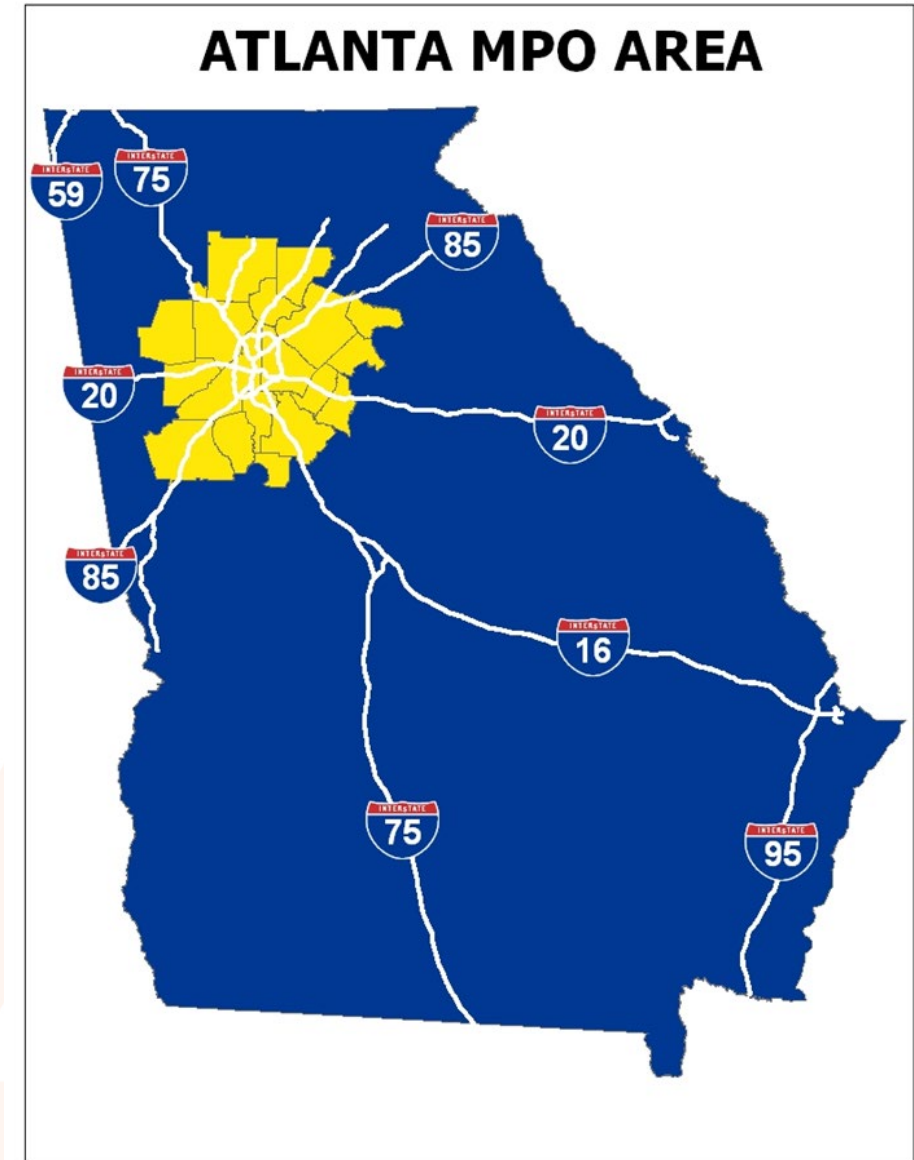




## Integrating INVEST into Project-Level Planning Tools - STAQS 2019 Sustainability and Resilience Session

# 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

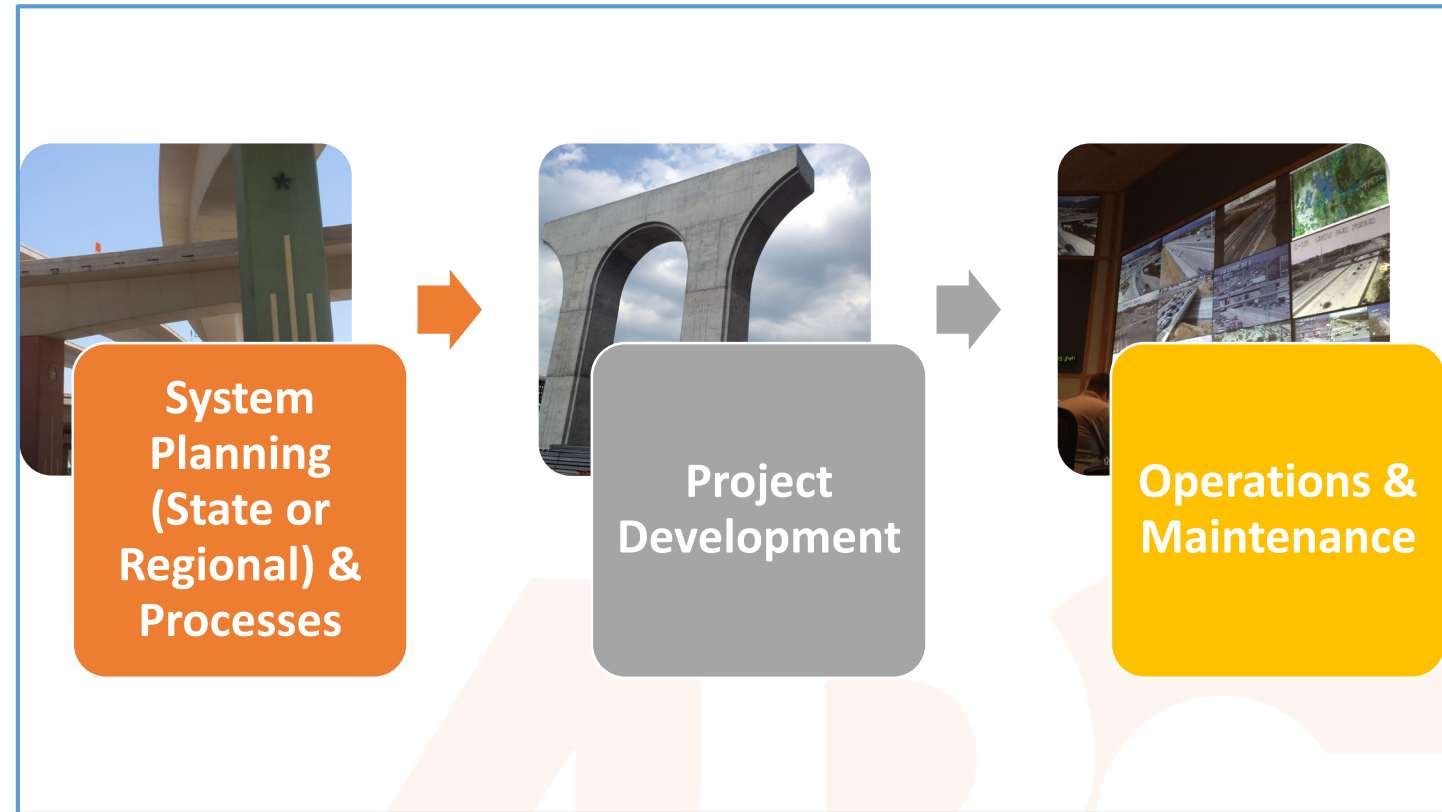




# INVEST (Infrastructure Voluntary Evaluation Sustainability Tool)



The Sustainability Triple Bottom Line



<https://www.sustainablehighways.org/>

# 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)

The screenshot displays the INVEST website interface. At the top left is the INVEST logo with the tagline "ECONOMIC • SOCIAL • ENVIRONMENTAL" and a "Submit Feedback on INVEST" button. The top right shows "Version 1.3", "Login", "Register", and a search bar. A horizontal navigation bar contains "About", "Learn", "Criteria", "Score", and "Resources". Below this is a "Case Studies" banner featuring a bridge image and the text "New case studies provide examples of how transportation agencies are using INVEST to improve sustainability." To the right of the banner is a "Popular Links" section with buttons for "Case Studies", "Videos", "INVEST Library", "Getting to Know INVEST", "My Workspace", "FHWA Sustainable Highways Initiative", "Version 1.3 Translation", "Technical Assistance Opportunities", and "Who is using INVEST?". Below the banner is a vertical menu with expandable items: "System Planning for States", "System Planning for Regions", "Project Development", and "Operations and Maintenance". At the bottom, a blue banner reads "Welcome to INVEST Version 1.3!".

Version 1.3

Login

Register

search

Submit Feedback on INVEST

About Learn Criteria Score Resources

**Case Studies**

New case studies provide examples of how transportation agencies are using INVEST to improve sustainability.

Popular Links

- Case Studies
- Videos
- INVEST Library
- Getting to Know INVEST
- My Workspace
- FHWA Sustainable Highways Initiative
- Version 1.3 Translation
- Technical Assistance Opportunities
- Who is using INVEST?

System Planning for States

System Planning for Regions

Project Development

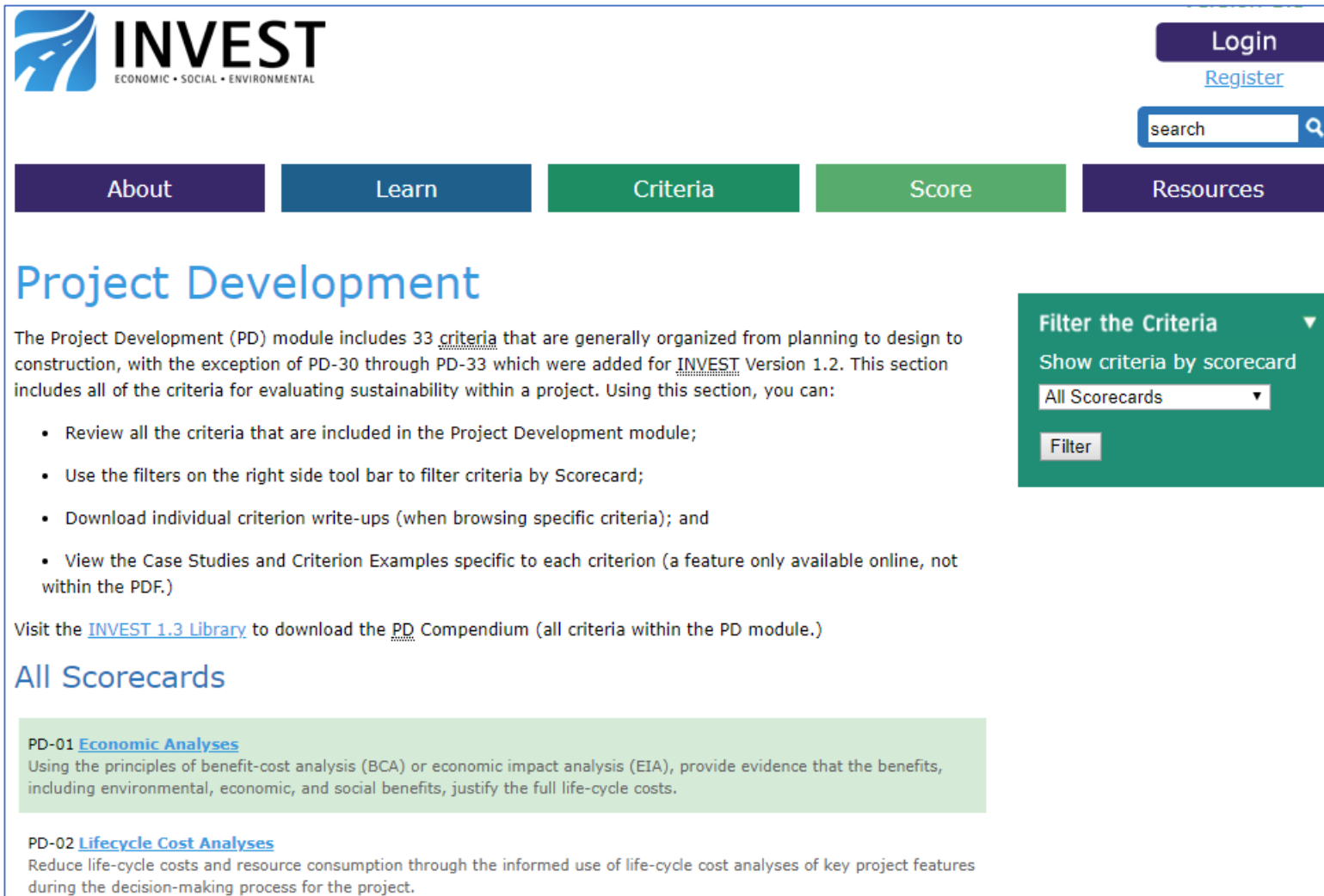
Operations and Maintenance

Welcome to INVEST Version 1.3!

# Scope of ARC Implementation



# INVEST Round 3 Implementation Assistance



The screenshot shows the INVEST Round 3 Implementation Assistance website. At the top left is the INVEST logo with the tagline "ECONOMIC • SOCIAL • ENVIRONMENTAL". To the right are "Login" and "Register" buttons, and a search bar. Below these are navigation tabs: "About", "Learn", "Criteria", "Score", and "Resources". The "Criteria" tab is selected. The main heading is "Project Development". Below it, a paragraph explains that the Project Development (PD) module includes 33 criteria organized from planning to design to construction, with an exception for PD-30 through PD-33 added in Version 1.2. A bulleted list follows: Review all criteria; Use filters on the right side tool bar to filter criteria by Scorecard; Download individual criterion write-ups; and View Case Studies and Criterion Examples. To the right of the text is a "Filter the Criteria" sidebar with a dropdown set to "All Scorecards" and a "Filter" button. Below the list, a link directs users to the "INVEST 1.3 Library" to download the "PD Compendium". The "All Scorecards" section lists two criteria: PD-01 Economic Analyses and PD-02 Lifecycle Cost Analyses, each with a brief description.

**INVEST**  
ECONOMIC • SOCIAL • ENVIRONMENTAL

Login  
Register

search

About Learn **Criteria** Score Resources

## Project Development

The Project Development (PD) module includes 33 criteria that are generally organized from planning to design to construction, with the exception of PD-30 through PD-33 which were added for INVEST Version 1.2. This section includes all of the criteria for evaluating sustainability within a project. Using this section, you can:

- Review all the criteria that are included in the Project Development module;
- Use the filters on the right side tool bar to filter criteria by Scorecard;
- Download individual criterion write-ups (when browsing specific criteria); and
- View the Case Studies and Criterion Examples specific to each criterion (a feature only available online, not within the PDF.)

Visit the [INVEST 1.3 Library](#) to download the PD Compendium (all criteria within the PD module.)

### All Scorecards

PD-01 [Economic Analyses](#)  
Using the principles of benefit-cost analysis (BCA) or economic impact analysis (EIA), provide evidence that the benefits, including environmental, economic, and social benefits, justify the full life-cycle costs.

PD-02 [Lifecycle Cost Analyses](#)  
Reduce life-cycle costs and resource consumption through the informed use of life-cycle cost analyses of key project features during the decision-making process for the project.

**Filter the Criteria**  
Show criteria by scorecard  
All Scorecards  
Filter

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

|   |  |                                       |   |   |                                    |  |
|---|--|---------------------------------------|---|---|------------------------------------|--|
| 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

# 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)



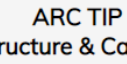
# Work Performed & Analysis



## 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. |



# ARC TIP Solicitation Application for Infrastructure & Capital Investment Funding Proposals

Returning User

Username:

Password:

SUBMIT

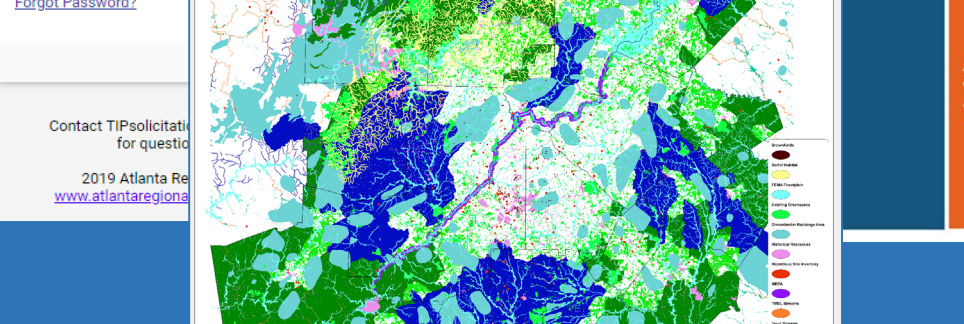
[Forgot Password?](#)

## THE ARC TIP PROJECT EVALUATION FRAMEWORK

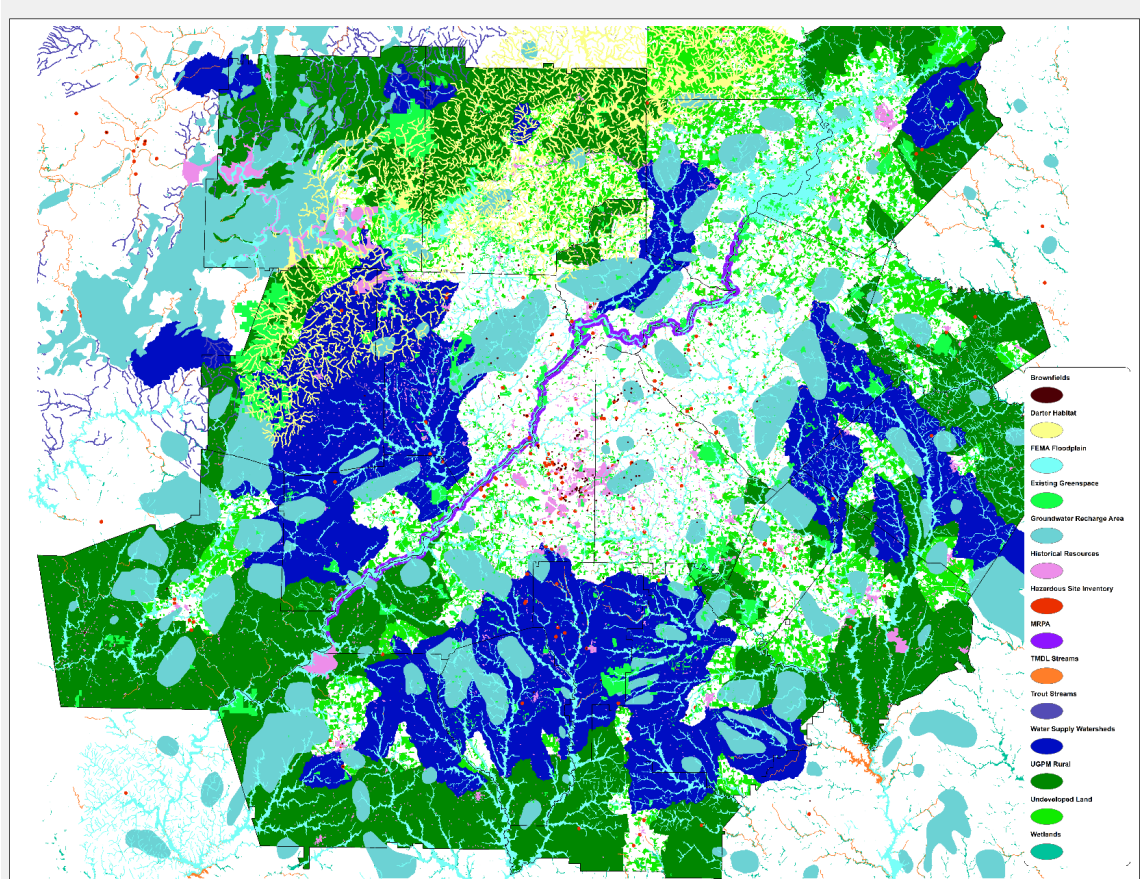
[Cookbook"](#)

Contact TIPsolicitation  
for question

2019 Atlanta Regional  
[www.atlantaregional.com](http://www.atlantaregional.com)



# ARC Project Environmental Screening Tool Description



## 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

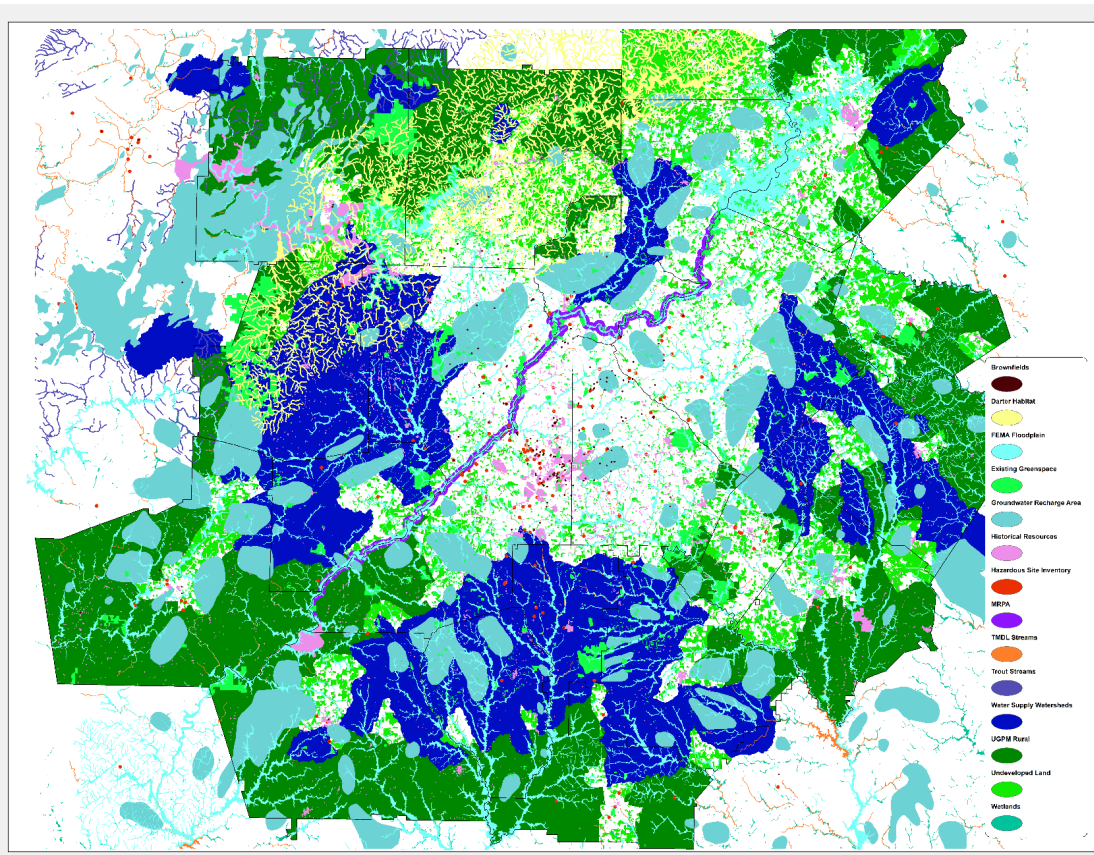
- GIS overlay, featuring ESRI ModelBuilder Extension
- Calculates acreages for each RTP/TIP project for each data layer (within 100-ft. buffer)



# ARC Project Environmental Screening Tool Description

## 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

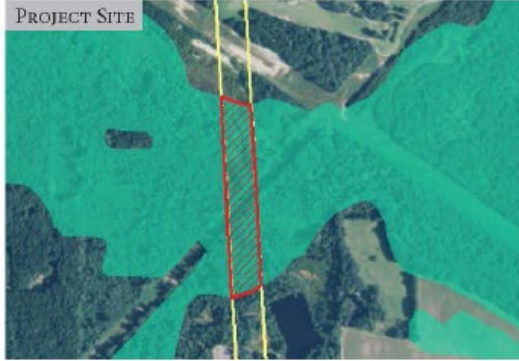
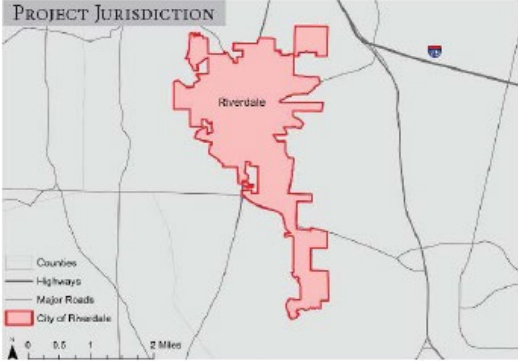




# ARC Project Environmental Screening Tool Recommendations

- 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

**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.



| 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](#)

# Project Risk Assessment Tool Description & Comparison

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

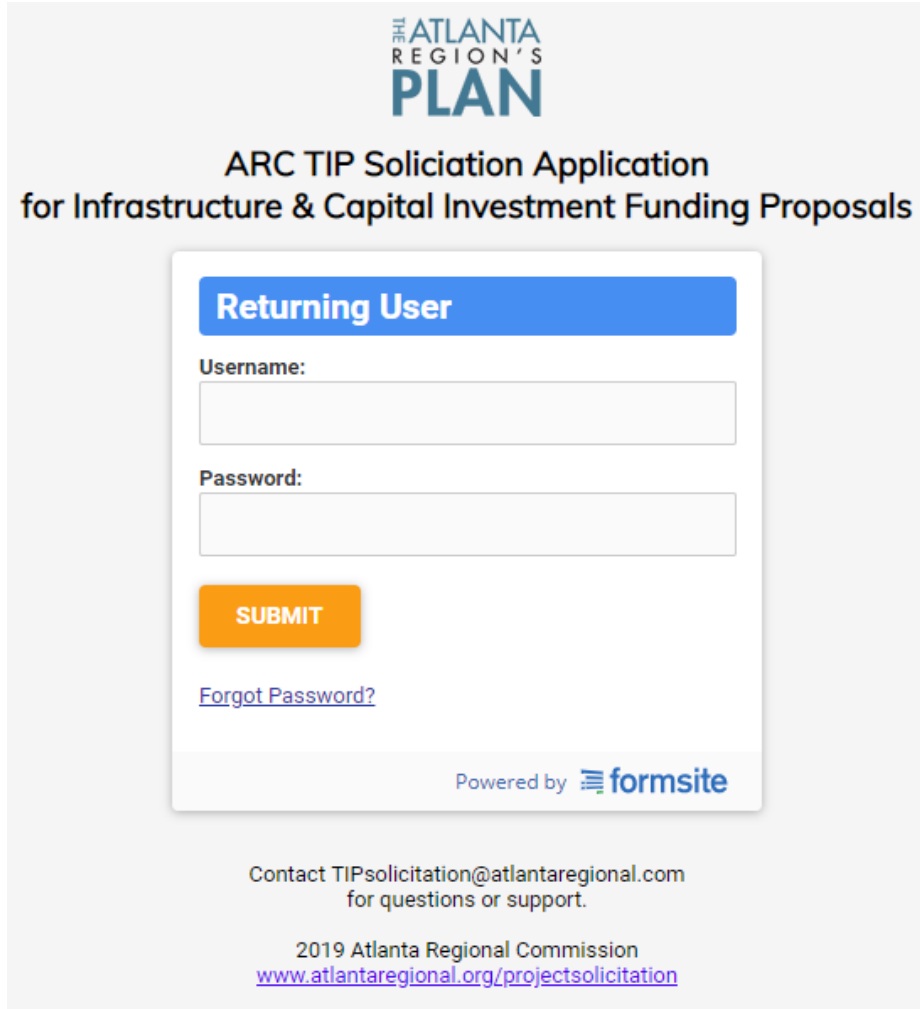
## Description

- 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

# Project Deliverability Assessment Tool Description & Comparison



The screenshot shows the login interface for the ARC TIP Solicitation Application. At the top is the logo for 'THE ATLANTA REGION'S PLAN'. Below it, the text reads 'ARC TIP Solicitation Application for Infrastructure & Capital Investment Funding Proposals'. The login form has a blue header 'Returning User'. It includes fields for 'Username:' and 'Password:', each with a text input box. Below the password field is an orange 'SUBMIT' button. A link for 'Forgot Password?' is located below the submit button. At the bottom of the form, it says 'Powered by formsite'. Below the form, contact information is provided: 'Contact TIPsolicitation@atlantaregional.com for questions or support.' and '2019 Atlanta Regional Commission' with the website 'www.atlantaregional.org/projectsolicitation'.

## 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)

# TIP Project Evaluation Framework Description & Comparison

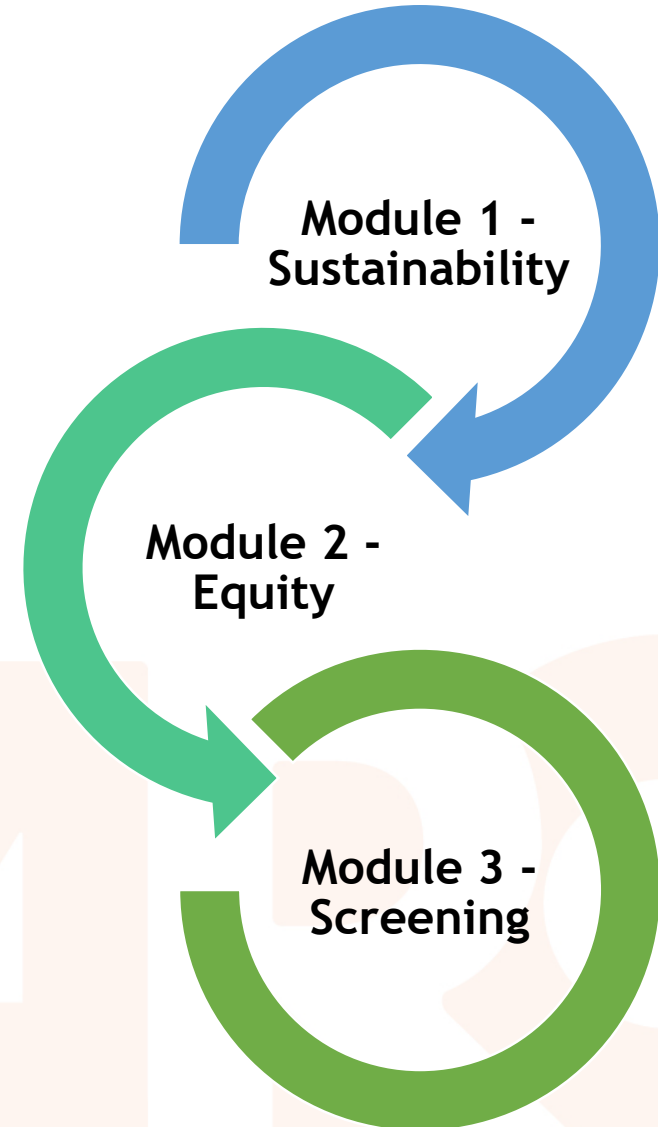
- Performance based prioritization process
- Matches appropriate performance criteria with each possible project type
- Includes cultural & environmental resource component
- Does not include sustainability criteria; and is non-prescriptive
- Conducting an FHWA-funded Resiliency Planning Study to identify 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 <sup>5</sup>                      | 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                                   |                                  |



# 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



# 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



# ARC Contact Info

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