The Eco-Logical Approach in Action:
Implementation Updates from Eco-Logical Grant Recipients

April 18, 2012
2:00 – 3:30 PM Eastern

Presenters

- Michael Lamprecht, Federal Highway Administration
- Steve Williams, Thomas Jefferson Planning District Council
- David Leopold, Chicago Department of Transportation
Eco-Logical Grant Program Overview

**Purpose:** To apply the goals and principles outlined in the 2006 multi-agency publication *Eco-Logical: An Ecosystem Approach to Developing Infrastructure Projects*

- A national solicitation for grant application occurred in 2007.

- Eligible applicants included:
  - Non-profits
  - All levels of government
  - Tribes
  - Colleges/universities
  - Private Entities

- 15 pilot projects received a total of $1.4 million in grant funding.

- The projects were required to identify local matching funds.
Range of Eco-Logical Grant Projects

* Alaska, Hawaii, and Puerto Rico are not included in this map because there are no current Eco-Logical projects in those locations.
Objectives of Eco-Logical Grant Projects

Projects test one or more aspects of the Eco-Logical approach:

- Build and Strengthen Collaborative Partnerships
- Identify Management Plans
- Integrate Plans
- Assess Effects
- Establish and Prioritize Opportunities
- Document Agreements
- Design Projects Consistent with Regional Ecosystems
- Balance Predictability and Adaptive Management

Eco-Logical analysis of a road in Illinois; part of the Tri-County Regional Planning Commission’s Regional Transportation, Ecosystem, and Land-Use Integration Plan
Reporting Project Findings and Success

FHWA regularly gathers information from grant recipients to document important lessons about the state of the practice for the Eco-Logical approach via:

- Interviews
- Progress reports
- Questionnaire responses
- Grant products

The 2010 Eco-Logical Grant Program Annual Report:
Eco-Logical Grant Project Findings

Findings from the grant recipients fall under four categories:

- Implementing Eco-Logical regionally and nationally
- Integrating Eco-Logical into organizational activities
- Partnering for interagency collaborations
- Using data and tools for Eco-Logical projects

Vision of a nature preserve and public trail from grant-recipient Envision Utah’s Blueprint Jordan River plan
Regional and National Implementation

- Most grant recipients have adopted a Regional Ecosystem Framework (REF) and are integrating products into long-range transportation planning and project selection.

- Approximately half of the recipients have begun or plan to replicate components of their project regionally or nationally.

- Recipients find that documentation of data analysis processes allows other organizations to replicate at a national scale.

Screenshot of the online decisionmaking mapping tool from the Houston-Galveston Area Council’s grant project.
Integrating into Organizational Activities

Key organizational factors that promote implementation include:

- Understanding and buy-in from senior-level management
- Effective demonstration of the quantifiable benefits of the Eco-Logical approach

Grant recipients that have integrated the Eco-Logical approach into the day-to-day operations of their organizations have been the most successful.
Interagency Collaborations

- Partnerships strengthen and promote implementation of Eco-Logical grant products.

- Partner adoption helps institutionalize the products and related Eco-Logical principles in the region.

- Memorandums of Understanding (MOUs) are valuable. The process has allowed grant recipients to communicate priorities, strengthen relationships, and refine methodologies.

North Central Texas Council of Governments’ recommended roadway projects for a Metropolitan Transit Plan.
Using Data and Tools

- Web-based data tools and maps reach a wider audience and help grant recipients connect with implementing agencies.

- Innovative and flexible methodologies can compensate for a lack of available data.

- National datasets, supplemented with local or regional data, integrated at a regional level help prioritize mitigation sites.

GIS-based wildlife-connectivity model with conservation lands and connectivity zones from New Hampshire Audubon’s grant project.
Improving Implementation

Resources that promote further implementation:

- Additional funding
- Greater staff capacity/resources to work on Eco-Logical
- Incentives for partner organizations to implement Eco-Logical
- Improved understanding among partner organizations about Eco-Logical
Signs of Success

Examples of implementation measures include:

- Formal adoption of approach into transportation planning process
- Use of plan/products by partners
- Signed MOU or agreement/interagency working group
- Publication/dissemination of:
  - Analytical tool
  - Data
  - Priority maps
  - Report or publication
- Use of project products or tool in project selection
- Receipt of additional grants
Resources

Eco-Logical Grant Program:
http://www.environment.fhwa.dot.gov/ecological/eco_grant_program.asp

The 2010 Eco-Logical Grant Program Annual Report:
INTEGRATING GREEN INFRASTRUCTURE & REGIONAL TRANSPORTATION PLANNING

STEPHEN WILLIAMS
EXECUTIVE DIRECTOR
THOMAS JEFFERSON PLANNING DISTRICT COMMISSION
CHARLOTTESVILLE, VIRGINIA
• Central Virginia
• 50% Urban – 50% Rural
• Blue Ridge Mtns & Piedmont
Project Purposes

Use FHWA Eco-Logical Model to develop reproducible model for small MPOs/regional governments to:

- Develop simple, transparent, collaborative approach to analyzing ecosystem value
- Integrate ecosystem value into transportation project prioritization
- Use ecosystem value to identify lowest ecosystem impact road alignment
- Integrate ecosystem value into other planning activities
Project Deliverables

1. **Regional Ecological Framework** – combines diverse ecosystem data
2. **Integrated Regional Map** – integrates ecosystem data with transportation projects
3. **Prioritized Transportation Projects** - based on Integrated Regional Map
4. **Least Environmental Impact Road Alignment**

**Diagram:**
- Regional Ecological Framework + Transportation Plans (State, MPO, local) → Integrated Regional Map → Prioritized Transportation Projects → Least Environmental Impact Road Alignment
Regional Ecological Framework

Integrate Ecosystem Data:

A. Convert Ecosystem Data to Raster Format (Spatial Analyst)

B. Steering Committee Established Ranking System

C. “Score” Rasters Using Ranks Established in Previous Step

D. Aggregate All Datasets to Create a Weighted Raster of Ecosystem Value
Regional Ecological Framework

Shows Relative Ecosystem Value
Overlay Transportation Plans with Regional Ecosystem Framework

A. All Recommended Projects for TJPD (400+)

B. Projects with Potential to Cause Environmental Impacts (60)
Prioritize Transportation Project with Least Ecosystem Impacts

1. **Buffer projects** to create impact zone
2. **Aggregate values** within impact zone to identify ecosystem impact
3. **Normalize values** to allow comparison of transportation projects
4. **Prioritize projects** based on lowest ecosystem impact
Lowest Ecosystem Impact Road Alignment

Use “Least Cost” Tool in ESRI Spatial Analyst
Other Opportunities for Integrated Planning

• **Identifying Mitigation Priorities**

• **Comprehensive Plans**
  - Let REF inform land use decisions, conservation planning

• **Meeting Chesapeake Bay Total Maximum Daily Load requirements**
  - Restoration focuses on impaired streams
  - Take credit for transportation mitigation projects at no cost to the locality

• **Nutrient Trading** — identify potential stormwater impact mitigation sites
Contact Information:

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The Cermak/ Blue Island Sustainable Streetscape

FHWA Ecological Webinar

David Leopold, Program Manager
CDOT Streetscape and Sustainable Design Program
The Cermak/ Blue Island Streetscape

Ecological Approach: A project-specific mitigation effort to demonstrate how sustainable infrastructure can support the urban ecosystem
Old Fashioned and New Fashioned Sustainability

Accommodate the needs of ALL users in a limited amount of space

Minimize impact on land, air and water resources
**Project Sustainable Goals**

**Stormwater Management**
Divert 80% of the typical average annual rainfall and at least 2/3 of rainwater falling within catchment area into stormwater best management practices.

**Water Efficiency**
Eliminate use of potable water for irrigation, specify native or climate adapted, drought tolerant plants for all landscape material.

**Transportation**
Improve bus stops with signage, shelters and lighting where possible, promote cycling with new bike lanes, improve pedestrian mobility with accessible sidewalks.

**Energy Efficiency**
Reduce energy use by min. 40% below a typical streetscape baseline, use reflective surfaces on roads/sidewalks, use dark sky-friendly fixtures. Min. 40% of total materials will be extracted, harvested, recovered, and/or manufactured within 500 miles of the project site.

**Recycling**
Recycle at least 90% of construction waste based on LEED NC criteria, Post/Pre-Consumer recycled content must be min. 10% of total materials value.

**Urban Heat Island, Air Quality**
Reduce ambient summer temperatures on streets and sidewalks through use of high albedo pavements, roadway coatings, landscaping, and permeable pavements. Require ultra low sulfur diesel and anti-idling.

**Education, Beauty & Community**
Provide public outreach materials/self-guided tour brochure to highlight innovative, sustainable design features of streetscape. Create places that celebrate community, provide gathering space, allow for interaction and observation of people and the natural world.

**Commissioning**
Model Stormwater BMP’s in Infoworks to analyze and refine design. Monitor stormwater BMP’s to ensure predicted performance and determine maintenance practices.
Integrated Design: Blue Island Cross Section

- Permeable Pavement for Stormwater Management
- Photocatalytic for Air Quality
- High SRI for Lighting and UHI
- Bike/Parking Lane
Integrated Design: Cermak Road

Infiltration Planters

Bioswale
Ecological Process and Grant Scope

- Sustainable Streetscape Design Manual
- Sustainable Streetscape Education Materials
Education: Informational Kiosks with Interpretive Graphics, Lightpole Identifiers, and Walking Tour
Commissioning- Sustainable Design Manual

- Design, Construction, and Commissioning Performance Report

- Details the Implementation of Sustainable Goals, Including Ideas Not Selected.

- Living Document to Include Construction and Commissioning Reports
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Questions?

Thomas Jefferson Planning District Commission:  
http://www.tjpdc.org

Chicago Department of Transportation:  
http://www.chicagodot.org

Eco-Logical Grant Program:  
http://www.environment.fhwa.dot.gov/ecological/eco_grant_program.asp

The 2010 Eco-Logical Grant Program Annual Report:  
Upcoming Eco-Logical Webinar Topics

May 2012: The Use of Regional Ecosystem Frameworks (REFs) for Transportation Planning at Regional, State, and National Scales

Future topics:

- Wetland Planning and Assessments: Applications for Transportation Siting and Mitigation
- Linking Transportation and Ecosystems in an Urban Environment: Stormwater Developments and Case Studies
- Green Infrastructure: Eco-Logical Concepts in Infrastructure Planning
- Technical Assistance to Connect Eco-Logical Knowledge with Transportation Plans and Projects
- Land Trusts as Mitigation Partnership Opportunities

Eco-Logical Webinar Series: