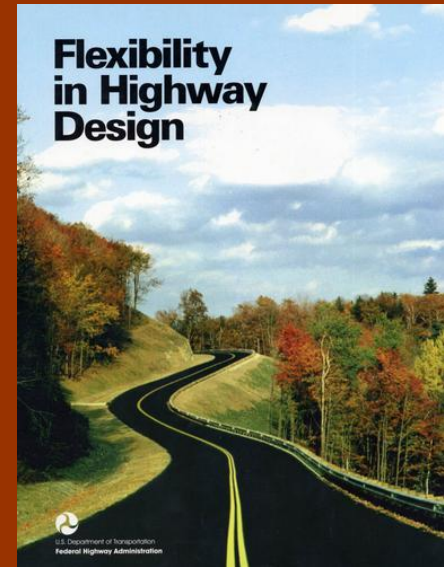


Overview of Sustainability Rating System Trends in Transportation

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Sustainability Rating System Functions

- Promote engineering awareness and integration into the transportation process and at the project level
- Management tool for accountability and project comparison
- Internal recognition for sustainable actions on highway projects (certifications)
- Scoping and design reference tool
- Public relations tool on sustainable practices
- Track sustainability program progress and areas for adjustment
- Tool for transportation decision making process



Rating Systems Chronology

- LEED (1998)
- GreenLITES (2008)
- Sustainable SITES (2009)
- GreenRoads (2010)
- ILAST (2010)
- STARS (2010)
- BE2ST(2010)
- INVEST (2011-2012)
- Envision (2012)
- Greenway (2012)

Leadership in Energy and Environmental Design (LEED)

- US Green Building Council (USGBC)
- 7 Criteria Categories: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation in Design, Regional Priority
- Building Design Emphasis
- Checklist Approach
- Cost for Accreditation and Certification
- 4 levels of certification via documentation to USGBC

Leadership in Transportation and Environmental Sustainability (GreenLITES)

- New York State Department of Transportation
- 5 Criteria Categories: Sustainable Sites, Water Quality, Material Resources, Atmosphere, Innovation
- Transportation specific checklist
- Internal certification; 4 levels of certification
- Context specific (climate, guidance)
- Mandatory with management participation
- Internal verification
- Operation and maintenance

Sustainable Sites Initiative (SITES™)

- American Society of Landscape Architects
- 9 Criteria Categories: Site selection, Pre-design assessment and planning Site design-water, Site design-soil and vegetation, Site design-materials selection, Site **design-human health**, and well-being, Construction Operations and **maintenance, Monitoring** and innovation
- Voluntary national guidelines and performance benchmarks for sustainable **land design, construction, and maintenance practices.**

GreenRoads/C4C Initiative

- University of Washington; C4C
- 7 Criteria Categories: **Basic Project Requirements (Plans)**, **Environment & Water**, **Access & Equity**, **Construction Activities**, **Materials and Resources**, **Pavement Technologies**, **Custom Credits**
- Checklist approach
- Prerequisite plans
- Verification by **independent reviewers**
- **Life cycle analysis and inventory**
- **Design, construction, operation and maintenance emphasis**

Illinois - Livable and Sustainable Transportation Rating System and Guide (I-LAST)

- Illinois Department of Transportation
- Checklist approach for planning and design
- 8 Criteria Categories: **Planning** , Design, Environmental Water Quality, Transportation, **Lighting**, Materials, Innovation
- High emphasis on **environmental criteria**
- Voluntary actions **not an official policy**; no internal certification
- Rating **criteria and rational measure of effectiveness** described in detail .

Sustainable Transportation Access Rating System (STARS)

- Developed by Portland (Oregon) Bureau of Transportation; Santa Cruz County Regional Transportation Commission
- 5 Criteria Categories ; Integrated Process, **Access**, Climate and Energy Ecological Function, **Cost Effectiveness Analysis**, Innovation
- Mix of transportation and **land use strategies to solve transportation issues**
- STARS is an integrated **planning/NEPA/design** framework
- Users to set and achieve clearly-stated goals and objectives

Building Environmentally and Economically Sustainable Transportation Infrastructure-Highways (BE²ST in-Highways)

- Recycled Materials Resource Center and University of Wisconsin-Madison
- 9 Criteria Categories: Social Requirements Including Regulation & Local Ordinances, Greenhouse Gas Emission, Energy Use, Waste Reduction (in-situ/ex-situ), Water Consumption, Social Carbon
- Emphasis on recycling, material use and construction
- Life cycle analysis techniques to provide a quantitative assessment of the impacts associated with a highway construction project.
- The methodology is grounded in quantitative metrics rather than an arbitrary point system

FHWA Infrastructure Voluntary Evaluation Sustainability Tool (INVEST)

- Federal Highway Administration
- Input from AASHTO, ASCE, ACEC and APWA
- 3 Criteria Categories: System Planning and Processes, Project Development, Operations and Maintenance
- Extensive list of criteria (61)
- All phases of transportation process from planning through operation and maintenance
- Framework for stakeholder communication
- Voluntary on federal projects

Envision

- Institute for Sustainable Infrastructure Ranking System/Harvard Zofnass Program for Sustainable Infrastructure
- 5 Criteria Categories: Quality of Life, Leadership, Resource Allocation, Natural World, Climate and Risk
- American Society of Civil Engineers, American Council of Engineering Companies, American Public Works and Harvard University
- Subjective scoring based upon levels of achievement for each criteria
- Extensive reference list and suggested sustainable practices
- Assessor training and verification for certification

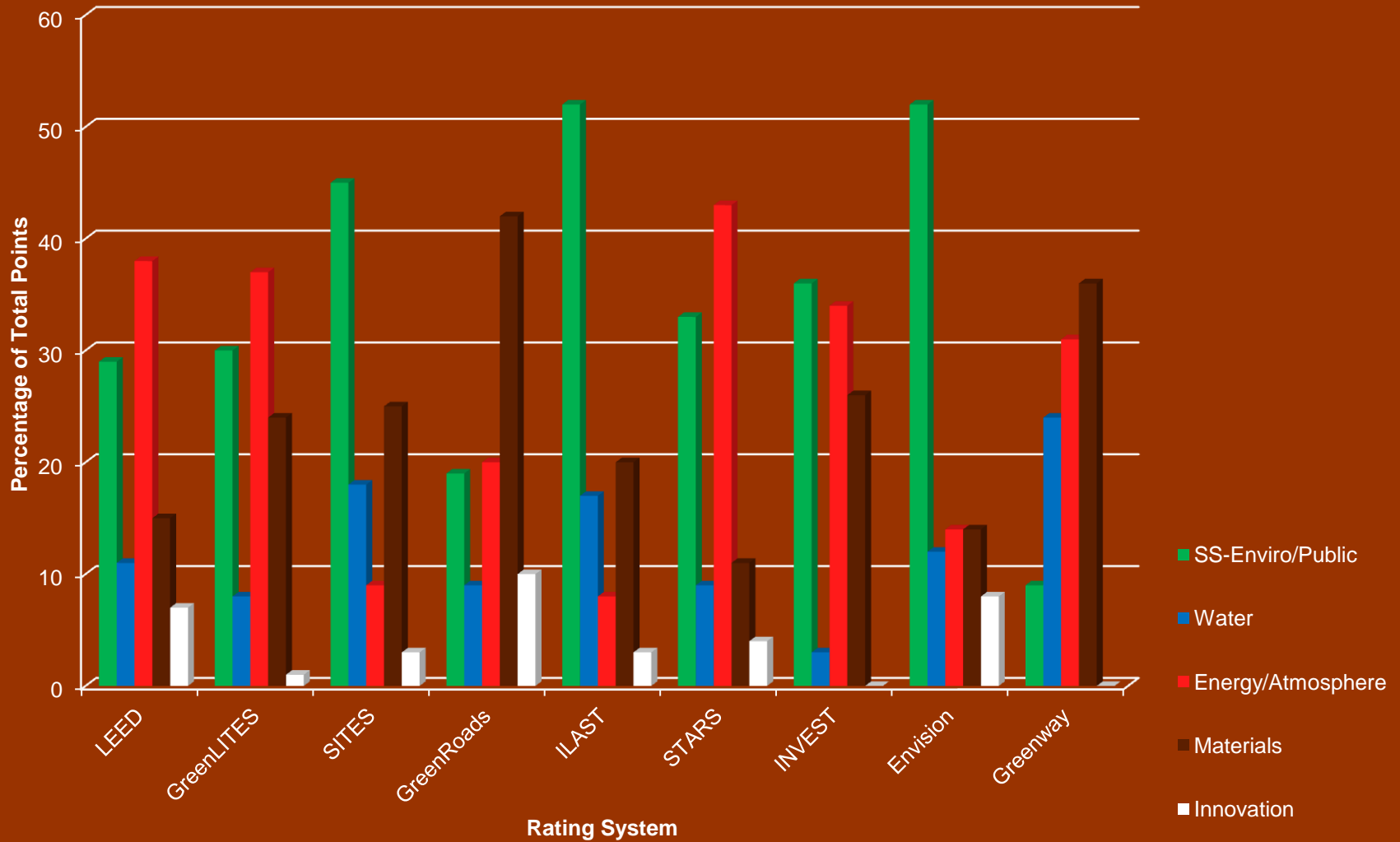
Greenways

- Department of Civil & Environmental Engineering at Jackson State University (Mississippi) (Pilot 2012)
- 5 Criteria Categories: Materials, Environment/Water, Traffic Efficiency, Lifecycle/Maintenance, Community/Multimodal
- Rating system for green **highway construction**
- **Cradle to grave energy/life cycle costs**
- **Outline plan and funding for maintenance**

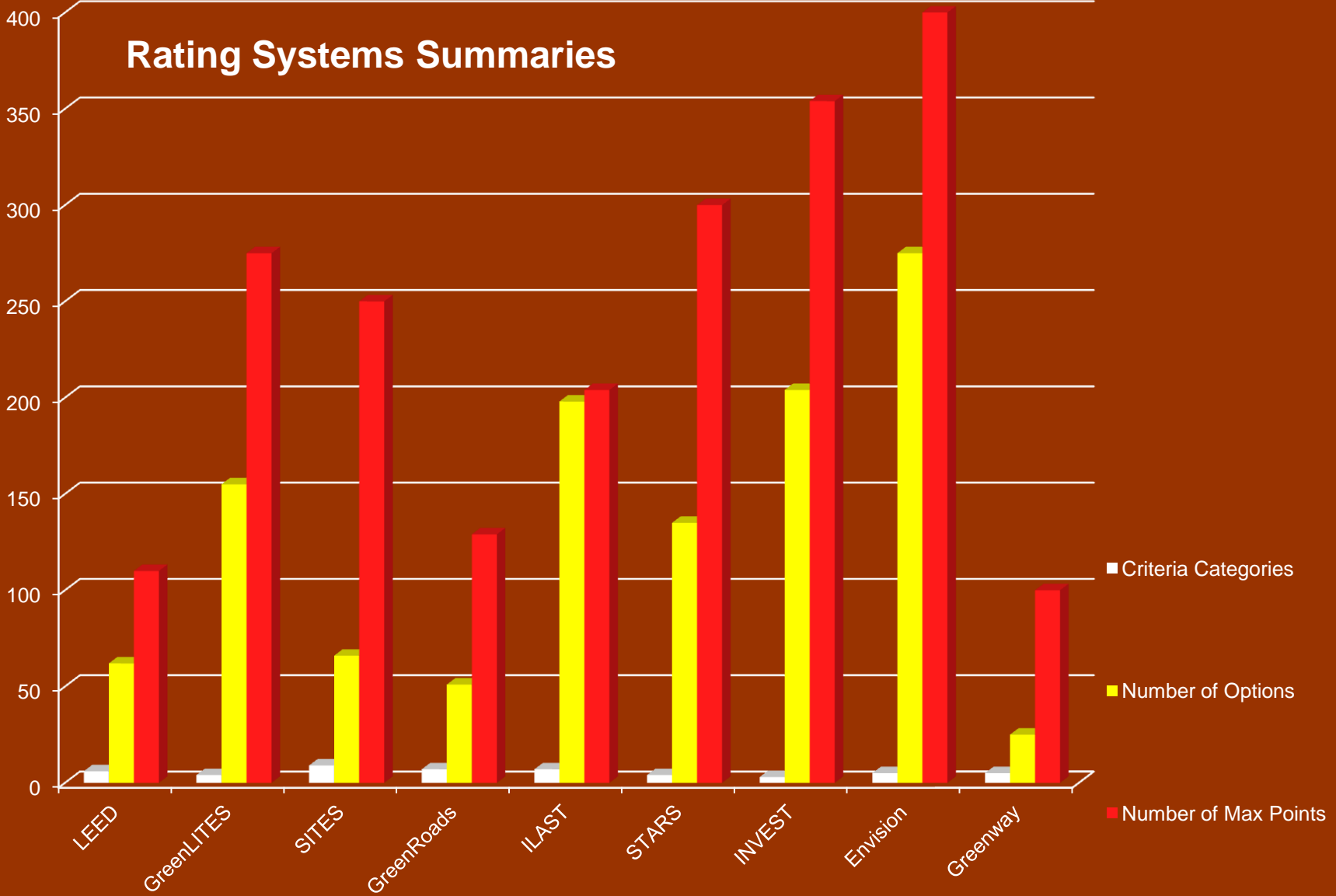
International Rating Systems

- (CEEQUAL) Civil Engineering Environmental Quality Assessment and Award Scheme (2003)
 - Institution of Civil Engineer Research and Development Enabling Fund (UK)
 - 12 criteria: Project management land use landscape, Ecology and biodiversity, **The historic environment**, Water resources and the water, environment, **Energy and carbon**, Material use, Waste management, Transport Effects on neighbors, Relations with the local community other stakeholders
- Integrated VicRoads (Roads Corporation of Victoria) Environmental Sustainability Tool (2012 pilot tested)
 - 11 criteria Air Quality, Behavioral Change and Capacity Building, Biodiversity, **Cultural Heritage**, Community Engagement, Energy Management Design, **Noise Management**, Resource Management, **Urban Design**, Water Management

Rating Systems Category Percentage of Total Points



Rating Systems Summaries

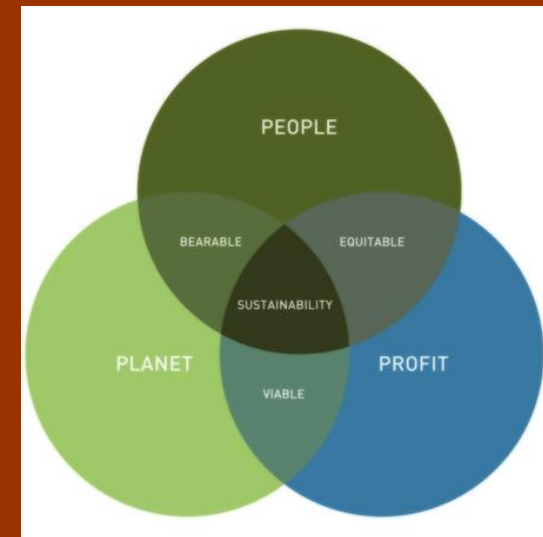
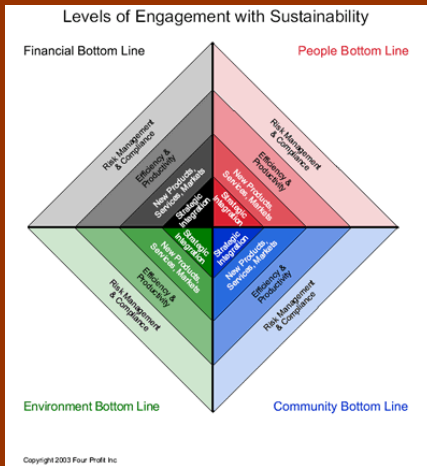
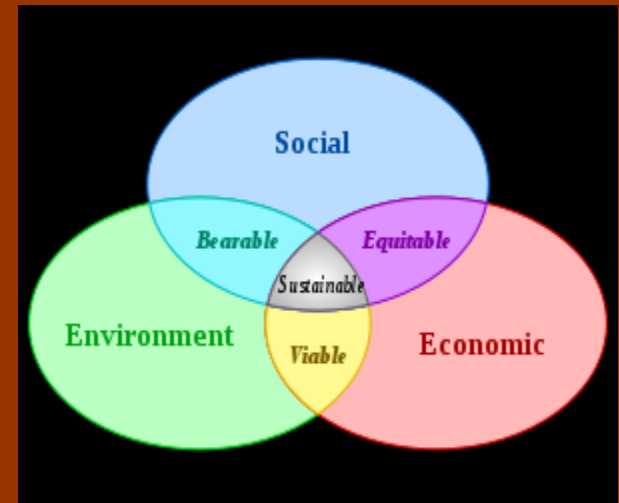
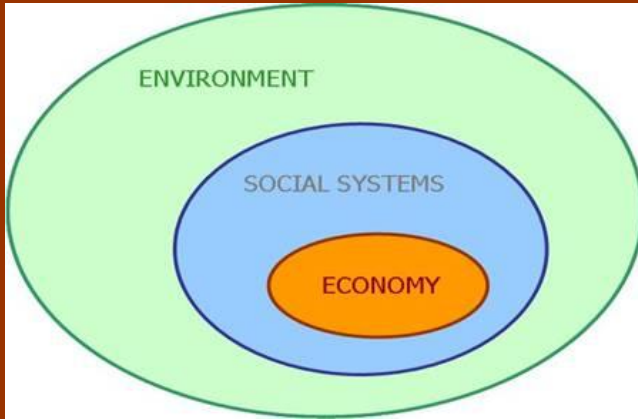


Trend Summary

- Continued “open source sharing”
- No one ranking system has emerged
- Increase in external certification type systems-complexity /verifications
- Increased emphasis on community impacts
- Stakeholder interaction and CSS
- Design to all transportation elements
- Smaller/easy to use DOT specific rating systems
- Life cycle costs and carbon/ghg emissions

Things to Consider When Selecting or Developing a Rating System

- Will the sustainability ranking system and program have upper management commitment, support and participation?
- Does the rating system criteria and scoring reflect the goals and objectives of an established sustainability program?
- Does the rating and scoring system mean anything to the project or to the project manager (such as salary performance indicator or project recognition)?
- Are the scoring criteria flexible and able to reflect the local environmental conditions of the state or regions?
- Will the rating system take too long or be too complex to fill out by a Project Team or a contractor?
- Will it be the right tool for decision making?



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