Measuring sustainability achievements with INVEST and LCA tools

William R. Vavrik, Ph.D., P.E.

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What is Sustainability?

- The satisfaction of basic social and economic needs, both present and future, and the responsible use of natural resources, all while maintaining or improving the well-being of the environment on which life depends.

- To FHWA, sustainability comes from striking a balance between three key principles: economic, social, and environmental.

The Sustainability Triple Bottom Line
INVEST Goals

- Encourage implementation of sustainable practices
- Help agencies assess their level of sustainability implementation and identify areas for internal improvement (grade their own paper)
- Provide a framework for communicating with stakeholders and decision makers about sustainability
- Establish a method for identifying sustainable best practices in highway systems, projects, programs
What is INVEST?

FHWA’s INVEST is located here: www.sustainablehighways.org

FHWA’s INVEST

- Infrastructure Voluntary Evaluation Sustainability Tool
- Web-based self-evaluation tool for assessing sustainability over the life cycle of a transportation project or program
- From system and project planning through design and construction, to operations and maintenance.
Supporting the Entire Life Cycle

- System Planning & Processes
- Project Development
- Operations & Maintenance
Welcome to INVEST Version 1.0!

Announcements

The Federal Highway Administration (FHWA) is seeking to partner with State departments of transportation (DOTs), metropolitan planning organizations (MPOs), Federal lands, and local governments on utilizing INVEST 1.0, FHWA's voluntary self-assessment tool, to assess and enhance the sustainability of their projects and programs. For more information, see the solicitation.

FHWA launched INVEST 1.0 on October 10, 2012. View the one-page
Evaluate – Score – Improve

- Evaluate – Using the collaborative process can provide the most important outcome

- Score – Provides recognition for implementing sustainability best practices and identifying gaps

- Improve – Using the process to improve in practice and identify cost effective measures
INVEST: Sustainability throughout the Transportation Lifecycle

Affected Triple Bottom Line Principles

- Environmental
- Economic
- Social

Voluntary • Private • Free • Flexible • Practical

System Planning & Processes

Project Development

Operations & Maintenance
Tollway and INVEST Implementation

- The Tollway selected INVEST based on:
  - Thorough evaluation of existing sustainability rating tools
  - INVEST is fully developed, vetted, provides an objective standard with which to measure, is free, and is a self-evaluation tool

- INVEST is a tool that will help the Tollway:
  - Measure and prove that we’re the “Cleanest and Greenest”
  - Evaluate past and present performance
  - Set a baseline against which future improvements can be measured
  - Identify and integrate of sustainable practices
  - Identify institutional and other barriers that may be preventing implementation of sustainable practices
  - Identify strengths regarding sustainability practices
Tollway Approach to INVEST Implementation

- Implementing all three modules

- System Planning & Operations and Maintenance Programs
  - Evaluating 3 baseline years and 2013
  - Will evaluate every year moving forward

- Project Development
  - Evaluating completed 22 projects to set baseline
  - Will evaluate all projects at 30% design, 95% design and completed construction moving forward
Sustainability Paradigm
The “Triple Bottom Line”

- Economic
- Social Responsibility
- Environmental Stewardship

Culture Change
Stakeholder Engagement
Awareness Building
Sustainable
What is Life Cycle Assessment (LCA)

- Compilation and evaluation of the inputs, outputs and potential environmental impacts of a product system throughout its life-cycle (ISO 14040, 1997)

- A cradle-to-grave approach for assessing industrial systems that evaluates all stages of a product’s life and provides a comprehensive view of the environmental aspects of the product or process (EPA, 2006)
LCA is quantitate analysis

Why must we quantify?

- If it is not quantified, it is not valued
  - Without value, it won’t get done
  - Without value, it cannot be improved upon
  - Without value, there is no incentive
## Difference between SRS and LCA

<table>
<thead>
<tr>
<th><strong>Sustainability Rating System</strong></th>
<th><strong>Life-Cycle Assessment</strong></th>
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<tbody>
<tr>
<td>Qualitative</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Incorporates social, economic, and environmental aspects</td>
<td>Only environmental</td>
</tr>
<tr>
<td>Usually rates a system</td>
<td>Typically for a specific product (eg. pavement, car, etc.)</td>
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Where might it go?

- Agency establishes sustainability goal
- Design to sustainability goal
- Review of design against goal
- Construction given design standard & goal
- Contractor runs LCA with actual materials & construction procedures – Potential bonus for sustainable construction
- Review of construction against design standard & goal
THANK YOU