Integrating INVEST into Project-Level Planning Tools - STAQS 2019 Sustainability and Resilience Session

August 21, 2019

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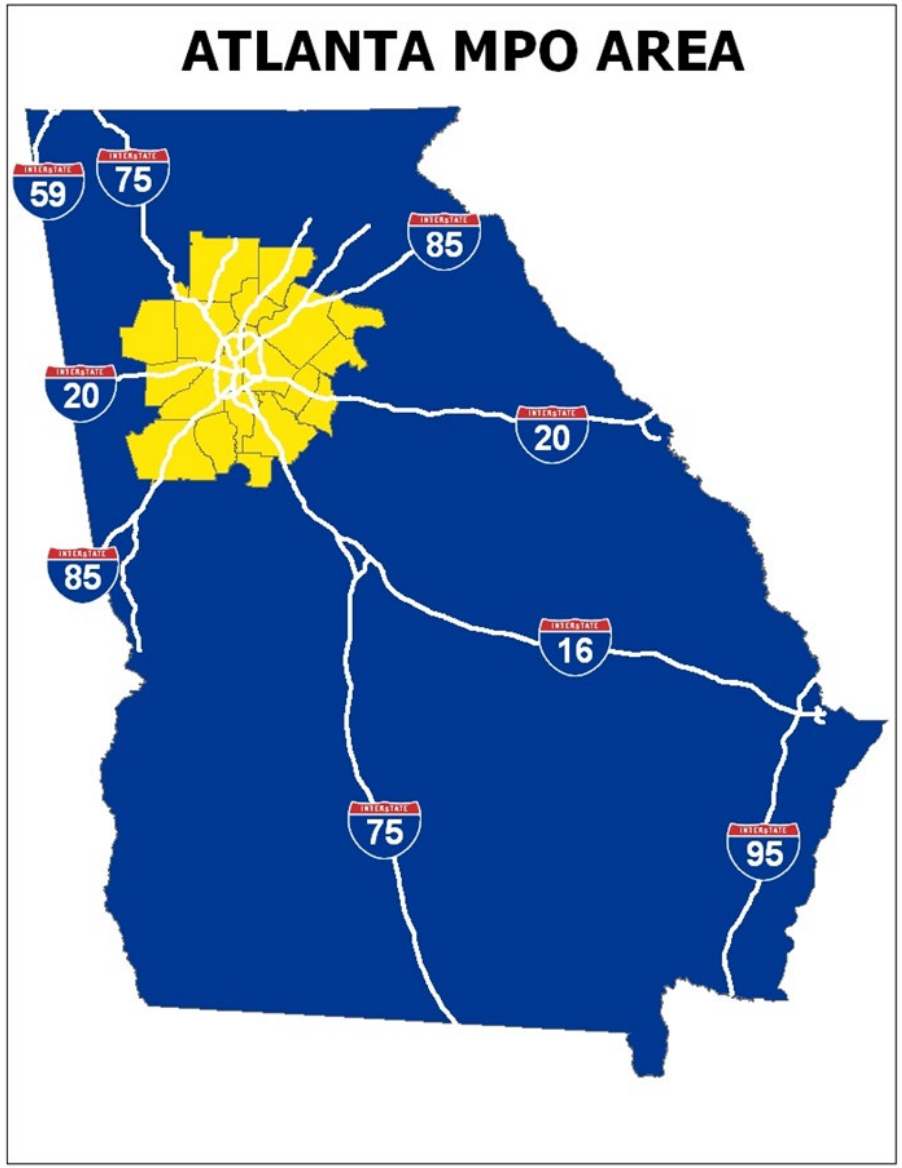
Metro Atlanta Facts

- 5,900 square miles (20 counties/100+ municipalities)
- 3.6 million jobs (2019)
- 5.7 million in population (2019)
- 42% white, 58% non-white by 2040
- 170 million daily vehicle miles traveled
- 250,000 daily transit boardings



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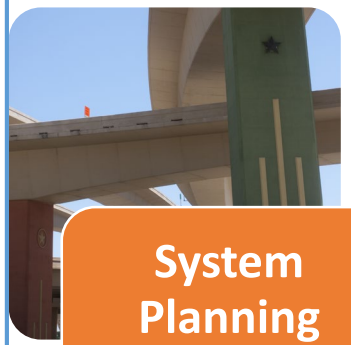
INVEST (Infrastructure Voluntary Evaluation Sustainability Tool)

The Sustainability Triple Bottom Line



System Planning (State or Regional) & Processes

Project Development

Operations & Maintenance

https://www.sustainablehighways.org/

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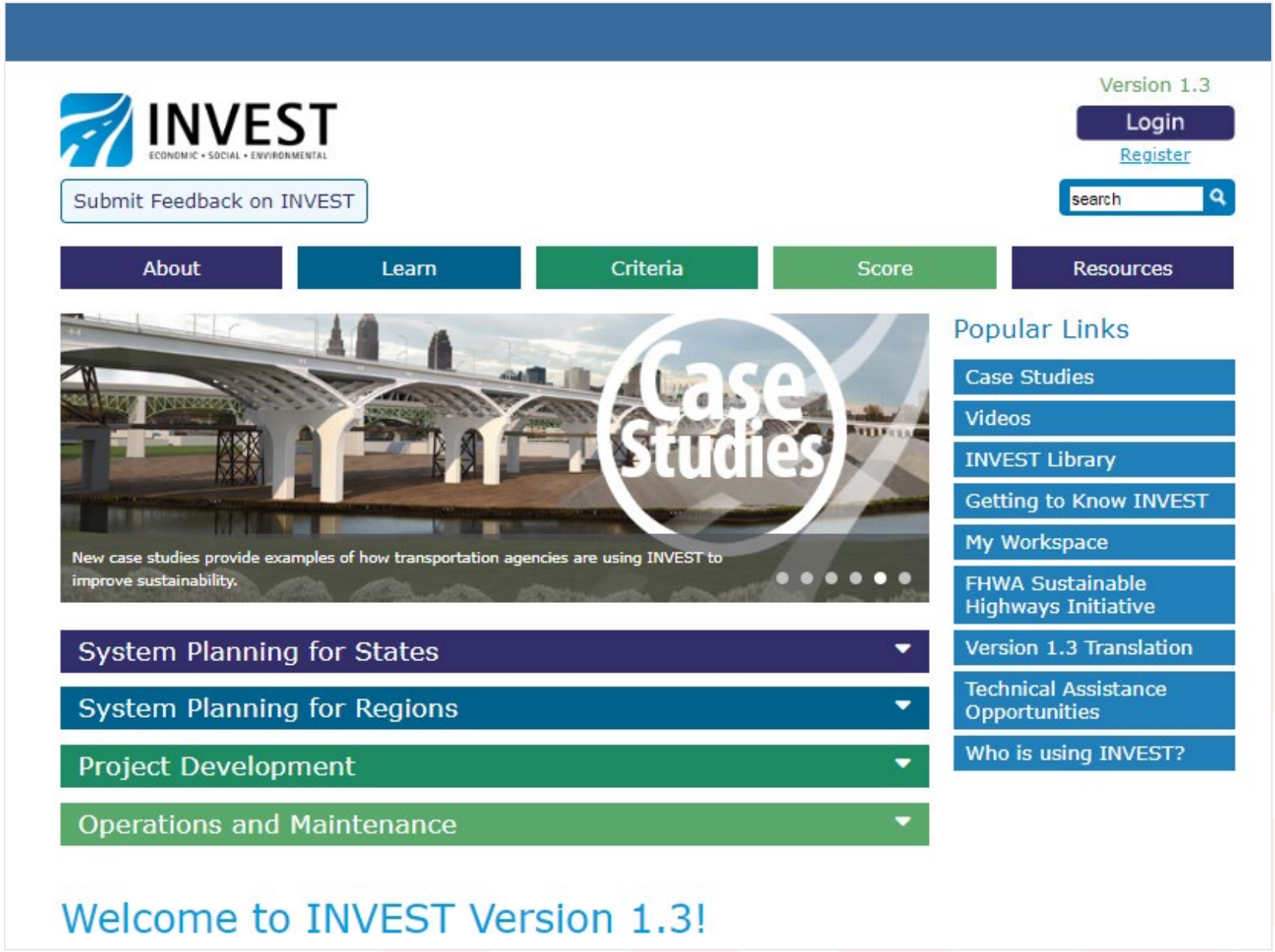
How to Access INVEST

- Web-based
- Criteria is provided
- Scoring is web-based (need a login)
- Prior case studies provided
- FHWA – Office of Natural Environment (HQ)



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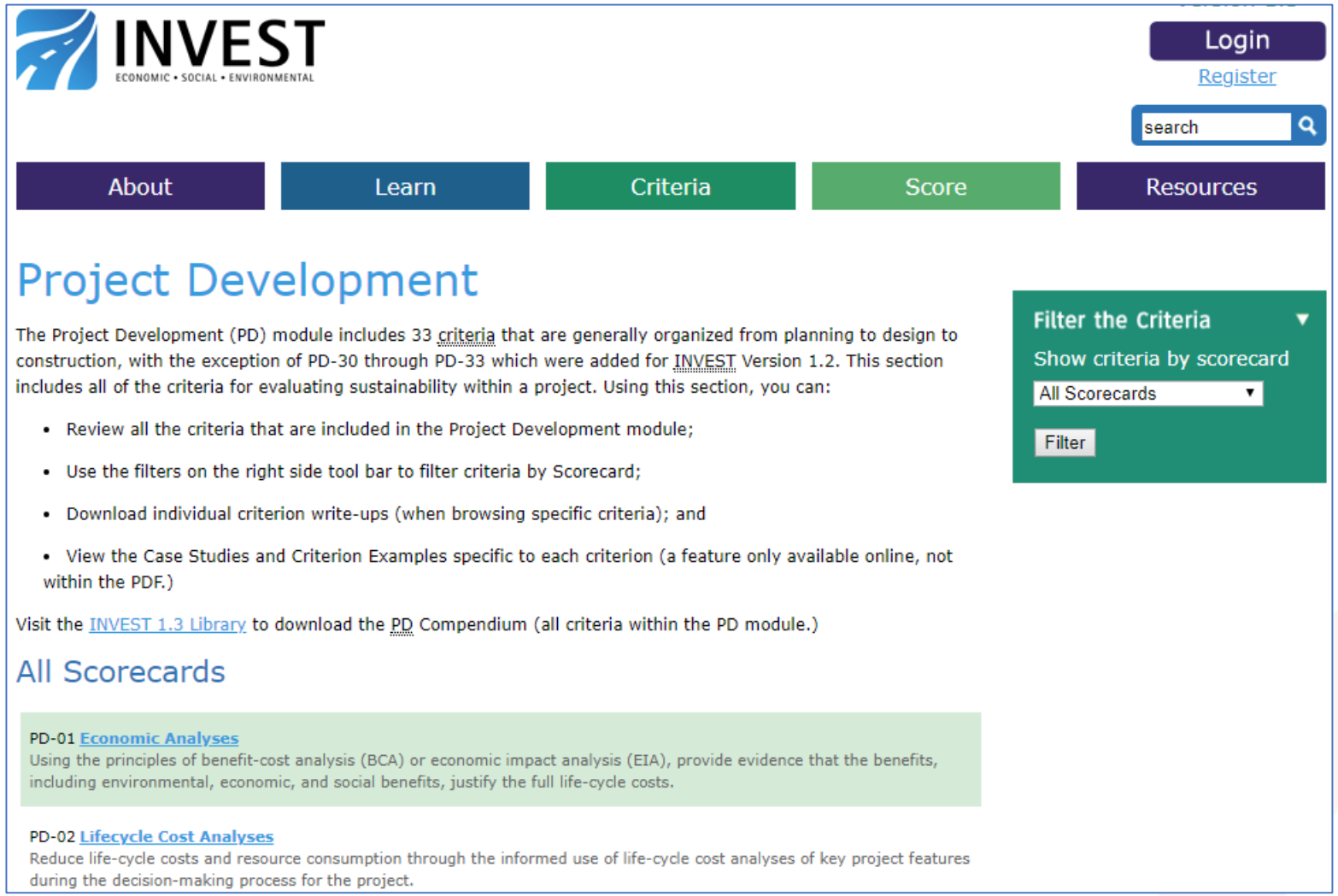
Scope of ARC Implementation

INVEST Round 3 Implementation Assistance



1. Project Development Module (v. 1.2)
2. $50,000 federal grant assistance, plus ARC in-kind match
3. Completed in Summer 2019

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Economic Analysis	Life Cycle Cost Analyses	Context Sensitive Project Development	Highway and Traffic Safety	Educational Outreach	Tracking Environmental Commitments	Habitat Restoration
Stormwater Quality and Flow Control	Ecological Connectivity	Pedestrian Facilities	Bicycle Facilities	Transit	Freight	ITS for System OperationsHistoric, Archaeological, and Cultural Preservation
Historic, Archaeological, and Cultural Preservation	Scenic, Natural, or Recreational Qualities	Energy Efficiency	Site Vegetation, Maintenance and Irrigation	Reduce, Reuse and Repurpose Materials	Recycle Materials	Earthwork Balance
Long-Life Pavement	Reduced Energy and Emissions in Pavement Materials	Permeable Pavement	Construction Environmental Training	Construction Equipment Emission Reduction	Construction Noise Mitigation	Construction Quality Control Plan
	Construction Waste Management	Low Impact Development	Infrastructure Resiliency Planning and Design	Light Pollution	Noise Abatement	

- ✓ Organized from planning, to design, to construction, to efficiency
- ✓ Use each criterion to evaluate sustainability within an individual project
- ✓ FHWA provides scoring methodology for each criterion

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Implementation Objectives

- Non-traditional approach: explore the 33 PD criteria and integrate into pre-existing ARC decision support tools (where feasible)

- Goal was to enhance the ARC tools to account for sustainability as comprehensively as INVEST

- ARC tools evaluated:
  - Project Environmental Screening Tool
  - Project Risk Assessment Tool (deliverability)
  - TIP Solicitation Application – Project Deliverability Assessment
  - TIP Project Evaluation Framework (performance based)

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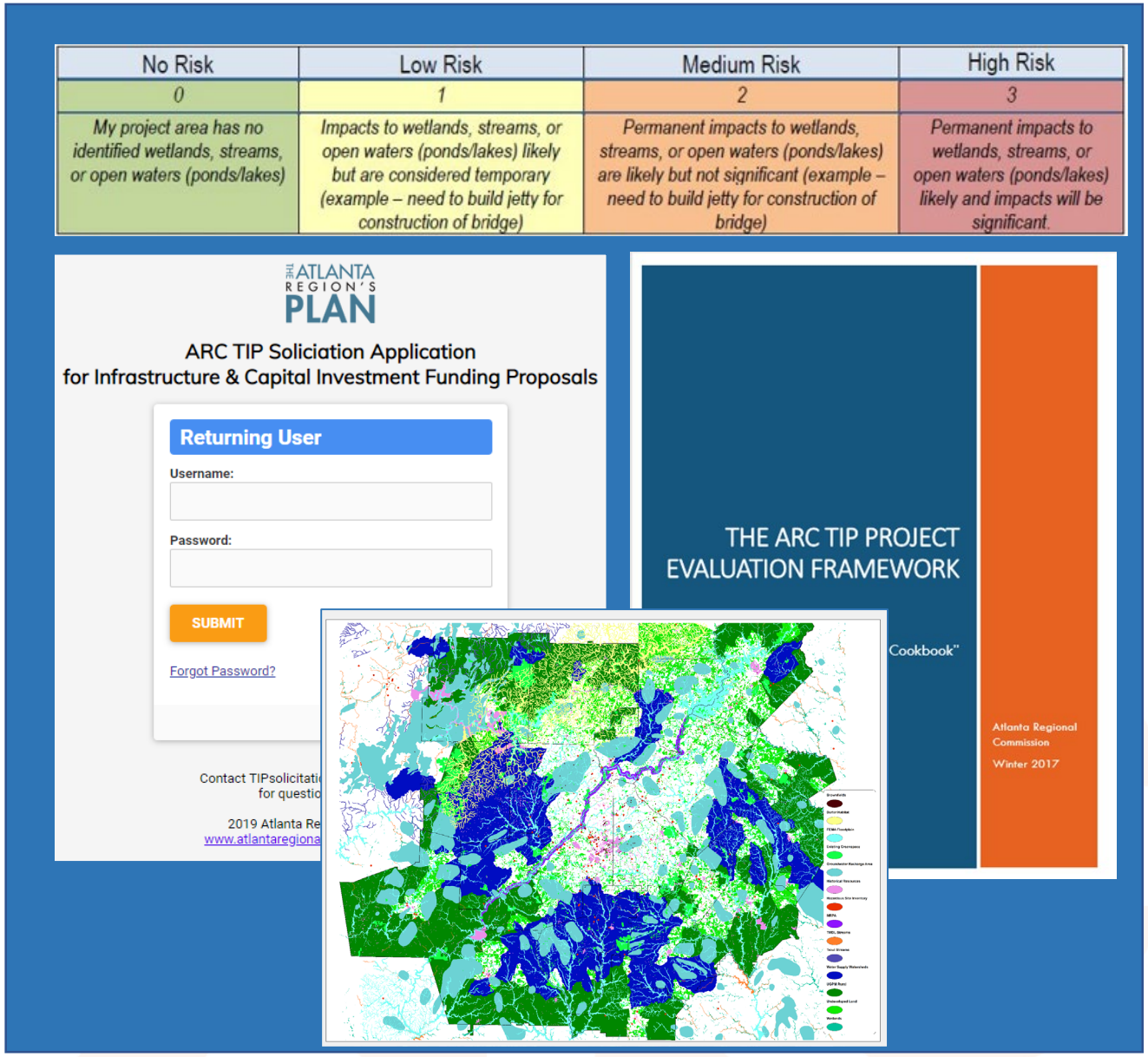
Work Performed & Analysis

Key Activity

1. Compared ARC tool criteria with INVEST PD criteria to identify consistencies and gaps
2. Documented matched and unmatched criteria, to assess whether PD criteria could be added to any of the four tools
3. Explained why certain INVEST PD criteria could not be incorporated
4. Recommended new INVEST PD criteria
5. Investigated incorporating social equity/environmental justice



No Risk	Low Risk	Medium Risk	High Risk
0	1	2	3
My project area has no identified wetlands, streams, or open waters (ponds/lakes)	Impacts to wetlands, streams, or open waters (ponds/lakes) likely but are considered temporary (example – need to build jetty for construction of bridge)	Permanent impacts to wetlands, streams, or open waters (ponds/lakes) are likely but not significant (example – need to build jetty for construction of bridge)	Permanent impacts to wetlands, streams, or open waters (ponds/lakes) likely and impacts will be significant.

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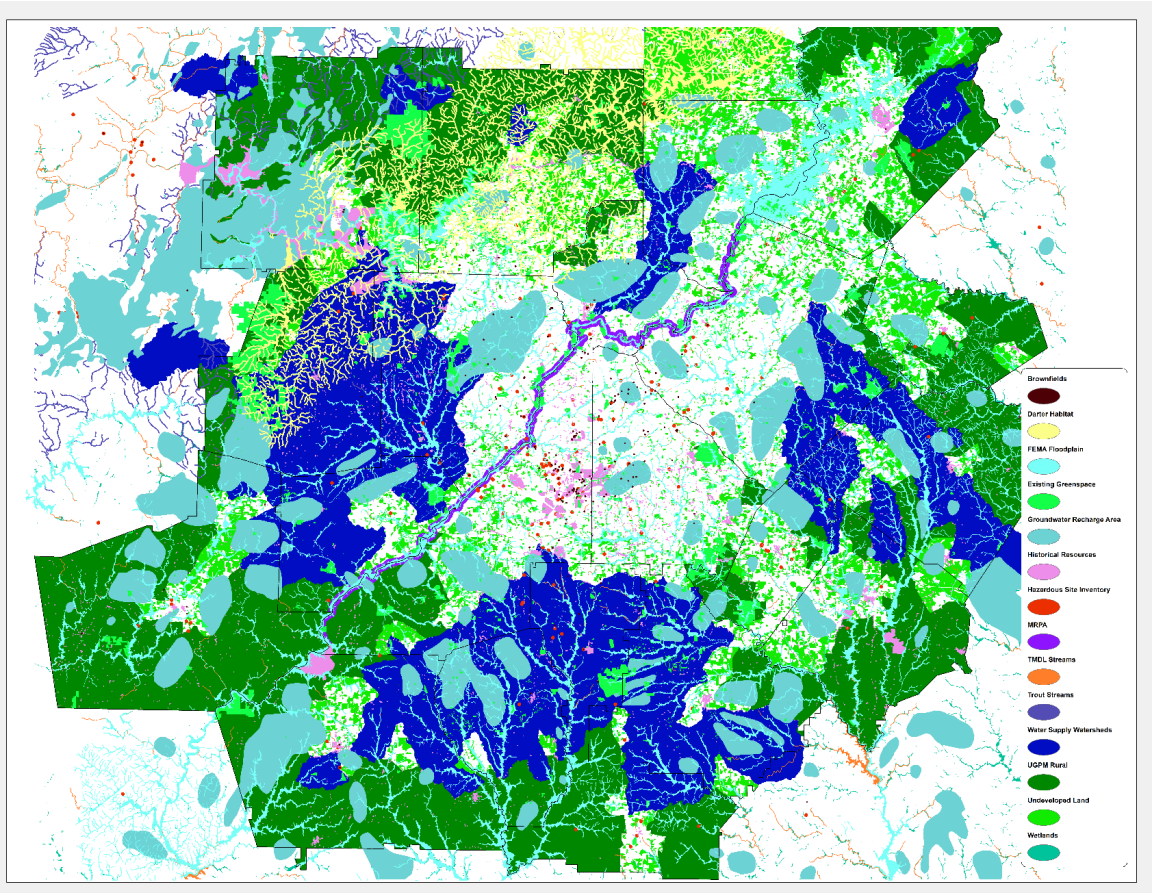
ARC Project Environmental Screening Tool Description



- GIS overlay, featuring ESRI ModelBuilder Extension
- Calculates acreages for each RTP/TIP project for each data layer (within 100-ft. buffer)

15 Data Layers:

1. Brownfields
2. Groundwater Recharge Areas
3. FEMA Floodplains
4. Small Water Supply Watersheds
5. Historical Resources
6. Wetlands
7. Hazardous Sites
8. Rural Areas
9. Metro River Protection Act Corridor
10. Undeveloped Land
11. Impaired Streams
12. Darter Habitat
13. Trout Streams
14. Endangered Species Habitat
15. Existing Greenspace

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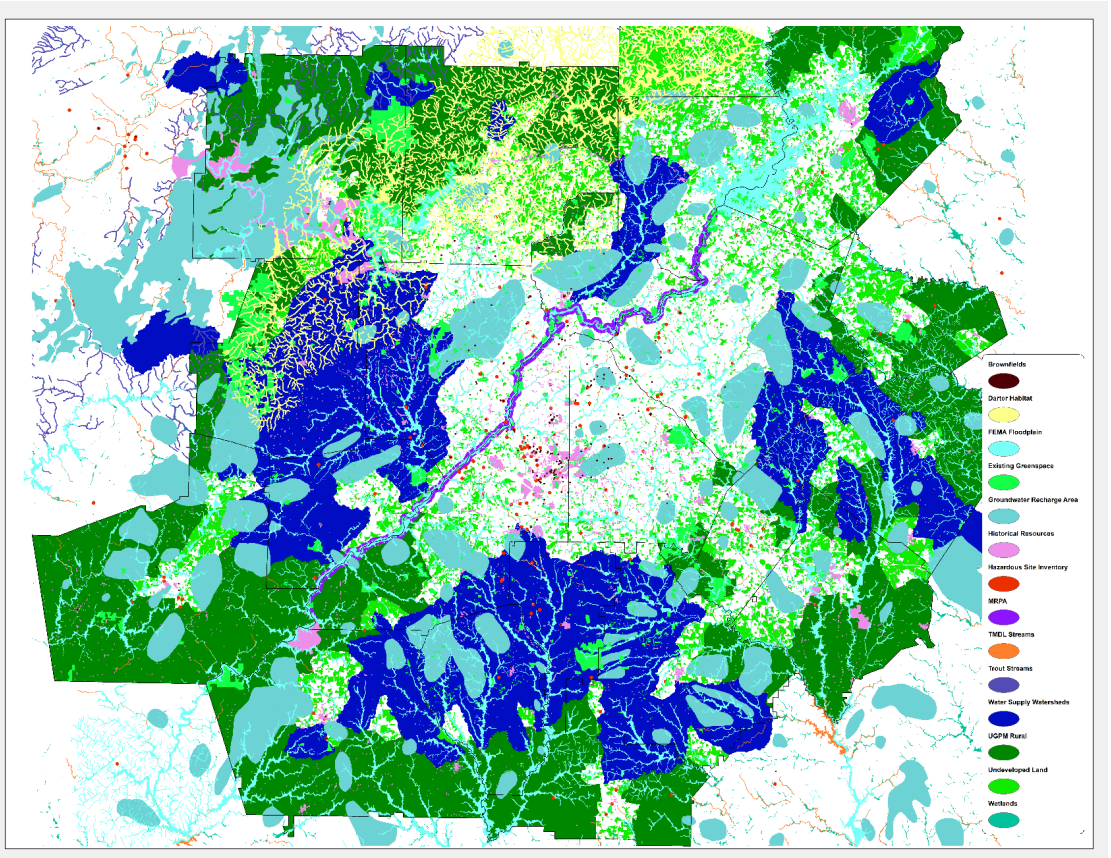

Findings

- 22 of 33 PD criteria did not match PEST criteria
- 11 of 33 PD criteria matched (1-to-many)
- 2 of 15 PEST criteria did not match PD criteria
- PEST scores are not actionable enough for local project stakeholders
- Incorporating a sustainability analytical function within a screening tool was challenging because the two purposes are incompatible from a GIS-overlay and scoring perspective
- Inadequate sustainability data in the region

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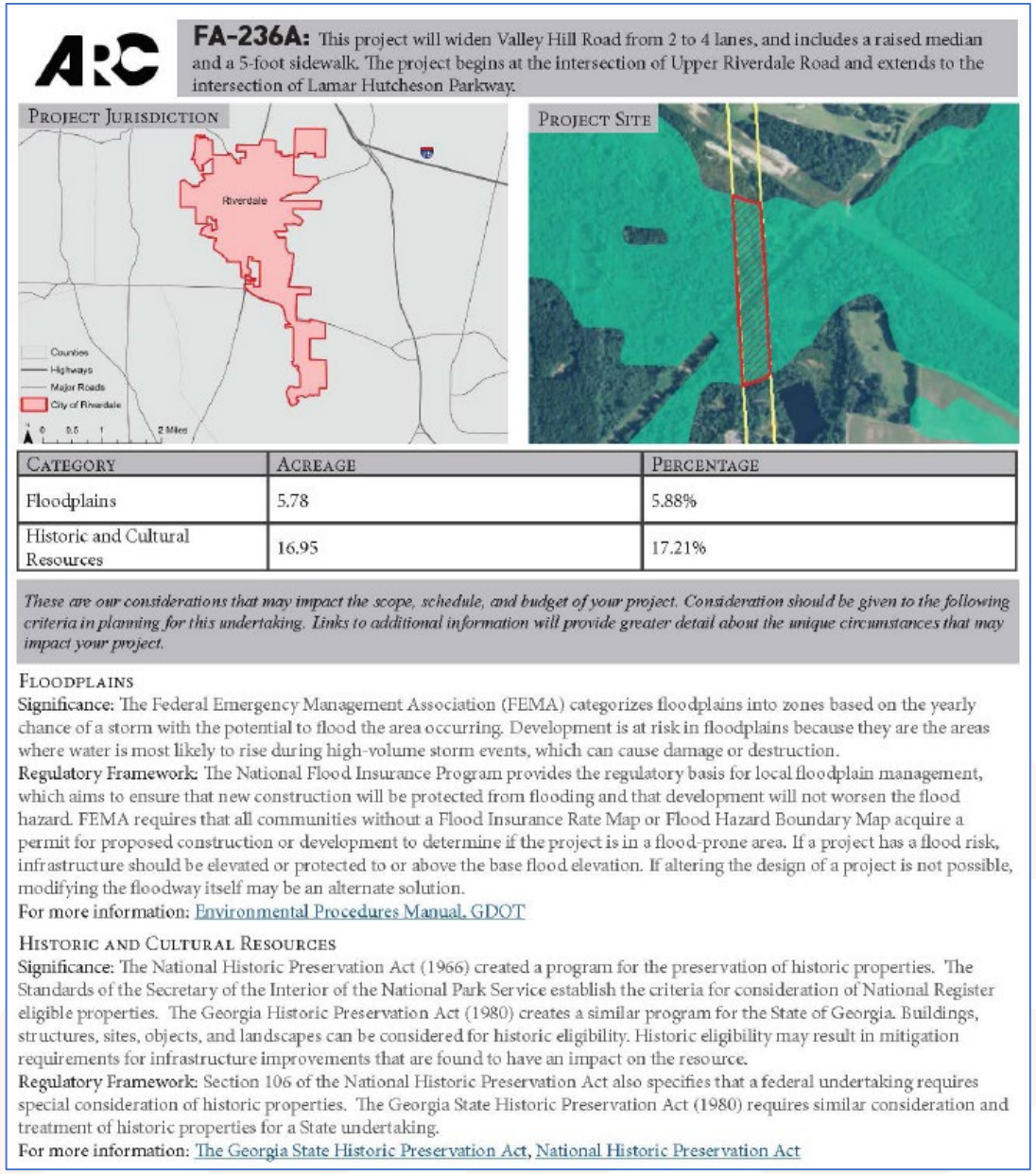
ARC Project Environmental Screening Tool Recommendations

- Consider a wider range of datasets for screening
- Improve data quality for better screening
- Provide a project "fact sheet" that makes the screening output more actionable and tangible to local sponsors (no scores)
  - Significance
  - Regulatory Framework
  - Information Resources and Contact Info
- Separate sustainability analysis from a screening analysis because the output is somewhat incompatible



ARC

FA-236A: This project will widen Valley Hill Road from 2 to 4 lanes, and includes a raised median and a 5-foot sidewalk. The project begins at the intersection of Upper Riverdale Road and extends to the intersection of Lamar Hutcheson Parkway.

Project Jurisdiction

Project Site

Category	Acreage	Percentage
Floodplains	5.78	5.88%
Historic and Cultural Resources	16.95	17.21%

These are our considerations that may impact the scope, schedule, and budget of your project. Consideration should be given to the following criteria in planning for this undertaking. Links to additional information will provide greater detail about the unique circumstances that may impact your project.

Floodplains

Significance: The Federal Emergency Management Association (FEMA) categorizes floodplains into zones based on the yearly chance of a storm with the potential to flood the area occurring. Development is at risk in floodplains because they are the areas where water is most likely to rise during high-volume storm events, which can cause damage or destruction.

Regulatory Framework: The National Flood Insurance Program provides the regulatory basis for local floodplain management, which aims to ensure that new construction will be protected from flooding and that development will not worsen the flood hazard. FEMA requires that all communities without a Flood Insurance Rate Map or Flood Hazard Boundary Map acquire a permit for proposed construction or development to determine if the project is in a flood-prone area. If a project has a flood risk, infrastructure should be elevated or protected to or above the base flood elevation. If altering the design of a project is not possible, modifying the floodway itself may be an alternate solution.

For more information: Environmental Procedures Manual, GDOT

Historic and Cultural Resources

Significance: The National Historic Preservation Act (1966) created a program for the preservation of historic properties. The Standards of the Secretary of the Interior of the National Park Service establish the criteria for consideration of National Register eligible properties. The Georgia Historic Preservation Act (1980) creates a similar program for the State of Georgia. Buildings, structures, sites, objects, and landscapes can be considered for historic eligibility. Historic eligibility may result in mitigation requirements for infrastructure improvements that are found to have an impact on the resource.

Regulatory Framework: Section 106 of the National Historic Preservation Act also specifies that a federal undertaking requires special consideration of historic properties. The Georgia State Historic Preservation Act (1980) requires similar consideration and treatment of historic properties for a State undertaking.

For more information: The Georgia State Historic Preservation Act, National Historic Preservation Act

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Project Risk Assessment Tool Description & Comparison

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Description

- Developed just prior to applying to INVEST
- Designed to assess delivery risk under Federal PDP
- Investigated possible consolidation of the RAT with the PEST, to also include appropriate PD criteria
- Converts responses to a risk score

Findings

- Risk scores are too arbitrary
- Difficult to compare deliverability risks with sustainability benefits

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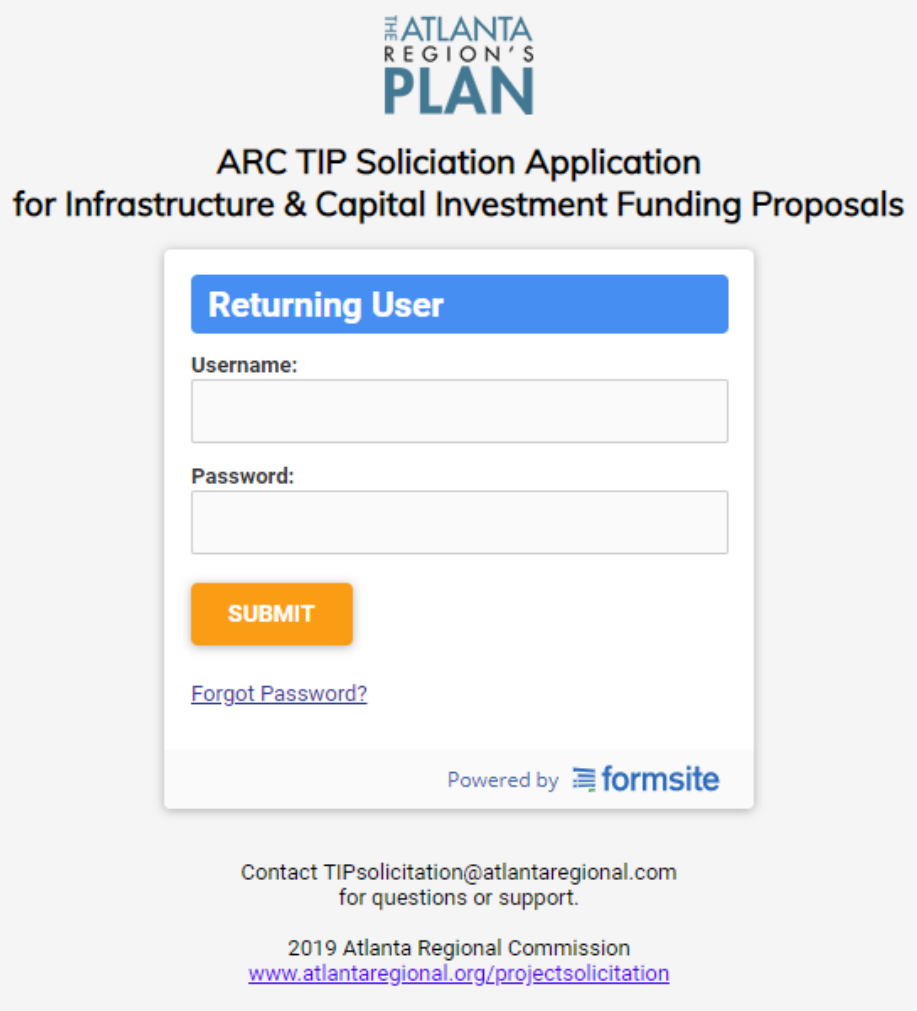
Project Deliverability Assessment Tool Description & Comparison



Description

- This is not a true tool, but a questionnaire used to gauge project readiness
- Sections:
  - Environmental Screening
  - Project Design Information
  - Budget and Schedule

Findings

- The PDA criteria do not match any of the INVEST PD criteria
- PDA is not meant to address the merits of a project (i.e., sustainability)

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TIP Project Evaluation Framework Description & Comparison

- Performance based prioritization process
- Matches appropriate performance criteria with each possible project type
- Includes cultural & environmental resource component
- Does not include sustainability criteria; and is non-prescriptive
- Conducting an FHWA-funded Resiliency Planning Study to identify needs and recommended strategies

Atlanta Region's Plan Goals	Performance Criteria	Project Types								
		Bicycle	Pedestrian	Trail	Roadway Asset Management &	Roadway Expansion	Roadway Transportation Systems Management &	Transit Expansion	Transit Asset Management and System	Misc. Emissions Related Projects
World Class Infrastructure	Mobility & Congestion	x	x	x	x	x	x	x	x	
	Reliability					x	x	x		
	Network Connectivity	x	x	x	x	x	x	x		
	Multimodal				x					
	Asset Mgt. & Resiliency				x				x	
Healthy Livable Communities	Safety	x	x	x	x	x	x		x	
	Air Quality & Climate Change	x	x	x		x	x	x	x[5]	x
	Cultural & Environmental Resources	x	x	x	x	x	x	x	x	
	Social Equity	x	x	x	x	x	x	x	x	
	Land Use Compatibility	x	x	x				x		
Competitive Economy	Goods Movement				x	x	x			
	Employment Accessibility	x	x	x	x	x	x	x	x	

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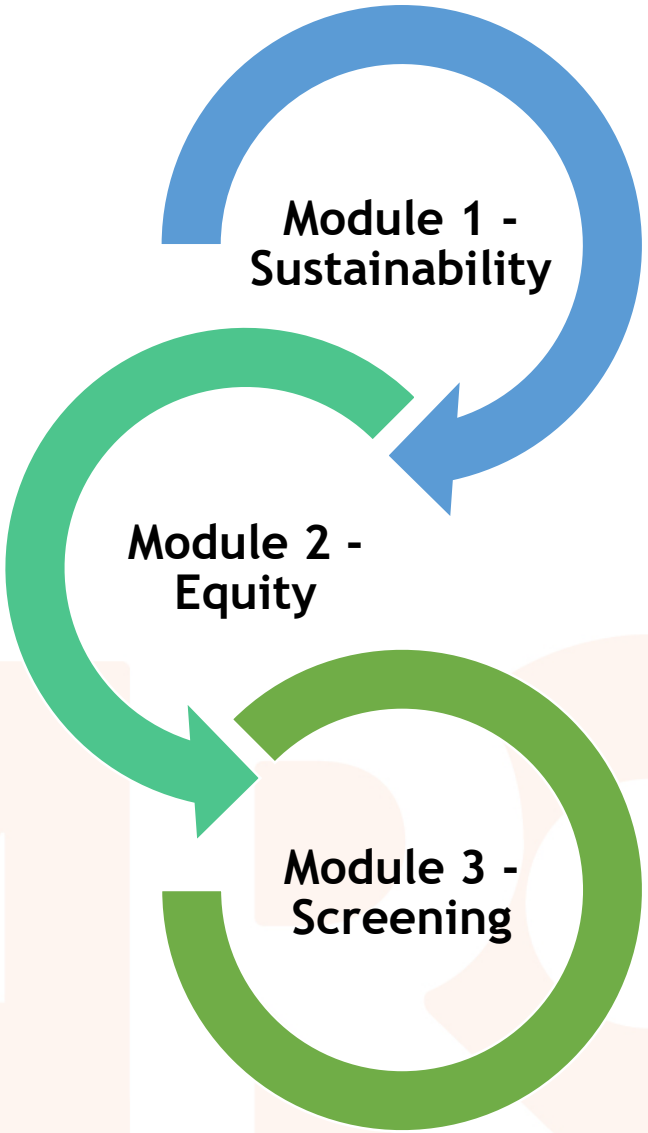
General Observations and Recommendations

- **Develop a modular analytical process to help streamline the associated data, analytical methodology, and output**

- **Difficult to apply all 33 PD criteria to every RTP/TIP project type**
  - Not all PD criteria are relevant to certain project types (e.g., light pollution for a transit bus route expansion)
  - Certain PD criteria are mostly applicable to activity outside of the planning process (e.g., construction erosion, or recycling)

- **Difficulty in conflating a screening/assessment analysis with a sustainability analysis (sustainability is too context sensitive)**

- **PD criteria do not account for environmental justice or hazardous waste/brownfield mitigation**



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Next Steps for ARC

- Work with FHWA to finalize and post case study on INVEST website
- Populate Screening Tool Fact Sheets for each RTP/TIP project (improve automation and make it web-based)
- Develop an Equity analytical module
- Develop a Sustainability analytical module and include sustainability criteria in TIP Project Evaluation Framework
- Conduct INVEST System Planning for Regions (SPR) scoring on the updated RTP (2020)
- Work with Georgia DOT to establish a centralized data management/stewardship process

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ARC Contact Info

Amy Goodwin - agoodwin@atlantaregional.org
Marquitrice Mangham - mmangham@atlantaregional.org
Allison Duncan – aduncan@atlantaregional.org
Kofi Wakhisi – kwakhisi@atlantaregional.org

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