Unless otherwise specified, all photos are by ARC.
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Executive Summary
In 2017, the Federal Highway Administration (FHWA) allocated funding to the Atlanta Regional Commission (ARC) to implement INVEST Version 1.2 (Infrastructure Voluntary Evaluation Sustainability Tool), and gather lessons learned. The general objective of this scope of work was to conduct a thorough comparison and analysis of different ARC decision support tools with the INVEST Project Development (PD) module criteria. Each of the four ARC tools included in the comparison were originally planned to analyze or assess environmental impacts, potential scope of anticipated National Environmental Policy Act (NEPA) review, and project deliverability of proposed transportation projects. Because the objectives of the implementation were to compare the ARC tools with the INVEST PD module, and then enhance them with INVEST criteria, ARC did not use the INVEST tool to score or rank projects. Instead, ARC conducted a detailed analysis on the comparison between INVEST PD criteria and the four planning tools. This Final Report provides a discussion of how ARC incorporated the INVEST PD criteria, either through its existing tools, and through its planning process. The ARC tools that were evaluated are the:

- Project Environmental Screening Tool;
- Project Risk Assessment Tool;
- Project Deliverability Assessment; and
- Transportation Improvement Program (TIP) Project Evaluation Framework Project

**Project Environmental Screening Tool**

The Project Environmental Screening Tool is a geospatial analytical tool used by ARC to identify potential environmental impact to critical resources, as well as to identify regional strategies for promoting avoidance, mitigation, and sustainability. The tool calculates both total acreages of impact for each layer and percent of the total project buffer area impacting each layer.

**Project Risk Assessment Tool**

The Risk Assessment Tool was developed in 2016 and allows project sponsors to score their proposed projects against multiple risk factors that are attributed to project delivery delay and the overall regional implementation rate. The output of the Risk Assessment Tool is a composite score indicating the potential risk of delivering the project through the Federal-aid program, as currently defined and scoped, on time and within the anticipated budget.

**Project Deliverability Assessment**

The Project Deliverability Assessment is a component of ARC’s overall TIP project prioritization framework and project selection process for Federal funding that is allocated to ARC. It is intended to identify possible barriers in delivery and enable ARC, Georgia Department of Transportation (GDOT), and sponsors to determine a realistic schedule and cost, or in some cases, how possible impacts can be avoided prior to the project being added to the TIP.

**TIP Project Evaluation Framework**

The TIP Performance Evaluation Framework (adopted in 2017, subsequent to the INVEST grant allocation) is a performance-based project evaluation process, developed with the assistance of a second Strategic Highway Research Program (SHRP2) Implementation Assistance Program grant. One of the performance criterion involves measuring the potential impact of a project on cultural and environmental resources.

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1 ARC is the Metropolitan Area Planning and Development Commission (a.k.a. "Regional Commission") (O.C.G.A. § 50-8-80) for the 10-county Atlanta region, under state law, and the Federally-designated Metropolitan Planning Organization (MPO) by the Federal Aid Highway Act of 1962, for the 20-county Atlanta region.
The results of the comparison between the ARC decision support tools and the INVEST PD criteria were unexpected. Instead of enhancing ARC’s existing tools with INVEST criteria, ARC ended up recommending a new tool that would evaluate sustainability as an independent analysis, but within a larger, modulated series of analyses. The reason for this is mostly attributed to the difference in how the criteria for INVEST PD module are used versus how ARC prefers to use sustainability criteria. ARC is recommending “front loading” its planning process with a more robust sustainability analysis, by using sustainability criteria to actually identify sustainable projects, as opposed to using criteria to evaluate projects once they have already been identified.

ARC determined that by placing an emphasis on sustainability at the beginning of the planning process, the criteria (underlying data) would be used to prioritize areas throughout the region where sustainable projects are most beneficial, and what types of sustainability components are most appropriate, depending on the existing environmental, social, or economic conditions of the corresponding location. Once there is a clearer idea of what types of transportation projects can be most sustainable, given the existing conditions, then the environmental screening process, can be evaluated with much more confidence and with enough guidance for local government sponsors to rely upon. While sustainability will not be the sole factor for identifying projects, conducting this up-front assessment will create opportunity for sponsors to consider sustainability components, such as those consistent with the INVEST PD criteria, as early as possible in the planning process. Applying the INVEST PD criteria from this perspective, avoids the potential misappropriation of the criteria, in circumstances where they may not be appropriate or context sensitive.
The INVEST PD module was an invaluable resource for providing direction on improving the tools that ARC uses to encourage sustainable project delivery. The full report outlines a series of recommendations and next steps for our use of the program as we continue to improve our process. A general overview of key lessons learned and recommended follow up steps is included below:

- Many of the INVEST PD criteria are appropriate for only certain project types/scores. Applying the criteria to all projects across the board could result in inconsistencies.

- Project type-related criteria are distinct project types that address distinct transportation improvement outcomes. Projects will rarely include multiple purposes, and therefore will not score well.

- Some of the INVEST PD criteria may not be suited to be addressed at the project level. Rather they are more systematic or comprehensive in nature, and could be addressed from a different lens or perspective.

- Equity criteria needs to be included in the PD module, or perhaps as an element of Educational Outreach.

- Qualitative direction is of greater value to local planning stakeholders, than quantitative analysis.

- Certain INVEST PD criteria should be considered for inclusion into a programmatic agreement with GDOT and the FHWA-Georgia Division.

- Robust data stewardship will be critical to attaining the successful outcomes for sustainable project delivery.
Objectives
Objectives

The motivation behind INVEST Version 1.2 implementation culminated from a few major ARC initiatives that were already underway, as well as the use of several decision-support tools, that did not appropriately incorporate sustainability. ARC’s INVEST implementation scope of work was non-traditional. Specifically, the goal of the application was not to evaluate or score a specific plan or project. Rather, to explore how to integrate the INVEST Project Development (PD) module criteria into any one or more of the pre-existing ARC decision-support tools briefly described below. Because the objective was to compare the tools, it was unsuitable to conduct any INVEST scoring. This implementation was undertaken by an interdisciplinary team of ARC staff and was guided by feedback from Environmental Consultation stakeholders. This process is described in more detail on page 16.

Below is a brief summary of the major initiatives and support tools that prompted ARC to explore the use of the INVEST tool.

Major Initiatives Underway

The Atlanta Region’s Plan

ARC is responsible for developing and updating The Atlanta Region’s Plan (TARP)\(^1\), a long-range blueprint that details the investments that will be made over the next 25 years to ensure metro Atlanta’s future success and improve the region’s quality of life. The plan, developed with robust public input, aims to “Win the Future” by providing world-class infrastructure, building a competitive economy and ensuring the region is comprised of healthy, livable communities. The “Win the Future” mantra is embodied by the symbol shown in Figure O-1, which is an unmistakable facsimile of the infamous Sustainability Venn diagram.

The process for developing and updating TARP is holistic and interdisciplinary, which is critical towards assuring sustainable outcomes. TARP incorporates all the ARC’s planning areas – transportation, community development, water resources, aging and health services, and workforce development. The transportation component of TARP, the Regional Transportation Plan/Transportation Improvement Program (RTP/TIP) aims to: improve mobility by investing $85 billion towards developing and maintaining a world class infrastructure, including building a comprehensive transportation network, to support 8 million residents and 4 million jobs by the year 2040 (ARC, 2015)\(^2\).

\(^1\) The Atlanta Region’s Plan website: https://atlantaregionsplan.org/.
\(^2\) ARC regional estimates and forecasts website: http://atlantaregionsplan.org/population-employment-forecasts/.
In 2013, FHWA designated ARC as a Lead Adopter of the Eco-Logical Implementation Assistance Program (IAP). The initial goal of the IAP was to develop a regional ecological framework (REF) for a very specific sub-area close to Downtown Atlanta (Proctor Creek). During work relating to the IAP, ARC expanded the scope to the entire metropolitan planning area, with the following applications: (1) identify potential environmental impacts relative to the long range regional transportation plan (RTP); and (2) identify suitable programmatic mitigation strategies. Expansion of the REF scope included some refinement of pre-existing environmental resource data layers and the addition of several new resource layers. Three key lessons learned from the 2013 IAP process were:

1. The REF (a.k.a. joint environmental database) will need to go through several rounds of iteration in order to operate a reliable transportation project screening process;

2. A significant amount of additional REF environmental resource data needs to be collected, validated, and mapped; and

3. Identifying programmatic mitigation strategies that are pertinent to transportation investment and project delivery requires additional research, outreach, and overall planning.

ARC incorporated the improved REF, shown in Figure O-2, into the development of the ensuing metropolitan long-range transportation plan (The Atlanta Region’s Plan) by using it to screen and score potential impacts of RTP projects. The REF and corresponding screening of RTP projects was also the focal point of ARC’s Environmental Consultation Process required under the Federal planning regulations (23 CFR 450.316(b) & 23 CFR 450.324(g)).

Figure O-2 – 2016 Regional Ecological Framework (REF) Map
Project Delivery Task Force

Concurrent with the IAP effort, ARC established the Project Delivery Task Force (PDTF), whose mission is “To accelerate Metro-Atlanta transportation project delivery through improved collaboration between transportation planning and project delivery activities.” The PDTF collaborated for almost two years on a Project Delivery Action Plan³ to help find ways to reduce project delivery delay, including specific actions to improve the link between planning and NEPA. The INVEST grant allowed us to continue several recommendations of this process, including:

- Evaluation of the Risk Assessment Tool that accounts for potential environmental impacts and how they affect project scope, schedule, and budget;
- Develop a database of common mitigation strategies for routine environmental considerations; and
- Refine the Joint Environmental Database (a.k.a. the REF) and develop a corresponding environmental screening tool and requirements.

Decision-Support Tools

Project Environmental Screening Tool

Prior to receiving INVEST implementation assistance, ARC had already been designated as a Lead Adopter by the FHWA/SHRP2 Eco-Logical IAP, in which the Project Environmental Screening Tool (a.k.a. REF) had been developed. ARC developed the Project Environmental Screening Tool to function as a geospatial analytical tool to identify potential environmental impact to critical resources, as well as to identify regional strategies for promoting avoidance, mitigation, and sustainability. The tool calculates both total acreages of impact for each layer and percent of the total project buffer area impacting each layer. This tool is primarily used to support the environmental consultation process in conjunction with the RTP/TIP project evaluation and the environmental consultation process.

Project Risk Assessment Tool

The Risk Assessment Tool was designed for prospective project sponsors to use as an analytical checklist to determine the level of risk of delivering the proposed project scope through the Federal Plan Development Process (PDP), and to help determine whether the sponsor should pursue Federal funding versus non-Federal funding. The tool includes multiple questions that are categorized by certain risk factors. The output, which is based on the respondent's responses to the questions, is a composite score indicating the potential risk of delivering the project through the Federal-aid program, as currently defined and scoped, on time and within the anticipated budget. Higher scores communicate higher project risk which indicates to developers that the project warrants further risk analysis. Figure O-3 is a blank copy of the risk register, which lists all the risk factors that are currently accounted for in the assessment.

³ 2016 Project Delivery Task Force Action Plan
### Figure O-3 – Sample Project Risk Assessment Tool Risk Register

<table>
<thead>
<tr>
<th>Risk</th>
<th>Risk Description</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Federal Funding (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td>Local Sponsor Match (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td>Project Sponsor Experience (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td>Logical Termini (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#5</td>
<td>Historic Resources (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#6</td>
<td>USCOE Permitting (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#7</td>
<td>Stream Buffer Variances (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#8</td>
<td>Section 4(f) (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#9</td>
<td>Environmental Justice (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#10</td>
<td>Public Controversy (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#11</td>
<td>NEPA (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#12</td>
<td>ROW Displacements (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#13</td>
<td>ROW Condemnations (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#14</td>
<td>Federal &amp; State Properties (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#15</td>
<td>Utilities (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#16</td>
<td>Railroads (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#17</td>
<td>Major Transmission Lines (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#18</td>
<td>MS4 (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#19</td>
<td>Staging (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Risk Score =** 0.00
The Project Deliverability Assessment was integrated into the TIP solicitation application in 2015, which together serves as the project funding application for the Surface Transportation Block Grant Program sub-allocation for urbanized areas with over 200,000 population (known locally as STBG-Urban), the LCI set-aside (ARC sub-allocation of the STBG-Urban), Congestion Mitigation Air Quality (CMAQ) program, and the Transportation Alternatives Program (TAP). The Project Deliverability Assessment is a component of the overall project prioritization framework and project selection process for Federal funding that is allocated to ARC. It is intended to identify possible barriers in delivery and enable ARC, GDOT, and sponsors to determine a realistic schedule and cost, or in some cases, how possible impacts can be avoided prior to the project being added to the TIP.

This assessment is not a tool, rather a comprehensive list of questions that are included in the last section of ARC’s TIP project solicitation application. The questions included in this assessment are intended to assist ARC staff in identifying possible impediments or challenges to implementation of the project, in the context of the project sponsor’s proposed scope, schedule and budget. However, the deliverability assessment does not currently address the merits of the proposed project, especially in terms of sustainable outcomes. That type of assessment is conducted through a separate evaluation framework explained further below. Through the INVEST implementation, ARC determined that the INVEST PD criteria that could be incorporated into the TIP Project Deliverability Assessment generally were factors that are typically addressed after the project has been programmed in the TIP. Figure O-4 is a table showing the environmental/NEPA related criteria included in the Project Deliverability Assessment.
<table>
<thead>
<tr>
<th>Sub-Section</th>
<th>Subject Matter Questions</th>
</tr>
</thead>
</table>
| Environmental Screening and Impact Analysis | - Alternatives Considered  
- Relationship & Coordination with Adjacent Projects  
- Historic Resources  
- Archaeological Sites  
- Railroad Involvement and Impacts  
- Multi-Jurisdictional/Multi-Agency Coordination  
- Proposed NEPA Analysis (PCE, CE, EA, or EIS)  
- Anticipated Impacts to:  
  o Historic Resources  
  o Archeological Resources  
  o Section 4f Resources  
  o Hazardous Waste Sites or Underground Storage Tanks  
  o Wetlands and Impaired Streams  
  o Other Waterbodies  
  o Endangered Species  
  o Air ($PM_{2.5}$) and Noise Quality  
- Utilities  
- Public Input or Opposition |
| Project Design Information | - Concept Layout  
- Existing and Proposed Typical Cross-Section  
- Proposed Right-of-Way Dimensions  
- Easement Requirements (permanent, temporary, utility)  
- Potential Property Displacements  
- Logical Termini  
- Complete Streets Components  
- Proposed FHWA Design Exceptions or GDOT Variances |
| Budget and Schedule | - Budget by Implementation Phase (PE, ROW, UTL, CST)  
- Proposed Phase Fiscal Year  
- Proposed/Requested Federal Amount  
- Proposed Non-Federal Amount (State, local, private) |
| Supporting Documentation | Demonstration of Non-Federal Match Commitment |
ARC has a rich history of performance-driven planning and decision-making. The most recent demonstration of this was the use of SHRP2 Implementation Assistance to develop the TIP Performance Evaluation Framework in 2017. With the passage of the past two Federal transportation authorization bills, the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America’s Surface Transportation (FAST) Act, states and metropolitan planning organizations (MPOs) across the nation are putting additional emphasis on developing performance-driven project and program evaluation methods. To further ARC’s state-of-practice and help demonstrate progress towards meeting eventual state and Federal performance measures, ARC is migrating the TIP solicitation process towards a key decision point (KDP) framework.

Figure O-5 is a matrix that guided the development of the individual metrics used to measure project-level performance. Actual metrics and associated data to facilitate the Cultural and Environmental Resources performance criterion, for each project type, are provided in sufficient detail in the TIP Performance Evaluation Framework guidebook.

Figure O-5 - TIP Prioritization Project Type/Mode and Key Performance Evaluation Criteria

<table>
<thead>
<tr>
<th>Atlanta Region’s Plan Goals</th>
<th>Performance Criteria</th>
<th>Project Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Class Infrastructure</td>
<td>Reliability</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Network Connectivity</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Multimodal</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Asset Mgt. &amp; Resiliency</td>
<td></td>
</tr>
<tr>
<td>Healthy Livable Communities</td>
<td>Safety</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Air Quality &amp; Climate Change</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Cultural &amp; Environmental Resources</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Social Equity</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Land Use Compatibility</td>
<td></td>
</tr>
<tr>
<td>Competitive Economy</td>
<td>Goods Movement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Employment Accessibility</td>
<td>x</td>
</tr>
</tbody>
</table>

4 TIP Project Evaluation Framework
5 This measure only applies to transit bus replacement asset management projects.
Scope of Implementation

As indicated by the initiatives and decision-support tools, pursuing sustainable outcomes is an integral part of ARC’s “DNA.” ARC’s application for the INVEST program is merely a continuation of these multi-year initiatives, with the fundamental goal being to enhance ARC’s environmental planning capabilities through the regional transportation planning process. Nevertheless, these capabilities (strategies, decision-support tools, collaboration, etc.) are continuously evolving and emerging, with INVEST being one of them.

To implement INVEST, ARC assembled an agency inter-divisional team. This team developed a work program to implement agency goals related to sustainable transportation project development and oversaw the implementation of the INVEST Implementation Project.

This team includes ARC staff from the Transportation, Access and Mobility Group; the Community Development Group; the Natural Resources Group; and the Research and Analytics Group. This team was supported by part-time temporary help, as needed. The following is the actual work program submitted to FHWA:

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Timeline</th>
<th>Outcome</th>
<th>Deliverable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1) Initial Review and Evaluation</strong></td>
<td>ARC will assemble external Environmental Consultation Stakeholders to review and evaluate the Deliverability Assessment Tool, the Risk Assessment Tool and the Project Environmental Screening Tool against the INVEST Criteria for Project Development. The Environmental Consultation Stakeholders are representatives from a variety of agencies and organizations that regularly consult on the development of long-range transportation plans, transportation project delivery, etc. The goal of Task 1 will be to identify weaknesses in the current tools and opportunities to realize efficiencies and improve processes for prioritizing both sustainability and deliverability.</td>
<td>3 months</td>
<td>A thorough evaluation of the pros and cons of aligning current project evaluation tools with the INVEST Criteria for Project Development; assessment of the costs and benefits of improving project sustainability as weighed against project deliverability; recommendations for next steps to integrate applicable and appropriate criteria into refined project evaluation tools.</td>
<td>A summary of findings and a 6-month work program that identifies a strategy for undertaking identified improvements to existing tools.</td>
</tr>
<tr>
<td><strong>2) Cata Compilation and Integration</strong></td>
<td>Based on the findings of the review, ARC will work to integrate the improvements that have been identified. Possible outcomes may include, but are not limited to: integration of existing tools; enhancing the scoring systems of current tools; improving the datasets that inform the current tools; better integration of socio-economic data to existing environmental data; identification of sources of information maintained by regional partners that can back-fill existing gaps; opportunities to transition the tools to an online resource. ARC will develop revised tools that align with the model established in the INVEST Project Development criteria and serve the needs of metro Atlanta.</td>
<td>8 months</td>
<td>ARC staff will have implemented the work program identified in Task 1.</td>
<td>A revised tools and recommendations on process improvements for sustainable project development and improved project delivery.</td>
</tr>
<tr>
<td>Task</td>
<td>Description</td>
<td>Timeline</td>
<td>Outcome</td>
<td>Deliverable</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>3) Impact on Decision-Making</td>
<td>Once the review and analysis has been completed, and improvements have been integrated into the revised tools, the external Environmental Consultation Stakeholders will reconvene to assess the enhanced tools. Projects previously evaluated by the Deliverability Assessment Tool, the Risk Assessment Tool, and/or the Project Environmental Screening Tool will be re-evaluated through the revised tools to evaluate improvements in processes for prioritizing sustainability and deliverability. The successful integration of the INVEST Project Development Criteria into existing deliverability evaluation tools will improve decision-making in the selection of sustainable regional transportation improvements.</td>
<td>4 months</td>
<td>Pending the recommendation of the Environmental Consultation Stakeholders, the revised tools will be integrated into the selection process for transportation projects that are programmed into the transportation improvement program (TIP).</td>
<td>The revised tools will be made available to regional project sponsors in through an online format, preferably an interactive web interface.</td>
</tr>
<tr>
<td>4) Collaboration</td>
<td>The INVEST Criteria for Project Development is intended to be used for the evaluation of specific transportation projects. However, ARC proposes to use the criteria as a model against which to evaluate existing tools for sustainable project development and improve processes for efficient project delivery. We believe that the model identified here provides an innovative and valuable framework to organize and improve sustainable project delivery. Because this is not the typical use of the modules in this criterion, it will serve as a national case study for our peers looking for inventive solutions to intricate challenges. At the end of this project, ARC will develop a final report that details the work performed, all parties involved in the process (including internal and external stakeholders), issues encountered, lessons learned, sustainability and deliverability improvements identified and implemented, and an analysis of the costs and benefits of implementing sustainable practices and the impact on deliverability. Recommendations for future actions in the realm of sustainable project development and processes for assessing the scope of project delivery will lend themselves to improving the INVEST criteria to add to the state of the practice.</td>
<td>2 months</td>
<td>A case study that details lessons learned and provides insights on a new and different way to use the INVEST tool to enhance sustainable project delivery.</td>
<td>The final report will be delivered to our partners at FHWA, along with links to the data and revised tools developed during this process.</td>
</tr>
</tbody>
</table>
Work Performed & Analysis
Work Performed

As discussed in the Objectives section, ARC took a non-traditional approach to implement the INVEST PD module, meaning that no specific projects were scored with the tool. Rather, the PD criteria were carefully examined to see if and how they could be incorporated into ARC’s pre-existing decision-support tools, or in the alternative, relied upon to make other types of modifications to these tools. In certain ways, INVEST highlighted explicit criteria that will help ARC to better align its decision-support tools with sustainability goals and objectives. Likewise, there were other outcomes that departed from the INVEST model, though the criteria and module established through this tool pointed ARC in the direction needed.

Principal alignments with INVEST:

- Expand ARC process and tools to include criteria that more thoroughly encompasses all qualities of sustainability – environment, economy and equity
- Transition away from a quantifiable score toward qualitative modules – encourage stronger link between planning and NEPA

Principal departures from INVEST:

- Certain INVEST PD criteria are beyond the consideration appropriate at the MPO level and are not included
- Segment the project screening/assessment process into at least three, distinct modules that serve different purposes and yield different planning-level outcomes.

The work performed throughout this implementation phase is described more fully in the discussion below.

Evaluation, Data Compilation, and Integration of ARC Tools with INVEST PD Criteria

The primary purpose of Task 1 was to evaluate, to what extent, sustainability measures were being accounted for in any of the four ARC tools, with the INVEST PD criteria serving as a benchmark. Figure WP-1, below, is a summary table showing which of the 33 INVEST PD criteria (Version 1.2) were directly accounted for by any of the four ARC decision-support tools. These findings were shared with the Environmental Consultation stakeholder group in April 2017. A six-month work program was developed to evaluate our existing process based on stakeholder feedback.

Based on this initial assessment, the ARC team concluded that there is plenty of opportunity to explore ways of integrating INVEST criteria into its decision-support tools. The following discussion is a more detailed review of how each tool measured up to the INVEST PD criteria, including weaknesses and opportunities to enhance the ARC tools, as well as the INVEST PD module.
<table>
<thead>
<tr>
<th>INVEST Project Development Criteria</th>
<th>Project Prioritization Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD-01: Economic Analyses</td>
<td>X</td>
</tr>
<tr>
<td>PD-02: Life Cycle Cost Analyses</td>
<td>X</td>
</tr>
<tr>
<td>PD-03: Context Sensitive Project Development</td>
<td>X</td>
</tr>
<tr>
<td>PD-04: Highway and Traffic Safety</td>
<td>X</td>
</tr>
<tr>
<td>PD-05: Educational Outreach</td>
<td>X</td>
</tr>
<tr>
<td>PD-06: Tracking Environmental Commitments</td>
<td>X</td>
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<tr>
<td>PD-07: Habitat Restoration</td>
<td>X</td>
</tr>
<tr>
<td>PD-08: Stormwater Quality and Flow Control</td>
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</tr>
<tr>
<td>PD-09: Ecological Connectivity</td>
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</tr>
<tr>
<td>PD-10: Pedestrian Facilities</td>
<td>X</td>
</tr>
<tr>
<td>PD-11: Bicycle Facilities</td>
<td>X</td>
</tr>
<tr>
<td>PD-12: Transit</td>
<td>X</td>
</tr>
<tr>
<td>PD-13: Freight</td>
<td>X</td>
</tr>
<tr>
<td>PD-14: ITS for System Operations</td>
<td>X</td>
</tr>
<tr>
<td>PD-15: Historic, Archaeological, and Cultural Preservation</td>
<td>X</td>
</tr>
<tr>
<td>PD-16: Scenic, Natural, or Recreational Qualities</td>
<td>X</td>
</tr>
<tr>
<td>PD-17: Energy Efficiency</td>
<td>X</td>
</tr>
<tr>
<td>PD-18: Site Vegetation, Maintenance and Irrigation</td>
<td>X</td>
</tr>
<tr>
<td>PD-19: Reduce, Reuse and Repurpose Materials</td>
<td>X</td>
</tr>
<tr>
<td>PD-20: Recycle Materials</td>
<td>X</td>
</tr>
<tr>
<td>PD-21: Earthwork Balance</td>
<td>X</td>
</tr>
<tr>
<td>PD-22: Long-Life Pavement</td>
<td>X</td>
</tr>
<tr>
<td>PD-23: Reduced Energy and Emissions in Pavement Materials</td>
<td>X</td>
</tr>
<tr>
<td>PD-24: Permeable Pavement</td>
<td>X</td>
</tr>
<tr>
<td>PD-25: Construction Environmental Training</td>
<td>X</td>
</tr>
<tr>
<td>PD-26: Construction Equipment Emission Reduction</td>
<td>X</td>
</tr>
<tr>
<td>PD-27: Construction Noise Mitigation</td>
<td>X</td>
</tr>
<tr>
<td>PD-28: Construction Quality Control Plan</td>
<td>X</td>
</tr>
<tr>
<td>PD-29: Construction Waste Management</td>
<td>X</td>
</tr>
<tr>
<td>PD-30: Low Impact Development</td>
<td>X</td>
</tr>
<tr>
<td>PD-31: Infrastructure Resiliency Planning and Design</td>
<td>X</td>
</tr>
<tr>
<td>PD-32: Light Pollution</td>
<td>X</td>
</tr>
<tr>
<td>PD-33: Noise Abatement</td>
<td>X</td>
</tr>
</tbody>
</table>
Project Environmental Screening Tool

The Project Environmental Screening Tool is primarily used to support the environmental consultation process, in conjunction with the RTP/TIP project evaluation, and the environmental consultation process. RTP/TIP projects are overlaid on top of each of the layers listed below, to measure each project’s footprint (measured in acres based on the project’s 100-foot buffer), which is then used to rank the project’s potential impact against all other RTP projects. As an improvement to the original REF geospatial analysis from 2016, this process is now facilitated by visual programming language that automates geoprocessing, which was customized and operated by the ARC team internally.

The original plan was to identify which of the 33 PD criteria could be seamlessly integrated into the screening tool’s compilation of environmental resources, such that the screening methodology would broaden to rank projects that could be considered more sustainable than others, based on the INVEST approach. As explained further in this section, this notion ended up being unrealistic due to a few reasons. The ARC team had to re-evaluate whether the screening tool could perform two main objectives: (1) project screening for potential risk to the environment and deliverability; and (2) project ranking, based on sustainability.

The screening tool’s current dataset layers are listed in Figure WP-2 below, with the most relevant INVEST PD criteria listed beside them. This matching exercise was done with both objectives in mind (screening and sustainability analyses).

Note in Figure WP-2, that a clear majority of the screening tool did correspond with at least one INVEST PD criterion. This was a satisfying result because it demonstrates, in theory, that the ARC screening fundamentally addresses sustainability. However, there were several INVEST PD criteria (22 of 33) that were not accounted for by the screening tool. There are a few key reasons as to why each of these factors could not be matched, as briefly summarized in Figure WP-3.

There were two ARC screening criteria that could not be reasonably matched with any of the INVEST PD criteria. Figure WP-4 provides some feedback to FHWA on how the INVEST PD module might account for two of the screening tool datasets that could not be matched to any of the 33 PD criteria.

* Information on the metadata will be included in Appendix C.
## ARC Project Screening Tool Dataset | Matching INVEST PD Criteria

| Brownfields | N/A |
| Darter Habitat | PD-07 (Habitat Restoration), PD-09 (Ecological Connectivity), PD-18 (Site Vegetation), PD-24 (Permeable Pavement), PD-30 (Low Impact Development), PD-31 (Infrastructure Resiliency) |
| Endangered Species | PD-07 (Habitat Restoration), PD-09 (Ecological Connectivity), PD-18 (Site Vegetation), PD-24 (Permeable Pavement), PD-30 (Low Impact Development), PD-31 (Infrastructure Resiliency) |
| FEMA Floodplains | PD-08 (Stormwater Quality), PD-24 (Permeable Pavement), PD-30 (Low Impact Development), PD-31 (Infrastructure Resiliency) |
| Existing Greenspace | PD-16 (Scenic, Natural, or Recreational Qualities), PD-18 (Site Vegetation), PD-31 (Infrastructure Resiliency) |
| Groundwater Recharge Area | PD-08 (Stormwater Quality), PD-18 (Site Vegetation), PD-24 (Permeable Pavement), PD-30 (Low Impact Development), PD-31 (Infrastructure Resiliency) |
| Historical Resources | PD-03 (Context Sensitive Project Development), PD-15 (Historic, Archeological, & Cultural Preservation), PD-16 (Scenic, Natural, or Recreational Qualities) |
| Hazardous Sites Inventory | N/A |
| MRPA (Metropolitan River Protection Act) | PD-08 (Stormwater Quality), PD-18 (Site Vegetation), PD-24 (Permeable Pavement), PD-30 (Low Impact Development), PD-31 (Infrastructure Resiliency) |
| TMDL Streams | PD-08 (Stormwater Quality), PD-18 (Site Vegetation), PD-24 (Permeable Pavement), PD-30 (Low Impact Development), PD-31 (Infrastructure Resiliency) |
| Trout Streams | PD-07 (Habitat Restoration), PD-09 (Ecological Connectivity), PD-18 (Site Vegetation), PD-24 (Permeable Pavement), PD-30 (Low Impact Development), PD-31 (Infrastructure Resiliency) |
| Small Water Supply Watersheds | PD-08 (Stormwater Quality), PD-18 (Site Vegetation), PD-24 (Permeable Pavement), PD-30 (Low Impact Development), PD-31 (Infrastructure Resiliency) |
| UGPM Rural | PD-15 (Historic, Archeological, & Cultural Preservation), PD-16 (Scenic, Natural, or Recreational Qualities) |
| Undeveloped Land | PD-15 (Historic, Archeological, & Cultural Preservation), PD-16 (Scenic, Natural, or Recreational Qualities) |
| Wetlands | PD-08 (Stormwater Quality), PD-18 (Site Vegetation), PD-24 (Permeable Pavement), PD-30 (Low Impact Development), PD-31 (Infrastructure Resiliency) |

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7 Existing greenspace coverage is defined through a state law requiring Georgia regional commissions to develop a Regional Resource Plan.

8 ARC’s website on the MRPA law.

9 Unified Growth Policy Map (UGPM) is the ARC Board adopted long range land use vision for the 20-County metro Atlanta region.
<table>
<thead>
<tr>
<th>Unmatched INVEST PD Criteria</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD-01</td>
<td>Benefit-cost analysis (BCA) is handled as part of the TIP Project Evaluation Framework and is not tied to any specific screening tool layer.</td>
</tr>
<tr>
<td>PD-02</td>
<td>Life-cycle cost analysis (LCCA) is not tied to any specific screening tool layer. Also, LCCA is currently not accounted for in the regional planning process. ARC should consider incorporating this into the TIP Project Evaluation Framework.</td>
</tr>
<tr>
<td>PD-04</td>
<td>Projects allocated with Federal funding through ARC’s TIP solicitation process are evaluated based on reducing crash risk and committing to FHWA’s Office of Safety’s proven countermeasures. 10 ARC should consider including crash history (consistent with FHWA Safety Performance Management Measures), as a screening and/or a sustainability criterion.</td>
</tr>
<tr>
<td>PD-05</td>
<td>This criterion is not tied to any specific screening tool layer. ARC does not facilitate public engagement at the project-level. ARC should consider requiring local government sponsors to educate their constituents on sustainability principles through outreach that is associated with the County Comprehensive Transportation Plan program (CTP)11.</td>
</tr>
<tr>
<td>PD-06</td>
<td>This criterion is not tied to any specific screening tool layer. GDOT tracks environmental commitments through stewardship of the Locally Administered Projects (LAP) and oversight of the NEPA review for each project.</td>
</tr>
<tr>
<td>PD-10</td>
<td>Pedestrian facilities may not be appropriate or feasible for certain project types, and therefore should not be considered as an up-front sustainability criterion in a screening tool. Rather, ARC promotes active mode investments through other planning mechanisms such as the regional bicycle and pedestrian plan update (“Walk! Bike! Thrive!”)12. ARC considered including existing sidewalk and trail facilities as a dataset in the screening tool, but ultimately decided against it, for the time being, because applying it as a screening criterion might impede additional active mode investment in the immediate vicinity.</td>
</tr>
<tr>
<td>PD-11</td>
<td>Bicycle facilities may not be appropriate or feasible for certain project types, and therefore should not be considered as an up-front sustainability criterion in a screening tool. Rather, ARC promotes active mode investments through other planning mechanisms such as the regional bicycle and pedestrian plan update (“Walk! Bike! Thrive!”). ARC considered including existing bike and trail facilities as a dataset in the screening tool, but ultimately decided against it, for the time being, because applying it as a screening criterion might impede additional active mode investment in the immediate vicinity.</td>
</tr>
<tr>
<td>PD-12</td>
<td>This criterion is not tied to any specific screening tool layer. Transit or HOV investments are considered to be an overall sustainability strategy for the region as a whole, and are evaluated through ARC’s screening tool, which makes it impractical to include this as a dataset within the screening tool.</td>
</tr>
<tr>
<td>PD-13</td>
<td>This criterion is not tied to any specific screening tool layer.</td>
</tr>
<tr>
<td>PD-14</td>
<td>This criterion is not tied to any specific screening tool layer.</td>
</tr>
<tr>
<td>PD-17</td>
<td>These criteria are not tied to any specific screening tool layer. These are typically first addressed during the PDP, which is administered by GDOT. Any project that is committed to include any one or more of these criteria are subject to rigorous Federal procurement procedures, value engineering requirements, and sometimes may conflict with other elements of the scope or purpose and need of the project. ARC should consider working with the FHWA-Georgia Division and GDOT to explore more programmatic or streamlined methods to incentivize or require any of these PD criteria.</td>
</tr>
<tr>
<td>PD-19</td>
<td></td>
</tr>
<tr>
<td>PD-20</td>
<td></td>
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<tr>
<td>PD-21</td>
<td></td>
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<tr>
<td>PD-22</td>
<td></td>
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<tr>
<td>PD-23</td>
<td></td>
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<tr>
<td>PD-25</td>
<td></td>
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<tr>
<td>PD-27</td>
<td></td>
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<tr>
<td>PD-28</td>
<td></td>
</tr>
<tr>
<td>PD-29</td>
<td></td>
</tr>
<tr>
<td>PD-32</td>
<td>This criterion is not tied to any specific screening tool layer.</td>
</tr>
<tr>
<td>PD-33</td>
<td>This criterion is not tied to any specific screening tool layer.</td>
</tr>
</tbody>
</table>

10 [FHWA Office of Safety Proven Countermeasures](#)

11 [CTP program](#) allocates STBGp funding to each of the 20 counties to develop and update a localized transportation plan every five years.

12 [Regional Bike/Ped Plan Update](#)
<table>
<thead>
<tr>
<th>ARC Project Screening Tool Dataset</th>
<th>Conclusion</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brownfields</td>
<td>This criterion is not explicitly accounted for in the PD-criteria. This is most likely because brownfield occurrences are not, by their very nature, a sustainability strategy, unlike preventing them altogether. However, if a proposed project were to encroach a brownfield site, then mitigating efforts would be governed by the Resource Conservation and Recovery Act (RCRA).</td>
<td>FHWA identify best practices for hazardous site clean-up, that are above and beyond the RCRA requirements. <a href="#">US Environmental Protection Agency’s former Project XL projects</a>, as well as various private sector led mitigation efforts may be a good start to identify guidance for this type of criterion.</td>
</tr>
<tr>
<td>Hazardous Sites Inventory</td>
<td>This criterion is not explicitly accounted for in the PD-criteria. This is most likely because hazardous waste sites are not, by their very nature, a sustainability strategy, unlike preventing them altogether. However, if a proposed project were to encroach a hazardous site, then mitigating efforts would be governed by RCRA.</td>
<td>FHWA identify best practices for hazardous site clean-up, that are above and beyond the RCRA requirements. <a href="#">US Environmental Protection Agency’s former Project XL projects</a>, as well as various private sector led mitigation efforts may be a good start to identify guidance for this type of criterion.</td>
</tr>
</tbody>
</table>

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[US EPA’s Project XL web archive](#)
ARC also investigated incorporating a social equity or environmental justice dataset to the screening tool as well, as these criteria are not currently included in the INVEST PD module. Discussion is included in the description of Module 2: Equity, later in this document.

Stakeholders recommended two additional resources, listed below, to consider as they explored new data sources to be integrated into the screening tool. ARC concluded that both data resources are very comprehensive and require additional time and budget to be further explored as a separate phase of research and analysis.

1. NatureServe – A crowd-sourced consortium that develops and maintains several distinct geospatial products featuring bio-diversity data. Some of the underlying datasets used by NatureServe are already accounted for, and others were not available at the geographic scale or resolution that would be sufficient enough to analyze project-level footprints.

2. InVEST – Developed and maintained by several leading non-profit/non-governmental organizations, through an effort called The Natural Capital Project. InVEST is a tool designed to help different types of stakeholders explore how changes in ecosystems are likely to lead to changes in benefits that flow to people. ¹⁴

The consensus from the ARC Team was that the ARC tools did not comprehensively address sustainability at the project level, relative to INVEST PD module, even though there was some compatibility with the underlying criteria. It was also observed that several of the INVEST PD criteria dealt with issues that the team believed are beyond the scope of the regional planning process or the authority of an MPO. For example, enforcing or requiring the use of Recycle Materials (PD-20) might be somewhat incongruent to the current regional planning process because it is unrealistic to expect project sponsors to commit to such a policy prior to commencing preliminary engineering. Procurement standards and design specifications could ultimately eliminate the opportunity to use recyclable materials, and so it would be challenging for the MPO to faithfully rely on this commitment at the planning stage, when there is a chance that it could be eliminated due to another legitimate constraint.

Furthermore, monitoring or enforcing sponsors to commit to criteria like these, after the PDP has commenced, is also beyond the scope, authority, or purview of the MPO. Tracking these types of commitments are typically left to the state departments of transportation, pursuant to the LAP stewardship agreements. Ideally, this would not be the case, and there would be a more comprehensive and collaborative way to incentivize or even require commitments such as this. The stark reality, is that the current institutional framework needs to evolve if the region is going to attain this level of sustainable project implementation. This is where early coordination and programmatic agreements could be useful to help streamline the process for local sponsors to be more open to some of the PD criteria.

The INVEST analysis concluded that incorporating a sustainability analytical function within the screening tool was unfeasible, because these two purposes are incompatible in the context of developing an analytical/evaluation tool. Therefore, the ultimate recommendation is to develop a separate sustainability module, that features an independent geospatial analytical methodology. ARC reached the conclusion that the Project Environmental Screening Tool had the most potential to be modified to align more closely with the model provided by INVEST. To achieve the outcomes desired by ARC, the tool will also be reworked to:

- Consider a wider range of criteria (datasets), including elements of sustainability and equity;
- Improve the quality and integrity of the current datasets that are incorporated in the tool, including development of a statewide data stewardship and oversight agenda; and
- Instead of providing a surrogate measure of impact through acreages, provide qualitative, informative, and actionable “fact sheets” for local sponsors to use as they begin to anticipate alternatives and the level and scope of their NEPA review.

As a result of the INVEST implementation, the ARC team concluded that the acreage calculation and associated rankings are only meaningful to regional planners but have little value to individual project sponsors. Therefore, the keystone recommendation of the entire INVEST implementation exercise is twofold:

- To minimize the significance of scoring output of any tools,
- While providing more insight and actionable guidance on both, how proposed projects could impact the environment, or how they could improve the environment through recommended sustainability practices.

A more detailed discussion of this recommendation is provided below under the Task 2 sub-heading.

**Project Risk Assessment Tool**

Prior to seeking INVEST implementation assistance, ARC contemplated incorporating the functionality of the Project Risk Assessment Tool within the Project Environmental Screening Tool. The vision was to quantify any environmental and deliverability risks associated with any of the screening tool data layers, based on the risk score calculated by the risk assessment tool methodology. So, the result would be a risk score that is automatically calculated, based on the proposed project’s footprint of each of the screening tool layers. This would have streamlined the information that both tools were providing, and make the work flow more efficient, by automating the risk calculation process. By merging the risk score calculation with the potential acreage of impact, there was the potential of providing a three-dimensional score for any transportation project, as follows:

1. Acres of impact to each of resource included in the screening tool;
2. Quantified risk score; and
3. Potential INVEST PD criteria score.

The risk assessment tool and INVEST PD criteria comparison resulted in minimal overlap. Only two of the PD criteria corresponded with any of the risk assessment factors. However, as previously discussed, scoring the projects using INVEST PD criteria would have been unsuitable since several of the PD criteria do not apply to every project type (e.g. resurfacing or new interchange or transit service), so the third dimension was ruled out as part of this effort. The Risk Assessment Tool factors are below in Figure WP-5.
<table>
<thead>
<tr>
<th>Risk</th>
<th>Risk Description</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Federal Funding (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td>Local Sponsor Match (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td>Project Sponsor Experience (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td>Logical Termini (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#5</td>
<td>Historic Resources (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#6</td>
<td>USCOE Permitting (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#7</td>
<td>Stream Buffer Variances (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#8</td>
<td>Section 4(f) (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#9</td>
<td>Environmental Justice (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#10</td>
<td>Public Controversy (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#11</td>
<td>NEPA (0 to 5)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#12</td>
<td>ROW Displacements (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#13</td>
<td>ROW Condemnations (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#14</td>
<td>Federal &amp; State Properties (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#15</td>
<td>Utilities (0 to 3)</td>
<td>0</td>
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<tr>
<td>#16</td>
<td>Railroads (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>#17</td>
<td>Major Transmission Lines (0 to 3)</td>
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</tr>
<tr>
<td>#18</td>
<td>MS4 (0 to 3)</td>
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</tr>
<tr>
<td>#19</td>
<td>Staging (0 to 3)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Risk Score = 0.00
**Project Deliverability Assessment**

The Project Deliverability Assessment tool is a component of ARC’s overall TIP Project Evaluation framework. This tool fared just as poorly as the Risk Assessment Tool in comparison to the INVEST PD criteria. Expanding the deliverability assessment to account for the PD criteria was also determined to be impractical, similar to the Risk Assessment Tool. ARC recommends that the deliverability criteria remain the same, since ARC concluded that a separate module be developed specifically for sustainability.

**TIP Project Evaluation Framework**

This is a performance-based evaluation framework which was developed after ARC made the decision to pursue INVEST implementation assistance. The evaluation framework ended up being the most INVEST PD compatible, among the four ARC tools that were compared. The evaluation process consists of three Key Decision Points (KDP), to objectively evaluate TIP funding applications. Figure WP-6 is a flowchart illustrating the process.

Key Decision Point 2 ("KDP2") is the main part of the evaluation that involves measuring an application’s potential performance, to be used to later rank the project among other similar projects. The performance criteria established relate back to The Atlanta Region’s Plan “Triple Bottom Line,” as shown below in Figure WP-7. The framework only applies to projects that are funded with certain Federal programs that are within ARC’s discretion, which is typically about 10% of all Federal funds allocated to projects and programs in the metro Atlanta TIP.

The evaluation framework extends beyond environmentally related factors, including factors relating to social equity, land use compatibility, safety, etc. Therefore, KDP2 is the most compatible tool with the INVEST PD criteria. Unlike the Project Screening Tool, KDP2 allows for projects to receive credit for including multiple sustainability components. Specifically, under the Cultural and Environmental Resources category, projects can receive credit if they include many of the INVEST PD criteria that the screening tool could not address. For instance, if an application proposes to use light-emitting diode (LED) lighting, permeable pavement, or green infrastructure then it would receive additional points in the KDP2 system, and should therefore, rank higher than other similar projects that did not commit to incorporating any of these elements. Nonetheless, there were still several INVEST PD criteria that could not be matched with KDP2 (Figure WP-8) since they are strategies that are decided upon after the planning process. Again, the lesson here is to adjust the planning process in the future, to enable these types of commitments to be made up front, prior to making TIP funding decisions.

The drawback with KDP2 is that it does not prescribe or require any specific sustainability criteria like the INVEST PD module does, and applicants are given free rein to propose any strategy that would subjectively be construed as improving the environment. The ARC team recommends exploring how the INVEST PD criteria can be incorporated into the KDP2 criteria in a more explicit fashion, but only incorporate the ones that are most feasible or practical. For example, earthwork balancing may ultimately not be incorporated entirely, or at least for certain project types, such as those that do not necessitate any earthwork during construction.

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15 TIP Project Evaluation Framework
There are three fundamental findings or recommendations that surfaced during this round of INVEST implementation:

1. Refrain from carrying out different analyses for different purposes, all in one tool and in a single methodology. Breakout the geospatial analyses into modules.

2. Avoid publishing scores. While they are meaningful to regional planners to help establish relativity, local

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16 This measure only applies to transit bus replacement asset management projects.
<table>
<thead>
<tr>
<th>Unmatched INVEST PD Criteria with Screening Tool</th>
<th>Addressed in TIP Performance Analysis (KDP2)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD-01 (Economic Analyses)</td>
<td>Yes. BCA is calculated for each application.</td>
</tr>
<tr>
<td>PD-02 (Lifecycle Cost Analyses)</td>
<td>Yes. This could be folded into the BCA calculation.</td>
</tr>
<tr>
<td>PD-04 (Highway and Traffic Safety)</td>
<td>Yes. Crash history, by severity is calculated. Application receives points for including FHWA proven countermeasures.</td>
</tr>
<tr>
<td>PD-05 (Educational Outreach)</td>
<td>No.</td>
</tr>
<tr>
<td>PD-06 (Tracking Environmental Commitments)</td>
<td>No.</td>
</tr>
<tr>
<td>PD-10 (Pedestrian Facilities)</td>
<td>This is a KDP2 project type.</td>
</tr>
<tr>
<td>PD-11 (Bicycle Facilities)</td>
<td>This is a KDP2 project type.</td>
</tr>
<tr>
<td>PD-12 (Transit and HOV Facilities)</td>
<td>This is a KDP2 project type.</td>
</tr>
<tr>
<td>PD-13 (Freight Mobility)</td>
<td>Yes. Roadway projects addressing load limited bridges or improving regional truck routes are given priority over other roadway projects.</td>
</tr>
<tr>
<td>PD-14 (ITS for System Operations)</td>
<td>This is a KDP2 project type.</td>
</tr>
<tr>
<td>PD-17 (Energy Efficiency)</td>
<td>This is accounted for in the Cultural &amp; Environmental Resources criterion.</td>
</tr>
<tr>
<td>PD-19 (Reduce, Reuse and Repurpose Materials)</td>
<td>No, but possible to be included in revised KDP2 criteria.</td>
</tr>
<tr>
<td>PD-20 (Recycle Materials)</td>
<td>No, but possible to be included in revised KDP2 criteria.</td>
</tr>
<tr>
<td>PD-21 (Earthwork Balance)</td>
<td>No.</td>
</tr>
<tr>
<td>PD-22 (Long-Life Pavement)</td>
<td>No, but possible to be included in revised KDP2 criteria.</td>
</tr>
<tr>
<td>PD-23 (Reduced Energy and Emissions in Pavement Materials)</td>
<td>No, but possible to be included in revised KDP2 criteria.</td>
</tr>
<tr>
<td>PD-25 (Construction Equipment Emission Reduction)</td>
<td>No.</td>
</tr>
<tr>
<td>PD-27 (Construction Noise Mitigation)</td>
<td>No.</td>
</tr>
<tr>
<td>PD-28 (Construction Quality Control Plan)</td>
<td>No.</td>
</tr>
<tr>
<td>PD-29 (Construction Waste Management)</td>
<td>No.</td>
</tr>
<tr>
<td>PD-32 (Light Pollution)</td>
<td>No, but possible to be included in revised KDP2 criteria.</td>
</tr>
<tr>
<td>PD-33 (Noise Abatement)</td>
<td>No, but possible to be included in revised KDP2 criteria.</td>
</tr>
</tbody>
</table>
planners do not necessarily depend on that information when conducting their own environmental screening or other similar evaluations.

3. Develop and formalize an Equity Analysis Module to promote more robust equity analyses earlier in the process, and contemporaneous with other project-level screening, alternatives and performance evaluation processes.

As previously discussed, ARC recommends that the initial screening tool remain mostly unchanged. While the initial direction was to expand it to account for measuring projects based on sustainability criteria, developing the analytical methodology and formatting the geospatial data became too complex to achieve both objectives within a single tool. Instead, ARC determined that a modulated analysis that features independent data sources and analytical methodologies is a more pragmatic structure. There would be three modules, unrelated to the INVEST modules, that serve independent purposes, shown in Figure WP-9.

Another fundamental recommendation is to remove any automated scoring from the screening tool output or from any of the proposed modules discussed here. The scores are best suited for internal purposes, at the discretion of regional planners, but ARC believes they are not useful to the various other end users who will use these tools to help them plan and program their projects to involve less risk and to improve the environment. Automated scores for each module will be replaced with relevant output that corresponds with the underlying geospatial analysis. This would mean the removal of the acreages of impact metric, the risk assessment score, and not incorporating the INVEST PD scoring methodologies. Sponsors find most value in ARC providing actionable steps that will help them better anticipate the path towards successful delivery of the project.

As INVEST continues to be implemented, ARC believes that focusing on sustainability will be more integral of the regional planning process and emphasized much earlier in the process. Including a robust equity planning support tool is paramount to any sustainability assessment as well as establishing overall planning objectives and project proposals. Below are some initial details of the proposed modules.

**Module 1: Sustainability Module**

The Sustainability Module analysis would be twofold:

1. Conduct a regionwide, geospatial analysis that identifies or prioritizes areas that are most vulnerable and most beneficial of heightened focus on sustainability.
2. Identify the most effective sustainability practices and strategies (including those presented in any of the four INVEST modules), that correspond to the specific circumstances of the areas prioritized for heightened sustainability focus.

This module includes elements that reflect best practices or desirable connections to sustainable project design. However, these elements were also the source of most debate on how to best reflect outcomes or considerations for project development.

- Air quality and emissions
- Transit connectivity
- Stormwater Management/ Low Impact Development
- Bicycle and Pedestrian Connectivity
- Noise Abatement
- Travel Demand Management
- Light Pollution

Specific concerns related to the context sensitive nature of many of these criteria. As opposed to many of the criteria identified in Module 3 (screening). ARC will need to explore how to associate these elements with various parts of the region and make recommendations on feasible and realistic sustainability strategies. ARC will rely on the Green Genesee/Smart Genesee tool as one of the models to develop this module.

**Module 2: Equity Module**

The current INVEST PD module includes no direction on equity related criteria. This may be because social equity needs to be considered very early in the planning process, and criteria demonstrating the effectiveness of equity strategies, at the project level, can be few and far between. ARC has been grappling with these issues for many years, as have many MPOs. However, its inclusion in the INVEST PD module could be useful in addressing
The Green Genesee/Smart Genesee (GGSG)\textsuperscript{27} is a broad sustainability effort that was initiated by Genessee County, New York, in 2014. The GGSG mission is based on two principles: green and smart. The GGSG project defines ‘green’ as the “collection of ecological and energy data to create land use maps and energy conservation plans.” ‘Smart’ is defined as the integration of these maps and plans into the county’s planning and zoning practices. The overall project is organized around six key steps that will help the county achieve ecological, societal, and economic benefits:

1. Set Goals
2. Review Data
3. Develop Asset Maps
4. Assess Risks
5. Determine Opportunities
6. Implement Action Plan

The GGSG project has identified various tools and other resources to facilitate most of these steps. The GGSG resource most relevant to ARC’s proposed Sustainability Module is the geospatial basemap series, which includes datasets that have not all been developed for the metro Atlanta region.

- Aquifers (primary and secondary)
- EPA Assessed Waterways
- Forest Cover
- Multi-Use Trails
- Land Use Cover
- New York Natural Heritage Program Significant Natural Communities
- 2010 Population
- Prime Farmland Soils
- Smart Growth Development Areas
- Snowmobile Trails
- Utility Infrastructure
- Watersheds
- Wetlands

These maps/data are used by the GGSG as references for identifying sustainability risks and applicable planning strategies that could be adopted to either eliminate or mitigate those risks. Some of these basemaps are similar to ARC’s screening tool datasets and are also relevant to the INVEST PD criteria. Of course, there are a couple (i.e., Heritage Program and snowmobile Trails) that could be substituted with Atlanta or Georgia-specific basemap information. Similar to ARC’s screening tool, the current GGSG version does not appear to address socio-economic conditions, which is why ARC is proposing the following module, explained below.

\textsuperscript{27} Green Genesee/Smart Genesee
the third “E” (equity) of sustainability.

In the past, ARC’s equity criteria have focused on Title VI and environmental justice requirements for transportation planning and implementation. This involves mapping minority and low-income populations to ensure equal benefits and burdens from programmed transportation projects. Recently, ARC has been working on furthering our strategies for addressing issues of equity throughout the transportation planning process. One application that is currently under development, is an online equity analysis tool similar to Delaware Valley Regional Planning Commission’s (DVRCP) Indicators of Potential Disadvantage. DVRPC has created an online, interactive map using Census data of all the Federally Protected Classes by census tract. However, ARC would like to expand on their idea to include additional layers for analysis on top of the demographic base map including zero-car households, transit accessibility, and employment accessibility. This tool and the criteria included have been vetted and endorsed by ARC’s Transportation Equity Advisory Group. It will support sustainable planning by encouraging equitable planning practices from planning partners. It will also give advocates, community leaders, and non-profits access to equity data, and educate the public on equity issues.

ARC staff is in the planning stages for the additional functionality of the online map, but the base-map has been finalized and will go online in the upcoming months. Below is the list of Federally Protected Classes that are included in the equity analysis base-map.

- Racial Minority
- Ethnic Minority
- National Origin
- Limited English Proficiency
- Low Income
- Older Adults
- Children
- Persons with Disabilities
- Females

**Module 3: Environmental Screening/Deliverability Risk Module**

This module most closely resembles the current Project Environmental Screening Tool. It includes:

- Cemeteries
- Floodplains
- Habitat and Wildlife
- Hazardous Waste Sites
- Historic and Cultural Resources
- Metropolitan River Protection Act (MRPA)
- Non-Jurisdictional Waters
- Parks and Recreation Areas
- Rural Areas
- TMDL Waters
- Underground Storage Tanks
- Wetlands

Note that Small Area Supply Watersheds, Trout Streams, Undeveloped Land, and Brownfields resource data have been removed. They were identified as duplicates to one or more of the remaining data layers.

Many of the PD criteria in INVEST mirror the criteria that are compiled in other tools and resources. However, feedback from external stakeholders suggested that the following items may not be appropriate for consideration at the MPO level:

- 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

In light of the feedback that overwhelmingly supports keeping the relative scoring results internal, while providing actionable guidance for project sponsors to rely on, ARC has developed a prototype fact sheet that could be used as a gateway to launch more detailed planning, technical assistance, early coordination, and more transparency. A sample fact sheet is below in Figure WP-10.

**Environmental Consultation Meeting Summaries**

Two meetings were held with a group of stakeholders regularly convened by ARC to advise on issues related to environmental review. The unique knowledge and insight they provide has been an invaluable resource through several updates of the Regional Transportation Plan. The feedback provided by this group at the beginning and end of this evaluation process proved equally valuable in determining the course of this project.
The first stakeholder meeting was held on April 27, 2017. The principle objective of the meeting included introducing the INVEST process and revisiting potential data, tools, methods, and policies on streamlining environmental and transportation planning for purposes of accelerating project delivery and practicing sustainability. The discussion included

- General dialogue about whether sustainability is a function of transportation planning, or something that exists outside of the process;
- Whether ARC was deploying the correct tools to align our goals of implementing sustainable project delivery;
- And to provide general direction in the course of self-evaluation that ARC was undertaking in the next several months.

Feedback was evaluated and incorporated into the process.

The second stakeholder meeting was held on July 20, 2018. This meeting had a dual purpose of introducing the consultation process for the upcoming Regional Transportation Plan and presenting the findings of the evaluation undertaken through the INVEST. The response to findings was overwhelmingly positive.

- Developing links between planning and NEPA has been an ongoing challenge
- Local project sponsors will get more meaningful information from the qualitative information rather than the quantitative analysis; the stakeholder committee can be a good resource for future technical support and training
- Developing the equity and sustainability modules will provide an enhanced level of support for project analysis that is not currently being achieved

Several stakeholders pledged on-going support in refining this model. Follow up meetings will extend beyond the scope of the INVEST grant, particularly as ARC continues to revise its methodology and tools.
**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.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>ACREAGE</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floodplains</td>
<td>5.78</td>
<td>5.88%</td>
</tr>
<tr>
<td>Historic and Cultural Resources</td>
<td>16.95</td>
<td>17.21%</td>
</tr>
</tbody>
</table>

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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**The formatting of the fact sheet is not final and will likely be customized in the future to present output from the Sustainability and Equity Modules as well.**
The INVEST PD module was an invaluable resource for providing direction on improving the tools that ARC uses to encourage sustainable project delivery. The following suggestions represent areas where the agency team and/or external stakeholders did not reach consensus on the best direction to pursue with the resources available. To the extent that FHWA makes modifications or changes to INVEST, the following suggestions are offered as points of consideration, but by no means are they offered as shortcomings or critiques. In general, the quality of content and organization in the modules of the INVEST PD criteria was a vital resource to the outcomes of this project.

- Equity criteria needs to be included in the PD module, or perhaps, added as an element of PD-05 (Educational Outreach).

- Qualitative direction is of greater value to local planning stakeholders, than quantitative analysis.

- Many of the 33 INVEST PD criteria are appropriate for only certain project types/scopes. It was difficult to find any project in the current TIP/RTP that would address all 33. As such, applying the PD criteria to all projects across the board, could result in inconsistent scores ("apples and oranges"), which would undermine the confidence of the actual scores themselves. In addition to scoring projects, ARC recommends that INVEST users translate the PD criteria into actionable guidance and policy, relative to the existing conditions and circumstances associated with a particular project. This is how ARC will implement the INVEST PD criteria within its proposed Sustainability Module.

- Project type related criteria (PD-04, PD-10 through PD-14) address distinct transportation improvement outcomes. Projects will rarely include multiple purposes, and therefore will not score well. ARC’s TIP Project Evaluation Framework provides criteria by project type, which helps make the evaluation more straightforward and easy to replicate across similarly situated projects. The INVEST PD module could mimic this structure, whereby specific PD criteria are identified for specific project types, purposes, or transportation needs.

- Some of the INVEST PD criteria may not be suited to be addressed at the project level, rather they are more systematic or comprehensive in nature, and could be addressed from a different lens or perspective. Criteria such as Educational Outreach (PD-05), Tracking Environmental Commitments (PD-06) are more procedural in nature, than they are project scope related.

- Certain INVEST PD criteria should be considered for inclusion into a programmatic agreement with GDOT and the FHWA-Georgia Division. This will help mitigate potential conflicts with other Federal rules and guidelines pertaining to NEPA purpose and need identification, value engineering, procurement, design exceptions, or other similar requirements.

- A critical component to the successful implementation of any of these tools will be robust data stewardship. Partnerships at multiple levels of government will be critical to achieving this outcome. ARC has initiated some research with GDOT to explore a model for effective data stewardship at a regional and statewide level. Preliminary research on this topic is included in Appendix B. Both the outcomes of the INVEST report on this ongoing research with GDOT will be critical to attaining successful outcomes for sustainable project delivery.
PART 5

Appendices
Appendix A: Draft Fact Sheet Text

Below is the language that the ARC Team is proposing to include in the Fact Sheet that was introduced in the Work Performed and Analysis section of the report. The main purposes of the fact sheet are to provide a very brief explanation of the regulatory basis behind identifying each resource that is flagged by the ESRI ModelBuilder geo-processing analysis explained in the report, and to include direct access to additional information associated with each resource. This language is subject to on-going review and modification, in association with local project sponsors, GDOT, and the FHWA partners.

**Habitat and Wildlife**

Significance: Maintaining habitat integrity is a key factor in species’ ability to thrive. Both quality and continuity of the space are crucial, and construction of projects can disrupt habitat. Species are part of a vast network of ecological relationships characterized by interdependencies, and any interruption in this network can cause widespread issues. Species also provide ecological services and benefits, such as pest and vegetation management, that are interconnected with their roles in the food networks and natural resource cycles.

Regulatory Framework: The National Environmental Protection Act (NEPA) entails standard environmental analyses to identify ecological resources including habitat and land use. In compliance with Section 7 of the Endangered Species Act, GDOT must identify the presence of threatened and endangered species, as listed by the U.S. Fish & Wildlife Service, and their designated critical habitat. Further surveys are required if it is determined that a potential project would threaten the existence of a listed species or adversely affect the species’ habitat.

Other relevant regulations include the Wildflower Preservation Act of 1973, the Georgia Endangered Wildlife Act, the Bald and Golden Eagle Protection Act of 1940, the Migratory Bird Treaty Act, and the Magnuson-Stevens Fishery Conservation and Management Act.

If a cold-water trout stream is identified in the study area, a 50 foot (rather than the traditional 25 foot) buffer should be planned for.

For more information:

*Endangered Species Act Section 7, U.S. Fish & Wildlife Service*

*Environmental Procedures Manual, GDOT*

**Parks and Recreation Areas**

Significance: Parks and recreation areas provide access to greenspace, which offer a number of health benefits to communities. Furthermore, greenspaces contribute to regional ecosystem services such as air quality and stormwater retention, and can provide habitat to species in the area.

Regulatory Framework: According to Section 4(f) of the U.S. Department of Transportation Act, publicly owned parks, recreation areas, and wildlife or waterfowl refuges, or any publicly or privately owned historic site can only be converted to a transportation use when it has been shown that there is no feasible alternative that avoids the land in question and that the project has appropriately planned to minimize harm.

For more information:

*Section 4(f) Overview, Federal Highway Administration*
Cemeteries

Significance: Cemeteries represent various social, historical, cultural and aesthetic values that often are a focal point of local significance. They are considered archaeological sites unless a survey determines that they are eligible for the National Register of Historic Sites. They present project risks because federally-funded projects must allow time for stakeholders to comment on the effects of development on historical and archaeological resources, which include cemeteries, buildings, districts, structures, objects and archaeological resources.

Regulatory Framework: The 1966 National Historic Preservation Act (NHPA) requires agencies receiving Federal money, needing Federal permits, or regulated by state or local agencies to consider potential impacts of projects on historical, cultural, and archaeological resources. If potential effects on historic resources are anticipated, then Section 106 applies, and a review process involving comment by the Advisory Council on Historic Preservation (ACHP) and coordination with various stakeholders begins. Specifically when burial sites are in question, a set of principles has been laid out by the ACHP to guide the planning and construction process.

Section 4(f) of the U.S. Department of Transportation Act requires that before historic lands are used for transportation infrastructure, it must be demonstrated that there is no feasible alternative and that the project includes all possible planning to minimize harm.

For more information:

Section 106 of the National Historic Preservation Act, ACHP
Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects, ACHP
Section 4(f) Overview, Federal Highway Administration

Hazardous Waste Sites

Significance: Hazardous waste sites, such as brownfield sites, have some degree of contamination from pollutants. The use of these sites for infrastructure projects is complicated by contamination, as the hazardous substances can be harmful to human health, and regulations surrounding development can cause delays in construction.

Regulatory Framework: The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) provides funding to clean up hazardous waste sites where the responsible party cannot be found or fails to act. Funding also covers spills and accidents involving contaminated sites.

The Resource Conservation and Recovery Act (RCRA) creates a framework for waste management. Subtitle C of RCRA regulates the safe handling of hazardous waste from the moment it is generated to its final disposal. Through the RCRA Corrective Action program, contaminated sites can be rehabilitated and made ready for future use.

The Georgia Environmental Protection Division maintains a list of hazardous sites in the state – the Hazardous Site Inventory (HSI) – which classifies the sites based on levels of contamination and progress on clean-up efforts. Sites are generally placed on the HSI when a release of a hazardous substance is discovered.

For more information:

Comprehensive Environmental Response, Compensation, and Liability Act, EPA
Resource Conservation and Recovery Act Regulations, EPA
Hazardous Site Response Act Guidance, EPD
Underground Storage Tanks

Significance: Underground storage tanks (USTs) are contaminated with petroleum or other hazardous substances stored at high pressure. Particularly when there is potential for the UST to leak, projects which cross land above USTs may face delays associated with required environmental site assessments.

Regulatory Framework: All USTs must be registered, and certain regulations must be followed if there is a leak or spill on the site. The Energy Policy Act regulates USTs and focuses on preventing releases of hazardous substances through the expansion of the Leaking Underground Storage Tank Trust Fund, which funds clean-up of contaminants.

For more information:

Leaking Underground Storage Tank Trust Fund, EPA

Floodplains

Significance: The Federal Emergency Management Association (FEMA) categorizes floodplains into zones based on the yearly chance of a storm occurring with the potential to flood the area. 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

TMDL Waters

Significance: The Total Maximum Daily Load (TMDL) applies to impaired waters, which are waters that do not or are not expected to meet water quality standards. TMDLs serve as a way to determine priority waters for clean-up as well as the levels of specific pollutants that must be eliminated.

Regulatory Framework: Section 303(d) of the Clean Water Act requires states to identify TMDLs for impaired waters – the maximum amount of a pollutant allowed in a body of water so that it will continue to meet water quality standards.

For more information:

Impaired Waters and TMDLs: Statutes and Regulations, EPA
Guidance for 1994 Section 303(d) Lists
**Non-Jurisdictional Waters**

Significance: Jurisdictional waters are considered “Waters of the United States” and are thus subject to the Clean Water Act. The decision of whether a body of water is jurisdictional or not is made by the U.S. Army Corps of Engineers.

Regulatory Framework: According to a decision by the EPA and the U.S. Army Corps of Engineers, non-jurisdictional waters are not subject to the regulations of the Clean Water Act.

For more information:

*Section 404 of the Clean Water Act, EPA*

**Wetlands**

Significance: Wetlands serve as protection from flooding and offer filtration and remediation, which helps to sustain the high plant and animal biodiversity that accompanies these areas. The levels of biodiversity seen in wetlands are beneficial to the surrounding ecosystem, as well as recreation and tourism industries.

Regulatory Framework: Section 404 of the Clean Water Act regulates the discharge of dredged or fill material into waters and wetlands. A permit for construction may be obtained only if no realistic, less degrading alternative can be found, and if plans show that every possible measure will be taken to minimize harm to wetlands.

For more information:

*Wetland Regulatory Authority, EPA*

**Rural Areas**

Significance: The Rural Area designation in the Unified Growth Policy Map refers to areas where little to no development has taken place and where there is little development pressure. Characterized largely by sporadic, large single family lots, agricultural uses, protected lands, and forests, these areas are generally located on the periphery, surrounding more developed and developing areas.

Regulatory Framework:

- Maintain rural road characteristics and protect scenic corridors
- Implement conservation design and development as appropriate in new residential neighborhoods
- Develop opportunities for heritage, recreation, and agriculturally-based tourism initiatives
- Identify areas to preserve as future large parks or conservation areas and create partnerships and dedicated funding sources for land conservation activities
- Identify opportunities for the development of rural broadband technology

For more information:

*Atlanta Region’s Plan – Regional Development Guide, Atlanta Regional Commission*
Metropolitan River Protection Act

Significance: The Chattahoochee River is the largest river in metro Atlanta and serves as the primary source of drinking water for millions of residents.

Regulatory Framework: The Metropolitan River Protection Act (MRPA) protects an 84-mile stretch of the Chattahoochee River between Buford Dam and Peachtree Creek by creating a 2,000 foot buffer along both banks of the river. All land-disturbing activity in the corridor must be reviewed, approved, and certified for consistency with Corridor Plan standards. Standards regarding vulnerability, buffer zones, and floodplains are laid out in the Corridor Plan and must be met in order to reduce the impact of development on the river.

For more information:
Metropolitan River Protection Act, Atlanta Regional Commission

Historic and Cultural Resources

Significance: The 1966 National Historic Preservation Act (NHPA) 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 NHPA also specifies that a Federal undertaking requires special consideration of historic properties. The Georgia State Historic Preservation Act requires similar consideration and treatment of historic properties for a State undertaking.

For more information:
The Georgia State Historic Preservation Act
The Advisory Council on Historic Preservation
National Historic Preservation Act
National Preservation Institute
National Historic Preservation Act, Section 106 – A Quick Guide for Preserving Native American Cultural Resources
Appendix B: Research on Practices from Other States

Florida: Efficient Transportation Decision Making - Environmental Screening Tool

Overview

The Efficient Transportation Decision Making (ETDM) process is Florida's procedure for reviewing transportation projects to consider potential environmental effects in the planning process. ETDM was developed in response to Congress's “Environmental Streamlining” initiative and emphasizes continuous agency participation, efficient online electronically managed environmental review and meaningful dispute resolution mechanisms. A working group was formed in 1999 to decide on specifics on the program. The first Memorandum of Understanding (MOU) was signed by 24 different State and Federal partners at the end of 2001. A pilot version of the ETDM process was implemented in 2003 with full implementation in 2005.

ETDM is supported by the Environmental Screening Tool (EST). The EST is an internet-accessible interactive database and mapping application which integrates a geo-relational database of ETDM projects, over 550 environmental resource GIS data layers, an automated and standardized GIS-based environmental screening analysis application, and numerous tools for data entry, review, and reporting. It is used to:

- Integrate data from multiple sources into an easy to use, standard format
- Analyze the effects of proposed projects on the human and natural environment
- Communicate information effectively among Environmental Technical Advisory Team (ETAT) representatives and to the public
- Store and report results of the ETAT review effectively and efficiently
- Maintain project records, including commitments and responses, throughout the project life cycle

Access

The EST has both public facing and password protected access. The public facing map only shows non-sensitive information and the password protected site includes endangered species and archeological sites, as well as the ability to save projects and generate reports. ETDM Coordinators and authorized MPO and FDOT District staff have read/write access to the Environmental Screening Tool so that they can update project information and respond to Environmental Technical Advisory Team (ETAT) review comments. ETAT representatives have read/write access to provide comments about potential effects to environmental resources. Community Liaison Coordinators (CLCs) create community inventories and review projects for potential sociocultural effects using the Environmental Screening Tool. These users are authorized by FDOT’s ETDM Coordinators and granted access by EST administration staff. Each user is given a unique username and password that grants permission to the servers and to the database. Each user is assigned a specific role according to their job duties which grants them write authority to specific portions of the database.

Functions

In the EST, users can create and save projects and draw their projects' full footprint on the map or draw line or points and specify a buffer distance. The project can also be downloaded as a shapefile. The user can then run an analysis for the 300+ layers contained in the map and get several autogenerated reports detailing the environmental, sociocultural, and cultural resources that are in the vicinity of the project. The project reviewers can then add their comments in the EST based on these reports and the project descriptions. The project team uses the EST to respond to the reviewers' comments in the form of a Screening Summary Report. The results of the screening events are maintained in the database for the life of the project and provided to the project manager for use in subsequent project phases.
Governance

The Florida Department of Transportation (FDOT) developed the EST and ETDM tools with in-house staff, consultants, and the University of Florida GeoPlan Center. The GeoPlan Center houses the digital databases of environmental and community resource information used in the project. Each individual department maintains and updates its own data to be provided to the Florida Geographic Data Library (FGDL), a repository of GIS data gathered from federal, state, and local governments. The updated data is then incorporated into EST. Much of the funding for ETDM came from FHWA, but FDOT also pays for some data maintenance.

**North Carolina: Natural Heritage Data Explorer**

Overview

Housed in the North Carolina Department of Cultural and Natural Resources (DCNR), the Natural Heritage Data Explorer consolidates information about hundreds of rare species and natural communities. This information helps project planners and landowners make land use decisions that have the most benefit for society and the economy, while having the least ecological impact.

Access

There is both public access and secured access for the Data Explorer. The publicly accessible site does not contain any sensitive information. The secured version of the site has several different tiers depending on the use case and DCNR hosts a free training that is required for viewing protected species data. The training outlines what the data means and how to understand it.

The tiers for access are broken out by user types. State and Federal employees are granted unobscured access the all the data. Regional or local governments are given access to only their jurisdiction's data. Contractors may purchase access by geographic area, but are not given species data. Contractors can contact DCNR for species data and will get what species was spotted on their project and when.

Functions

The Natural Heritage Data Explorer is a web-based, interactive map. With appropriate access, a user can create a project by either uploading a shapefile or drawing project boundaries. That project can then be submitted into the system, which autogenerates a report for the user outlining any features present in a one-mile buffer analysis of the project. Users are also able to annotate their maps and edit their appearance to create printable maps suitable for public engagement. This feature is especially helpful for agencies without access or experience with ARCGIS.

Governance

The Natural Heritage Data Explorer was built and is maintained by NatureServe and only includes data and resources from DCNR. For this reason, there is no formalized data governance yet. The process for completing an environmental review is housed at the Department of Administration (DOA), where there is a clearinghouse of reports that need to go to up to 20 different departments for comment. Following the success of the Natural Heritage Data Explorer, however, discussions are beginning to form around streamlining the overall process.

DCNR uses data agreements for many of their users. For example, if a user would regularly need to purchase data from the site at the start of a survey, they enter into a data agreement where the fee is waived in return for the final survey data. In this way the data within the tool stays up-to-date through surveys as they are completed.
Utah: Planning and Environmental Linkage

Overview

The Utah Planning and Environmental Linkage (uPEL) is an online interactive mapping tool that brings together many environmental, cultural, and population data for streamlining environmental project reviews. It is housed at the Utah Department of Transportation and nested inside of the Utah Planning Network, a GIS platform containing Utah’s transportation related data.

Access

The public has access to most of the tool. The sensitive data including species is not accessible, but it is housed at the consultant’s, Bio-West server. The autogenerated report summarizes the sensitive information without giving details.

Functions

The access restricted uPEL allows users to create projects by uploading a shapefile. That project can then be submitted into the system, which autogenerates a report for the user outlining any features present in a buffer analysis of the project.

There is both informational and tiered data summarized in the report. The information data, such as demographic information is useful for knowing the context of a potential project. The tiered data is organized into three categories based on resource sensitivity and project proximity to the resource. Tier I is assigned to the most sensitive resources and may indicate issues that would lengthen project and regulation time. Tiers II and III demonstrate less critical areas, but may still require potential mitigation, stakeholder concern, or heavy public involvement.

Governance

Several MOUs were signed by a variety of agencies agreeing to provide data regularly to the Automated Geographic Reference Center (AGRC), Utah’s statewide GIS agency. UDOT also has an MOU with AGRC to receive the data. In addition, some data, including sensitive data is held in a server at the consultant Bio-West’s office requiring many data security agreements.

Washington: Environmental GIS Workbench

Overview

Washington’s Environmental GIS Workbench is a program run out of Washington State DOT’s (WSDOT) Environmental section. Originally built in 1999 with 70 datasets, it functions as a data library currently containing over 700 environmental and natural resource datasets. These datasets include environmental data such as air quality, priority species and habitats, and soils, as well as general reference data such as transportation routes and administrative boundaries.

Access

Almost all the data in the GIS Workbench is available to all WSDOT staff, included some sensitive data like endangered species. One exception would be traffic incident records that contain personal information. MPO or local government staff do not have access to the GIS Workbench, though they can access the DOT’s publicly available data through the WSDOT GIS Data Download site. To gain access to the sensitive information housed in the GIS Workbench or outside agency data an MPO or local government employee would have to officially request the data directly from the steward of that dataset. Consultants working under contract with WSDOT can be set up with a username and password to access the GIS Workbench, which can then be activated and deactivated as their contracts are concluded.
Functions

Environmental GIS Workbench is a tool built for use in ArcMap or ArcGIS Pro desktop products that acts as a library for looking up data from a collection of sources. The GIS Workbench allows planners to quickly find over 700 datasets to use in their own geospatial analysis in ArcGIS. They can then use their professional judgement in characterizing impacts of potential projects and create map products for public review. Familiarity with ArcGIS is required to get the most use out of this tool.

Governance

WSDOT has data sharing agreements in place with WA Department Fish & Wildlife (WDFW) and with the Department of Archaeology and Historic Preservation (DAHP). The overall data stewardship is the responsibility of the data owner, but the Environmental Department in WSDOT updates and maintains the GIS Workbench. The data in the GIS Workbench is manually updated monthly, quarterly, annually, or on an as-needed basis depending on the dataset by the Environmental Department in WSDOT. Efforts are being made for partner agencies to host their non-sensitive data online so that the update process could become partially automated. The Environmental Department in WSDOT also occasionally makes small schema or layer symbology changes to the updated data and creates buffer analyses as needed.
## Appendix C: GIS Metadata Information

<table>
<thead>
<tr>
<th>Updated Data Layer</th>
<th>Source</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant Groundwater Recharge Areas</td>
<td>Georgia Environmental Protection Division</td>
<td>2017</td>
</tr>
<tr>
<td>Hazardous Sites Inventory</td>
<td>US EPA Resource Conservation and Recovery Act Information</td>
<td>2018</td>
</tr>
<tr>
<td>Brownfields</td>
<td>Georgia Environmental Protection Division</td>
<td>2017</td>
</tr>
<tr>
<td>Wetlands</td>
<td>National Wetlands Inventory</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Floodplains</td>
<td>FEMA Flood Insurance Rate Maps</td>
<td>2013-2017</td>
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<tr>
<td>Cemeteries</td>
<td>ARC LandPro, ESRI</td>
<td>2018</td>
</tr>
<tr>
<td>Historic Resources</td>
<td>National Historic Preservation Act, GNAHRGIS</td>
<td>2017</td>
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Environmental Consultation Meeting Summaries

Two meetings were held with a group of stakeholders regularly convened by ARC to advise on issues related to environmental review. The unique knowledge and insight they provide has been an invaluable resource through several updates of the Regional Transportation Plan. The feedback provided by this group at the beginning and end of this evaluation process proved equally valuable in determining the course of this project.

The first stakeholder meeting was held on April 27, 2017. The principle objective of the meeting included introducing the INVEST process and revisiting potential data, tools, methods, and policies on streamlining environmental and transportation planning for purposes of accelerating project delivery and practicing sustainability. The discussion included

- General dialogue about whether sustainability is a function of transportation planning, or something that exists outside of the process;
- Whether ARC was deploying the correct tools to align our goals of implementing sustainable project delivery;
- And to provide general direction in the course of self-evaluation that ARC was undertaking in the next several months.

Feedback was evaluated and incorporated into the process.

The second stakeholder meeting was held on July 20, 2018. This meeting had a dual purpose of introducing the consultation process for the upcoming Regional Transportation Plan and presenting the findings of the evaluation undertaken through the INVEST. The response to findings was overwhelmingly positive.

- Developing links between planning and NEPA has been an ongoing challenge
- Local project sponsors will get more meaningful information from the qualitative information rather than the quantitative analysis; the stakeholder committee can be a good resource for future technical support and training
- Developing the equity and sustainability modules will provide an enhanced level of support for project analysis that is not currently being achieved

Several stakeholders pledged on-going support in refining this model. Follow up meetings will extend beyond the scope of the INVEST grant, particularly as ARC continues to revise its methodology and tools.

Stakeholders included:

- Atlanta Regional Commission
- City of Douglasville Planning and Zoning
- Clayton County DOT
- Douglas County DOT
- Federal Highway Administration – Georgia Division
- Federal Highway Administration - INVEST
- Federal Transit Administration – Region IV
- Georgia Department of Community Affairs
- Georgia Department of Natural Resources
  - Environmental Protection Division
  - Historic Preservation Division
  - Wildlife Resources Division
- Georgia Department of Transportation
  - Office of Planning
  - Office of Program Delivery
  - Office of Program Control
- Georgia Institute of Technology (CGIS)
- Georgia Regional Transportation Authority
- Metropolitan Atlanta Rapid Transit Authority (MARTA)
- Metropolitan Atlanta Rapid Transit Authority
- National Park Service
- National Park Service - Chattahoochee National Recreation Area
- Paulding County DOT
- State of Georgia Geospatial Information Office
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service, Georgia Ecological Services
- University of Georgia – Carl Vinson Institute, Information Technology