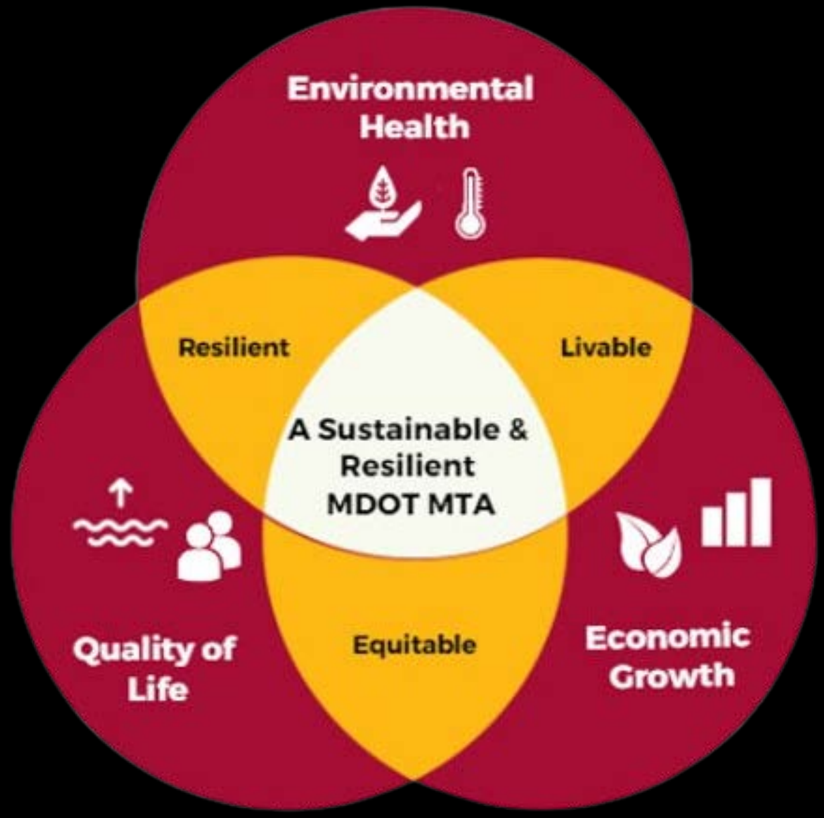
- Local Buses (CityLink and LocalLink)
- Commuter Buses
- Light RailLink
- Metro SubwayLink
- MARC Train Service
- Paratransit



MTA's Resilient Transportation Program

Our Vision:

"Manage increased climate risk by evaluating MTA's climate vulnerability, increasing adaptive capacity, and implementing priority strategies through effective and equitable program, project, and purchasing decisions."

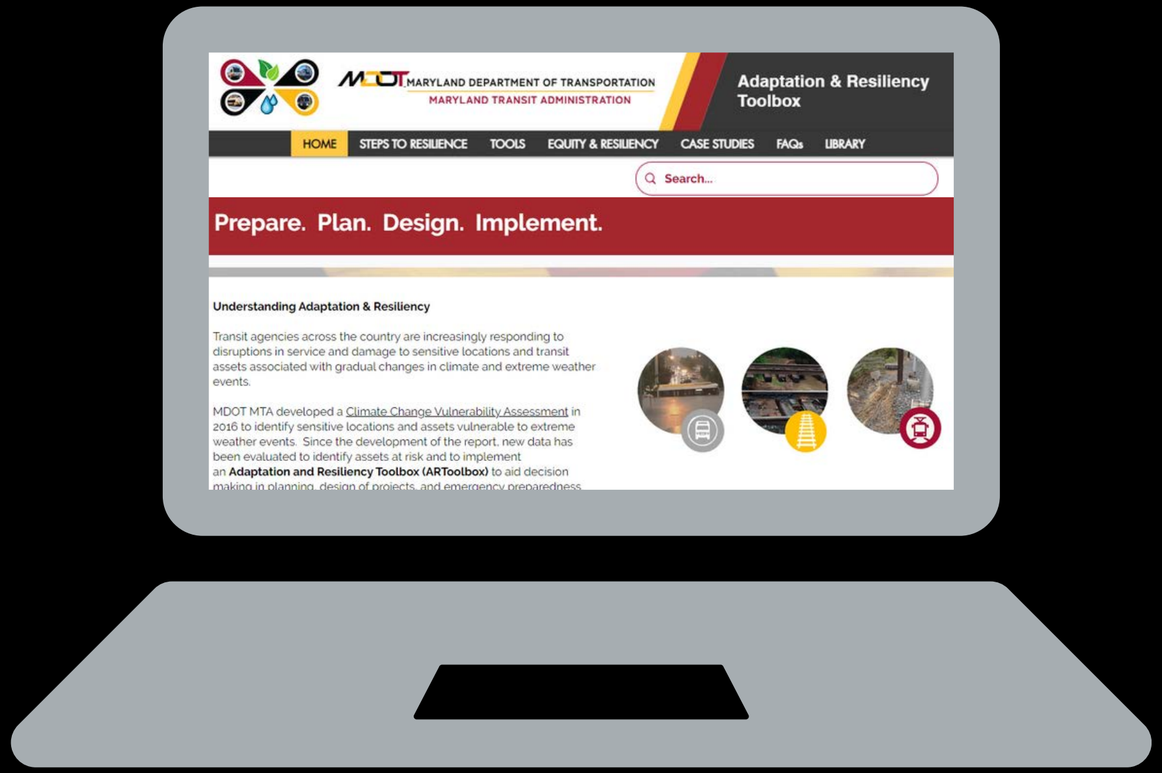


Moving Beyond The Vulnerability Assessment

Through internal agency workshopping, the following needs were identified following the vulnerability assessment:

- Centralized "hub" for all resiliency planning resources, data, and projects
- Legacy/Succession Planning Measures
- Identification of Potential Adaptation Measures
- Resiliency Data/Info at the Asset Level, or per Mode
- Funding Avenues (Grants) and Application Guidance
- Personnel Education on Resiliency/Climate Change
- A "repeatable" application for Peer Agencies

The Approach: The Adaptation and Resiliency Toolbox

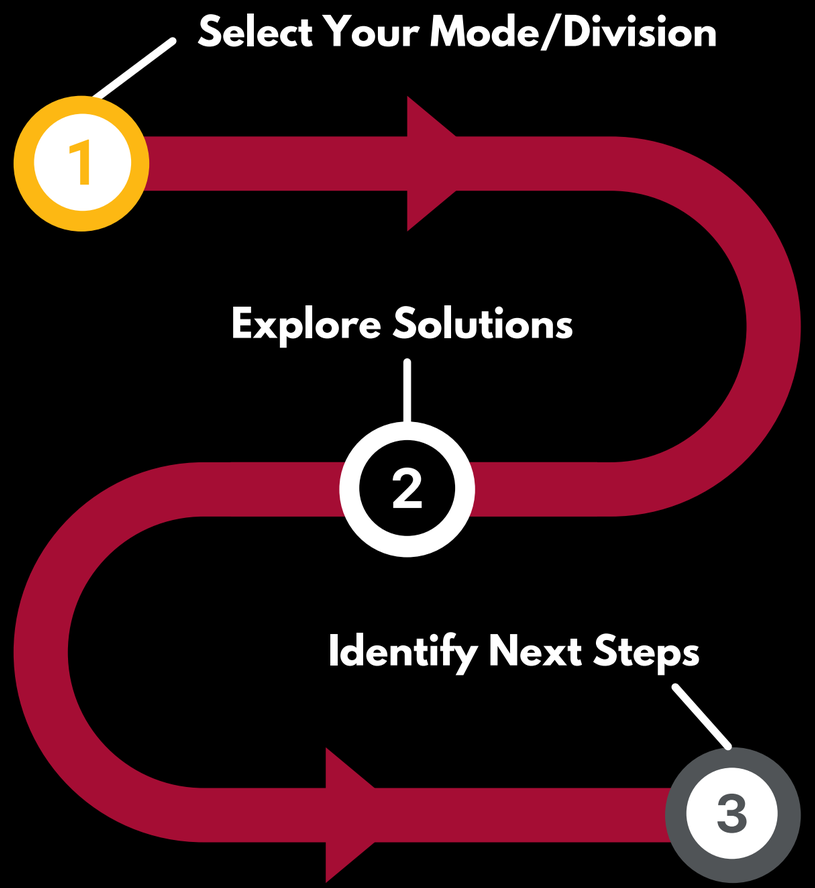


www.resilientmdotmta.com

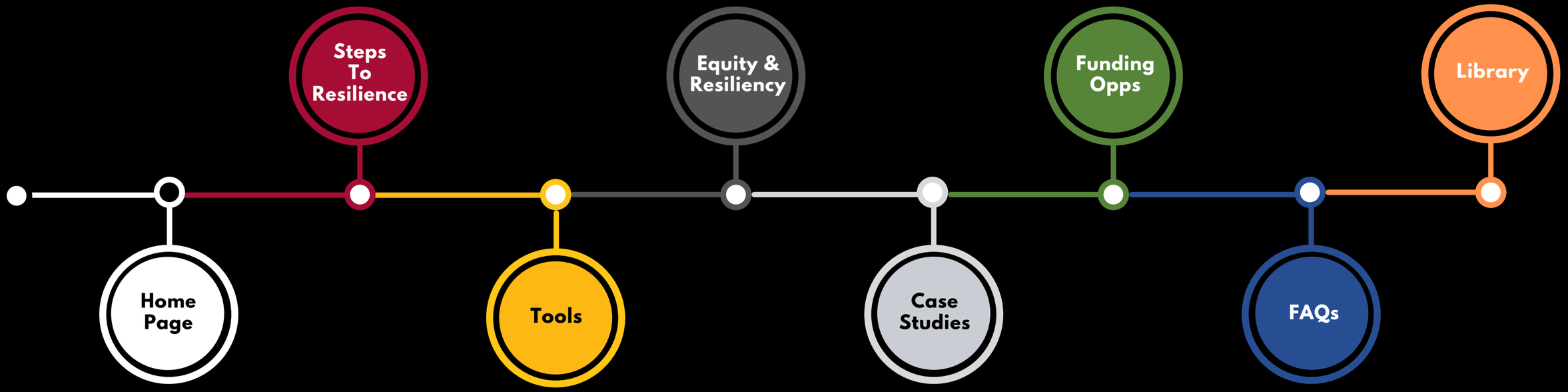
How is it Utilized by MTA?

The ARToolbox identifies:

- "Vulnerable" assets (very high and high risk) per mode/division
- Why each asset is vulnerable (e.g., sea level rise)
- Potential adaptation/resiliency measures
- Data/background information required for grant applications
- Next steps



ARToolbox Elements



MTA's Adaptation and Resiliency Toolbox (ARToolbox)

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Tools

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Adaptation & Resiliency Toolbox

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Resiliency Planning Tools

MDOT MTA's Resiliency Planning Tools assist with understanding climate-related risks and vulnerabilities and help guide planners, engineers, designers, and modes/divisions to harden assets and build resistance to a changing climate. Browse available tools below.

Asset Navigation Tool

Provides an overview of identified vulnerable assets per mode/division, why each asset is vulnerable (e.g., sea level rise), potential adaptation/ resiliency measures, and next steps to begin the process of incorporating these measures into the project planning process.

> View Tool

Resiliency Search Tool

Resiliency solutions are potential adaptation and resiliency measures that may be implemented for a specific project - either stand alone or part of an overall improvement for an asset. View solutions by long-,mid-,and short-term timeframes.

> View Tool

Vulnerability Mapping Tool

Interactive GIS application highlighting MDOT MTA assets with layers for various climate related data utilized for determining MDOT MTA's vulnerability risk.

> View Tool

Library

View a variety of resources related to resiliency planning efforts at MDOT MTA, including reports, documents, methodologies, and relevant external links for additional information.

> View Library

Funding Resources

Review potential grant funding sources to implement resiliency/adaptation measures, general information regarding the grant application process, and points of contact.

> View Funding Resources

Case Studies

Explore case studies to see a summary of projects that incorporated resiliency efforts under development or completed for MDOT MTA assets.

> View Case Studies

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Asset Navigation Tool

1 Select Your Mode/Division

MARC

MARC assets classified as vulnerable include stations and track. Learn more about specific locations identified as "very high" risk and potential adaptation measures that may be incorporated into the project planning process.

> View Tool

Metro

Various Metro assets have been identified as "very high" and "high" risk including stations, track, various facilities, and bridge structures. Learn more about potential adaptation measures for the identified Metro assets.

> View Tool

Light Rail

Light Rail assets classified as "very high" and "high" risk include stations, track, facilities, and bridge structures. Explore potential adaptation measures that may be employed to harden vulnerable Light Rail assets.

> View Tool

Freight

MDOT MTA owned freight lines/track, facilities, and bridge structures have been identified as "very high" and "high" risk. Learn more about potential adaptation measures for these freight assets.

> View Tool

Bus - P&R

Bus stops have not been evaluated as part of the vulnerability assessment. However, several park and ride facilities have been classified as "very high" or "high" risk. Explore potential adaptation measures for park and ride facilities.

> View Tool

MTA's Adaptation and Resiliency Toolbox (ARToolbox)

Tools

Metro

Background

The Metro SubwayLink (Metro) system consists of 14 stations over 15.5 miles from Owings Mills through downtown Baltimore to Johns Hopkins Hospital. The system connects suburban Baltimore County communities to large governmental and private employers, major sports complexes and universities.

Learn More About Metro Operations

Vulnerable Metro Assets

LET'S GET STARTED

Metro assets have been classified as being low, moderate, **"high"** or **"very high"** risk for vulnerability to climate change, as shown in MDOT MTA's Mapping Tool. For additional information on how assets were classified, refer to "Vulnerability Criteria." Vulnerable Metro assets include stations, facilities, tracks, and bridges. **Click on any asset below to go directly to potential adaptation measures that may be employed at Metro's assets with high/very high vulnerability.**

Stations | Facilities | Track | Bridges

MDOT INTRANET ACCESS ONLY

Metro Stations

	Vulnerability	Long-Term Solutions	Mid-Term Solutions	Short-Term Solutions
Old Court Station	High Risk • 100-Yr Floodplain • 500-Yr Floodplain	Backup Power/ Generator Supply Critical Asset Relocation	Electrical Equipment Protection Stormwater Management	Stormwater Maintenance Clearing/Grading
Shot Tower (East)	Very High Risk • Sea Level Rise • Hurricanes • 100-Yr Floodplain • 500-Yr Floodplain	Elevating Assets Dry Floodproofing Slope Stabilization/ Erosion Control • Gabion Mattress • Gabion Basket Retaining Walls • Sheet Pile Retaining Walls	Electrical Equipment Protection Stairwell Flex-Gate	Stormwater Maintenance
Shot Tower (West)	Very High Risk • Sea Level Rise • Hurricanes • 100-Yr Floodplain			

Success Story

Metro Tunnel Pumping/
Dewatering Study and 30% Design

Success Story

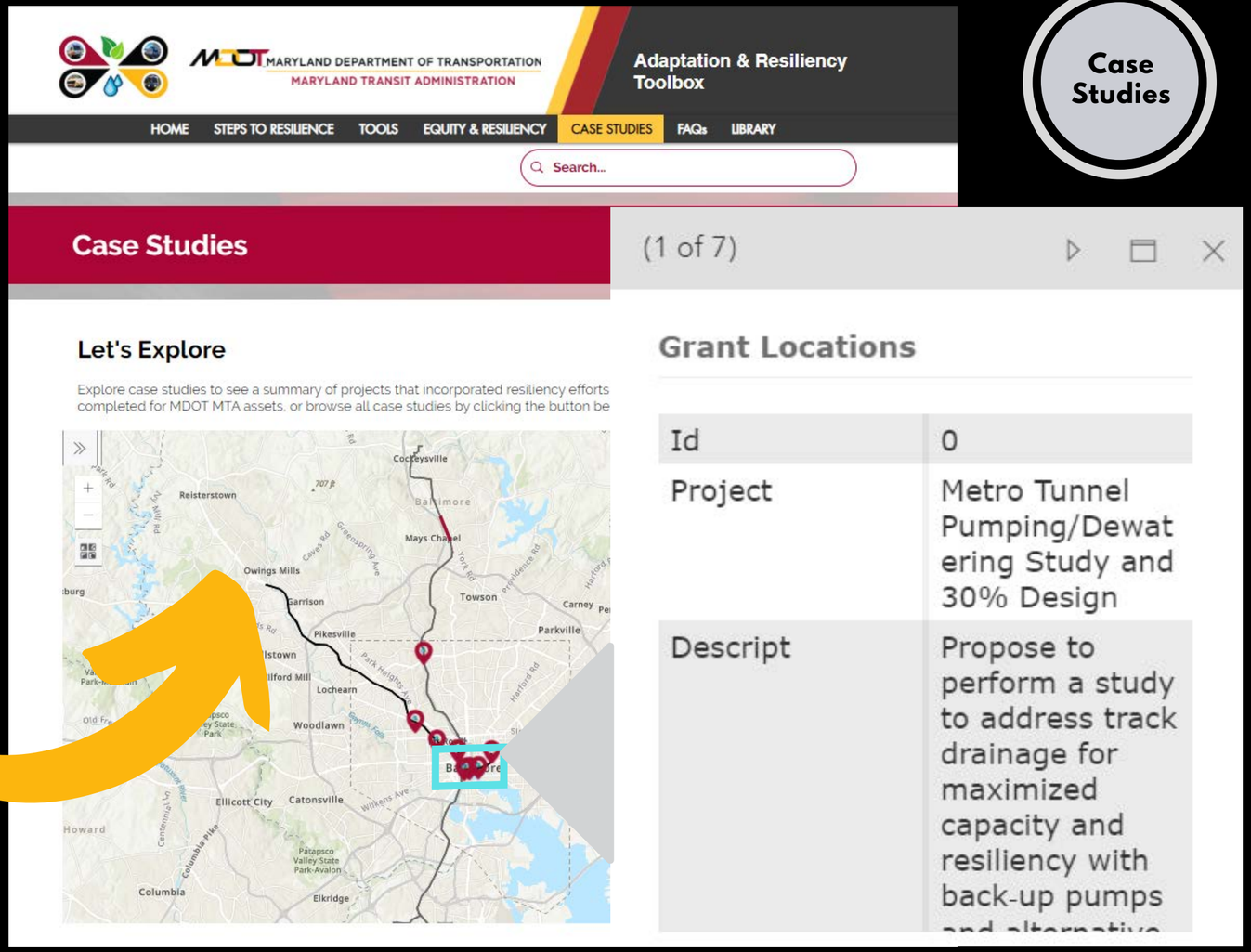
March 20, 2023

Russell J. Strickland
Governor's Authorized Representative
Maryland Department of Emergency Management
5401 Rue Saint Lo Drive
Reisterstown, MD 21136

Re: Application Approval Letter
FEMA-4491-DR-MD-0007
MTA Metro Tunnel Pumping Dewatering Study and 30% Design
Advanced Assistance

Governor's Authorized Representative Strickland:

I am pleased to inform you that the **MTA Metro Tunnel Pumping Dewatering Study and 30% Design, submitted under FEMA-4491-DR-MD-0007**, has been approved. This application is for an Advance Assistance study of the track drainage in Baltimore City to inform and develop 30% designs of the pumping stations.



Case Studies

Challenges

- Competitive State Funding
- Internal Agency Buy-In
- Evolving Science, Evolving ARToolbox

Thank you!

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